

**NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION**

**2019 BUSINESS PLAN AND BUDGET FILING**

**ATTACHMENT 1**

**SUMMARY TABLES FOR NERC AND REGIONAL ENTITY**

**PROPOSED 2019 BUDGETS AND ASSESSMENTS**

**NERC'S Proposed Budget by Program<sup>1</sup>**

NERC Program	2018 Budget for Statutory Functions	2019 Budget for Statutory Functions
Reliability Standards	\$ 6,821,893	\$ 6,736,078
<u>Compliance Monitoring and Enforcement</u>		
Compliance Assurance	8,904,105	8,922,937
Compliance Analysis, Organization Registration and Certification	4,887,082	5,021,479
Compliance Enforcement	6,673,939	6,857,235
Reliability Assessment and System Analysis	7,312,956	8,029,587
<u>Reliability Risk Management</u>		
Situation Awareness	3,846,648	4,296,209
Event Analysis	5,161,490	5,339,268
Performance Analysis	4,633,422	5,227,610
E-ISAC (including CRISP)	21,850,597	27,395,627
Training, Education and Personnel Certification	3,043,024	2,223,625
<b>Total Budget</b>	<b>\$ 73,135,156</b>	<b>\$ 80,049,655</b>

<sup>1</sup>Does not include the proposed provision for Working Capital reserve funding

**Proposed Budget for Statutory Activities of NERC, Each Regional Entity and WIRAB<sup>1</sup>**

	2018 Budget for Statutory Functions	2019 Budget for Statutory Functions
NERC	\$ 73,135,156	\$ 80,049,655
FRCC	7,514,112	6,695,787
MRO	11,726,736	15,980,354
NPCC	15,106,967	15,803,891
ReliabilityFirst	21,393,899	22,648,458
SERC	17,182,868	18,144,948
SPP RE	10,793,195	-
Texas RE	12,656,953	13,069,599
WECC	27,097,344	26,950,566
WIRAB	1,067,785	1,162,700
<b>Total Budget</b>	<b>\$ 197,675,015</b>	<b>\$ 200,505,958</b>

<sup>1</sup>Does not include the proposed provision for Working Capital reserve funding

**Proposed Assessments for Statutory Activities of NERC and Each Regional Entity and WIRAB**

	Assessments for Statutory Functions 2018	Allocation to Canada 2018	Assessments for Statutory Functions 2019	Allocation to Canada 2019	Allocation to Canada 2019 Budget v 2018 Budget Over (Under)	% Over (Under)
<b>NERC</b>	\$ 62,936,968	\$ 5,778,945	\$ 68,883,995	\$ 6,205,577	\$ 426,632	7.38%
<b>Regional Entities</b>	\$ 115,366,505	\$ 10,385,989	\$ 113,461,051	\$ 10,201,225	\$ (184,764)	-1.78%
FRCC	6,660,518	-	5,827,925	-		
MRO	10,730,106	1,789,219	15,471,669	1,557,423		
NPCC	14,341,787	5,592,327	15,003,411	5,834,155		
ReliabilityFirst	20,147,707	-	21,255,831	-		
SERC	17,205,136	-	17,372,215	-		
SPP RE	9,727,265	-	-	-		
Texas RE	11,271,986	-	13,248,000	-		
WECC	25,282,000	3,004,443	25,282,000	2,809,647		
<b>WIRAB</b>	\$ 711,026	\$ 101,234	\$ 750,000	\$ 109,030	\$ 7,796	7.70%
<b>Total Budget</b>	\$ 179,014,499	\$ 16,266,168	\$ 183,095,046	\$ 16,515,832	\$ 249,664	1.53%

**NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION**

**2019 BUSINESS PLAN AND BUDGET FILING**

**ATTACHMENT 2**

**NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION**

**PROPOSED 2019 BUSINESS PLAN AND BUDGET**

**NERC**

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# 2019 Business Plan and Budget

Final

August 8, 2018

**RELIABILITY | ACCOUNTABILITY**



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# About NERC

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## Overview

The North American Electric Reliability Corporation (NERC) is a not-for-profit entity organized under the New Jersey Nonprofit Corporation Act. NERC's mission is to assure the effective and efficient reduction of risks to the reliability and security of the Bulk Power System (BPS)<sup>1</sup>. NERC's area of responsibility spans the continental U.S. and portions of Canada and Mexico. Entities under NERC's jurisdiction are the users, owners, and operators of the BPS—a system that serves the needs of over 340 million people, includes installed electricity production capacity of approximately 1,200 gigawatts, operates 475,000 miles of high-voltage transmission (100 kV and above), and is comprised of assets worth more than one trillion dollars.

## Electric Reliability Organization

The Federal Energy Regulatory Commission (FERC) certifies and has oversight of NERC as the electric reliability organization (ERO) within the U.S. to establish and enforce NERC Reliability Standards for the U.S. portion of the BPS, pursuant to Section 215 (§215) of the Federal Power Act (FPA). As of June 18, 2007, FERC granted NERC the legal authority to enforce Reliability Standards with all U.S. users, owners, and operators of the BPS and made compliance with those standards mandatory and enforceable. Section 215 also requires that the organization certified by FERC as the ERO seek recognition with relevant authorities in Canada and Mexico, and in 2005, the U.S. Department of Energy (DOE) and Canadian federal and provincial governments agreed to bilateral principles for a consistent, continent-wide reliability regulatory framework under a non-governmental institution (the ERO) designed to function on an international basis. To date, eight Canadian provinces<sup>2</sup> and the National Energy Board of Canada have adopted such a framework, and Mexico is in the process of implementing such a framework after a historic restructuring of Mexico's electricity industry and reforms of the country's regulatory framework were enacted in 2013 and 2014. NERC and WECC are working with the Mexican regulator, *Comisión Reguladora de Energía* (CRE) and the Mexican system and market operator, *CENACE*, under a memorandum of understanding (MOU) signed in 2017, to ensure that, as Mexico implements its new authorities, they will be consistent with the framework in Canada and the United States and support continent-wide reliability and security.

## Membership and Governance

An 11-member Board, comprised of 10 independent trustees and NERC's president and chief executive officer (CEO) serving as the management trustee, governs NERC. The Board has formed several committees to facilitate oversight of the organization in the areas of finance and audit, governance and human resources, compliance, technology and security, nominations and enterprise-wide risk.

Membership in NERC is open to any person or entity that has an interest in the reliability of the North American BPS. Membership is voluntary and affords participants the opportunity to engage in the governance of the organization through election to the Member Representatives Committee (MRC).<sup>3</sup> More than 600 entities and individuals are members of NERC.

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<sup>1</sup> NERC's standards, compliance, and enforcement activities are focused on the [Bulk Electric System \(BES\)](#), which is comprised of certain BPS facilities.

<sup>2</sup> British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, and Nova Scotia.

<sup>3</sup> The [MRC](#) comprises voting representatives elected from the 12 membership sectors. The MRC elects the independent trustees and, along with the Board, votes on amendments to the bylaws. The MRC also provides policy advice and recommendations to the Board on behalf of stakeholders with respect to annual budgets, business plans, and other matters pertinent to the purpose and operation of the organization.



## Scope of Oversight

As the international, multijurisdictional ERO in North America, NERC:

- Proposes, supports the development of, monitors compliance with, and enforces mandatory Reliability Standards for the North American BES, subject to regulatory oversight and approvals from FERC in the U.S. and applicable authorities in Canada
- Conducts near-term and long-term reliability assessments of the North American BPS
- Certifies BPS operators as having and maintaining the necessary knowledge and skills to perform their reliability responsibilities
- Maintains situational awareness of events and conditions that may threaten BPS reliability
- Coordinates efforts to improve physical and cyber security for the BPS of North America
- Conducts detailed analyses and investigations of system disturbances and unusual events as well as measuring ongoing system trends to determine root causes, uncovering lessons learned, and issuing relevant findings as advisories, recommendations, guidelines, and essential actions to the industry to mitigate and control risks to reliability
- Identifies and prioritizes risks to reliability and uses a broad toolkit to mitigate and control risks to reliability, including the potential need for new or modified Reliability Standards, improved compliance monitoring and enforcement methods, or other initiatives

## Delegated Authorities

In executing its responsibility, NERC delegates certain authorities to regional reliability entities (Regional Entities or the Regions) to perform aspects of the ERO functions described through delegation agreements. FERC has approved delegation agreements between NERC and seven Regional Entities: the Florida Reliability Coordinating Council (FRCC), Midwest Reliability Organization (MRO), Northeast Power Coordinating Council, Inc. (NPCC), ReliabilityFirst (RF), SERC Reliability Corporation (SERC), Texas Reliability Entity, Inc. (Texas RE), and Western Electricity Coordinating Council (WECC). These agreements describe the authorities delegated and responsibilities assigned to the Regional Entities in the U.S. to address, among other things: (1) developing regional Reliability Standards; (2) monitoring compliance with and enforcement of Reliability Standards (both North American-wide and regional); (3) registering owners, operators, and users of the BES and certifying reliability entities (Reliability Coordinators [RCs], Balancing Authorities [BAs], and Transmission Operators [TOPs]); (4) assessing reliability and analyzing performance; (5) training and education; (6) event analysis and reliability improvement; and (7) situational awareness and infrastructure security. NERC expects Regional Entities whose territories and geographic footprints extend into Canadian provinces and Mexico to perform equivalent functions in those jurisdictions.

## ERO Enterprise Operating Model

The collective network of leadership, experience, judgment, skills, and technologies shared among NERC and the Regional Entities is referred to as the ERO Enterprise. In 2014, a common operating model, *Improving Coordinated Operations across the ERO Enterprise*,<sup>4</sup> was developed to define how NERC and the Regional Entities achieve excellence in the oversight and execution of statutory functions by collaborating to mitigate reliability risks. The model also defines the division of the roles and responsibilities for NERC and the Regional Entities to efficiently and effectively execute services performed as the collective ERO Enterprise.

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<sup>4</sup> [Improving Coordinated Operations Across the ERO Enterprise](#)

NERC has unique responsibilities within the ERO Enterprise to design the oversight of program areas, develop operational oversight and leadership, set qualifications and expectations for the performance of delegated activities, and assess, train, and give feedback to corresponding Regional Entity programs. Implementation of the operating model progressed with NERC's finalization of documented oversight plans for all statutory program areas for which the Regional Entities' have delegated activities. Further, NERC and the Regional Entities have deepened their coordination activities to identify, prioritize, and address risks to reliability. NERC also reviews and provides input to the annual Regional Entity business plans and budgets (BP&Bs), including but not limited to review of resource allocations, staffing capacity assessments, and program performance assessments. NERC input and review occurs before Regional Entity board approval.

Similarly, the Regional Entities have a mirrored set of responsibilities that include being responsive to the design of the operational model, providing input into the overall development of each ERO program area, providing training and development to meet ERO qualifications, being receptive to feedback from the ERO, and making responsive adjustments. Regional Entities also have an obligation to meet professional standards of independence and objectivity and provide the best available expertise for addressing risks.

With due recognition and awareness of the distinction between individual roles, responsibilities, and corporate status, NERC and the Regional Entities are continually refining their individual and collective operating and governance practices in support of an agreed-upon set of strategic and operational goals and objectives that are designed to ensure the ERO fulfills its statutory obligations.

### **Statutory and Regulatory Background**

NERC's authority as the ERO in the U.S. is based on §215 of the FPA, as added by the Energy Policy Act of 2005,<sup>5</sup> and FERC's regulations and orders issued pursuant to §215. In Canada, NERC's authorities are established by the memoranda of understanding and regulations previously mentioned.

### **Funding**

Section 215 of the FPA and FERC's regulations specify procedures for NERC's funding in the U.S. NERC's annual BP&B is subject to FERC approval in the U.S and, once approved, NERC's annual funding is provided primarily through assessments to load-serving entities. These assessments are allocated on a net-energy-for-load (NEL) basis. Equivalent funding mechanisms are provided in Canada, subject to the specific laws and regulations of each province.

The Regional Entities' funding requirements are addressed separately in their respective BP&Bs, which must be reviewed and approved by NERC and FERC. The U.S. assessments for the Regional Entity budgets are included in the overall NERC assessments to load-serving entities.

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<sup>5</sup> This was codified in §215 of the FPA, 16 United States C. 824o.

## Introduction and Executive Summary

TOTAL RESOURCES (in whole dollars)				
	2019 Budget	U.S.	Canada	Mexico
Statutory FTEs	204.92			
Non-statutory FTEs	-			
<b>Total FTEs</b>	<b>204.92</b>			
Statutory Expenses	\$ 78,717,677			
Non-Statutory Expenses	\$ -			
<b>Total Expenses</b>	<b>\$ 78,717,677</b>			
Statutory Inc (Dec) in Fixed Assets	\$ 1,331,978			
Non-Statutory Inc (Dec) in Fixed Assets	\$ -			
<b>Total Inc (Dec) in Fixed Assets</b>	<b>\$ 1,331,978</b>			
Statutory Funding of Reserves	\$ 148,674			
Non-Statutory Funding of Reserves	\$ -			
<b>Total Working Capital Requirement</b>	<b>\$ 148,674</b>			
<b>Net Proceeds from Financing Activities</b>	<b>\$ (1,067,980)</b>			
Total Statutory Funding Requirement	\$ 79,130,349			
Total Non-Statutory Funding Requirement	\$ -			
<b>Total Funding Requirement</b>	<b>\$ 79,130,349</b>			
	<b>TOTAL</b>	<b>US</b>	<b>CANADA</b>	<b>MEXICO</b>
<b>Statutory Funding Assessments</b>	<b>\$ 68,883,995</b>	<b>\$ 62,466,508</b>	<b>\$ 6,205,577</b>	<b>\$ 211,910</b>
<b>Non-Statutory Fees</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>NEL</b>	<b>4,506,897,694</b>	<b>3,981,131,801</b>	<b>512,670,827</b>	<b>13,095,066</b>
<b>NEL%</b>	<b>100.00%</b>	<b>88.33%</b>	<b>11.38%</b>	<b>0.29%</b>

## Strategic and Operational Planning

The ERO Enterprise's strategic and operational planning process is informed by ongoing activities to identify (1) BPS reliability risks, particularly informed by the Reliability Issues Steering Committee's (RISC's) biennial reliability leadership summit and *ERO Reliability Risk Priorities Report*<sup>6</sup> (RISC report), and (2) opportunities to improve ERO Enterprise effectiveness and efficiency. The transparent and collaborative process includes input from stakeholders<sup>7</sup>, the Board, and Regional Entity boards. These inputs are used by ERO Enterprise leadership to inform the following strategic and operational planning components:

- **ERO Enterprise Long-Term Strategy**<sup>8</sup> – The long-term strategy discusses key challenges and strategic focus areas for the ERO Enterprise over the next five to seven years. The long-term strategy is reviewed on a periodic basis to identify any needed adjustments.
- **ERO Enterprise Operating Plan**<sup>9</sup> – Guided by the long-term strategy, the operating plan identifies the ERO Enterprise's vision, mission, core principals, and goals, and provides a list of key contributing activities<sup>10</sup> by the combined ERO Enterprise, NERC, and the Regional Entities as applicable to inform a rolling three-year operational planning horizon. The operating plan is reviewed biennially<sup>11</sup> and updated as needed.
- **ERO Enterprise BP&Bs** – BP&Bs set the specific annual activities, resources, and resource allocation in support of the goals and objectives in the operating plan. BP&Bs are prepared, reviewed, and approved annually for NERC and each of the Regional Entities.
- **ERO Enterprise Metrics**<sup>12</sup> – The metrics include measures, thresholds, and targets to provide indicators of BPS reliability and security as well as ERO Enterprise effectiveness and efficiency. The metrics are reviewed annually and updated as needed to ensure they meaningfully inform near and long-term priorities.<sup>13</sup>

## Evolving Reliability Risks

Over the past several years, NERC has transformed its activities towards being more risk-based, ensuring that the right activities are focused on the most pertinent risks to the reliable operation of the BPS. The RISC is an advisory committee to the Board, providing key insights, priorities, and high-level leadership for issues of strategic importance to BPS reliability. The latest RISC report, which was accepted by the Board on February 8, 2018, presents the results of its continued work to define and prioritize risks and to offer recommendations to the Board to inform the development of NERC's risk strategy. The RISC report recommendations are considered as the operating plan's goals and contributing activities are updated for the coming years. In the latest report, the RISC recommended a high level of focus and priority on the following areas that have been identified as having a higher likelihood of BPS-wide occurrence and higher impact to BPS reliability.

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<sup>6</sup> [ERO Reliability Risk Priorities Report \(Board Accepted February 8, 2018\)](#)

<sup>7</sup> This includes input from the RISC, MRC, NERC standing and technical committees, trade associations and industry forums, as well as public comment periods.

<sup>8</sup> [ERO Enterprise Long-Term Strategy \(Board Approved November 9, 2017\)](#)

<sup>9</sup> [ERO Enterprise Operating Plan \(Board Approved November 9, 2017\)](#)

<sup>10</sup> Activities that are recommendations from the RISC report are labeled accordingly.

<sup>11</sup> The operating plan is reviewed in the same year the RISC reviews and updates its report.

<sup>12</sup> [2018 ERO Enterprise Metrics \(Board Approved November 9, 2017\)](#)

<sup>13</sup> Each ERO Enterprise entity establishes additional metrics to support performance-based compensation programs. These metrics typically measure achievement of specific objectives, tasks, and activities on a departmental or company-wide basis for the operating year.

### **Cybersecurity Vulnerabilities**

Cyber threats are becoming more sophisticated and increasing in number. Exploitation of cybersecurity vulnerabilities can cause loss of control or damage to BPS-related voice communications, data, monitoring, protection and control systems, or tools. A cyber-attack can result in equipment damage, degradation of reliable operations, uncontrolled cascading of the BPS, and loss of load. Further, cybersecurity vulnerabilities can come from several sources, both internal and external, and in some instances the utility may have its cybersecurity fully tested.

### **Changing Resource Mix**

The rapid rate at which fuel costs, subsidies, and federal, state, and provincial policies are affecting the resource mix are creating a new paradigm in which planners, balancing authorities, and system operators are reacting to resource additions and retirements. Further, the integration of new technologies and distributed energy resources are affecting the ability of operators to see and control resources within their area.

### **BPS Planning**

BPS planning is a risk closely tied to the changing resource mix because planners currently lack the ability to update or create system models and scenarios of potential future states to identify system needs based on the dynamic nature of the system. This changing system makes it increasingly difficult to evaluate BPS stability, including inertia and frequency response, voltage support (adequate dynamic and static reactive compensation), and ramping constraints.

### **Resource Adequacy**

Changes in the generation resource mix and new technologies are altering the operational characteristics of the grid and will challenge system planners and operators to maintain reliability in real time. Failure to take into account these changing characteristics and capabilities can lead to insufficient capacity and essential reliability services to meet customer demands.

### **ERO Enterprise Goals**

As part of the *ERO Enterprise Operating Plan* discussed above, the ERO Enterprise has six goals enabling the ERO Enterprise to successfully carry out its mission. A description of each goal is provided below, followed by additional information about the allocation of NERC's and the full ERO Enterprise's resources toward achievement of each goal.

#### **Goal 1: Risk-Responsive Reliability Standards**

Reliability Standards establish threshold requirements for assuring the BES is planned, operated, and maintained to minimize risks of cascading failures, avoid damage to major equipment, or limit interruptions of the BPS. Reliability Standards are clear, timely, effective in mitigating risks to reliability, and consider cost-effectiveness/impact.

#### **Goal 2: Objective, Risk-Informed Compliance Monitoring, Mitigation, Enforcement, and Entity Registration**

The ERO Enterprise is a strong enforcement authority that is objective, fair, and promotes a culture of reliability excellence through risk-informed compliance monitoring, mitigation, enforcement, and registration.

#### **Goal 3: Reduction of Known Reliability Risks**

The ERO Enterprise recognizes significant known risks to reliability, assures those risks are reduced, and promotes a culture of reliability excellence.

**Goal 4: Identification and Assessment of Emerging Reliability**

The ERO Enterprise identifies, objectively assesses, and prioritizes emerging risks to reliability to inform stakeholders and enable effective actions to reduce these risks to reliability.

**Goal 5: Identification and Reduction of Cyber and Physical Security Risks**

The ERO Enterprise identifies and evaluates cyber and physical security risks to the BPS and assures those risks are reduced through active stakeholder engagement and information sharing of current threats and vulnerabilities, security workshops, and development of good industry practice guides. The ERO Enterprise supports the Electricity Information Sharing and Analysis Center (E-ISAC), the Cybersecurity Risk Information Sharing Program (CRISP), technical protective programs, and physical and cybersecurity preparedness exercises, and engages with government partners to de-classify sensitive security information needed to protect BPS devices and assets. The ERO Enterprise works with stakeholders to develop and share information to foster BPS resiliency in connection with both traditional and emerging risks.

**Goal 6: Effective and Efficient Operations**

The ERO Enterprise embraces transparency, collaboration, consistency, quality, efficiency, and timeliness of results and operates as a coordinated and collaborative enterprise.

**Allocation of NERC Resources to ERO Enterprise Goals and Risk Priorities**

The charts below provide an overview of the allocation of both NERC and the ERO Enterprise’s 2019 resources associated with each goal in the *ERO Enterprise Operating Plan* and the related contributing activities discussed above. Using surveys, funding sources, and FTEs as a guide, the charts reflect the relative amount of total resources (people and dollars) focused on supporting each of the six goals noted above. Since many departments work on multiple activities that further multiple goals, forecasting all activities supporting each goal is not precise. However, these charts provide a general picture regarding how resources are allocated.

NERC Resource Allocation to Operating Plan Goals



## ERO Enterprise Resource Allocation to Operating Plan Goals



### Ongoing Focus on Effectiveness and Efficiency

NERC and the Regional Entities continue to collaborate to improve effectiveness and efficiency, evaluate resources, and leverage combined skillsets to improve ERO Enterprise activities and control costs. This collaboration and resulting efficiencies can be found in a number of areas, including but not limited to:

- **ERO Enterprise IT investments** – NERC and the Regional Entities, under the oversight of the Board Technology and Security Committee (TSC), have developed a long-term ERO Enterprise IT program resulting in a number of enterprise tools to enhance operations, improve efficiency, and reduce costs at the NERC, regional, and registered entity levels. For example, these tools will facilitate efficiency of data submittals, consistency in compliance resources, and overall reliability through information sharing related to event analysis, misoperations, and situational awareness.
- **Enforcement** – NERC has worked closely with Regional Entities to streamline enforcement processes, and therefore required resources, in connection with the development of more efficient and risk-based enforcement mechanisms.
- **Standards** – As standards development has matured, NERC management has reallocated Standards staff towards more critical activities like cyber security and analytical capabilities.
- **Forums** – As further described in the quarterly forum reports to the Board, NERC and the Regional Entities continue to leverage the transmission and generation forums to jointly address risks to reliability to mitigate their impacts on the reliable operation of the BES.
- **Industry** – The ERO Enterprise continues to collaborate with and rely on industry resources and expertise through the various standing and technical committees, working groups, and task forces that are critical to both identifying and supporting key initiatives and priorities.

Additional information on long-term and ongoing effectiveness and efficiency goals can be found in Focus Area 2 of the *ERO Enterprise Long-Term Strategy*, Goal 6 of the draft *ERO Enterprise Operating Plan*, and Metric 7d of the *2018 ERO Enterprise Metrics*. Current efforts in support of these goals are detailed in a draft framework for improving ERO Enterprise effectiveness and efficiency that was presented and discussed at the May 9, 2018 MRC meeting.<sup>14</sup>

<sup>14</sup> [MRC Agenda Package – May 9, 2018 \(see agenda item 8\)](#)

## 2019 Key Business Planning Assumptions

NERC and the Regional Entities use the goals and contributing activities in the *ERO Enterprise Operating Plan* as a guide to support the development of their respective BP&Bs. NERC and the Regional Entities use this planning information to evaluate their projected workloads and determine resource levels and allocation required to complete necessary tasks and meet their statutory obligations.

### Application of Section 215 Criteria

In its order approving NERC's *2013 Business Plan and Budget*, FERC required NERC to establish criteria for determining whether its proposed activities are eligible for funding under §215. In an order dated April 19, 2013, FERC approved NERC's proposed criteria, with certain modifications.<sup>15</sup> *Exhibit A – Application of NERC Section 215 Criteria* summarizes the major activities NERC proposes to undertake in 2019 and the approved §215 criteria applicable to such activities.

### Overview of 2019 Budget and Funding Requirements

NERC's 2019 combined expense and fixed asset (capital) budget is approximately \$80.0M, which represents an increase of approximately \$6.9M (9.5%) from the 2018 budget. Total expenses are increasing approximately \$7.9M (11.1%) over 2018. The total fixed asset (capital) budget, excluding depreciation,<sup>16</sup> is approximately \$4.8M, an increase of \$904k (23.3%) from 2018. Approximately \$9.0M (11.2%) of NERC's 2019 budget is related to CRISP, with the majority of the CRISP budget funded by participating utilities, with a small portion funded through assessments.

NERC's proposed 2019 assessment is approximately \$68.9M, which represents an increase of \$6.0M (9.5%) from 2018 and reflects the proposed release of \$550k of funds from the Assessment Stabilization Reserve to reduce 2019 assessments. Further, NERC proposes to deposit \$500k of penalty collections during the 12 months ended June 30, 2018 into the Assessment Stabilization Reserve. Without the proposed release of funds from the Assessment Stabilization Reserve to offset assessments (as further discussed below), NERC's total assessments would increase \$6.5M (10.3%) over 2018. Factors contributing to the difference between the proposed budget increase and the proposed assessment increase include debt (capital financing) assumptions and other funding from CRISP, workshop fees, etc.

In order to stabilize assessments and align budget and assessment increases more closely, NERC has undertaken a multi-year strategy to manage assessment increases. NERC's policy *Accounting, Financial Statement and Budgetary Treatment of Penalties Imposed and Received for Violations of Reliability Standards*<sup>17</sup> and NERC Rules of Procedure (ROP) §1107.2 specify that penalties received during the period July 1 through the following June 30 are to be used in the subsequent budget period to offset U.S. assessment billings. However, ROP §1107.4 provides for exceptions or alternatives to this treatment if approved by FERC. In February 2015, the Board approved an amendment to the company's *Working Capital and Operating Reserve Policy*.<sup>18</sup> Among the approved changes was the creation of an Assessment

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<sup>15</sup> North American Electric Reliability Corporation, Order on Compliance, 143 FERC ¶ 61,052 (2013).

<sup>16</sup> NERC and the Regional Entities budget depreciation as an operating expense with an equal and offsetting credit against budgeted Fixed Asset (capital) additions. As a result, the budgets do not include depreciation in the funding requirements.

<sup>17</sup> Accounting, Financial Statement and Budgetary Treatment of Penalties Imposed and Received for Violations of Reliability Standards, December 8, 2008 and as amended August 15, 2013.

<sup>18</sup> [NERC's Working Capital and Operating Reserve Policy](#). NERC filed a petition with FERC on March 6, 2015 for approval of this policy; FERC conditionally approved the revised policy in an order issued June 18, 2015, in Docket No. RR15-8-000. *North American Electric Reliability Corporation, Order Conditionally Accepting Revisions to Working Capital and Operating Reserve Policy*, 151 FERC ¶ 61,225 (2015). On August 14, 2015, NERC submitted a compliance filing to the June 18, 2015 order with a modification to the policy, which FERC accepted by letter order dated September 18, 2015 (Docket No. RR15-8-001).



Stabilization Reserve.<sup>19</sup> This reserve was established to implement the strategic goal of more closely aligning annual budget and U.S. assessment increases and to better manage year-to-year assessment increases. The eventual goal is to narrow the gap between annual percentage changes in NERC's budget and annual percentage changes in assessments that result from year-to-year variations in penalty collections.

Subject to FERC approval, NERC will deposit the \$500k of penalty funds collected during the period July 1, 2017–June 30, 2018 into the Assessment Stabilization Reserve and release \$550k from the Assessment Stabilization Reserve to reduce 2019 assessments, resulting in a matching 2019 budget and assessment increase of 9.5%. The allocation of assessments to Canadian entities will reflect the final determination and allocation of certain compliance and enforcement costs to Canadian entities pursuant to NERC's policy on the allocation of compliance costs.<sup>20</sup>

The following table provides a high-level year-over-year comparison of the major categories of expenses, total budget, and full-time equivalents (FTEs).

Statement of Activities and Fixed Assets Expenditures 2018 and 2019 Budgets						
STATUTORY						
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)	% Over (Under)
<b>Funding</b>						
<b>ERO Funding</b>						
NERC Assessments	\$ 62,936,968	\$ 62,936,968	\$ -	\$ 68,883,995	\$ 5,947,027	9.5%
Assessment Stabilization Reserve - Penalties	600,000	600,000	-	550,000	(50,000)	
Third-Party Funding (CRISP)	7,324,253	7,219,381	(104,872)	7,486,353	162,101	
Testing Fees	1,790,000	1,689,757	(100,243)	1,790,000	-	
Services & Software	50,000	50,000	-	40,000	(10,000)	
Workshops	185,000	301,380	116,380	195,000	10,000	
Interest	95,000	268,413	173,413	185,000	90,000	
Miscellaneous	-	-	-	-	-	
<b>Total Funding</b>	<b>\$ 72,981,221</b>	<b>\$ 73,065,900</b>	<b>\$ 84,678</b>	<b>\$ 79,130,349</b>	<b>\$ 6,149,128</b>	<b>8.4%</b>
<b>Expenses</b>						
Personnel Expenses	\$ 40,969,105	\$ 41,131,865	\$ 162,760	\$ 43,952,190	\$ 2,983,085	7.3%
Meeting Expenses	3,395,100	3,484,028	88,928	3,380,400	(14,700)	-0.4%
Operating Expenses	26,352,371	28,572,330	2,219,959	31,170,916	4,818,544	18.3%
Other Non-Operating	138,878	165,048	26,170	214,171	75,293	54.2%
<b>Total Expenses</b>	<b>\$ 70,855,455</b>	<b>\$ 73,353,271</b>	<b>\$ 2,497,816</b>	<b>\$ 78,717,677</b>	<b>\$ 7,862,222</b>	<b>11.1%</b>
<b>Fixed Assets</b>						
Depreciation	\$ (1,594,299)	\$ (3,042,075)	\$ (1,447,776)	\$ (3,446,022)	\$ (1,851,724)	
Computer & Software CapEx	2,549,000	2,549,000	-	3,488,000	939,000	
Equipment CapEx	1,175,000	565,559	(609,441)	890,000	(285,000)	
Leasehold Improvements	150,000	150,000	-	400,000	250,000	
<b>Inc(Dec) in Fixed Assets</b>	<b>\$ 2,279,701</b>	<b>\$ 222,484</b>	<b>\$ (2,057,218)</b>	<b>\$ 1,331,978</b>	<b>\$ (947,724)</b>	<b>-41.6%</b>
<b>Total Budget</b>	<b>\$ 73,135,156</b>	<b>\$ 73,575,755</b>	<b>\$ 440,599</b>	<b>\$ 80,049,655</b>	<b>\$ 6,914,499</b>	<b>9.5%</b>
<b>FTEs</b>	<b>199.28</b>	<b>187.63</b>	<b>(11.65)</b>	<b>204.92</b>	<b>5.64</b>	<b>2.8%</b>

<sup>19</sup> In accordance with the approved *Working Capital and Operating Reserve Policy*, the Assessment Stabilization Reserve may be funded with penalty funds and surplus operating reserves. The actual amount of the contribution, as well as releases from the fund to reduce assessments, are determined annually as part of NERC's BP&B process, based on recommendation by the FAC and requiring both Board and FERC approval.

<sup>20</sup> Expanded Policy on Allocation of Certain Compliance and Enforcement Costs, July 29, 2008.

NERC's 2019 budget and funding requirements reflect the resources necessary to support achievement of the goals and objectives set forth in the *ERO Enterprise Operating Plan*. The 2019 budget is comprised of both operating and fixed asset (capital) costs. Operating costs generally include personnel, consulting, office space, software licensing, third-party data management, communications, and other customary services to support office operations. Fixed asset (capital) costs primarily reflect investments in equipment and software to support operations, including investments in the development of software applications and infrastructure to facilitate improved business processes and efficiency.

### Key Budget Assumptions

Key assumptions used in the development of NERC's 2019 budget include the following:

- **A net increase to headcount by 6 (5.64 FTEs).** This reflects an increase of 11 positions (10.34 FTEs) in support of the long-term strategy for the E-ISAC, as outlined in the *Electricity Information Sharing and Analysis Center* section of Section A, and a decrease of 5 positions (4.70 FTEs) in the rest of NERC operations. A 6.0% reduction to FTEs (vacancy rate) is applied to account for attrition and hiring delays, which is the same as 2018.
- **Investment for the second year of the E-ISAC long-term strategy.** In addition to the headcount (FTE) increase for the E-ISAC discussed above, the strategy calls for investment in additional grid security exercise (GridEx) support, E-ISAC portal enhancements, and office facilities to support growth. Additional information can be found in *Exhibit E – E-ISAC Long-Term Strategy*.
- **Investments in technology and tools.** This includes a planned funding for the Compliance Monitoring and Enforcement Program (CMEP) tool, with investment in complementary solutions for entity registration and standards data, as described in *Exhibit F – CMEP Technology Project*, as well as an upgrade to the SAFNR situational awareness tool, as outlined in *Exhibit G – Situation Awareness for FERC, NERC, and the Regional Entities (SAFNR)*.
- **Market-based compensation for personnel.** Executive and staff compensation and benefits are established based on guidelines established by the Board's Corporate Governance and Human Resources Committee (CGHRC) and the results of market compensation and benefit studies, most recently completed in 2017.
- **Anticipated market increases in medical and dental benefit plan costs.** Medical and dental premium cost estimates are based on market data provided by the company's benefits consultant. No other changes to retirement or other benefit plans have been assumed for 2019.
- **Slight decrease to meeting and travel expenses.** The company has undertaken a number of significant efforts over the past several years to reduce travel and meeting expenses. For example, the company has worked closely with Regional Entities to share meeting space where possible, which has helped reduce meeting costs.

### Fixed Asset (Capital) Budget and Capital Financing

NERC's 2019 capital budget is approximately \$4.8M (excluding depreciation), which represents an increase of \$904k from 2018. This increase is primarily due to additional ERO Enterprise software project spending and leasehold improvements for the E-ISAC. The table below provides a summary of the major capital budget components.

NERC Capital Budget	Budget 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	
			Variance Budget	Variance %
ERO Application Development	\$ 2,148,000	\$ 3,268,000	\$ 1,120,000	52.1%
Hardware (storage, servers)	805,000	565,000	(240,000)	-29.8%
Other Equipment	370,000	425,000	55,000	14.9%
Disaster Recovery	100,000	-	(100,000)	-100.0%
NERC Software Licenses	301,000	120,000	(181,000)	-60.1%
Leasehold Improvements	150,000	400,000	250,000	166.7%
<b>Total</b>	<b>\$ 3,874,000</b>	<b>\$ 4,778,000</b>	<b>\$ 904,000</b>	<b>23.3%</b>

NERC has budgeted approximately \$4.6M (both operating expenses and capital expenditures) in 2019 for services related to the planning, design, and implementation of software applications supporting ERO Enterprise tools for common NERC and Regional Entity operations. These related costs include approximately \$3.3M in capital expenditures and \$1.3M in other IT operating costs. Additional information regarding the ERO Enterprise IT strategy, the current status of the development of ERO Enterprise IT applications, and projects that will be under development in 2019 can be found in the *Information Technology* section of Section A. The 2019 capital budget also includes ongoing funding for IT security, data storage, servers, hardware, and software license costs.

#### **CMEP Technology Project and Standards Data and Entity Registration Solutions**

Starting in 2017, NERC has been working closely with the Regional Entities to evaluate and implement strategic investments in tools that replace the current three CMEP applications used among NERC and the Regional Entities with a single, common CMEP application. The scope of the project includes how Reliability Standards and entity registration data will be integrated with the tool, as well as how best to support the various parts of the compliance and enforcement process (e.g., analysis of risk, development of implementation plans and audit schedules, actual compliance monitoring, and enforcement processing).

Of the \$3.3M in fixed asset (capital) expenditures for ERO Enterprise applications in 2019, approximately \$1.8M relates to the new CMEP tool. Additional investments include development of separate applications for entity registration (\$600k) and standards data (\$300k), which are planned projects that have been accelerated to 2019 to smoothly integrate with the new CMEP solution. The capital expenditure for the CMEP tool is expected to be approximately \$5.0–6.0M in total, with work spanning through 2020. Funding for this work will be subject to review and approval as part of the BP&B process each year. For additional information on the CMEP Technology Project and entity registration and standards solutions, please see the *Information Technology* section of Section A, as well as *Exhibit F – CMEP Technology Project*.

#### **SAFNR**

The remaining 2019 capital expenditure of \$600k for ERO Enterprise applications relates to enhancing the functionality of SAFNR to improve the ability to accurately understand current conditions on the BPS, and to incorporate functionality elements piloted during GridEx IV that will provide the E-ISAC with more timely and understandable common operating picture information. Because the tool benefits both the situation awareness and E-ISAC teams, approximately one-third of the costs for the SAFNR upgrade are budgeted to the E-ISAC with the rest under the Situation Awareness program. This allocation is subject to change as the benefits of the upgrade are realized. The SAFNR upgrade project will undergo the same business case and approval process as other enterprise IT investments. For additional information on

SAFNR, please see the *Situation Awareness* section of Section A and *Exhibit G – Situation Awareness for FERC, NERC, and the Regional Entities (SAFNR)*.

The 2019 budget assumes that approximately \$3.3M of the total \$4.6M capital budget for ERO Enterprise applications will be financed through the capital financing program described and put in place as part of NERC's *2014 Business Plan and Budget*. Further information regarding capital financing can be found in *Exhibit C – Capital Financing*.

### Working Capital and Operating Reserves

Under the company's *Working Capital and Operating Reserve Policy*, NERC is proposing an overall reserve budget of \$8.6M for Working Capital (i.e., the amount of funds necessary to satisfy the company's projected cash flow needs during the budget year), the four categories of Operating Reserves, and the Assessment Stabilization Reserve. This represents an increase of \$1.1M (14.7%) from the total reserve amounts included in NERC's 2018 budget. The reserve categories are broken down as follows:

- **Future Obligation Reserve** – Includes funding that has been received to satisfy future obligations under lease, credit, loan, or other agreements to which the company is a party. This reserve is comprised primarily of existing funds and is budgeted to be \$2.0M for 2019.
- **System Operator Certification Reserve** – Includes surplus funding from operator certification and testing fees that are above incurred expenses and shall be used solely to support operator testing and certification needs. The 2019 System Operator Certification Reserve is budgeted at \$676k and comprised primarily of existing funds.
- **CRISP Reserve** – Represents funds dedicated to support CRISP. These reserves are established pursuant to a CRISP budget agreed to and funded entirely by utilities participating in CRISP. These reserves have no impact on assessments and they are segregated from other reserves pursuant to the terms of the CRISP agreements. The CRISP reserves are projected to be \$500k in the 2019 budget.
- **Operating Contingency Reserve** – Includes funds for contingencies that were not anticipated, assumed to be likely, or the timing of which was uncertain, at the time of preparation and approval of the company's BP&B. NERC's current policy on Operating Contingency Reserves requires a reserve target of 3.5–7.0%, except as otherwise approved by the Board after review and recommendation by the Board Finance and Audit Committee (FAC). This percentage is calculated against NERC's total budget for operating and capital expenditures, less those costs related to CRISP and System Operator Certification, each of which has a separate reserve category. For the 2019 budget, management is recommending an Operating Contingency Reserve of approximately \$3.8M, or 5.5% of total budgeted operating and fixed asset (capital) costs.
- **Assessment Stabilization Reserve** – To date, this reserve has been funded entirely by previously received penalties and is projected to have a balance of \$2.1M as of January 1, 2019. For purposes of the company's 2019 BP&B, NERC is proposing the release of \$550k of Assessment Stabilization Reserve funds to offset U.S. assessments. Assuming FERC approves the proposal, the remaining balance of \$1.5M in the Assessment Stabilization Reserve will be used to reduce U.S. assessments in one or more future periods, subject to review and approval by the Board and FERC in the applicable year's BP&B.

### Department Budget and FTE Comparisons

The following table shows a 2019 versus 2018 total budget comparison by department. The amounts reflect all direct and indirect departmental costs, including fixed asset (capital) costs. Costs incurred for general and administrative and other overheads are considered indirect and are allocated to the statutory departments based on the ratio of that department's budgeted FTEs to total budgeted statutory FTEs.

## 2019 versus 2018 Total Budget by Department

Total Budget	2018 Budget	2019 Budget	Change	
			2019 Budget v 2018 Budget	% Change
Reliability Standards*	\$ 6,821,893	\$ 6,736,078	\$ (85,816)	-1.3%
Compliance Monitoring and Enforcement Programs*	20,465,126	20,801,651	336,525	1.6%
Reliability Assessments and System Analysis	7,312,956	8,029,587	716,631	9.8%
Reliability Risk Management*	13,641,560	14,863,087	1,221,527	9.0%
Training, Education, and Personnel Certification	3,043,024	2,223,625	(819,399)	-26.9%
<b>NERC Budget, excluding E-ISAC</b>	<b>\$ 51,284,559</b>	<b>\$ 52,654,028</b>	<b>\$ 1,369,469</b>	<b>2.7%</b>
E-ISAC (non-CRISP)	\$ 13,130,686	\$ 18,351,920	\$ 5,221,234	39.8%
E-ISAC (CRISP)*	8,719,912	9,043,707	323,795	3.7%
<b>Total E-ISAC Budget</b>	<b>\$ 21,850,597</b>	<b>\$ 27,395,627</b>	<b>\$ 5,545,030</b>	<b>25.4%</b>
<b>Total Budget</b>	<b>\$ 73,135,156</b>	<b>\$ 80,049,655</b>	<b>\$ 6,914,499</b>	<b>9.5%</b>

\*Includes key technology application costs, including the CMEP Technology Project and complementary solutions for entity registration and standards data, as well as SAFNR, for which funding is shared by Reliability Risk Management and E-ISAC.

The primary areas of increase are in E-ISAC, Reliability Assessments and System Analysis (RASA), and Reliability Risk Management (RRM). The E-ISAC increase reflects additional staff related to the long-term strategy discussed in the *Electricity Information Sharing and Analysis Center* section of Section A and the attachment to Exhibit E, *Expanding E-ISAC Operations to Include 24x7 Onsite Operations*. The increase for 2019 due to the implementation of this strategy is approximately \$3.5M; most of the remaining increase is due to the allocation of general and administrative overhead costs based on the additional FTEs. The increases in RASA and RRM are due to reallocations of personnel to these programs from other programs to align with current resource needs, and, for RRM, the capital costs associated with the upgrade to SAFNR (see *Exhibit G – Situation Awareness for FERC, NERC, and the Regional Entities (SAFNR)*).

The capital costs associated with the CMEP Technology Project result in an increase in the CMEP areas, but the total increase for the CMEP is reduced by the elimination or reallocation of FTEs to other program areas, which also results in lower allocations of indirect costs and fixed assets from Administrative Services to these departments. Similarly, the decreases in the Reliability Standards and Training, Education, and Personnel Certification departments is largely the result of the elimination or reallocation of FTEs.

The following table presents a 2019 versus 2018 comparison of budgeted FTEs by department and reflects 2019 personnel additions, interdepartmental transfers of previously budgeted positions, and attrition assumptions. The number of FTEs represents the number of employees employed full time during the year, plus the number of employees employed part time (less than full schedule) or during a portion of the year, converted to a full-time basis. Headcount represents the total number of personnel employed during the year, regardless of the length of their employment or whether they are full-time or part-time employees. FTEs will be less than headcount, unless there are no part-time employees and no employees who are employed less than a full year. The company's 2019 personnel budget is based upon existing headcount and associated compensation and benefit costs, as well as assumptions on the number and cost of new hires and the assumed vacancy rate, all within an overall FTE budget. An average vacancy rate is applied to each position and its associated costs to arrive at an overall personnel cost budget. The vacancy rate represents an adjustment that is applied in the calculation of budgeted personnel costs to account for attrition and for variations from the budget assumptions on the timing of new hires.

## 2019 versus 2018 FTEs by Department

FTEs*	2018 Budget	2019 Budget	Change	
			2019 Budget v 2018 Budget	% Change
Reliability Standards	15.51	14.57	(0.94)	-6.1%
Compliance Monitoring and Enforcement Programs	40.89	39.01	(1.88)	-4.6%
Reliability Assessments and System Analysis	14.10	15.04	0.94	6.7%
Reliability Risk Management	26.32	27.26	0.94	3.6%
Training, Education, and Personnel Certification	5.88	3.76	(2.12)	-36.0%
Administrative Programs	67.45	67.68	0.23	0.3%
<b>NERC FTEs, excluding E-ISAC</b>	<b>170.14</b>	<b>167.32</b>	<b>(2.82)</b>	<b>-1.7%</b>
E-ISAC (non-CRISP)	25.38	33.84	8.46	33.3%
E-ISAC (CRISP)	3.76	3.76	-	0.0%
<b>Total E-ISAC FTEs</b>	<b>29.14</b>	<b>37.60</b>	<b>8.46</b>	<b>29.0%</b>
<b>Total FTEs</b>	<b>199.28</b>	<b>204.92</b>	<b>5.64</b>	<b>2.8%</b>

\*Reflects 2019 additions and transfers between departments, anticipated timing of 2019 hires, and assumes 6% attrition in all programs

The Administrative Programs encompass a number of necessary support functions, including Information Technology, Legal and Regulatory, Finance and Accounting, Human Resources, Facilities and Meeting Planning, Communications, External Affairs, and Government Relations staff. It also includes General and Administrative functions, which include the CEO, the Chief Reliability Officer (CRO), and their support staff. For FERC and external reporting purposes, these programs are allocated as indirect expenses to the operating areas on a per FTE basis.

For 2019, NERC is budgeting an increase of 11 positions in support of the long-term strategy for the E-ISAC, which includes 9 positions in the E-ISAC and 2 in the Administrative Programs area (see the *Electricity Information and Analysis Center* section of Section A for details). There will also be a decrease of 5 open positions in the remaining NERC departments. This results in an increase of 9 positions (8.46 FTEs) in the E-ISAC, a net decrease of 3 positions (2.82 FTEs) in other NERC departments (decrease of 5 positions plus the 2 added support roles for E-ISAC), resulting in a total net increase of 6 positions (5.64 FTEs) for NERC in 2019. The table above reflects the elimination of 5 open positions and reallocations of staff among departments. Currently, the proposed position eliminations are in the Compliance Assurance, Training and Education, and RRM areas.

The 2019 organizational chart can be found in Appendix 1. The difference between the number of positions reflected in the organizational chart and total budgeted FTEs is due to assumptions regarding vacancy rates and timing of new hires.

The following table is a statement of activities and fixed asset expenditures comparing the 2018 budget, 2018 projection, and 2019 budget.

Introduction and Executive Summary

Statement of Activities and Fixed Assets Expenditures 2018 and 2019 Budgets

STATUTORY

	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)	% Inc 2019 over 2018
<b>Funding</b>						
<b>ERO Funding</b>						
NERC Assessments	\$ 62,936,968	\$ 62,936,968	\$ -	\$ 68,883,995	\$ 5,947,027	9.5%
Assessment Stabilization Reserve - Penalties	600,000	600,000	-	550,000	(50,000)	
<b>Total NERC Funding</b>	<b>\$ 63,536,968</b>	<b>\$ 63,536,968</b>	<b>\$ -</b>	<b>\$ 69,433,995</b>	<b>\$ 5,897,027</b>	
Third-Party Funding (CRISP)	\$ 7,324,253	\$ 7,219,381	\$ (104,872)	\$ 7,486,353	\$ 162,101	
Testing Fees	1,790,000	1,689,757	(100,243)	1,790,000	-	
Services & Software	50,000	50,000	-	40,000	(10,000)	
Workshops	185,000	301,380	116,380	195,000	10,000	
Interest	95,000	268,413	173,413	185,000	90,000	
Miscellaneous	-	-	-	-	-	
<b>Total Funding (A)</b>	<b>\$ 72,981,221</b>	<b>\$ 73,065,900</b>	<b>\$ 84,678</b>	<b>\$ 79,130,349</b>	<b>\$ 6,149,128</b>	<b>8.4%</b>
<b>Expenses</b>						
<b>Personnel Expenses</b>						
Salaries	\$ 31,791,098	\$ 31,931,961	\$ 140,863	\$ 33,810,276	\$ 2,019,179	
Payroll Taxes	1,949,557	1,864,208	(85,349)	2,044,880	95,324	
Benefits	3,988,886	4,251,518	262,632	4,673,208	684,322	
Retirement Costs	3,239,565	3,084,178	(155,386)	3,423,826	184,261	
<b>Total Personnel Expenses</b>	<b>\$ 40,969,105</b>	<b>\$ 41,131,865</b>	<b>\$ 162,760</b>	<b>\$ 43,952,190</b>	<b>\$ 2,983,085</b>	<b>7.3%</b>
<b>Meeting Expenses</b>						
Meetings	\$ 1,071,500	\$ 1,177,447	\$ 105,947	\$ 1,056,500	\$ (15,000)	
Travel	2,204,000	2,147,202	(56,798)	2,184,000	(20,000)	
Conference Calls	119,600	159,378	39,778	139,900	20,300	
<b>Total Meeting Expenses</b>	<b>\$ 3,395,100</b>	<b>\$ 3,484,028</b>	<b>\$ 88,928</b>	<b>\$ 3,380,400</b>	<b>\$ (14,700)</b>	<b>-0.4%</b>
<b>Operating Expenses</b>						
Consultants & Contracts	\$ 13,724,185	\$ 14,308,501	\$ 584,316	\$ 15,043,318	\$ 1,319,133	
Office Rent	3,091,804	3,087,919	(3,885)	3,335,058	243,254	
Office Costs	5,365,084	5,640,947	275,863	6,506,917	1,141,833	
Professional Services	2,537,500	2,453,388	(84,112)	2,757,600	220,100	
Miscellaneous	39,500	39,500	-	82,000	42,500	
Depreciation	1,594,299	3,042,075	1,447,776	3,446,022	1,851,724	
<b>Total Operating Expenses</b>	<b>\$ 26,352,371</b>	<b>\$ 28,572,330</b>	<b>\$ 2,219,959</b>	<b>\$ 31,170,916</b>	<b>\$ 4,818,544</b>	<b>18.3%</b>
<b>Total Direct Expenses</b>	<b>\$ 70,716,577</b>	<b>\$ 73,188,223</b>	<b>\$ 2,471,647</b>	<b>\$ 78,503,506</b>	<b>\$ 7,786,929</b>	<b>11.0%</b>
<b>Indirect Expenses</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ (0)</b>	<b>\$ -</b>	<b>\$ (0)</b>	
<b>Other Non-Operating Expenses</b>	<b>\$ 138,878</b>	<b>\$ 165,048</b>	<b>\$ 26,170</b>	<b>\$ 214,171</b>	<b>\$ 75,293</b>	<b>54.2%</b>
<b>Total Expenses (B)</b>	<b>\$ 70,855,455</b>	<b>\$ 73,353,271</b>	<b>\$ 2,497,816</b>	<b>\$ 78,717,677</b>	<b>\$ 7,862,222</b>	<b>11.1%</b>
<b>Change in Assets</b>	<b>\$ 2,125,766</b>	<b>\$ (287,372)</b>	<b>\$ (2,413,138)</b>	<b>\$ 412,672</b>	<b>\$ (1,713,095)</b>	
<b>Fixed Assets</b>						
Depreciation	\$ (1,594,299)	\$ (3,042,075)	\$ (1,447,776)	\$ (3,446,022)	\$ (1,851,724)	
Computer & Software CapEx	2,549,000	2,549,000	-	3,488,000	939,000	
Furniture & Fixtures CapEx	-	-	-	-	-	
Equipment CapEx	1,175,000	565,559	(609,441)	890,000	(285,000)	
Leasehold Improvements	150,000	150,000	-	400,000	250,000	
Allocation of Fixed Assets	0	(0)	(0)	(0)	(0)	
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>\$ 2,279,701</b>	<b>\$ 222,484</b>	<b>\$ (2,057,218)</b>	<b>\$ 1,331,978</b>	<b>\$ (947,724)</b>	<b>-41.6%</b>
<b>TOTAL BUDGET (=B+C)</b>	<b>\$ 73,135,156</b>	<b>\$ 73,575,755</b>	<b>\$ 440,599</b>	<b>\$ 80,049,655</b>	<b>\$ 6,914,499</b>	<b>9.5%</b>
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)*</b>	<b>\$ (153,935)</b>	<b>\$ (509,855)</b>	<b>\$ (355,920)</b>	<b>\$ (919,306)</b>	<b>\$ 1,086,353</b>	
<b>FTEs</b>	<b>199.28</b>	<b>187.63</b>	<b>(11.65)</b>	<b>204.92</b>	<b>5.64</b>	<b>2.8%</b>

\* Refer to Table B-1 for a complete analysis of the Working Capital and Operating Reserve balance.

## FERC Order 830 – Geomagnetic Disturbance

In FERC's Order No. 830 approving Reliability Standard TPL-007-1 (*Transmission System Planned Performance for Geomagnetic Disturbance Events*),<sup>21</sup> FERC directed NERC to file a research work plan describing how NERC will conduct research into the specific geomagnetic disturbance (GMD)-related topics identified in the order. Since that time, NERC developed a preliminary GMD research work plan containing a set of GMD research activities, which was filed with FERC on May 30, 2017 in accordance with the Order No. 830 directive. The research activities identified in the preliminary plan are expected to advance the understanding of GMD events and the risks these high-impact, low-frequency events pose to the reliability of the BPS. In October 2017, FERC issued an order accepting NERC's preliminary work plan.

NERC developed a research plan<sup>22</sup> with the Electric Power Research Institute (EPRI) and filed it with FERC on April 19, 2018<sup>23</sup>. This \$3.4M research project is being co-funded by NERC (\$200k per year for three years, budgeted in RASA Consultants and Contracts expense) along with more than 20 owners and operators from the electric industry. Further, NERC continues to work with industry to collect information about geomagnetically induced current (GIC) and the potential impacts on power system reliability.

NERC has also worked with the technical committees to develop an ROP Section 1600 Data Request for the collection of GMD data, as directed by FERC in Order 830. The GMD Data Request was presented to and approved by the NERC Board on August 16, 2018. NERC has begun developing requirements for the necessary technology application to collect GMD data from reporting entities. These requirements will be used to determine future funding needs.

NERC continues to conduct outreach with representatives from governmental agencies in the U.S., Europe, and Canada, academia, vendors, and industry to identify the GMD-related work that is currently in progress and determine where opportunities exist for research synergies.

## E-ISAC Long-Term Strategy

Over the past several years the E-ISAC has focused on improving its technical and analytical capabilities with a goal of becoming the electricity industry's leading, trusted source for analysis and sharing of security information. Significant support from the Electricity Subsector Coordinating Council (ESCC), the ESCC Members Executive Committee (MEC)<sup>24</sup>, the DOE, and other stakeholders have helped the E-ISAC provide the industry with unique insights, leadership, and coordination on security matters.

At the request of the NERC Board and under the guidance of the ESCC and MEC, executive leadership of the E-ISAC developed a long-term strategic plan, which is included as *Exhibit E – E-ISAC Long-Term Strategy*. The long-term strategic plan is to transform the E-ISAC into a world-class intelligence collecting and analytical capability for the electricity industry. The *E-ISAC Long-Term Strategy* was approved by the MEC on April 24, 2017 and accepted by the Board on May 11, 2017.

To implement this vision, the E-ISAC is planning a deliberate growth strategy over the next four years that increases both staff and technical resources. Based on industry and stakeholder feedback, the 2019 BP&B includes the second year's recommended additions related to this strategy, primarily related to analytical capabilities, as further described in the *Electricity Information Sharing and Analysis Center* section of Section A and the attachment to Exhibit E, *Expanding E-ISAC Operations to Include 24x7 Onsite Operations*.

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<sup>21</sup> [FERC Order 830 - Reliability Standard for Transmission System Planned Performance for Geomagnetic Disturbance Events](#)

<sup>22</sup> [Revised Geomagnetic Disturbance Research Work Plan of the North American Electric Reliability Corporation](#)

<sup>23</sup> Docket Nos. RM15-11-002 and RM15-11-003

<sup>24</sup> The ESCC formed the MEC in March 2016 to provide industry leadership and expertise to guide and support the E-ISAC, including but not limited to the development of strategic plans and budgets.



## Projections for 2020–2021

NERC has developed preliminary operating and fixed asset (capital) projections for 2020 and 2021. Significant assumptions in these projections include:

- No increase in total FTEs over the 2019 budget (except for impacts of the long-term E-ISAC strategy discussed below).
- Personnel and benefit cost increases are consistent with 2019 assumptions.
- Debt service repayment obligations in connection with the company’s Capital Financing Program are consistent with the projected Enterprise IT Applications capital forecast. The Capital Financing Program is the primary funding source for the CMEP Technology Project, which is expected to continue through 2020 (see *Exhibit F – CMEP Technology Project* for more details).
- E-ISAC budget increases in 2020 and 2021 will represent the vast majority of projected increases in the total NERC budget. The current budget projections for E-ISAC, including CRISP, for 2020 and 2021 are \$29.8 and \$33.5 million, respectively. These projected budget increases will be funded in part by the CRISP participating utilities and are primarily driven by planned headcount additions and strategic program initiatives.

Currently, NERC projects a total budget increase versus the prior year of 9.5% in 2019, 3.2% in 2020, and 3.5% in 2021. Assessments are budgeted to increase 9.5% in 2019, and projected to increase 6.5% in 2020 and 5.4% in 2021, before the impact of any release of Assessment Stabilization Reserve funds. The assessment increase for 2019 includes the proposed release of \$550k from the Assessment Stabilization Reserve to achieve a matching budget and assessment increase of 9.5%. The budget and assessment increases for 2020 and 2021 are projections that will be refined as those budgets are finalized.

Introduction and Executive Summary

Statement of Activities and Fixed Assets Expenditures  
2019 Budget & Projected 2020 and 2021 Budgets

	2019 Budget	2020 Projection	\$ Change 20 v 19	% Change 20 v 19	2021 Projection	\$ Change 21 v 20	% Change 21 v 20
<b>Funding</b>							
<b>ERO Funding</b>							
NERC Assessments	\$ 68,883,995	\$ 73,392,456	\$ 4,508,461	6.5%	\$ 77,383,032	\$ 3,990,576	5.4%
Assessment Stabilization Reserve - Penalties	550,000	-	(550,000)	0.0%	-	-	0.0%
<b>Total NERC Funding</b>	<b>\$ 69,433,995</b>	<b>\$ 73,392,456</b>	<b>\$ 3,958,461</b>	<b>5.7%</b>	<b>\$ 77,383,032</b>	<b>\$ 3,990,576</b>	<b>5.4%</b>
Third-Party Funding (CRISP)	\$ 7,486,353	\$ 7,544,926	\$ 58,573	0.8%	\$ 7,551,401	\$ 6,475	0.1%
Testing Fees	1,790,000	1,790,000	-	0.0%	1,790,000	-	0.0%
Services & Software	40,000	40,000	-	0.0%	40,000	-	0.0%
Workshops	195,000	275,000	80,000	41.0%	275,000	-	0.0%
Interest	185,000	185,000	-	0.0%	185,000	-	0.0%
Miscellaneous	-	-	-	0.0%	-	-	0.0%
<b>Total Funding (A)</b>	<b>\$ 79,130,349</b>	<b>\$ 83,227,382</b>	<b>\$ 4,097,034</b>	<b>5.2%</b>	<b>\$ 87,224,433</b>	<b>\$ 3,997,051</b>	<b>4.8%</b>
<b>Expenses</b>							
<b>Personnel Expenses</b>							
Salaries	\$ 33,810,276	\$ 35,491,859	\$ 1,681,583	5.0%	\$ 37,710,982	\$ 2,219,123	6.3%
Payroll Taxes	2,044,880	2,118,363	73,483	3.6%	2,227,488	109,125	5.2%
Benefits	4,673,208	5,047,742	374,534	8.0%	5,412,135	364,393	7.2%
Retirement Costs	3,423,826	3,601,527	177,701	5.2%	3,833,952	232,425	6.5%
<b>Total Personnel Expenses</b>	<b>\$ 43,952,190</b>	<b>\$ 46,259,491</b>	<b>\$ 2,307,301</b>	<b>5.2%</b>	<b>\$ 49,184,557</b>	<b>\$ 2,925,066</b>	<b>6.3%</b>
<b>Meeting Expenses</b>							
Meetings	\$ 1,056,500	\$ 1,146,500	\$ 90,000	8.5%	\$ 1,146,500	\$ -	0.0%
Travel	2,184,000	2,184,000	-	0.0%	2,184,000	-	0.0%
Conference Calls	139,900	139,900	-	0.0%	139,900	-	0.0%
<b>Total Meeting Expenses</b>	<b>\$ 3,380,400</b>	<b>\$ 3,470,400</b>	<b>\$ 90,000</b>	<b>2.7%</b>	<b>\$ 3,470,400</b>	<b>\$ -</b>	<b>0.0%</b>
<b>Operating Expenses</b>							
Consultants & Contracts	\$ 15,043,318	\$ 15,377,948	\$ 334,630	2.2%	\$ 15,732,644	\$ 354,696	2.3%
Office Rent	3,335,058	3,455,058	120,000	3.6%	3,575,058	120,000	3.5%
Office Costs	6,506,917	6,890,037	383,120	5.9%	7,146,610	256,573	3.7%
Professional Services	2,757,600	2,742,061	(15,539)	-0.6%	2,725,395	(16,666)	-0.6%
Miscellaneous	82,000	59,500	(22,500)	-27.4%	59,500	-	0.0%
Depreciation	3,446,022	3,506,873	60,851	1.8%	4,024,750	517,877	14.8%
<b>Total Operating Expenses</b>	<b>\$ 31,170,916</b>	<b>\$ 32,031,478</b>	<b>\$ 860,562</b>	<b>2.8%</b>	<b>\$ 33,263,958</b>	<b>\$ 1,232,480</b>	<b>3.8%</b>
<b>Total Direct Expenses</b>	<b>\$ 78,503,506</b>	<b>\$ 81,761,369</b>	<b>\$ 3,257,863</b>	<b>4.1%</b>	<b>\$ 85,918,914</b>	<b>\$ 4,157,546</b>	<b>5.1%</b>
<b>Indirect Expenses</b>	<b>\$ -</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>0.0%</b>	<b>\$ 0</b>	<b>\$ (0)</b>	<b>0.0%</b>
<b>Other Non-Operating Expenses</b>	<b>\$ 214,171</b>	<b>\$ 297,203</b>	<b>\$ 83,032</b>	<b>38.8%</b>	<b>\$ 290,127</b>	<b>\$ (7,076)</b>	<b>-2.4%</b>
<b>Total Expenses (B)</b>	<b>\$ 78,717,677</b>	<b>\$ 82,058,572</b>	<b>\$ 3,340,895</b>	<b>4.2%</b>	<b>\$ 86,209,041</b>	<b>\$ 4,150,470</b>	<b>5.1%</b>
<b>Change in Assets</b>	<b>\$ 412,672</b>	<b>\$ 1,168,810</b>	<b>\$ 756,139</b>	<b>183.2%</b>	<b>\$ 1,015,392</b>	<b>\$ (153,419)</b>	<b>-13.1%</b>
<b>Fixed Assets</b>							
Depreciation	\$ (3,446,022)	\$ (3,506,873)	\$ (60,851)	1.8%	\$ (4,024,750)	\$ (517,877)	14.8%
Computer & Software CapEx	3,488,000	2,408,000	(1,080,000)	-31.0%	1,701,000	(707,000)	-29.4%
Furniture & Fixtures CapEx	-	-	-	0.0%	-	-	0.0%
Equipment CapEx	890,000	1,530,000	640,000	71.9%	1,530,000	-	0.0%
Leasehold Improvements	400,000	100,000	(300,000)	-75.0%	100,000	-	0.0%
Allocation of Fixed Assets	(0)	(0)	0	0.0%	0	0	0.0%
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>\$ 1,331,978</b>	<b>\$ 531,127</b>	<b>\$ (800,851)</b>	<b>-60.1%</b>	<b>\$ (693,750)</b>	<b>\$ (1,224,877)</b>	<b>-230.6%</b>
<b>TOTAL BUDGET (=B+C)</b>	<b>\$ 80,049,655</b>	<b>\$ 82,589,698</b>	<b>\$ 2,540,044</b>	<b>3.2%</b>	<b>\$ 85,515,291</b>	<b>\$ 2,925,593</b>	<b>3.5%</b>
<b>FTEs</b>	<b>204.92</b>	<b>211.50</b>	<b>6.58</b>	<b>3.2%</b>	<b>219.96</b>	<b>8.46</b>	<b>4.0%</b>

## Section A – 2019 Business Plan and Budget Program Area and Department Detail

### Reliability Standards

Reliability Standards Program (in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	15.51	14.57	(0.94)
Direct Expenses	\$ 3,332,944	\$ 3,377,356	\$ 44,412
Indirect Expenses	3,470,011	3,446,152	(23,859)
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	18,939	(87,430)	(106,369)
TOTAL BUDGET	\$ 6,821,893	\$ 6,736,078	\$ (85,816)

### Background and Scope

The Reliability Standards program carries out the ERO's statutory responsibility to develop, adopt, obtain approval of, and modify (as and when appropriate) mandatory NERC Reliability Standards (both continent-wide standards and regional reliability standards) to assure the BES is planned, operated, maintained, and secured to minimize risks of cascading failures, avoid damage to major equipment, or limit interruptions of the BPS. The major activities undertaken by the Standards department include:

- Delivering high-quality, continent-wide reliability standards:** NERC standard developers and other standards staff provide project management and leadership to develop solutions necessary to address reliability risks identified through the Reliability Risk Management Process (RRMP). These may include the development of, or modifications to, Reliability Standards through standard development outreach activities, facilitation of drafting team activities, drafting support, assisting drafting teams in maintaining adherence to the development process as outlined in the *Standard Processes Manual*, and ensuring that the quality of documents produced is appropriate for approval by industry and the Board. Compliance Assurance continues to work closely with the standard development program to provide compliance information, statistics, technical input, and perspectives to drafting teams to clarify compliance risks.
- Facilitating continent-wide industry engagement:** NERC manages the work of over 200 industry contributors who serve on the Standards Committee, subgroups, and other project teams for the development of Reliability Standards through the standards development program.
- Conducting balloting, disseminating information, and supporting regulatory filings:** Through NERC's commenting and ANSI-accredited balloting process, industry consensus is built by engaging thousands of industry volunteers within hundreds of registered entities throughout North America who review, comment on, and approve the standards created by the standard drafting teams. The department also supports the filing of standards with applicable regulatory authorities and provides support with regulatory proceedings.

The Reliability Standards program provides a mechanism for the Regional Entities to process regional standards when unique regional reliability gaps are detected, or incorporate regional variances into continent-wide standards. The NERC Standards department staff supports regional standards development processes by providing technical advice, final quality review of regional standards, presentation to the Board, and preparation of regional standards materials for submission for standard adoption to the applicable regulatory authorities in the U.S. and Canada.

## Stakeholder Engagement and Cost Effectiveness Project

As part of the standard development process, industry technical experts scope, draft, and review the new or revised Reliability Standards for approval by the industry ballot body, adoption by the Board, and filing with regulatory authorities in the U.S. and Canada. Additionally, federal, state and provincial regulatory authorities, the Board, Regional Entities, and many industry stakeholders have expressed interest in the identification of costs incurred from implementing Reliability Standards compared to risks they address. The objective is to ensure that these elements are considered during the standards development and revision process. A process has been established that ensures that industry feedback on costs is taken into account throughout the standard development process.

## Key Efforts Underway

NERC ensures that the Reliability Standards Development Plan (RSDP) is effectively executed and that Reliability Standards are focused on and mitigate significant risks to BES reliability. Department resources are focused on supporting the *ERO Enterprise Operating Plan*, including but not limited to support of the RRMP and resolving FERC directives. Standards department key activities include:

- **Focus on the selection of projects undertaken.** Resources are expended on issues determined to be a reliability risk through the RRMP (also see the Reliability Assessment and System Analysis section and the Performance Analysis section below for additional detail). The department applies broad project management skills to implement a variety of solutions to a reliability concern. An effective solution to an identified reliability risk may be a Reliability Standard, or it may be a guideline, information request, training, NERC Alert, technical conference, research, or a combination of these or other tools.
- **Address FERC directives and respond to FERC orders** through standard development projects, as necessary. Each project determines whether: (1) the directive will be complied with as issued, (2) there is an equally effective and efficient way to address the concern that fostered the directive, or (3) there is technical justification (including that the directive has been overcome by events, processes, or advances in technology) that resolution of the directive is no longer needed.
- **Perform a comprehensive review of standards.** In 2018, NERC and industry will complete a comprehensive review of the Reliability Standards to measure their effectiveness and ability to mitigate the risks to the reliability and security of the BPS, compared to the industry burden for their implementation. An outcome of this review will inform the need to retire or enhance requirements based on operational experience. This will include an analysis of reliability risk, particularly emerging risks, and cost effectiveness. In 2019, projects will be initiated to address the results of this review to retire or modify Reliability Standards.
- **Facilitate smooth transition to new standards.** This includes working with the Compliance Assurance, Enforcement, Registration, Reliability Assurance, Reliability Assessment and System Analysis, and Performance Analysis groups to develop guidelines, webinars, and other activities to support auditor and industry training for the new standards.

The 2019–2021 RSDP will be developed in 2018 in conjunction with the Standards Committee, RISC, and RRMP. It will outline the work plan for the continued evaluation of Reliability Standards, the Standards department’s support of Reliability Risk Management, and resolution of FERC directives. Additionally, standards grading metrics will be used to measure the overall quality of each enforceable Reliability Standard as a basis for measuring needed improvements.

### **2019 Goals and Deliverables**

In 2018, the body of Reliability Standards will be reviewed for potential improvements while considering quality and content criteria, as well as results-based standards principles. In 2019, industry and NERC will determine whether there is a need to make further improvements to the standards through periodic reviews that include: (1) a measured review of the content of standards, considering whether the requirements could more effectively mitigate risks to the BPS, (2) whether the standards are results-based and drafted with high quality, (3) whether the standards are concise or if the number of requirements could be reduced, and (4) whether compliance expectations are clear. Also in 2019, Standards staff will continue to support the operating plan through the key activities discussed above by addressing potential improvements, any new directives issued by FERC, as well any reliability risks identified through RRMP or by the RISC for which a Reliability Standard is part of the solution.

### **Resource Requirements**

#### **Personnel**

The 0.94 reduction in FTEs results from the reallocation of one position (0.94 FTEs) to realign staff with current needs.

#### **Consultants and Contracts**

No consultant or contract expenses were budgeted in 2018. Budgeted consultant and contract expenses are \$50k for 2019 for standards development support. A detailed breakdown of 2018 and 2019 budgeted expenses is shown in *Exhibit B – Consultant and Contractor Costs*.

#### **Other Costs**

The \$300k increase in computer and software capital expenditures is for a standards database solution that will integrate with the new CMEP tool.

Section A – 2019 Business Plan and Budget Program Area and Department Detail

Statement of Activities and Fixed Assets Expenditures					
2018 Budget & Projection, and 2019 Budget					
RELIABILITY STANDARDS					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 6,689,437	\$ 6,689,437	\$ -	\$ 6,598,401	\$ (91,036)
Assessment Stabilization Reserve - Penalties	71,739	71,739	-	58,793	(12,946)
<b>Total NERC Funding</b>	<b>\$ 6,761,176</b>	<b>\$ 6,761,176</b>	<b>\$ -</b>	<b>\$ 6,657,194</b>	<b>\$ (103,982)</b>
Third-Party Funding					
Testing Fees	-	-	-	-	-
Services & Software	-	-	-	-	-
Workshops	50,000	50,000	-	60,000	10,000
Interest	10,717	24,323	13,605	18,884	8,166
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 6,821,893</b>	<b>\$ 6,835,499</b>	<b>\$ 13,605</b>	<b>\$ 6,736,078</b>	<b>\$ (85,816)</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 2,207,431	\$ 1,879,225	\$ (328,205)	\$ 2,031,580	\$ (175,850)
Payroll Taxes	145,638	118,136	(27,502)	134,348	(11,290)
Benefits	299,194	261,710	(37,484)	297,782	(1,412)
Retirement Costs	246,107	220,557	(25,550)	224,171	(21,936)
<b>Total Personnel Expenses</b>	<b>\$ 2,898,370</b>	<b>\$ 2,479,629</b>	<b>\$ (418,741)</b>	<b>\$ 2,687,881</b>	<b>\$ (210,489)</b>
<b>Meeting Expenses</b>					
Meetings	\$ 105,000	\$ 105,000	\$ -	\$ 105,000	\$ -
Travel	240,000	238,050	(1,950)	220,000	(20,000)
Conference Calls	-	3,369	3,369	18,000	18,000
<b>Total Meeting Expenses</b>	<b>\$ 345,000</b>	<b>\$ 346,419</b>	<b>\$ 1,419</b>	<b>\$ 343,000</b>	<b>\$ (2,000)</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ -	\$ 100,000	\$ 100,000	\$ 50,000	\$ 50,000
Office Rent	-	-	-	-	-
Office Costs	49,796	26,281	(23,515)	38,200	(11,596)
Professional Services	-	-	-	-	-
Miscellaneous	500	500	-	500	-
Depreciation	39,278	173,799	134,521	257,774	218,496
<b>Total Operating Expenses</b>	<b>\$ 89,574</b>	<b>\$ 300,580</b>	<b>\$ 211,006</b>	<b>\$ 346,474</b>	<b>\$ 256,900</b>
<b>Total Direct Expenses</b>	<b>\$ 3,332,944</b>	<b>\$ 3,126,629</b>	<b>\$ (206,315)</b>	<b>\$ 3,377,356</b>	<b>\$ 44,412</b>
<b>Indirect Expenses</b>	<b>\$ 3,470,011</b>	<b>\$ 3,553,026</b>	<b>\$ 83,015</b>	<b>\$ 3,446,152</b>	<b>\$ (23,859)</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 6,802,955</b>	<b>\$ 6,679,655</b>	<b>\$ (123,300)</b>	<b>\$ 6,823,508</b>	<b>\$ 20,553</b>
<b>Change in Assets</b>	<b>\$ 18,939</b>	<b>\$ 155,844</b>	<b>\$ 136,905</b>	<b>\$ (87,430)</b>	<b>\$ (106,369)</b>
<b>Fixed Assets</b>					
Depreciation	\$ (39,278)	\$ (173,799)	\$ (134,521)	\$ (257,774)	\$ (218,496)
Computer & Software CapEx	-	-	-	300,000	300,000
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	58,217	(133,048)	(191,264)	(129,656)	(187,872)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ 18,939</b>	<b>\$ (306,847)</b>	<b>\$ (325,785)</b>	<b>\$ (87,430)</b>	<b>\$ (106,369)</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 6,821,893</b>	<b>\$ 6,372,808</b>	<b>\$ (449,085)</b>	<b>\$ 6,736,078</b>	<b>\$ (85,816)</b>
<b>FTEs</b>	<b>15.51</b>	<b>13.38</b>	<b>(2.13)</b>	<b>14.57</b>	<b>(0.94)</b>

## Compliance Assurance, Compliance Analysis, Organization Registration and Certification, and Compliance Enforcement

The Compliance Assurance, Compliance Analysis, Organization Registration and Certification, and Compliance Enforcement program areas promote a culture of reliability excellence through risk-informed compliance monitoring, mitigation, enforcement, and registration.

### Compliance Assurance

Compliance Assurance (in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	19.27	16.45	(2.82)
Direct Expenses	\$ 4,520,550	\$ 4,294,505	\$ (226,044)
Indirect Expenses	4,311,226	3,890,817	(420,409)
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	72,330	737,614	665,285
<b>TOTAL BUDGET</b>	<b>\$ 8,904,105</b>	<b>\$ 8,922,937</b>	<b>\$ 18,832</b>

### Background and Scope

NERC's Compliance Assurance group works collaboratively with the Regional Entities to ensure effective implementation of risk-based compliance monitoring under the CMEP across the entire ERO Enterprise. This program ensures that Regional Entities monitor registered entities for compliance according to their own specific facts and circumstances, including the entity's inherent risks, evaluation of controls in place to mitigate the inherent risks, and other factors, such as risk elements and entity performance. Additionally, the risk-based compliance monitoring approach allows for the appropriate allocation of resources to the issues that pose a higher level of risk to the reliability of the BPS.

The CMEP provides for Regional Entities to develop customized compliance oversight plans (COPs) for each registered entity that identifies: (1) the standards or requirements to be monitored; (2) the monitoring processes (tools) for use by the Regional Entities, including compliance audits, self-certification, and spot checking; and (3) the interval of monitoring. NERC and the Regional Entities ensure that inherent risk assessments (IRAs) for registered entities begin with a consistent framework and that Regional Entities' implementation of the CMEP coalesce around effective and efficient practices, ensuring comprehensive data management procedures that address data reporting requirements, integrity, retention, security, and confidentiality.

The Compliance Assurance group's responsibilities include, but are not limited to, the following major activities and functions:

- Oversight of the Regional Entities' implementation of the risk-based compliance monitoring program and NERC ROP in North America;
- Development and execution of the annual CMEP Implementation Plan (IP);
- Oversight of the use of necessary compliance-related processes, procedures, IT platforms, tools, and templates;
- Development and delivery of education and training for ERO Enterprise staff;

- Training and outreach activities for the Critical Infrastructure Protection (CIP) Reliability Standards and subsequent enhancements to support industry compliance and security;
- Coordination with the NERC Standards department to assist in the smooth transition for standards from development to enforceability and feedback on risks seen in the field that are not addressed by a standard, as well as information on where a standard is too broad; and
- Support for Regional Entity and industry committees, working groups, and task forces, such as the ERO Compliance Monitoring Group, NERC Compliance and Certification Committee (CCC) and NERC Critical Infrastructure Protection Committee (CIPC).

### **Stakeholder Engagement and Benefit**

NERC continues to promote the Regional Entities' development of customized COPs for registered entities. As the risk-based compliance monitoring approach was implemented in 2015 and 2016, Regional Entities worked closely with stakeholders to develop IRAs and appropriately scope compliance monitoring activities. As this process continues to mature, Regional Entities will continue to customize compliance monitoring tools and frequency of monitoring for each registered entity, based on its IRA as well as additional considerations such as risk elements, entity performance, internal controls, and mitigating activities to inform the development of their COPs.

Compliance Assurance continues to work closely with the standard development program to provide compliance information, statistics, technical input, and perspectives to drafting teams to provide an increased reliability benefit and clarify compliance risks. This collaboration with industry and the Standards department occurs early in the standard development process by providing draft compliance monitoring insights, including information on how compliance with draft standards will be determined, as well as input to the drafting teams on the auditability and enforceability of the draft standards. This collaboration ensures that ERO Enterprise tools used in the auditing process, such as the reliability standards auditing worksheet (RSAW), do not expand or modify standards requirements.

NERC also continues to provide industry-focused outreach events and webinars on the ERO Enterprise's approaches to risk-based CMEP activities. ERO Enterprise staff will continue its webinar series providing views on standards and requirements associated with the 2019 risk elements identified for consideration for compliance monitoring.

### **Key Efforts Underway**

#### **NERC Oversight of Risk-Based Compliance Monitoring**

Consistent with the goals and objectives set forth in the operating plan, NERC continues to implement risk-based compliance monitoring as part of its stated objectives of ensuring BPS reliability, improving consistency, effectiveness, and efficiency of ERO Enterprise compliance operations, focusing on identified risks, and reducing unnecessary burdens on registered entities. Ensuring the successful implementation of NERC's risk-based CMEP remains the priority of Compliance Assurance's oversight plan for the Regional Entities. As part of that oversight, and in addition to offering regular feedback to the Regional Entities, NERC continues to identify areas for improvement or promoting consistency through training, guidance, or adjustments during the following year. NERC also produces an ERO Enterprise CMEP annual report, which includes an assessment of the risk-based CMEP implementation.

NERC performs oversight of the Regional Entities' compliance monitoring programs primarily through the review of processes, supporting evidence, observations, and other information provided by the Regional Entities over the course of focused program area engagements that are scheduled throughout the year. NERC communicates the recommendations and findings to the Regional Entities to help the ERO



Enterprise develop responsive strategies and solutions to potential issues and ensure uniform and consistent implementation of the CMEP. Such recommendations and findings also help identify priority areas for training of ERO Enterprise staff during the year.

### **CIP Compliance**

NERC and the Regional Entities continue to manage the smooth implementation of compliance activities for CIP Version 5 Reliability and Physical Security Standards, along with their subsequent enhancements by providing training, webinars, and other forms of outreach. The ERO Enterprise continues to provide educational programs to support industry compliance and the integration of risk assessment and internal controls.

### **CMEP Technology Project**

Beginning in 2017 through 2020, NERC, in collaboration with the Regional Entities, will develop and implement a common CMEP tool, including the various processes and activities (e.g., analysis of risk, development of implementation plans and audit schedules, actual compliance monitoring, and enforcement processing). For more information on the CMEP Technology Project, see *Exhibit F – CMEP Technology Project*.

### **Regional Entity Training**

NERC Compliance Assurance provides training to Regional Entity staff on the most important elements of risk-based compliance monitoring, including enhancements to registered entity IRAs, internal controls reviews, COP development, as well as Reliability Standards monitoring. NERC develops this training based on observations from its oversight activities of the Regional Entities, as well as the process reviews described above.

### **Emerging Technology Roundtables**

Compliance Assurance periodically hosts an Emerging Technology Roundtable with industry and vendors that includes in-depth discussions around the integration of emerging technologies associated with BPS operations to address and mitigate cyber and physical security risks of the BPS.

### **Compliance Enforcement Authority for Southwest Power Pool Regional Transmission Organization**

As a result of the Southwest Power Pool Regional Entity (SPP RE) dissolution process, in early 2018 the Board approved, and FERC subsequently approved,<sup>25</sup> that NERC assume the Compliance Enforcement Authority (CEA) activities for the registered entity SPP Regional Transmission Organization (RTO) for two years. This is the role that is generally delegated by NERC to a Regional Entity. Essentially the CEA is responsible for planning and conducting all CMEP activities as described in the ROP and other guiding documents. NERC will leverage existing internal and Regional Entity resources and expertise to undertake the CEA activities with respect to the SPP RTO.

### **2019 Goals and Deliverables**

The Compliance Assurance group has several goals and deliverables that support the *ERO Enterprise Operating Plan*. Resources will be focused on improvements implemented as a result of the risk-based compliance monitoring activities in 2017 and 2018. Specific 2019 objectives for this group are:

- Continue to mature the risk-based compliance monitoring program, providing ongoing oversight of the risk-based CMEP, including IRAs, consideration of internal controls, coordinated oversight of Multi-Region Registered Entities (MRREs), and ensuring that COPs are addressing the relevant risks.

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<sup>25</sup> *North American Electric Reliability Corporation, Midwest Reliability Organization, and SERC Reliability Corporation, Order Granting Approvals in Connection with the Dissolution of the Southwest Power Pool regional Entity*, 163 FERC ¶ 61,094 (2018).

- Work closely with NERC’s Enforcement and IT departments, as well as staff in the Regional Entities, to develop application business requirements and test business functionality for the ERO Enterprise CMEP tool.
- Support the continued successful implementation of the CIP Version 5 Reliability Standards and subsequent enhancements as they become effective.
- Monitor and support effective implementation of the physical security Reliability Standard.
- Enhance and implement training to support monitoring of Reliability Standards, integrating principles from the Compliance Monitoring Competency Guide.
- Continue feedback to Standards through integration and coordination between the standards and compliance functions for clear stakeholder implementation and feedback on risks seen in the field that are not addressed by a standard, as well as information on where a standard is too broad. This effort will be supported through a common set of RSAWs, guidance, and outreach.
- Support international CMEP activities, including reliability and security subject matter expertise and outreach.
- Provide support and leadership to the CIPC and CCC as well as their subcommittees, working groups, and task forces. Support the CIPC and CCC leadership and development and implementation of annual work plans.
- Develop and implement the NERC CEA program for SPP RTO.

These 2019 activities are necessary to further implement risk-based compliance monitoring, including the CIP standards, and integrate the standards and compliance functions. A number of activities that support the implementation of the strategic risk-based reforms are intended to reduce regulatory burden by focusing compliance monitoring according to each registered entity’s potential impact on the BPS.

## Resource Requirements

### Personnel

The increase in Compliance Assurance personnel in prior years through the reallocation of resources from other departments to Compliance Assurance was the result of NERC’s plan to strengthen the implementation and oversight of the risk-based CMEP, increase risk analysis capabilities and technical expertise, and support feedback loops that improve program oversight and the development and implementation of Reliability Standards. Due to the maturation of these areas, three open positions (2.82 FTEs) are being eliminated from the Compliance Assurance department.

### Consultants and Contracts

Funds budgeted for consultant and contract expenses to assist in successful implementation of risk-based compliance monitoring remains unchanged at \$50k. A detailed breakdown of the 2018 and 2019 budgeted expenses is shown in *Exhibit B – Consultant and Contractor Costs*.

### Other Costs

The \$884k increase in computer and software capital expenditures is attributed to the CMEP Technology Project, for which the total capital expenditure of approximately \$1.8M is split evenly between Compliance Assurance and Compliance Enforcement. The \$204k increase in office costs is primarily for license and hosting fees for the new CMEP tool.

Section A – 2019 Business Plan and Budget Program Area and Department Detail

Statement of Activities and Fixed Assets Expenditures					
2018 Budget & Projection, and 2019 Budget					
COMPLIANCE ASSURANCE					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 8,801,659	\$ 8,801,659	\$ -	\$ 8,835,237	\$ 33,578
Assessment Stabilization Reserve - Penalties	89,130	89,130	-	66,379	(22,751)
<b>Total NERC Funding</b>	<b>\$ 8,890,790</b>	<b>\$ 8,890,790</b>	<b>\$ -</b>	<b>\$ 8,901,616</b>	<b>\$ 10,827</b>
Third-Party Funding	\$ -	\$ -	\$ -	\$ -	\$ -
Testing Fees	-	-	-	-	-
Services & Software	-	-	-	-	-
Workshops	-	-	-	-	-
Interest	13,316	36,881	23,565	21,320	8,005
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 8,904,105</b>	<b>\$ 8,927,671</b>	<b>\$ 23,565</b>	<b>\$ 8,922,937</b>	<b>\$ 18,832</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 2,936,161	\$ 2,744,850	\$ (191,311)	\$ 2,526,754	\$ (409,407)
Payroll Taxes	192,067	190,220	(1,847)	166,873	(25,194)
Benefits	398,424	443,766	45,342	441,671	43,247
Retirement Costs	324,835	292,832	(32,003)	278,308	(46,527)
<b>Total Personnel Expenses</b>	<b>\$ 3,851,487</b>	<b>\$ 3,671,667</b>	<b>\$ (179,819)</b>	<b>\$ 3,413,605</b>	<b>\$ (437,881)</b>
<b>Meeting Expenses</b>					
Meetings	\$ 200,000	\$ 200,000	\$ -	\$ 200,000	\$ -
Travel	375,000	327,197	(47,803)	375,000	-
Conference Calls	-	12,506	12,506	8,000	8,000
<b>Total Meeting Expenses</b>	<b>\$ 575,000</b>	<b>\$ 539,703</b>	<b>\$ (35,297)</b>	<b>\$ 583,000</b>	<b>\$ 8,000</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ 50,000	\$ 93,750	\$ 43,750	\$ 50,000	\$ -
Office Rent	-	-	-	-	-
Office Costs	43,563	140,469	96,906	247,400	203,837
Professional Services	-	-	-	-	-
Miscellaneous	500	500	-	500	-
Depreciation	-	-	-	-	-
<b>Total Operating Expenses</b>	<b>\$ 94,063</b>	<b>\$ 234,719</b>	<b>\$ 140,656</b>	<b>\$ 297,900</b>	<b>\$ 203,837</b>
<b>Total Direct Expenses</b>	<b>\$ 4,520,550</b>	<b>\$ 4,446,089</b>	<b>\$ (74,461)</b>	<b>\$ 4,294,505</b>	<b>\$ (226,044)</b>
<b>Indirect Expenses</b>	<b>\$ 4,311,226</b>	<b>\$ 4,635,061</b>	<b>\$ 323,835</b>	<b>\$ 3,890,817</b>	<b>\$ (420,409)</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 8,831,775</b>	<b>\$ 9,081,149</b>	<b>\$ 249,374</b>	<b>\$ 8,185,322</b>	<b>\$ (646,453)</b>
<b>Change in Assets</b>	<b>\$ 72,330</b>	<b>\$ (153,479)</b>	<b>\$ (225,809)</b>	<b>\$ 737,614</b>	<b>\$ 665,285</b>
<b>Fixed Assets</b>					
Depreciation	\$ -	\$ -	\$ -	\$ -	\$ -
Computer & Software CapEx	-	-	-	884,000	884,000
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	72,330	(173,566)	(245,896)	(146,386)	(218,715)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ 72,330</b>	<b>\$ (173,566)</b>	<b>\$ (245,896)</b>	<b>\$ 737,614</b>	<b>\$ 665,285</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 8,904,105</b>	<b>\$ 8,907,583</b>	<b>\$ 3,478</b>	<b>\$ 8,922,937</b>	<b>\$ 18,832</b>
<b>FTEs</b>	<b>19.27</b>	<b>17.82</b>	<b>(1.45)</b>	<b>16.45</b>	<b>(2.82)</b>

## Compliance Analysis, Organization Registration and Certification

Compliance Analysis, Organization Registration and Certification (in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	9.40	9.40	-
Direct Expenses	\$ 2,148,762	\$ 2,393,481	\$ 244,718
Indirect Expenses	2,103,037	2,223,324	120,287
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	635,283	404,674	(230,608)
TOTAL BUDGET	\$ 4,887,082	\$ 5,021,479	\$ 134,397

### Background and Scope

The Compliance Analysis, Organization Registration, and Organization Certification functions are fulfilled by two groups at NERC: Registration and Reliability Assurance (includes Compliance Analysis and Organization Certification). The groups are responsible for a range of requirements and activities embodied in Section 500 (Organization Registration and Certification) and Appendices 5A and 5B of the NERC ROP. The groups provide technical resource support to the standards development, compliance monitoring, and enforcement functions. The following specific activities are conducted:

- **Registration** – Identify and register BES users, owners, and operators that are responsible for compliance with Reliability Standards. Organizations that are registered are included on the NERC Compliance Registry (NCR) and responsible for knowing the content of and complying with all applicable Reliability Standards. Maintain the current registry for the entire ERO as entities take on and drop functional responsibilities.
- **Certification** – Evaluate and certify the competency of reliability entities, i.e., RCs, BAs, and TOPs. Entities performing these functions must be evaluated for having the necessary personnel, knowledge, facilities, programs, and other qualifications to carry out these important responsibilities. For example, they must demonstrate the ability to meet the requirements and sub-requirements of all of the Reliability Standards applicable to the reliability function(s). This also includes confirming through the certification review process that a reliability entity continues to have the capabilities mentioned above following planned and unplanned material changes to that entity's operation.
- **Reliability assurance** – Conduct activities to reasonably assure the ERO that certain actions have been taken as reported in response to NERC Alerts or guidance to industry.
- **Oversight** – Provide oversight of Regional Entity implementation of regional registration, compliance, certification, investigation, complaint programs, and processes.
- **Investigations** – Conduct non-public, confidential investigations to identify possible violations of NERC Reliability Standards in response to complaints, BES disturbances, or other similar triggers. Registration and Reliability Assurance staff participate on all Regional Entity-led investigations and as observers as requested on FERC-led reliability investigations and inquiries.
- **Compliance evaluations** – Work closely with Regional Entity staff to confirm that qualified events and disturbances are evaluated against the relevant approved Reliability Standards and ensure formal compliance monitoring occurs if indicated. These analyses are shared with FERC staff.
- **Complaints** – Address formal complaints that allege the violation of Reliability Standards, through a confidential process.

## Key Efforts Underway

Registration continues to implement areas for improvements identified in 2016. These areas included:

- Conducting NERC-led Review Panels on registration requests and identifying process improvements;
- NERC ROP changes;
- Reviewing the Coordinated Functional Registration (CFR) process and model efficiencies;
- Supporting the entity registration xRM database (centralized entity registration system) initiative (for more information on entity registration solution, see the *Information Technology* section of Section A);
- Conducting a thorough review of the NERC website for any registration-related modifications;
- Continuing Regional Entity oversight activities.

Additionally, on July 27, 2017, NERC issued a letter to entities registered in the SPP RE footprint that NERC and SPP had mutually agreed to terminate the delegation agreement between NERC and SPP RE. NERC Registration is leading this effort to transition these entities to other Regional Entities, which requires an extensive amount of time and resources. Work will continue throughout the majority of 2018 and into 2019.

NERC Reliability Assurance, in conjunction with Regional Entities, performed a review of the Certification program in 2016 regarding its effectiveness in determining an entity's ability to become certified and then operational, and to begin incorporating changes to the program, if applicable, based on the outcomes of the review. The team concluded that the certification process is necessary and is effective in determining an entity's ability to become certified and operational. The team recommended two improvements to the existing certification process which are continuing to be addressed:

- Clearly establish the focus of certification on evaluation of an entity's capability to perform the reliability function of TOP, BA, and/or RC through the use of standardized templates to be used by each Regional Entity's certification team.
- Conduct an evaluation of the certification review process to determine effectiveness of the current triggers of the certification review and execution of the actual process, and implement any needed ROP changes.
- Continue Regional Entity oversight activities.

## 2019 Goals and Deliverables

The Registration and Reliability Assurance groups have several goals and deliverables that support the *ERO Enterprise Operating Plan*. Resources will be focused on building upon the improvements identified in 2016 as well as the SPP RE transition. Specific 2019 objectives for these groups are:

- Continue to conduct NERC-led Review Panels on registration requests.
- Continue to implement Registration program improvements and conduct any additional actions identified by the project.
- Begin the entity registration xRM database initiative (centralized entity registration system).
- Continue to manage the SPP RE transition.
- Monitor and support changing footprints, functional relationships, and model changes in the Western Interconnection, especially with regard to the RC role.

- Ensure proper oversight of the Regional Entities for the Certification program.
- Respond to industry changes requiring certification review, with particular emphasis on control center relocations, Energy Management System (EMS) replacements, and RC, BA, and TOP footprint changes.
- Evaluate BES disturbances and events for potential gaps in compliance monitoring or Reliability Standards.
- Support the ongoing joint FERC, NERC, and Regional Entity restoration and recovery initiatives in conjunction with industry.

## **Resource Requirements**

### **Personnel**

There is no change in FTEs for 2019 from the 2018 budget.

### **Consultants and Contracts**

No consultant or contract expenses are budgeted in 2019, which is consistent with the 2018 budget.

Section A – 2019 Business Plan and Budget Program Area and Department Detail

Statement of Activities and Fixed Assets Expenditures					
2018 Budget & Projection, and 2019 Budget					
COMPLIANCE ANALYSIS, ORGANIZATION REGISTRATION and CERTIFICATION					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 4,837,109	\$ 4,837,109	\$ -	\$ 4,971,365	\$ 134,257
Assessment Stabilization Reserve - Penalties	43,478	43,478	-	37,931	(5,547)
<b>Total NERC Funding</b>	<b>\$ 4,880,587</b>	<b>\$ 4,880,587</b>	<b>\$ -</b>	<b>\$ 5,009,296</b>	<b>\$ 128,709</b>
Third-Party Funding	\$ -	\$ -	\$ -	\$ -	\$ -
Testing Fees	-	-	-	-	-
Services & Software	-	-	-	-	-
Workshops	-	-	-	-	-
Interest	6,495	18,468	11,973	12,183	5,688
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 4,887,082</b>	<b>\$ 4,899,055</b>	<b>\$ 11,973</b>	<b>\$ 5,021,479</b>	<b>\$ 134,397</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 1,514,712	\$ 1,588,447	\$ 73,735	\$ 1,596,696	\$ 81,983
Payroll Taxes	95,616	94,753	(863)	98,909	3,293
Benefits	194,709	221,082	26,373	232,391	37,682
Retirement Costs	168,791	178,168	9,377	178,558	9,767
<b>Total Personnel Expenses</b>	<b>\$ 1,973,828</b>	<b>\$ 2,082,451</b>	<b>\$ 108,623</b>	<b>\$ 2,106,554</b>	<b>\$ 132,726</b>
<b>Meeting Expenses</b>					
Meetings	\$ 2,250	\$ 2,250	\$ -	\$ 2,250	\$ -
Travel	150,500	153,995	3,495	150,500	-
Conference Calls	-	6,736	6,736	5,400	5,400
<b>Total Meeting Expenses</b>	<b>\$ 152,750</b>	<b>\$ 162,981</b>	<b>\$ 10,231</b>	<b>\$ 158,150</b>	<b>\$ 5,400</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ -	\$ -	\$ -	\$ -	\$ -
Office Rent	-	-	-	-	-
Office Costs	21,684	20,755	(929)	16,600	(5,084)
Professional Services	-	-	-	-	-
Miscellaneous	500	500	-	500	-
Depreciation	-	67,006	67,006	111,677	111,677
<b>Total Operating Expenses</b>	<b>\$ 22,184</b>	<b>\$ 88,261</b>	<b>\$ 66,077</b>	<b>\$ 128,777</b>	<b>\$ 106,592</b>
<b>Total Direct Expenses</b>	<b>\$ 2,148,762</b>	<b>\$ 2,333,693</b>	<b>\$ 184,931</b>	<b>\$ 2,393,481</b>	<b>\$ 244,718</b>
<b>Indirect Expenses</b>	<b>\$ 2,103,037</b>	<b>\$ 2,504,805</b>	<b>\$ 401,769</b>	<b>\$ 2,223,324</b>	<b>\$ 120,287</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 4,251,799</b>	<b>\$ 4,838,499</b>	<b>\$ 586,699</b>	<b>\$ 4,616,805</b>	<b>\$ 365,005</b>
<b>Change in Assets</b>	<b>\$ 635,283</b>	<b>\$ 60,556</b>	<b>\$ (574,727)</b>	<b>\$ 404,674</b>	<b>\$ (230,608)</b>
<b>Fixed Assets</b>					
Depreciation	\$ -	\$ (67,006)	\$ (67,006)	\$ (111,677)	\$ (111,677)
Computer & Software CapEx	600,000	600,000	-	600,000	-
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	35,283	(93,796)	(129,079)	(83,649)	(118,932)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ 635,283</b>	<b>\$ 439,198</b>	<b>\$ (196,084)</b>	<b>\$ 404,674</b>	<b>\$ (230,608)</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 4,887,082</b>	<b>\$ 5,277,697</b>	<b>\$ 390,615</b>	<b>\$ 5,021,479</b>	<b>\$ 134,397</b>
<b>FTEs</b>	<b>9.40</b>	<b>9.53</b>	<b>0.13</b>	<b>9.40</b>	<b>-</b>

## Compliance Enforcement

Compliance Enforcement (in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	12.22	13.16	0.94
Direct Expenses	\$ 2,451,137	\$ 3,082,704	\$ 631,567
Indirect Expenses	2,733,948	3,112,654	378,706
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	1,488,854	661,877	(826,976)
TOTAL BUDGET	\$ 6,673,939	\$ 6,857,235	\$ 183,297

### Background and Scope

The NERC Enforcement group is responsible for overseeing enforcement processes, the application of penalties or sanctions, and activities to mitigate and prevent recurrence of noncompliance with Reliability Standards. The group works collaboratively with the Regional Entities to ensure consistent and effective implementation of the risk-based CMEP. Importantly, the department also focuses on ensuring that the ERO Enterprise dedicates resources to the matters that pose the greatest risk to reliability. The Enforcement department performs its responsibilities by:

- Monitoring Regional Entities' enforcement processes and providing oversight of their outcomes to ensure due process, to identify best practices and process efficiency opportunities, and to promote consistency among Regional Entities' business practices;
- Collecting and analyzing enforcement data and trends to assist with the identification of emerging risks and to help inform the development of enforcement policies and processes;
- Filing Notices of Penalty (NOPs) and other submittals associated with noncompliance discovered through Regional Entity compliance monitoring and enforcement activities;
- Processing and filing NOPs and other submittals associated with violations discovered through NERC-led investigations and audits;
- Collaborating with other NERC departments, including Reliability Assurance, Standards, and Event Analysis;; and
- Delivering training to ERO Enterprise staff and registered entities, as well as supporting other outreach efforts.

Under §215(e)(1) of the FPA, NERC or a Regional Entity may impose a penalty on a user, owner, or operator of the BPS for a violation of a Reliability Standard approved by FERC. As the ERO, NERC has Sanction Guidelines in its ROP that govern the ERO Enterprise's determinations of penalties and non-monetary sanctions for Reliability Standard violations. The Sanction Guidelines provide information on the factors that affect penalty determinations and the behaviors, e.g., self-reporting, timely mitigation, and cooperation, that the ERO Enterprise seeks to encourage to promote compliance and reliable operations.

### ERO Enterprise Core Values and Guiding Principles

The *ERO Enterprise Operating Plan* promotes the ERO Enterprise's core values and guiding principles. A goal of the ERO Enterprise is to be "a strong enforcement authority that is objective, fair, and promotes a culture of reliability excellence through risk-informed compliance monitoring, mitigation, enforcement, and registration." The following principles serve as guidelines for the conduct and behavior of all involved in the ERO Enterprise enforcement program to ensure alignment with this goal and the core values.



**CEAs are independent, without conflict of interest, objective, and fair.** The ERO Enterprise strives to be a strong enforcement authority that is independent, without conflict of interest, objective, and fair. NERC and each of the Regional Entities has a code of conduct addressing the professional and ethical standards applicable to its personnel. Foremost among these standards is the requirement that no person work on a matter where that work may affect the person's financial interest. The ERO Enterprise also expects its personnel to conduct themselves professionally and respectfully when engaging with registered entities or other stakeholders. Personnel who do not meet these standards are subject to discipline, up to and including termination.

***The Enforcement program promotes a culture of reliability excellence through a risk-based approach.***

The ERO Enterprise's risk-based enforcement philosophy generally advocates reserving enforcement actions under section 5.0 of the CMEP for those issues that pose a higher risk to the reliability of the BPS. The risk of a noncompliance is determined based on specific facts and circumstances, including any controls in place at the time of the noncompliance. The ERO Enterprise works with registered entities to ensure timely remediation of potential risks to reliability and prevent recurrence of noncompliance. The enforcement process allows parties to address risks collaboratively and promote increased compliance and reliability through improvement of programs and controls at the registered entities.

The ERO Enterprise applies a presumption of non-enforcement treatment of minimal risk noncompliance to entities with demonstrated internal controls who are permitted to self-log such minimal risk issues. Regarding other issues posing a minimal risk, NERC and the Regional Entities may exercise appropriate judgment whether to initiate a formal enforcement action or resolve the issue outside of the formal enforcement processes. The availability of streamlined treatment of minimal risk noncompliance outside of the formal enforcement process encourages self-inspection by registered entities. When self-identified minimal risk noncompliance is more than likely not going to be subject to a financial penalty, registered entities are encouraged to establish more robust internal controls for the detection and correction of noncompliance. This approach allows the ERO Enterprise to oversee the activities of registered entities in a more efficient manner and to focus resources where they result in the greatest benefit to reliability. In this context, efficiency does not necessarily mean less time or effort. Rather, it is using the requisite time, knowledge, and skills required for each circumstance. In addition, this approach allows the ERO Enterprise to continue to provide clear signals to registered entities about identified areas of concern and risk prioritization, while maintaining existing visibility into potential noncompliance and emerging areas of risk. Outcomes for noncompliance are based on the risk of a specific noncompliance and may range from streamlined, non-enforcement processes, to significant monetary penalties.

***Enforcement actions are used and penalties are imposed when warranted, commensurate with risk.*** An element of a risk-based approach to enforcement is accountability of registered entities for their noncompliance. No matter the risk of the noncompliance, the registered entity still bears the responsibility of mitigating that noncompliance. Based on the risk, facts, and circumstances associated with that noncompliance, the Regional Entity decides on an appropriate disposition track, inside or outside of an enforcement action, as described above, and whether a penalty is appropriate for the noncompliance.

Penalties are generally warranted for serious risk violations (e.g., uncontrolled loss of load, CIP program failures) and for when repeated noncompliance constitutes an aggravating factor. In addition to the use of significant penalties to deter undesired behavior, the ERO Enterprise also incentivizes desired behaviors.<sup>26</sup>

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<sup>26</sup> As required by §215(e)(6) of the Federal Power Act and the Commission's regulations at 18 C.F.R. §39.7(g), the Sanction Guidelines, Appendix 4B to the NERC ROP, provide that penalties and sanctions imposed for the violation of a Reliability Standard shall bear a reasonable relation to the seriousness of the violation while also reflecting consideration of the other factors specified in the Sanction Guidelines. The [Sanction Guidelines](#) are available on NERC's website.

Specifically, Regional Entities may offset penalties to encourage valued behavior. Factors that may mitigate penalty amounts include registered entity cooperation, accountability (including admission of violations), culture of compliance, and self-identification of noncompliance. Regional Entities may also grant credit in enforcement determinations for certain actions undertaken by registered entities for improvements in addition to mitigating factors. For example, Regional Entities may consider significant investments in reliability made by registered entities, beyond those otherwise planned and required, as an offset for proposed penalties in enforcement determinations. Regional Entities do not award credits or offsets for actions or investments undertaken by a registered entity that are required to mitigate noncompliance.

NERC engages in regular oversight of Regional Entity enforcement activities to confirm that the Regional Entities have followed the CMEP. This oversight evaluates the consistency of disposition methods, including assessment of a penalty or sanction, with previous resolutions of similar noncompliance involving similar circumstances. The Board Compliance Committee considers the recommendations of NERC staff regarding approval of Full NOPs and monitors the handling of noncompliance through the streamlined disposition methods of Spreadsheet NOPs, Find, Fix, Track, and Reports (FFT), and Compliance Exceptions (CEs).

**Actions are timely and transparent.** NERC's ROP (including the CMEP and Sanction Guidelines) and program documents are available to the public.<sup>27</sup> NERC also posts information on enforcement actions on a monthly basis.<sup>28</sup> Moreover, information on the efficiency of the enforcement program is available to regulators, industry stakeholders, and the public on a quarterly basis.<sup>29</sup>

**Noncompliance information is used as an input to other processes.** When developing risk elements, NERC annually identifies and prioritizes risks to BPS reliability, taking into account factors such as compliance findings, event analysis experiences, and data analysis. In addition, Regional Entities consider factors such as noncompliance information when conducting an IRA of a registered entity. The ERO Enterprise also uses noncompliance information in a feedback loop to the standards development process. This allows enhanced Reliability Standards through appropriate information flows from compliance monitoring and enforcement to the standards drafting process and other NERC programs. NERC regularly provides analysis and lessons learned from noncompliance information to industry stakeholders and the public.<sup>30</sup>

### **Stakeholder Engagement and Benefit**

Over the past few years, NERC and the Regional Entities have made substantial progress in reducing the number of instances of noncompliance remaining to be evaluated and processed. The ERO Enterprise has held registered entities accountable for instances of noncompliance that posed a risk to reliability while ensuring that enforcement actions are timely and transparent. NERC promotes a culture of reliability excellence by examining registered entities' internal compliance programs and considering them as mitigating factors in penalty determinations.

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<sup>27</sup> [NERC Rules of Procedure](#)

<sup>28</sup> [Posted compliance exceptions, Spreadsheet Notices of Penalty, and Full Notices of Penalty](#)

<sup>29</sup> The CMEP reports can be found in the Compliance Committee meeting agenda packages on the [Compliance Committee website](#).

<sup>30</sup> Id.

## Key Efforts Underway

### Enforcement Metrics

In an effort to improve the efficiency of enforcement processing throughout the ERO Enterprise, NERC developed a series of key enforcement metrics, which are tracked and analyzed throughout the year. The ERO Enterprise has continued to promote timely mitigation of noncompliance with over 99 percent of noncompliance discovered before 2015, and over 85 percent discovered in 2016, having completed Mitigation Plans or mitigating activities, reducing risk to the BPS. Including noncompliance discovered in 2017, there are 1,530 instances of noncompliance with outstanding mitigation activities. Of these, only one minimal risk instance of noncompliance has a discovery date of 2014 or earlier. It has an expected completion date in Q4 2018.

The ongoing use of CEs throughout the ERO Enterprise, has contributed to the noncompliance average age of 8.0 months. As a comparison, the average age of noncompliance was 12 months at its highest point in 2014. In 2016, it had dropped to 10.8 months. As of the end of 2017, 82 percent of the ERO Enterprise noncompliance inventory was less than one year old and only three percent was over two years old. During 2017, the ERO completed processing of all pre-2014 non-federal entity noncompliances and all but three outstanding pre-2014 federal entity noncompliances.

### Continued Outreach Efforts in 2018 and Beyond

In 2018, NERC and the Regional Entities continue to conduct outreach activities that focus on self-logging, compliance exceptions, and risk assessment of noncompliance. NERC plans to use existing industry events, such as the standards and compliance workshops and industry webinars, to provide information on enforcement activities.

### NERC Oversight of Risk-Based CMEP Implementation

For 2018, ensuring the successful implementation of NERC's risk-based CMEP remains the priority of Enforcement's oversight plan for the Regional Entities. As part of that oversight and in addition to offering regular feedback to the Regional Entities, NERC will continue to identify areas for improvement or promoting consistency through training, guidance, or adjustment the following year. NERC also produces an ERO Enterprise CMEP annual report, which includes an assessment of the risk-based CMEP implementation. NERC expects to publish that report during Q1 2019.

NERC performs oversight of the Regional Entities' enforcement programs primarily through the review of the processes, supporting evidence, and other information provided by the Regional Entities over the course of focused engagements of program areas that are scheduled throughout the year. NERC communicates the recommendations and findings to the Regional Entities to help the ERO Enterprise develop responsive strategies and solutions to potential issues and ensure consistent implementation of the CMEP. Such recommendations and findings also help identify priorities for training of ERO Enterprise staff during the year.

### Regional Entity Training

NERC Enforcement will provide training to Regional Entity staff on the most important elements of risk-based enforcement, including risk assessment of noncompliance and the determination of appropriate penalties and sanctions for noncompliance. NERC is developing this training based on observations from its oversight activities of Regional Entity settlement agreements, as well as the process reviews described above.

### **CMEP Technology Project**

Beginning in 2017 through 2020, NERC, in collaboration with the Regional Entities, will develop and implement a common CMEP tool that supports the CMEP, including the various processes and activities (e.g., analysis of risk, development of implementation plans and audit schedules, actual compliance monitoring, and enforcement processing). For more information on the CMEP Technology Project, see *Exhibit F – CMEP Technology Project*.

### **2019 Goals and Deliverables**

Specific 2019 objectives for the Enforcement department include:

- Continuing to refine and improve the risk-based CMEP processes;
- Continuing to implement in a transparent manner an ERO Enterprise enforcement philosophy that is risk-focused and drives desired behaviors by registered entities;
- Expanding the feedback loop of information from Enforcement to Standards and other program areas; and
- Working closely with NERC's Compliance Assurance and IT departments, as well as the Regional Entities, to develop application business requirements and test business functionality for the CMEP tool.

### **Resource Requirements**

#### **Personnel**

The increase of one position (0.94 FTEs) is the result of resource allocations to realign staff with current needs.

#### **Consultants and Contracts**

No consultant or contract expenses were budgeted in Enforcement in 2018. The addition of \$161k of expenses is a result of a reclassification of support for the Compliance Reporting and Tracking System (CRATS) from the IT department to Enforcement. A detailed breakdown of the 2018 and 2019 budgeted expenses is shown in *Exhibit B – Consultant and Contractor Costs*.

#### **Other Costs**

The \$884k budgeted for computer and software capital expenditures is attributed to the CMEP Technology Project, for which the total capital expenditure of approximately \$1.8M is split evenly between Compliance Assurance and Compliance Enforcement. The \$211k increase in office costs is primarily for license and hosting fees for the new CMEP tool.

Section A – 2019 Business Plan and Budget Program Area and Department Detail

Statement of Activities and Fixed Assets Expenditures					
2018 Budget & Projection, and 2019 Budget					
COMPLIANCE ENFORCEMENT					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 6,608,973	\$ 6,608,973	\$ -	\$ 6,787,076	\$ 178,103
Assessment Stabilization Reserve - Penalties	56,522	56,522	-	53,103	(3,418)
<b>Total NERC Funding</b>	<b>\$ 6,665,495</b>	<b>\$ 6,665,495</b>	<b>\$ -</b>	<b>\$ 6,840,179</b>	<b>\$ 174,684</b>
Third-Party Funding	\$ -	\$ -	\$ -	\$ -	\$ -
Testing Fees	-	-	-	-	-
Services & Software	-	-	-	-	-
Workshops	-	-	-	-	-
Interest	8,444	20,961	12,517	17,056	8,612
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 6,673,939</b>	<b>\$ 6,686,456</b>	<b>\$ 12,517</b>	<b>\$ 6,857,235</b>	<b>\$ 183,297</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 1,792,112	\$ 1,972,628	\$ 180,516	\$ 1,991,052	\$ 198,940
Payroll Taxes	115,916	115,709	(206)	126,256	10,340
Benefits	168,533	185,311	16,777	198,145	29,612
Retirement Costs	200,403	211,841	11,438	218,788	18,385
<b>Total Personnel Expenses</b>	<b>\$ 2,276,963</b>	<b>\$ 2,485,489</b>	<b>\$ 208,526</b>	<b>\$ 2,534,240</b>	<b>\$ 257,277</b>
<b>Meeting Expenses</b>					
Meetings	\$ 2,000	\$ 2,000	\$ -	\$ 2,000	\$ -
Travel	47,500	48,471	971	47,500	-
Conference Calls	-	3,367	3,367	2,400	2,400
<b>Total Meeting Expenses</b>	<b>\$ 49,500</b>	<b>\$ 53,838</b>	<b>\$ 4,338</b>	<b>\$ 51,900</b>	<b>\$ 2,400</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ -	\$ 48,500	\$ 48,500	\$ 161,000	\$ 161,000
Office Rent	-	-	-	-	-
Office Costs	19,160	120,480	101,320	230,050	210,890
Professional Services	-	-	-	-	-
Miscellaneous	500	500	-	500	-
Depreciation	105,014	105,014	0	105,014	-
<b>Total Operating Expenses</b>	<b>\$ 124,674</b>	<b>\$ 274,494</b>	<b>\$ 149,820</b>	<b>\$ 496,564</b>	<b>\$ 371,890</b>
<b>Total Direct Expenses</b>	<b>\$ 2,451,137</b>	<b>\$ 2,813,822</b>	<b>\$ 362,685</b>	<b>\$ 3,082,704</b>	<b>\$ 631,567</b>
<b>Indirect Expenses</b>	<b>\$ 2,733,948</b>	<b>\$ 3,084,838</b>	<b>\$ 350,890</b>	<b>\$ 3,112,654</b>	<b>\$ 378,706</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 5,185,085</b>	<b>\$ 5,898,660</b>	<b>\$ 713,575</b>	<b>\$ 6,195,358</b>	<b>\$ 1,010,273</b>
<b>Change in Assets</b>	<b>\$ 1,488,854</b>	<b>\$ 787,796</b>	<b>\$ (701,058)</b>	<b>\$ 661,877</b>	<b>\$ (826,976)</b>
<b>Fixed Assets</b>					
Depreciation	\$ (105,014)	\$ (105,014)	\$ (0)	\$ (105,014)	\$ -
Computer & Software CapEx	1,548,000	1,548,000	-	884,000	(664,000)
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	45,868	(115,516)	(161,383)	(117,109)	(162,976)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ 1,488,854</b>	<b>\$ 1,327,470</b>	<b>\$ (161,384)</b>	<b>\$ 661,877</b>	<b>\$ (826,976)</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 6,673,939</b>	<b>\$ 7,226,130</b>	<b>\$ 552,191</b>	<b>\$ 6,857,235</b>	<b>\$ 183,297</b>
<b>FTEs</b>	<b>12.22</b>	<b>11.86</b>	<b>(0.36)</b>	<b>13.16</b>	<b>0.94</b>

## Reliability Assessment and System Analysis

Reliability Assessment and System Analysis (in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	14.10	15.04	0.94
Direct Expenses	\$ 4,256,247	\$ 4,831,482	\$ 575,235
Indirect Expenses	3,154,555	3,557,318	402,763
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	(97,847)	(359,213)	(261,366)
TOTAL BUDGET	\$ 7,312,956	\$ 8,029,587	\$ 716,631

### Background and Scope

The NERC Reliability Assessment and System Analysis (RASA) department, which includes the Reliability Assessment, System Analysis, and Advanced Analytics and Modeling (AAM) groups, carries out the ERO's statutory responsibility to conduct assessments of the reliability of the BPS. These assessments are used to provide insight and guidance about reliability risks, which provide a foundation for the development of new Reliability Standards or modifications to Reliability Standards, or other initiatives, such as guidelines, alert(s), webinars, etc., all focused on enhancing overall reliability. The majority of the activities in the RASA department directly address the risk priorities established by the RISC. In particular, the risks pertaining to changing resources and planning noted in the RISC report are of particular importance to the assessment and analysis work being performed in RASA.

NERC staff works closely with stakeholders on creating assessment development schedules, including schedules with adequate stakeholder review at every level. All NERC reliability assessments typically have a sponsoring technical committee, subcommittee, or other subgroup. The long-term and seasonal assessments are conducted by the NERC Planning Committee's (PC's) Reliability Assessment Subcommittee (RAS), and ultimately endorsed by the PC. Special assessments often require a separate and specialized task force or advisory group to help construct, conduct, and produce special topic assessments.

The department focuses on developing a technical framework and understanding the emerging reliability risks facing the industry. It also provides guidance and insights to stakeholders across North America. The department relies on its own engineering and analysis expertise, as well as Regional Entity and stakeholder resources. RASA is responsible for:

- Independent reliability assessments on the overall reliability and adequacy of the BES and associated emerging reliability risks that could impact the short-, mid- and the long-term (e.g., 10-year) planning horizons, and other reliability issues requiring an in-depth analysis.
- Support for the development and improvement of long-term, sustainable interconnection-based power flow, dynamic, and load models that exhibit the accuracy and fidelity reflecting actual BES reliability performance and dynamic conditions.
- Interconnection-wide analysis of steady-state and dynamic conditions, including frequency, ERS, stability, short circuit ratio, and oscillatory behavior aspects.
- Advancement of industry and the ERO's understanding of power system characteristics and behaviors by gathering larger phasor measurement units (PMU) datasets for advanced data analytics and modeling improvements.

- Assurance oversight that the BES electrical elements necessary for its reliable operation are identified, requiring the elements to follow the Reliability Standards.
- Establishment of reliability leadership and consistent, technically sound insights and recommendations that position industry and policymakers to enhance reliability through effective outreach and communications.

### **Stakeholder Engagement and Benefit**

RASA works with industry leaders to create a reliability strategy that is relevant, timely, and effective to address the most important reliability risks. This effort includes (1) reviewing and addressing key priority risks identified by the RISC; (2) synthesizing key information identified through analysis and assessment efforts; (3) extracting and prioritizing the associated reliability risks; (4) sharing and integrating risk analysis insights across the ERO Enterprise; and (5) translating that knowledge into actionable guidance and recommendations for NERC management, the Board, and industry, along with state, federal, and provincial policymakers.

### **Key Efforts Underway**

RASA focuses its efforts in the following key areas:

#### **Reliability Assessment**

Reliability assessments serve to evaluate the expected reliability of the BES through extensive deterministic and probabilistic analyses to identify potential reliability risks and potential mitigation approaches. These reviews include both evaluations at the edge of the planning horizon, as well as assessments of the anticipated performance during the short-term (12- to 18-month outlook). These analyses involve planned and anticipated changes to generation resources, transmission infrastructure, and load behavior compared to base-line needs of the system to remain reliable, and formulate recommendations and related guidance. This assessment is often completed by examining special scenarios and unique situations within the BES. These analyses provide a technical platform for important policy discussions on challenges facing the interconnected BES, as well as focused recommendations on mitigation to improve overall reliability or lessen reliability risks.

By identifying and quantifying emerging issues, NERC is able to provide risk-informed recommendations and support a learning environment for industry to address emerging risks and pursue improved reliability performance. These efforts are expanding to assess reliability impacts from the changing resource mix, reliability behavior of resources, distributed energy resources, and loads. Many recent resource additions are asynchronous and energy-limited, requiring assessment of a substantial number of scenarios rather than just seasonal peak conditions. Reliability assessments must therefore include a greater focus on probabilistic approaches, assessing the sufficiency of essential reliability services (ERS), as well as focusing seasonal assessments on short-term horizons to encompass evaluations beyond peak condition reserve margin analyses. Key assessments include:

- Long-Term Reliability Assessment (LTRA) (supplemented by the Probabilistic Assessment)
- Summer and Winter Reliability Assessments
- Special Reliability Assessments (selected based on high-priority/high-risk issues that require an independent assessment from the ERO)

A significant ongoing effort involving RASA, Regional Entity staff, and stakeholders focuses on effective ERS. These efforts are expected to lead to a broad set of recommendations that will culminate with defined elements, an evaluation of initial metrics and data compilation of actual performance, and refinement of the ongoing assessment of ERS measures.

As part of reliability assessment activities, NERC collects, maintains, and annually publishes the Electricity Supply and Demand (ES&D) database, which includes 10-year projections for the North American BPS. Data is validated by the Regional Entities, NERC staff, and the RAS during NERC’s annual development of the LTRA. The data collection and management of its systems are an essential component to NERC’s MOU with the DOE’s Energy Information Agency.

### **System Analysis**

Understanding the technical behavior of the North American grid is the foundation for identifying crucial aspects of performance that are important for sustaining overall reliability. NERC’s understanding of grid behavior is achieved through constant observation and study, analytic simulations, and forensic analysis of system disturbances. The System Analysis group focuses on:

- **Power system analysis** – Develop technical analyses in key reliability areas, resulting in technically accurate and comprehensive reports addressing areas of concern (e.g., frequency response, short circuit strength, inter-area oscillation, distributed energy resources, etc.). The purpose of these technical analyses are to understand and evaluate BPS characteristics, behavior, and performance due to the changing resource mix and integration of new technology. These analyses are also intended to provide oversight, guidance, direction, and technical expertise to address key planning-related issues and interconnection-wide concerns.
- **Advance software capabilities** – Continue to explore the use of state-of-the-art software to conduct power system analysis. Enhance the usage of real-time tools used by the industry to sharpen and fine-tune models as the system evolves with the integration of new technology.
- **Technical support, implementation and outreach** – Provide technical expertise, research, and feedback to the industry. Provide foundational technical efforts that support development of key reliability planning-related standards. Solicit industry’s help by using resources and leveraging any research that has been done by the industry. NERC system analysis assessment and studies are coordinated through the PC’s System Analysis and Modeling Subcommittee (SAMS) in a collaborative manner to engage stakeholder involvement and support.

System analysis activities also support the following objectives:

- Continue leading and improving NERC’s analytical capabilities to address a broad range of engineering topics.
- Conduct analyses and assessments in response to FERC directives.
- Support Reliability Standards development with subject matter expertise.
- Support and lead technical analysis of emerging risks requiring advanced analytics and interconnection-wide assessment.
- Conduct detailed forensic analyses of significant system disturbances.



Key focus areas include:

- PMU measurement, use, and analysis improvements
  - Synchrophasor technology
  - Power plant model verification
  - Oscillation analysis
- Frequency response analysis, interconnection frequency response obligation analysis, and forward-looking reliability assessment
- Interconnection-wide system inertia study
- Interconnection-wide short circuit ratio assessment
- Interconnection-wide model building designation and criteria administration
- Interconnection-wide model validation
- Improving model quality and fidelity
- Analysis of TPL Footnote 12
- Load and distributed energy resource modeling
- Event analysis (simulation and forensic analysis of major events)
- Reliability Standards support
- BES exception and self-determined notification processing

### Advanced Analytics and Modeling

The AAM group focuses on emerging reliability risks to the BPS through advanced system analysis techniques and modeling capabilities. The AAM group works collaboratively with NERC stakeholders, particularly through the NERC PC and Operating Committee (OC) as well as their technical subgroups. Through these activities, AAM’s key focuses include:

- **State of Modeling Report** – Provide industry insight related to modeling improvements and interconnection-wide system analysis, with recommendations for enhancement and industry engagement. Provide industry with annual updates related on modeling and modeling practices.
- **Inverter-based resource performance** – Perform event analyses and investigate abnormal performance of inverter-based resources, particularly solar photovoltaic. Develop industry recommendations and address potential reliability gaps through NERC Alerts, guidelines, technical reference documents, industry education, and evaluation of Reliability Standards. Coordinate the PC’s Inverter-Based Resource Performance Task Force (IRPTF).
- **Distributed energy resources** – Support industry in the reliable integration of increased levels of distributed energy resources. Provide industry leadership and technical guidance on key reliability impacts of distributed energy resources. Develop recommended practices (modeling, planning, and operations) to ensure BPS reliability.
- **Synchrophasor technology** – Support industry adoption and advancement of synchrophasor technology through the PC’s Synchronized Measurement Subcommittee (SMS). Study interconnection-wide oscillatory behavior (and other interconnection-wide phenomena) through PMU data collected from RCs.
- **Power plant model verification** – Support industry understanding and expertise in power plant modeling through the PC’s System Analysis and Modeling Subcommittee’s (SAMS’s) Power Plant Modeling and Verification Task Force (PPMVTF). Advance capabilities to perform a disturbance-based model verification, working with software vendors. Support industry implementation of MOD-026-1 and MOD-027-1.

- **Dynamic load modeling** – Drive improvements of dynamic load modeling capabilities in support of industry stability studies for planning and real-time reliability assessments. Advance state of the art modeling capability across North America. Support the SAMS’s Load Modeling Task Force (LMTF) efforts.
- **Changing end-use loads** – Support studies and technical positions on the changing nature of end-use loads and advocate for grid-friendly load behavior. Engage with industries collaboratively, working with utility members, to represent BPS needs.
- **Interconnection-wide case quality assessments** – Perform annual assessments of case quality and fidelity on the interconnection-wide cases released by the MOD-032 designees. Develop a feedback loop mechanism with the MOD-032 designees to instigate improvements to models.
- **Modeling notifications** – Proactively address deficiencies in interconnection-wide models and provide industry education on key modeling topics as identified by NERC or industry.
- **Interconnection Reliability Operating Limits (IROLs)** – Coordinate with the PC’s Methods for Establishing IROLs Task Force (MEITF) and support improvements to the methods, practices, and tools used for establishing IROLs. Coordinate with industry and FERC on potential new approaches to characterize IROLs while ensuring reliable operation of the BPS.

### Technical Committees

RASA coordinates and administers the activities and efforts of the PC and its subgroups. The PC and its subgroups provide the oversight, guidance, and leadership essential to address these areas of strategic focus efficiently and comprehensively, and ensure technical accuracy, with the objective of enhancing BPS reliability. Further, the PC recognizes the need to strengthen the ties between the technical committees to ensure expertise is leveraged and amplified, thereby increasing the relevance and value of the technical committee results. NERC supports industry volunteers and helps them achieve industry consensus around important and strategic reliability issues as identified by the RISC and detailed in the *ERO Enterprise Long-Term Strategy* and *ERO Enterprise Operating Plan*.

### NERC and Regional Entity Coordination

NERC’s Reliability Assessment and Performance Analysis (RAPA) staff coordinate with Regional Entity counterparts through the ERO RAPA Group to collaborate on and provide oversight for reliability assessment and reliability risk analysis functions. The responsibilities of this group include facilitating the exchange of information, jointly coordinating work product expectations (scope, timing, schedule, resource expenditures, budget assumptions, etc.), and promoting consistency across the ERO Enterprise. Additionally, ERO RAPA continually seeks improvements to data and information coordination, methods, and approaches for the advancement of BPS risk analysis, and interfaces with the NERC technical committees accordingly to fulfill these objectives. Key objectives include:

- Program management and operations
  - Achieve consistent implementation and alignment across the ERO Enterprise for reliability assessment and performance analysis functions.
  - Periodically review coordination plans and ensure they are aligned with the *ERO Enterprise Operating Plan*.
- Program oversight
  - Provide oversight to reliability assessments and other key reports. ERO RAPA establishes common approaches and processes for reliability assessments and solutions for program challenges.

- Implement enhancements to improve ERO Enterprise-wide efficiency and effectiveness of RAPA-related functions.
- Data and information coordination
  - Provide consistent oversight materials regarding data collection, checking, validation, and assessment for use throughout NERC and the Regional Entities.
  - Coordinate data and information systems across the ERO Enterprise.

Further, RASA continues to work closely with other organizations, including but not limited to the Electric Power Research Institute (EPRI), the DOE, the Institute of Electrical and Electronic Engineers (IEEE), the Institute of Nuclear Power Operations (INPO), the North American Transmission Forum (NATF), the North American Generation Forum (NAGF), and the Canadian Electricity Association (CEA). RASA collaborates with these groups on a number of fronts, including GMD, vegetation management, and variable generation integration. RASA also works with the Interstate Natural Gas Association of America (INGAA) and the Natural Gas Supply Association (NGSA) regarding studies pertaining to the interdependency of gas and electric systems.

### **2019 Goals and Deliverables**

RASA activities and deliverables for 2019 are in support of the following goals and objectives identified in the *ERO Enterprise Operating Plan*.

#### **Goal 3: Reduction of Known Risks to Reliability**

- Ensure that the IRPTF completes its scope of work on schedule and implements the recommendations needed to maintain reliability. The recommendations should include addressing any gaps in Reliability Standards.
- Collaborate with Planning Coordinators to expand development of interconnection-wide models with expected dispatches to support effective long-term planning assessments.
- Work with stakeholders to develop and share knowledge and information supporting BPS resilience.

#### **Goal 4: Identification and Assessment of Emerging Reliability Risks**

- Improve resource adequacy assessments with increased probabilistic and risk analysis.
- Conduct interconnection-wide analysis of steady-state and dynamic conditions, including frequency, ERS, stability, short circuit ratio, and oscillatory behavior aspects to support NERC's reliability assessments and improve industry planning.
- Perform model validations at the interconnection level and compare with internal transmission owner models (short circuit model validation).
- Gather additional system performance data (e.g., data on balancing and frequency performance, renewables, and ERS) to advance analytics and improve modeling.
- Increase technical analysis and assessment focus on natural gas, wind, and solar resource and fuel availability.
- Develop technical references and guidelines that advance and improve reliability using new technologies.
- Develop quality and fidelity assessments of interconnection models.

## Resource Requirements

### Personnel

The increase of one position (0.94 FTEs) is the result of resource allocations to realign staff with current needs.

### Consultants and Contracts

The total consultant and contract expenses for the RASA department increased from \$525k in 2018 to \$625k in 2019, specifically to support research on the reliability effects of GMD. A detailed breakdown of 2018 and 2019 budgeted expenses are shown in *Exhibit B – Consultant and Contract Costs*.

Section A – 2019 Business Plan and Budget Program Area and Department Detail

<b>Statement of Activities and Fixed Assets Expenditures</b>					
<b>2018 Budget &amp; Projection, and 2019 Budget</b>					
<b>RELIABILITY ASSESSMENT and SYSTEM ANALYSIS</b>					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 7,212,995	\$ 7,212,995	\$ -	\$ 7,924,404	\$ 711,409
Assessment Stabilization Reserve - Penalties	65,217	65,217	-	60,690	(4,528)
<b>Total NERC Funding</b>	<b>\$ 7,278,213</b>	<b>\$ 7,278,213</b>	<b>\$ -</b>	<b>\$ 7,985,094</b>	<b>\$ 706,881</b>
Third-Party Funding	-	-	-	-	-
Testing Fees	-	-	-	-	-
Services & Software	-	-	-	-	-
Workshops	25,000	25,000	-	25,000	-
Interest	9,743	27,684	17,941	19,493	9,750
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 7,312,956</b>	<b>\$ 7,330,896</b>	<b>\$ 17,941</b>	<b>\$ 8,029,587</b>	<b>\$ 716,631</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 2,334,967	\$ 2,505,353	\$ 170,387	\$ 2,588,128	\$ 253,162
Payroll Taxes	144,330	150,118	5,787	156,888	12,558
Benefits	283,513	323,070	39,557	355,375	71,862
Retirement Costs	258,277	277,158	18,881	285,005	26,728
<b>Total Personnel Expenses</b>	<b>\$ 3,021,087</b>	<b>\$ 3,255,699</b>	<b>\$ 234,612</b>	<b>\$ 3,385,397</b>	<b>\$ 364,310</b>
<b>Meeting Expenses</b>					
Meetings	\$ 121,000	\$ 121,000	\$ -	\$ 121,000	\$ -
Travel	250,000	263,486	13,486	250,000	-
Conference Calls	-	3,367	3,367	6,500	6,500
<b>Total Meeting Expenses</b>	<b>\$ 371,000</b>	<b>\$ 387,853</b>	<b>\$ 16,853</b>	<b>\$ 377,500</b>	<b>\$ 6,500</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ 525,000	\$ 525,000	\$ -	\$ 625,000	\$ 100,000
Office Rent	-	-	-	-	-
Office Costs	187,889	202,769	14,880	217,710	29,821
Professional Services	-	-	-	-	-
Miscellaneous	500	500	-	500	-
Depreciation	150,771	196,362	45,591	225,375	74,604
<b>Total Operating Expenses</b>	<b>\$ 864,160</b>	<b>\$ 924,631</b>	<b>\$ 60,471</b>	<b>\$ 1,068,585</b>	<b>\$ 204,425</b>
<b>Total Direct Expenses</b>	<b>\$ 4,256,247</b>	<b>\$ 4,568,183</b>	<b>\$ 311,936</b>	<b>\$ 4,831,482</b>	<b>\$ 575,235</b>
<b>Indirect Expenses</b>	<b>\$ 3,154,555</b>	<b>\$ 3,896,364</b>	<b>\$ 741,809</b>	<b>\$ 3,557,318</b>	<b>\$ 402,763</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 7,410,803</b>	<b>\$ 8,464,547</b>	<b>\$ 1,053,744</b>	<b>\$ 8,388,800</b>	<b>\$ 977,997</b>
<b>Change in Assets</b>	<b>\$ (97,847)</b>	<b>\$ (1,133,650)</b>	<b>\$ (1,035,804)</b>	<b>\$ (359,213)</b>	<b>\$ (261,366)</b>
<b>Fixed Assets</b>					
Depreciation	\$ (150,771)	\$ (196,362)	\$ (45,591)	\$ (225,375)	\$ (74,604)
Computer & Software CapEx	-	-	-	-	-
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	52,924	(145,905)	(198,829)	(133,838)	(186,762)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ (97,847)</b>	<b>\$ (342,267)</b>	<b>\$ (244,420)</b>	<b>\$ (359,213)</b>	<b>\$ (261,366)</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 7,312,956</b>	<b>\$ 8,122,280</b>	<b>\$ 809,325</b>	<b>\$ 8,029,587</b>	<b>\$ 716,631</b>
<b>FTEs</b>	<b>14.10</b>	<b>14.98</b>	<b>0.88</b>	<b>15.04</b>	<b>0.94</b>

## Reliability Risk Management

NERC's Reliability Risk Management (RRM) department carries out the ERO's statutory responsibility to perform assessments (real-time or near real-time continual awareness, detailed analysis of significant events, and longer-term broad performance assessments) of the reliability and adequacy of the BPS including identifying potential issues of concern relating to system, equipment, entity, and human performance that may indicate the need to implement targeted interventions. RRM has three groups: Situation Awareness (also referred to as Bulk Power System Awareness), Event Analysis, and Performance Analysis. These groups have five primary functions: (1) BPS awareness; (2) event and root cause analysis; (3) assessment of human performance challenges that affect reliability and identification of improvement opportunities; (4) continent-wide analysis and reporting of BPS performance; and (5) support of the OC.

RRM's functions and resources are directly focused on proactive awareness of BPS conditions and all events over a threshold of certain risk or impact. Through awareness and continuous assessment, RRM identifies potential reliability risks. RRM analyzes events in detail, addresses the most significant risks to reliability, and ensures that industry is well informed of system events, emerging trends, risk analysis, and lessons learned. Through performing these functions, RRM provides data and analysis to inform other aspects of NERC's statutory functions. The group also provides strategic direction for using risk-based concepts in planning and executing its responsibilities.

## Situation Awareness

Situation Awareness (in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	5.64	5.64	-
Direct Expenses	\$ 2,566,215	\$ 2,621,352	\$ 55,137
Indirect Expenses	1,261,822	1,333,994	72,172
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	18,610	340,863	322,252
TOTAL BUDGET	\$ 3,846,648	\$ 4,296,209	\$ 449,561

### Background and Scope

NERC's Situation Awareness group and the Regional Entities monitor BPS conditions, significant occurrences and emerging risks, and threats across the 14 RC regions in North America to maintain an understanding of conditions and situations that could impact reliable operation. This group also supports the development and publication of NERC Alerts and awareness products and facilitates information sharing among industry, the Regional Entities, and the government during crisis situations and major system disturbances. The process for understanding the potential threats or vulnerabilities to BPS reliability starts with understanding occurrences and events in the context in which they occur.

### Stakeholder Engagement and Benefit

BPS conditions continually change and provide recognizable signatures through automated tools, mandatory reports and voluntary information sharing, and third-party publicly available sources. The significant majority of these signatures represents conditions and occurrences that have little or no reliability impact, either positive or adverse, on the BPS. However, being cognizant of the short-term condition of the BPS and the signatures associated with the entire range of reliability performance helps the ERO identify significant occurrences more accurately and efficiently. Registered entities continue to robustly share information and collaborate with the ERO to maintain and improve the overall reliability.

## Key Efforts Underway

Situation Awareness focuses on the following in support of the *ERO Enterprise Operating Plan*:

- Ensure that the ERO is aware of all BES events above a threshold of impact.
- Enable the sharing of information and data to facilitate wide-area situational awareness.
- During crisis situations, facilitate the exchange of information among industry, the Regional Entities, and the U.S. and Canadian governments.
- Keep industry informed of emerging reliability threats and risks, including any expected actions.
- Conduct the annual NERC Monitoring and Situational Awareness Conference and Human Performance Conference.
- Administer the NERC Alerts process as specified in ROP §810 to issue Advisory (Level 1) Alerts on significant and emerging reliability- and security-related topics as needed, and facilitate the tracking of actions specified in Recommendation (Level 2) and Essential Action (Level 3) Alerts.
- Perform oversight, as per the Situation Awareness Oversight Plan, of the activities and performance of the Regional Entities.

The department uses the following major reliability-related tools to support department activities:

- **Resource Adequacy (Area Control Error [ACE] Frequency) Tool** – This software application provides continuous monitoring of key resource adequacy performance metrics, including pre-established thresholds and limits defined in standards. It alerts RCs and resource subcommittees to conditions that could result in critical inadequacies, such as major tie errors, inaccurate load forecasts, and inadequate frequency response.
- **Inadvertent Interchange** – This tool facilitates the entering of monthly scheduling data and submittal of monthly inadvertent performance standards reports to NERC. It also assists in the monitoring and resolution of reliability issues originated by inadvertent interchange imbalances.
- **Frequency Monitoring and Analysis Tool** – This tool detects frequency events and captures key frequency response information for each interconnection.
- **Intelligent Alarms Tool** – This tool detects short-term and long-term frequency deviations using data transmitted to NERC by the BAs. When coupled with the FNet<sup>31</sup> and Frequency Monitoring and Analysis tools, this tool allows immediate differentiation of the cause of a frequency deviation—a generator trip or a scheduling error.
- **Genscape** – The PowerIQ and PowerRT tools provide more detailed insight into current-day conditions impacting BPS conditions in both normal operations and stressed conditions.
- **Process Information (PI) Historian System** – The PI Historian system benefits RASA for the attainment of deliverables recommended in the 2015 ERS Task Force (ERSTF) Report (specifically, collect and analyze system inertia data) and offers longer term value for both RASA and RRM. The system enables the continued strategy to transition away from other applications, offsetting future expenses by replicating the functionality of Resource Adequacy and Intelligent Alarms in-house in the 18–36 months outlook, and creates the necessary foundation for NERC’s eventual receipt and consumption of streaming synchrophasor data in near real time.

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<sup>31</sup> FNet – Operated by the Power Information Technology Laboratory at the University of Tennessee, FNet is a low-cost, quickly deployable global positioning system (GPS)-synchronized wide-area frequency measurement network. High dynamic accuracy Frequency Disturbance Recorders are used to measure the frequency, phase angle, and voltage of the power system at ordinary 120 V outlets. The measurement data are continuously transmitted via the Internet to the FNet servers hosted at the University of Tennessee and Virginia Tech.

Several reliability-related situational awareness and monitoring tools and processes are undergoing enhancement or modification. The following are being focused on during 2018: (1) an upgrade to the SAFNR software application to include preparation of a request for proposals (RFP) in late 2018; (2) operation and maintenance of the NERC Alerts tool while planning for a streamlined NERC Alert process and platform appropriately integrated with related ongoing NERC, E-ISAC, and ERO Enterprise IT initiatives; (3) a refresh of the Reliability Coordinator Information System (RCIS) legacy application for operability and maintainability reasons, with no significant changes to functionality; and (4) continuing to set the conditions to bring limited streaming synchrophasor data into NERC for wide-area situational awareness and event triage applications.

### **2019 Goals and Deliverables**

In 2019, the Situation Awareness group will continue to accomplish the specific goals and deliverables referenced above in support of the *ERO Enterprise Operating Plan*, and will also focus on the upgrade to the SAFNR application. The current SAFNR platform limits the Situation Awareness group's ability to accurately understand current conditions on the BPS due to the inability to easily or cost-effectively update the underlying power system information, including incorporating available real-time data feeds on risks to reliability, such as severe weather, flooding, and wildfires, as well as available information on interconnection frequency, BA ACE, and aggregated customer outages.

Further, enhancing SAFNR will incorporate functionality elements piloted during GridEx IV that will enable the Situation Awareness group to provide the E-ISAC and the ESCC with more timely and understandable common operating picture information, meeting the *GridEx IV Executive Tabletop Report* recommendation that states that NERC and the E-ISAC should enhance their ability to provide reliable, timely, and accurate information regarding the state of grid reliability and security threats and events, and largely meeting the observation #3 recommendation from the *GridEx IV Distributed Play Lessons Learned Report*, which states that the E-ISAC should consider adding a "common operational picture" function to the E-ISAC portal.

With the insight gained from more than five years of use, the system can be implemented as envisioned—a shared platform for rapid and accurate situational awareness that appropriately protects the proprietary information in the tool while maximizing the value of understanding shared to the right audiences. See *Exhibit G – Situation Awareness for FERC, NERC, and the Regional Entities (SAFNR)* for further details.

### **Resource Requirements**

#### **Personnel**

There is no change in FTEs for 2019 from the 2018 budget.

#### **Consultants and Contracts**

The overall funding of approximately \$1.3M for consultant and contract expenses (which largely includes support costs of the tools described above) in 2019 is consistent with the 2018 budget. A detailed breakdown of the 2018 and 2019 budgeted expenses is shown in *Exhibit B – Consultant and Contract Costs*.

#### **Other Costs**

The \$400k increase for computer and software capital expenditures is attributed to the upgrade for SAFNR, for which the total capital expenditure of \$600k is split between Situation Awareness and the E-ISAC.



Section A – 2019 Business Plan and Budget Program Area and Department Detail

Statement of Activities and Fixed Assets Expenditures					
2018 Budget & Projection, and 2019 Budget					
SITUATION AWARENESS					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 3,816,664	\$ 3,816,664	\$ -	\$ 4,266,141	\$ 449,477
Assessment Stabilization Reserve - Penalties	26,087	26,087	-	22,759	(3,328)
<b>Total NERC Funding</b>	<b>\$ 3,842,751</b>	<b>\$ 3,842,751</b>	<b>\$ -</b>	<b>\$ 4,288,899</b>	<b>\$ 446,149</b>
Third-Party Funding					
Testing Fees	-	-	-	-	-
Services & Software	-	-	-	-	-
Workshops	-	-	-	-	-
Interest	3,897	8,403	4,506	7,310	3,413
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 3,846,648</b>	<b>\$ 3,851,154</b>	<b>\$ 4,506</b>	<b>\$ 4,296,209</b>	<b>\$ 449,561</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 888,593	\$ 747,279	\$ (141,314)	\$ 865,683	\$ (22,910)
Payroll Taxes	59,143	50,725	(8,418)	58,475	(668)
Benefits	144,353	178,875	34,523	182,721	38,368
Retirement Costs	98,676	95,692	(2,984)	95,435	(3,240)
<b>Total Personnel Expenses</b>	<b>\$ 1,190,764</b>	<b>\$ 1,072,571</b>	<b>\$ (118,193)</b>	<b>\$ 1,202,314</b>	<b>\$ 11,550</b>
<b>Meeting Expenses</b>					
Meetings	\$ 2,000	\$ 2,000	\$ -	\$ 2,000	\$ -
Travel	33,000	26,400	(6,600)	33,000	-
Conference Calls	-	3,369	3,369	-	-
<b>Total Meeting Expenses</b>	<b>\$ 35,000</b>	<b>\$ 31,769</b>	<b>\$ (3,231)</b>	<b>\$ 35,000</b>	<b>\$ -</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ 1,295,495	\$ 1,295,495	\$ -	\$ 1,280,990	\$ (14,505)
Office Rent	-	-	-	-	-
Office Costs	41,897	39,322	(2,575)	93,600	51,703
Professional Services	-	-	-	-	-
Miscellaneous	500	500	-	500	-
Depreciation	2,559	7,722	5,162	8,948	6,389
<b>Total Operating Expenses</b>	<b>\$ 1,340,451</b>	<b>\$ 1,343,039</b>	<b>\$ 2,587</b>	<b>\$ 1,384,038</b>	<b>\$ 43,587</b>
<b>Total Direct Expenses</b>	<b>\$ 2,566,215</b>	<b>\$ 2,447,379</b>	<b>\$ (118,836)</b>	<b>\$ 2,621,352</b>	<b>\$ 55,137</b>
<b>Indirect Expenses</b>	<b>\$ 1,261,822</b>	<b>\$ 1,212,087</b>	<b>\$ (49,736)</b>	<b>\$ 1,333,994</b>	<b>\$ 72,172</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 3,828,038</b>	<b>\$ 3,659,466</b>	<b>\$ (168,572)</b>	<b>\$ 3,955,347</b>	<b>\$ 127,309</b>
<b>Change in Assets</b>	<b>\$ 18,610</b>	<b>\$ 191,688</b>	<b>\$ 173,078</b>	<b>\$ 340,863</b>	<b>\$ 322,252</b>
<b>Fixed Assets</b>					
Depreciation	\$ (2,559)	\$ (7,722)	\$ (5,162)	\$ (8,948)	\$ (6,389)
Computer & Software CapEx	-	-	-	400,000	400,000
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	21,170	(45,388)	(66,558)	(50,189)	(71,359)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ 18,610</b>	<b>\$ (53,110)</b>	<b>\$ (71,720)</b>	<b>\$ 340,863</b>	<b>\$ 322,252</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 3,846,648</b>	<b>\$ 3,606,356</b>	<b>\$ (240,292)</b>	<b>\$ 4,296,209</b>	<b>\$ 449,561</b>
<b>FTEs</b>	<b>5.64</b>	<b>4.66</b>	<b>(0.98)</b>	<b>5.64</b>	<b>-</b>

## Event Analysis

<b>Event Analysis</b> (in whole dollars)			
	<b>2018 Budget</b>	<b>2019 Budget</b>	<b>Increase (Decrease)</b>
Total FTEs	11.28	11.28	-
Direct Expenses	\$ 2,680,449	\$ 2,857,240	\$ 176,791
Indirect Expenses	2,523,644	2,667,989	144,344
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	(42,604)	(185,960)	(143,357)
<b>TOTAL BUDGET</b>	<b>\$ 5,161,490</b>	<b>\$ 5,339,268</b>	<b>\$ 177,778</b>

### Background and Scope

The Event Analysis group performs assessments of the reliability and adequacy of the BES. This includes identifying potential issues of concern related to system, equipment, entity, and human performance that may indicate a need to develop remediation strategies, action plans, or data used to revise or retire Reliability Standards or consider new Reliability Standards. The group analyzes and determines the cause of the events, promptly ensures tracking of corrective actions to prevent recurrence, and provides lessons learned to the industry. Event Analysis ensures that reporting and analysis are consistent to allow wide-area assessment of trends and risks. The department analyzes all reportable events for sequence of events, root cause, risk to reliability, and mitigation, and keeps the industry well informed of system events, emerging trends, risk analysis, lessons learned, and expected actions.

Additional resources within this department focus on identifying human-error risks and those precursor factors that allow human error to impact system reliability. The department educates industry regarding risks, precursors, and mitigation methods. Resources also support compliance and standards training initiatives and trending and analysis to identify emerging reliability risks. These efforts are conducted in collaboration with industry human performance projects, including WECC's Human Performance Working Group, the OC's Event Analysis Subcommittee (EAS), and others.

### Stakeholder Engagement and Benefit

The Event Analysis department coordinates the use of collective resources, consistency in analysis, and timely delivery of event analysis reports.<sup>32</sup> The ERO disseminates lessons learned and other useful information to the electric industry obtained from or as a result of event analysis. The Event Analysis team conducts in-depth analyses of approximately 150 events per year on average. Annually, the team also conducts calls facilitated by the Regional Entities with over 140 registered entities to finalize root and contributing causes for the categorized events analyzed. Major analysis to date includes continuing assessment of Energy Management System (EMS) outages, continued collaboration with the RASA and Performance Analysis groups on frequency response performance, analyses of substation equipment failure events, and protective relay trends, including ground overcurrent relay misoperations, relay communication system failures, and the importance of commissioning testing.

### Collaboration with the Trade Associations and Forums

The activities of the NATF, the NAGF, trade associations, and other industry groups are expected to compliment ERO Enterprise activities and limit the need to add incremental resources to the NERC and Regional Entity BP&Bs that might otherwise be required in the absence of these forums.

<sup>32</sup> The core process for Event Analysis is outlined in the approved process: [ERO Event Analysis Process - Version 3.1](#) (December 2016).

NATF has been invited to participate in several reliability initiatives that are expected to continue into 2019, including protection systems misoperations reduction, challenges associated with inverter-based resources, physical security, various activities related to reliability assurance initiatives, improvement of modeling practices, and complementary efforts on addressing the GMD challenges.

Event Analysis seeks to accomplish several specific goals and objectives as part of the strategic focus of the ERO Enterprise and in support of the *ERO Enterprise Operating Plan*:

- Work with the Regional Entities to review information from registered entities on qualifying events and disturbances advancing awareness of events above a threshold level; facilitate analysis of root and contributing causes, risks to reliability, wide-area assessments, and remediation efforts; and disseminate information regarding events in a timely manner.
- Ensure that all reportable events are analyzed for sequence of events, root cause, risk to reliability, and mitigation.
- Continue to refine risk-based methods to support better identification of reliability risks, including the use of more sophisticated cause codes for analysis.
- Conduct training (webinars, workshops, and conference support) to inform industry and the ERO Enterprise of lessons learned, root cause analysis, trends, human performance, and extreme weather preparedness and recommendations.
- Develop reliability recommendations and Alerts as needed and track industry accountability for critical reliability recommendations.
- Ensure that industry is well informed of system events, emerging trends, risk analysis, lessons learned, and expected actions.
- Conduct major event analysis and reporting of major findings and recommendations that will improve reliability.
- Perform oversight, as per the Event Analysis Oversight Plan, of the activities and performance of the Regional staffs.

The Event Analysis department also supports several of the top-priority reliability risk projects as identified and described under the Performance Analysis section of this document.

## **2019 Goals and Deliverables**

In 2019, the Event Analysis group will continue to accomplish the specific goals and deliverables referenced above in support of the *ERO Enterprise Operating Plan*, particularly with regard to analysis in the area of inverters and inverter technologies as the proliferation of renewables using these technologies are rapidly increasing.

## **Resource Requirements**

### **Personnel**

There is no change in FTEs for 2019 from the 2018 budget.

### **Consultants and Contracts**

No funding is budgeted for consultant and contract expenses in 2019, which is consistent with the 2018 budget.

Section A – 2019 Business Plan and Budget Program Area and Department Detail

Statement of Activities and Fixed Assets Expenditures					
2018 Budget & Projection, and 2019 Budget					
EVENT ANALYSIS					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 5,061,521	\$ 5,061,521	\$ -	\$ 5,239,131	\$ 177,610
Assessment Stabilization Reserve - Penalties	52,174	52,174	-	45,517	(6,657)
<b>Total NERC Funding</b>	<b>\$ 5,113,695</b>	<b>\$ 5,113,695</b>	<b>\$ -</b>	<b>\$ 5,284,648</b>	<b>\$ 170,953</b>
Third-Party Funding	\$ -	\$ -	\$ -	\$ -	\$ -
Testing Fees	-	-	-	-	-
Services & Software	-	-	-	-	-
Workshops	40,000	156,380	116,380	40,000	0
Interest	7,794	19,927	12,133	14,620	6,825
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 5,161,490</b>	<b>\$ 5,290,002</b>	<b>\$ 128,512</b>	<b>\$ 5,339,268</b>	<b>\$ 177,778</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 1,783,120	\$ 1,868,493	\$ 85,373	\$ 1,903,950	\$ 120,830
Payroll Taxes	110,619	105,369	(5,250)	113,420	2,801
Benefits	227,802	245,405	17,603	264,308	36,506
Retirement Costs	198,179	194,876	(3,303)	210,479	12,300
<b>Total Personnel Expenses</b>	<b>\$ 2,319,720</b>	<b>\$ 2,414,144</b>	<b>\$ 94,424</b>	<b>\$ 2,492,158</b>	<b>\$ 172,438</b>
<b>Meeting Expenses</b>					
Meetings	\$ 81,500	\$ 187,447	\$ 105,947	\$ 81,500	\$ 0
Travel	150,000	146,310	(3,690)	150,000	-
Conference Calls	-	10,559	10,559	-	-
<b>Total Meeting Expenses</b>	<b>\$ 231,500</b>	<b>\$ 344,317</b>	<b>\$ 112,817</b>	<b>\$ 231,500</b>	<b>\$ 0</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ -	\$ -	\$ -	\$ -	\$ -
Office Rent	-	-	-	-	-
Office Costs	43,786	56,159	12,373	47,500	3,714
Professional Services	-	-	-	-	-
Miscellaneous	500	500	-	500	-
Depreciation	84,943	85,582	639	85,582	639
<b>Total Operating Expenses</b>	<b>\$ 129,229</b>	<b>\$ 142,241</b>	<b>\$ 13,012</b>	<b>\$ 133,582</b>	<b>\$ 4,353</b>
<b>Total Direct Expenses</b>	<b>\$ 2,680,449</b>	<b>\$ 2,900,702</b>	<b>\$ 220,253</b>	<b>\$ 2,857,240</b>	<b>\$ 176,791</b>
<b>Indirect Expenses</b>	<b>\$ 2,523,644</b>	<b>\$ 2,923,574</b>	<b>\$ 399,929</b>	<b>\$ 2,667,989</b>	<b>\$ 144,344</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 5,204,093</b>	<b>\$ 5,824,276</b>	<b>\$ 620,182</b>	<b>\$ 5,525,228</b>	<b>\$ 321,135</b>
<b>Change in Assets</b>	<b>\$ (42,604)</b>	<b>\$ (534,273)</b>	<b>\$ (491,670)</b>	<b>\$ (185,960)</b>	<b>\$ (143,357)</b>
<b>Fixed Assets</b>					
Depreciation	\$ (84,943)	\$ (85,582)	\$ (639)	\$ (85,582)	\$ (639)
Computer & Software CapEx	-	-	-	-	-
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	42,339	(109,477)	(151,816)	(100,379)	(142,718)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ (42,604)</b>	<b>\$ (195,059)</b>	<b>\$ (152,455)</b>	<b>\$ (185,960)</b>	<b>\$ (143,357)</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 5,161,490</b>	<b>\$ 5,629,217</b>	<b>\$ 467,727</b>	<b>\$ 5,339,268</b>	<b>\$ 177,778</b>
<b>FTEs</b>	<b>11.28</b>	<b>11.24</b>	<b>(0.04)</b>	<b>11.28</b>	<b>-</b>

## Performance Analysis

Performance Analysis (in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	9.40	10.34	0.94
Direct Expenses	\$ 2,639,101	\$ 3,169,962	\$ 530,861
Indirect Expenses	2,103,037	2,445,656	342,619
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	(108,716)	(388,009)	(279,293)
<b>TOTAL BUDGET</b>	<b>\$ 4,633,422</b>	<b>\$ 5,227,610</b>	<b>\$ 594,188</b>

### Background and Scope

The Performance Analysis department currently consists of balancing and frequency control (B&FC) and data analytics (DA) groups and provides significant statistical analysis and outreach support for NERC and the entire ERO Enterprise. The outreach includes initiatives with the Regional Entities and electricity industry-related organizations.

### B&FC Scope

B&FC provides support and services necessary for the real-time operation of the BPS in the areas of balancing resources and demand, interconnection frequency, interchange scheduling, and control performance. B&FC is responsible for providing technical assistance in the development and administration of the NERC balancing standards (BAL standards) that include BAL-001 Real Power Balancing Control Performance, BAL-002 Disturbance Control Performance, BAL-003 Frequency Response and Frequency Bias Setting, BAL-004 Time Error Correction, and BAL-006 Inadvertent Interchange. B&FC is also instrumental in performing the analysis and development of annual reports and informational filings that satisfy the FERC directives set forth in the orders that approved the balancing standards.

B&FC supports the OC's Resources Subcommittee (RS), Frequency Working Group (FWG), Inadvertent Interchange Working Group (IIWG), and Reserves Working Group (RWG) through facilitation of quarterly in-person meetings, organizing and hosting of teleconferences as needed, drafting and posting of agendas and meeting minutes, and hosting subcommittee and industry webinars. B&FC also maintains the RS website and Balancing Authority Submittal Site (BASS), which are critical to industry stakeholders by providing operational information and a submittal mechanism for the aforementioned balancing standard requirements.

The PC and OC jointly created the ERS Working Group (ERSWG) to advance the work initiated by the ERSTF in consideration of the technical and operational impacts to BPS reliability that could result from the changing generation resource mix throughout North America. B&FC provides support through data collection, analysis, and reporting for five of the ERS measures that include Measure 1: Synchronous Inertial Response at an Interconnection Level, Measure 2: Initial Frequency Deviation Following Largest Contingency, Measure 3: Synchronous Inertial Response at a BA Level, Measure 4: Frequency Response at an Interconnection Level, and Measure 6: Net Demand Ramping Variability. B&FC supports the annual *State of Reliability* report (SOR report) by providing data and analysis for interconnection frequency response (M-4) and related statistical analysis.

In 2017, B&FC partnered with the Situation Awareness group, IT, and OSisoft to accomplish the specification, development, and installation of a PI Historian system that allows NERC to retrieve, analyze, and report on data that is currently hosted and analyzed by external parties. The initial data includes

interconnection frequency and BA ACE across North America and provides enhanced wide area visualization and analysis of the North American BES. B&FC is leading the effort to build the asset framework hierarchy that will further enhance analysis and reporting that support the efforts of NERC staff and technical committees. Near-term project initiatives include the retrieval of high-speed sub-second frequency data from the University of Tennessee at Knoxville into the NERC PI Historian. While the implementation of PI Historian at NERC is a very large step forward, the maintenance of this database and continued development of visualization, analysis, and reporting tools continue to be a considerable effort and resource requirement going forward.

### **DA Scope**

DA is responsible for the collection, management, and analysis of data related to the performance of five areas of BPS operations: transmission, conventional generation, wind generation, protection system misoperations, and demand response. DA also provides application training and end-user support to reporting entities and Regional Entity staff. DA collaborates with internal and external stakeholders through working groups associated with the industry sectors reporting performance data to define and revise reporting requirements and related applications. Analysis performed by DA includes identifying potential risks of concern related to system, equipment, entity, and organizational performance that may indicate a need to develop remediation strategies, improvements to the reporting applications, new data collection or analysis tools, or data used to create, revise, or retire reliability standards or consider new reliability standards or reporting areas. Such analysis provides the foundation for the annual SOR report, the annual misoperations report, and technical papers to the industry.

DA continues the 2018 trend of highly concentrated business engagement in IT projects. 2019 projects include: (1) the planning and subsequent deployment of the solar data collection system; (2) continued refinement and implementation of the data sharing process to comply with FERC Order 824; (3) development of portal applications on the NERC enterprise platform; (4) integration of the next application data set for the ERO data warehouse; and (5) continued planning and collection of ROP Section 1600 data requests, including but not limited to GMD studies and cyber and physical security data. Throughout these projects, DA has developed effective and efficient processes and work products that are being adopted by the NERC Project Management Office as models for other NERC IT projects. To improve data quality, DA conducts multiple multi-day in-person training sessions for end-users that provide data to the reporting applications. In addition to its legacy work with data collection and analysis, DA provides business subject matter expertise for several IT projects, including new data reporting and analytical tools, projects to support FERC data needs, ERO Enterprise data sharing, as well as projects with other NERC groups.

### **Stakeholder Engagement and Benefit**

The Performance Analysis group monitors the performance and identifies risks to reliability of the BES in North America through analyzing data from industry measuring historic trends. The group provides reports and recommendations regarding the anticipated conditions that could impact the reliability, security, and stability of the BPS to the industry, Regional Entities, regulatory entities, and other designated entities.

Performance Analysis works with industry leaders to create a reliability strategy that is relevant, timely, and effective at addressing the most important reliability risks. This effort includes Performance Analysis's contribution (including its data gathering and statistical analyses of data, trends, and events) toward the ERO's understanding of key information identified through (1) analysis and assessment efforts; (2) extraction and prioritization of the associated reliability risks from that information; (3) communication and integration of those risk analysis insights across the ERO Enterprise; and (4) translation of that knowledge into actionable guidance and recommendations for NERC management, the Board, industry,

and state, federal, and provincial policymakers. This offers stakeholders an open and transparent approach for the development of NERC's reliability strategy, ultimately ensuring the ERO is accountable to industry, regulators, and the public at large.

B&FC will continue to support the RS, ERSWG, and industry stakeholders through performance-based webinars, technical whitepapers, reliability guidelines, and individual outreach. These efforts have proven successful throughout 2017 and 2018, with an emphasis on frequency response performance and operational capabilities.

### **Key Efforts Underway**

In addition to support of the RS and its working groups, the maintenance and administration of the BAL standards is a major effort for B&FC, with particular current focus on BAL-003-1 Frequency Response and Frequency Bias Setting. B&FC fulfils the ongoing tasks assigned to the ERO in BAL-003-1 Attachment A and the Procedure for ERO Support. These tasks include, but are not limited to:

- Ongoing quarterly identification, review, selection, and posting of BAL-003-1 and M-4 frequency events for use by BAs and other industry stakeholders;
- Calculation and posting of Minimum Frequency Bias Settings for each BA;
- Calculation and assignment of BA Frequency Response Obligations for the upcoming year;
- Calculation and assignment of BA annual Frequency Bias Settings and L10 values for April implementation into BA control systems;
- Ongoing maintenance of and necessary modifications to BAL-003-1 Frequency Response Standard Forms used by BAs to calculate frequency response performance and document bilateral purchase or sale of frequency response and/or participation in a Frequency Response Sharing Group in accordance with BAL-003-1;
- Maintenance of the BASS used by BAs for BAL-003-1 submittals and performance of vetting for stakeholders requesting access to the BASS;
- Ongoing annual development of the Frequency Response Annual Analysis Report, which is necessary to identify changes in frequency response performance and recommend changes in Interconnection Frequency Response Obligations in accordance with BAL-003-1; and
- Leading efforts related to FERC Order 794 that approved the BAL-003-1 standard and directed NERC to submit a report in 2018 addressing (1) an evaluation of the use of linear regression methodology to calculate frequency response and (2) the availability of resources for applicable entities to meet the Frequency Response Obligation.

The key trends, findings, and recommendations from Performance Analysis serve as technical input to Reliability Standards and standards project prioritization, compliance process improvements, event analyses, reliability assessment, and critical infrastructure protection efforts. This analysis of BES performance provides an industry reference for historical BES reliability, but it also offers analytical insights that lead toward the prioritization of specific actionable risk control steps for industry. These analyses and results are summarized in the annual SOR report, which provides guidance and recommendations for enhanced BPS reliability. Performance Analysis has added Generator Availability Data System (GADS) wind data to the data collected under NERC ROP Section 1600, requiring the development of a new software tool to enable this. In 2019, DA will begin development of the system for solar data collection.

Performance Analysis is working with Event Analysis to develop a link between their databases. Specific equipment outages will be linked to disturbance reports filed with NERC, enabling better association of transmission and generation outages. The continued alignment between these efforts will enhance the ability to conduct effective event analyses as well as to identify key reliability areas for trend analyses of multiple databases. This is expected to improve the depth of event analyses across the ERO Enterprise and expand the quality of data gathered. With use of sophisticated statistical and probabilistic analyses, trends and insights about reliability performance will be identified, as well as effective measures and actions to address reliability risks. Performance Analysis has begun data mining of completed Event Analysis efforts to identify any insights from these events. This is important for as the grid evolves, these events may have been particularly relevant to enhanced grid reliability at the time of the original event investigation.

Performance Analysis is currently refining the composition of NERC’s annual SOR report to expand the GADS data trend analysis and, for 2018, has begun reflecting post-seasonal reliability review, insights from analysis of the GADS, Transmission Availability Data System (TADS), and Demand Response Data System (DADS), and integration of event analysis and misoperations. Also, in 2019, the department will implement the decision of whether the SOR report should move from a Q1–Q4 report to a Q4–Q3 report. Current dynamics around validation and reporting of corporate metrics might even move the SOR report to a Q3–Q2 reporting to accommodate the needs of this activity within a common reporting framework.

Further, Performance Analysis continues to work closely with other organizations, including but not limited to EPRI, DOE, IEEE, INPO, NATF, NAGF, and CEA. Performance Analysis collaborates with these groups on a number of fronts, including the TADS, GADS, and DADS.

### **2019 Goals and Deliverables**

In 2019, Performance Analysis has a number of specific goals and deliverables in support of the *ERO Enterprise Operating Plan*, including:

- Issue the SOR report, guidelines, recommendations, and Alerts as needed (including the verification and validation of data and information through Regional Entities and technical committees, as required).
- Provide support and leadership to the OC, Operating Reliability Subcommittee (ORS), and RS and its working groups, the FWG, IIWG, and RWG, with emphasis on balancing operations and analysis, administration of balancing standards, and performance-based outreach to functional entities responsible for real-time BPS reliability.
- Continue the administration of the BAL standards, with emphasis on BAL-003-1 Frequency Response.
- Provide technical assistance to Compliance Assurance and Enforcement with emphasis on BAL-003-1 for the BA performance requirements that became effective in 2017.
- Develop quarterly BPS performance reports using PI Historian data and functionality to support the OC and RS.
- Oversee and evaluate reliability trends that identify reliability risks by analyzing data contained in GADS, TADS, and DADS, along with reliability metrics and protection and controls system misoperations data.
- Support Reliability Standards development by providing subject matter expertise.
- Provide support and leadership to the PC’s subcommittees, working groups, and task forces, with primary focus on the Performance Analysis Subcommittee (PAS) and its subgroups.



- Assist in the development of approaches to registration and provide input to NERC staff in support of the development of CMEP risk elements.
- Conduct major event investigations, analyses, and reporting of major findings, recommendations, and lessons learned that will improve reliability.
- Provide insight on emerging system protection issues, and hand-off any issues gleaned with future implications to RASA.

Additionally, a major effort in 2019 will be the development of the technical report to be filed with FERC, in accordance with the directives set forth in Order 794, in addition to development of the *Frequency Response Annual Analysis Report*. Another major effort in 2019 will be the expansion of the PI Historian to include high speed frequency data from the University of Tennessee at Knoxville, as well as interconnection inertia data to support efforts of the RS and ERSWG.

## Resource Requirements

### Personnel

The increase of one position (0.94 FTEs) is the result of resource allocations to realign staff with current needs.

### Consultants and Contracts

Performance Analysis's budgeted consultant and contract expenses increased from \$572k in 2018 to \$654k in 2019, primarily due to an increased need for GADS, TADS, and DADS support. A detailed breakdown of 2018 and 2019 budgeted expenses is shown in *Exhibit B – Consultant and Contract Costs*.

Section A – 2019 Business Plan and Budget Program Area and Department Detail

Statement of Activities and Fixed Assets Expenditures					
2018 Budget & Projection, and 2019 Budget					
PERFORMANCE ANALYSIS					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 4,533,448	\$ 4,533,448	\$ -	\$ 5,132,484	\$ 599,036
Assessment Stabilization Reserve - Penalties	43,478	43,478	-	41,724	(1,754)
<b>Total NERC Funding</b>	<b>\$ 4,576,927</b>	<b>\$ 4,576,927</b>	<b>\$ -</b>	<b>\$ 5,174,208</b>	<b>\$ 597,282</b>
<b>Third-Party Funding</b>					
Testing Fees	-	-	-	-	-
Services & Software	50,000	50,000	-	40,000	(10,000)
Workshops	-	-	-	-	-
Interest	6,495	18,468	11,973	13,401	6,906
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 4,633,422</b>	<b>\$ 4,645,395</b>	<b>\$ 11,973</b>	<b>\$ 5,227,610</b>	<b>\$ 594,188</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 1,372,376	\$ 1,500,026	\$ 127,650	\$ 1,581,929	\$ 209,553
Payroll Taxes	92,361	96,058	3,697	104,052	11,690
Benefits	154,799	165,524	10,725	186,375	31,576
Retirement Costs	154,224	161,005	6,781	176,656	22,433
<b>Total Personnel Expenses</b>	<b>\$ 1,773,760</b>	<b>\$ 1,922,613</b>	<b>\$ 148,853</b>	<b>\$ 2,049,012</b>	<b>\$ 275,252</b>
<b>Meeting Expenses</b>					
Meetings	\$ 11,000	\$ 11,000	\$ -	\$ 11,000	\$ -
Travel	80,000	76,708	(3,292)	80,000	-
Conference Calls	-	3,367	3,367	3,600	3,600
<b>Total Meeting Expenses</b>	<b>\$ 91,000</b>	<b>\$ 91,075</b>	<b>\$ 75</b>	<b>\$ 94,600</b>	<b>\$ 3,600</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ 572,030	\$ 572,030	\$ -	\$ 653,565	\$ 81,535
Office Rent	-	-	-	-	-
Office Costs	57,812	44,521	(13,291)	76,290	18,478
Professional Services	-	-	-	-	-
Miscellaneous	500	500	-	500	-
Depreciation	143,999	252,434	108,435	295,995	151,996
<b>Total Operating Expenses</b>	<b>\$ 774,341</b>	<b>\$ 869,485</b>	<b>\$ 95,144</b>	<b>\$ 1,026,350</b>	<b>\$ 252,009</b>
<b>Total Direct Expenses</b>	<b>\$ 2,639,101</b>	<b>\$ 2,883,173</b>	<b>\$ 244,072</b>	<b>\$ 3,169,962</b>	<b>\$ 530,861</b>
<b>Indirect Expenses</b>	<b>\$ 2,103,037</b>	<b>\$ 2,481,396</b>	<b>\$ 378,359</b>	<b>\$ 2,445,656</b>	<b>\$ 342,619</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 4,742,138</b>	<b>\$ 5,364,569</b>	<b>\$ 622,431</b>	<b>\$ 5,615,618</b>	<b>\$ 873,480</b>
<b>Change in Assets</b>	<b>\$ (108,716)</b>	<b>\$ (719,175)</b>	<b>\$ (610,458)</b>	<b>\$ (388,009)</b>	<b>\$ (279,293)</b>
<b>Fixed Assets</b>					
Depreciation	\$ (143,999)	\$ (252,434)	\$ (108,435)	\$ (295,995)	\$ (151,996)
Computer & Software CapEx	-	-	-	-	-
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	35,283	(92,919)	(128,202)	(92,014)	(127,297)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ (108,716)</b>	<b>\$ (345,353)</b>	<b>\$ (236,637)</b>	<b>\$ (388,009)</b>	<b>\$ (279,293)</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 4,633,422</b>	<b>\$ 5,019,216</b>	<b>\$ 385,794</b>	<b>\$ 5,227,610</b>	<b>\$ 594,188</b>
<b>FTEs</b>	<b>9.40</b>	<b>9.54</b>	<b>0.14</b>	<b>10.34</b>	<b>0.94</b>

## Electricity Information Sharing and Analysis Center

E-ISAC (including CRISP) (in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	29.14	37.60	8.46
Direct Expenses	\$ 15,056,942	\$ 18,148,115	\$ 3,091,173
Indirect Expenses	6,519,415	9,004,572	2,485,157
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	274,241	242,940	(31,301)
TOTAL BUDGET	\$ 21,850,597	\$ 27,395,627	\$ 5,545,030

### Background and Scope

The E-ISAC reduces cyber and physical risk to the electricity industry across North America by providing unique insights, leadership, and coordination. NERC formed the Electricity Sector Information Sharing and Analysis Center (ES-ISAC) in 1998 when the U.S. Secretary of Energy requested that NERC serve as the ISAC<sup>33</sup> for the Electricity Subsector.<sup>34</sup> NERC rebranded the ES-ISAC to the Electricity Information Sharing and Analysis Center (E-ISAC) in September 2015. The current E-ISAC organizational structure is designed to support the three primary focus areas in support of its long-term strategy, which is discussed further below: information sharing, analysis, and engagement. The Programs and Engagement group manages the portfolio of E-ISAC products and services and is focused on ensuring stakeholder needs are understood and addressed. The Operations group consists of four teams. The Watch Operations team and CRISP team are primarily focused on information sharing, while the Cyber and Physical teams are focused on deeper analysis of incidents, threats, and mitigations. Both of the main groups support each other across the three focus areas wherever possible.

The E-ISAC also oversees CRISP, a unique public-private initiative between the E-ISAC, the North American electric utility industry, the DOE, and the U.S. Intelligence Community that delivers real-time, relevant, and actionable cybersecurity risk information to all E-ISAC member electricity asset owners and operators. The program leverages subject matter expertise and resources from the E-ISAC, DOE, the Pacific Northwest National Laboratory (PNNL), and the Argonne National Laboratory. Using passive information sharing devices (ISD) on participant networks outside boundary firewalls, packet header information is collected. The CRISP participation agreement contains strict data-handling procedures and guidelines. Participant data is used and then matched against known threat signatures—classified and unclassified—to identify potential threats and provide participants with recommended mitigation steps. Aggregated indicators of compromise and other relevant security information are shared with all E-ISAC members, regardless of participation in CRISP.

In addition to voluntary reporting of security and threat information by industry participants, registered entities subject to Reliability Standard CIP-008-5 with High Impact and Medium Impact BES Cyber Systems are required to have processes in place for identifying Cyber Security Incidents, determining if a Cyber Security Incident is a Reportable Cyber Security Incident, and if so, notifying the E-ISAC. Further, in its Order No. 848 issued July 19, 2018, FERC directed NERC to develop and submit modifications to Reliability Standards to provide for mandatory reporting to the E-ISAC (and other organizations) of Cyber Security

<sup>33</sup> In 1998, US Government authorities that were derived from Presidential Decision Directive 63, established the Information Security Analysis Center (ISAC) construct. The E-ISAC focuses specifically on information sharing, analytics and sector activities directly related to the protection of critical infrastructure.

<sup>34</sup> Subsequent administrations have sought to continue and strengthen information sharing in other sectors by establishing other sector-specific ISACs. In 2013, the DOE again reaffirmed its desire for NERC to continue to operate the E-ISAC.

Incidents that compromise, or attempt to compromise, a responsible entity's Electronic Security Perimeter or associated Electronic Access Control or Monitoring Systems.

Additionally, since 2011, the E-ISAC has sponsored a biennial grid security exercise (GridEx). This geographically-distributed exercise is designed to exercise the electricity industry's crisis response in handling simulated coordinated cyber and physical security threats and incidents, to strengthen utilities' crisis response functions and relationships with government emergency managers and law enforcement, and to provide input for lessons learned. Most recently, GridEx IV, held in November 2017, consisted of a two-day grid-focused operational exercise for participants across North America and a half-day tabletop discussion for executives. Over 6,500 participants from 450 industry and government organizations participated in GridEx IV. The E-ISAC manages the program and collects industry information during and after the exercise, subject to existing data collection and protection policies. During the exercise, E-ISAC watch and analysis staff exercise the E-ISAC mission and share crisis information and analysis towards mitigating the threats and attacks. Lessons learned and recommendations are shared with exercise participants via restricted reports, and are also shared publically at a high level.

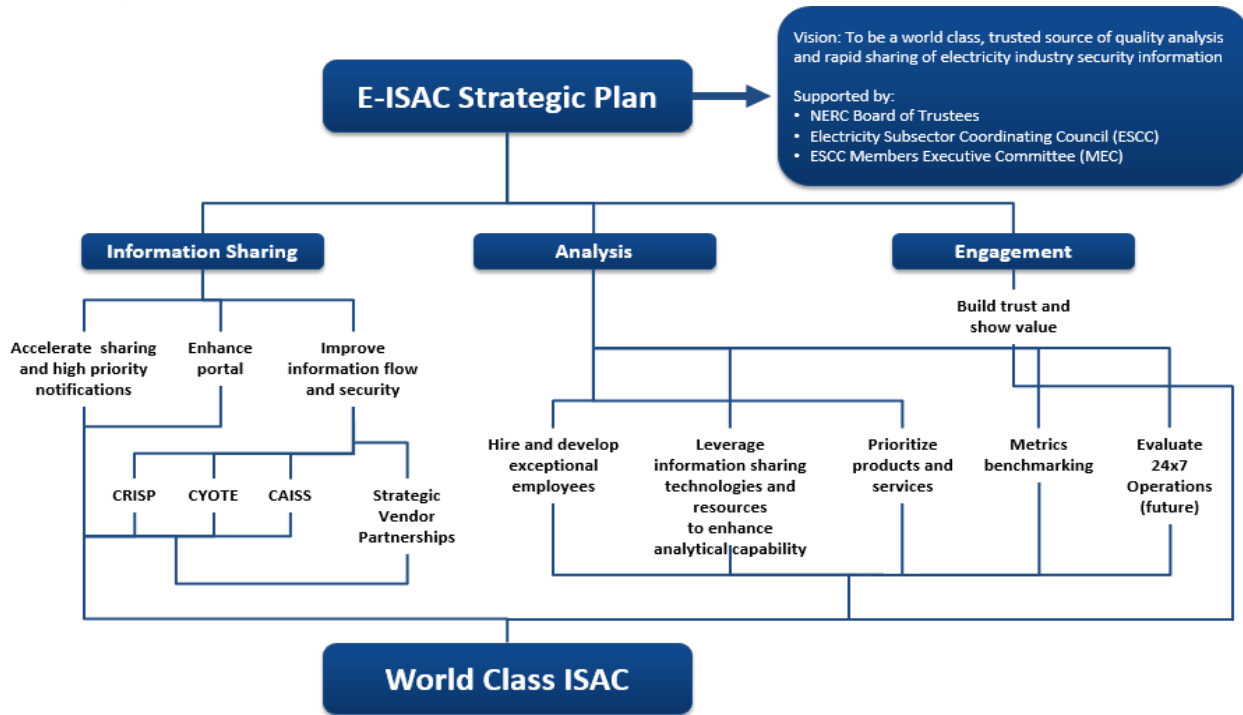
Also since 2011, NERC has sponsored an annual grid security conference (GridSecCon). This conference brings together hundreds of industry and government subject matter experts on cyber, physical, and operations technology threats and solutions, with training sessions and classified or official use briefs on topics vital to grid security. The E-ISAC provides expertise and gathers appropriate speakers, panelists, and training providers.

E-ISAC staff also routinely engages stakeholders through monthly briefings and threat workshops. The briefings cover timely physical and cyber security topics with regards to critical infrastructure protection. Private and government partner representatives, including those from the U.S. Department of Homeland Security (DHS) National Cybersecurity and Communications Integration Center (NCCIC), regularly discuss current events and risk mitigation strategies within the electricity industry audience. Special guest speakers from industry or security analysis firms also provide coverage of emerging threats and mitigation information.

### **Key Efforts Underway: E-ISAC Long-Term Strategy**

At the request of the Board and under the guidance of the ESCC and the ESCC MEC, E-ISAC executive leadership developed a long-term strategic plan, a copy of which is included as *Exhibit E – E-ISAC Long-Term Strategy*. The goal of the long-term strategic plan is to build the E-ISAC into a world-class, trusted source of quality analysis and rapid sharing of electricity industry security information. The MEC approved the long-term strategy on April 24, 2017. The strategy was accepted by the Board on May 11, 2017 and incorporated into NERC's 2018 BP&B that was approved by both the Board and FERC. The E-ISAC's long-term strategy contemplates a measured increase in resources over a five-year period, with the exact timing of resource additions dependent on progress in execution of the long-term strategy and NERC's annual BP&B process. Resource increases to augment existing capabilities for 2019 are detailed below under *2019 Goals and Deliverables*, and in the attachment to Exhibit E, *Expanding E-ISAC Operations to Include 24x7 Onsite Operations*.

The three primary elements of the E-ISAC's long-term strategy are depicted in the chart below: information sharing, analysis, and engagement.



**Information Sharing**

Timely and effective information sharing is critical to security risk identification and mitigation. Long-term strategy focus areas include the development and implementation of high priority notification procedures, automated information sharing technology, improving the functionality of the E-ISAC portal, and improving access of personnel to classified intelligence sources. The E-ISAC communication portal capabilities include publishing immediate notifications and other informational products, exchanging threat indicator information, and providing self-service access to user security awareness services. With the support of the IT department, the E-ISAC installed a completely new communication portal, incorporating important enhancements with improved functionality and capabilities, such as facilitating direct data exchange with E-ISAC members, other ISACs, and government partners, and establishing user communities that allow registered users to discuss security issues.

Additionally, beyond the portal notifications, the E-ISAC developed the Critical Broadcast Program (CBP) to deliver information rapidly to stakeholders about emerging security threats, based on the best analysis available at the time, with follow-on updates as more details emerge. The CBP allows a faster response to events and a higher level of awareness for members provided by E-ISAC analysts.

The E-ISAC has also broadened automated information sharing capabilities beyond CRISP, piloting a program using the Structured Threat Information Expression/Trusted Automated Exchange of Indicator Information (STIX/TAXII) protocols in use by many organizations, including the DHS. During 2017 and early 2018, the E-ISAC and several industry partners piloted the Cyber Automated Information Sharing System (CAISS). The pilot evaluated technological solutions for bi-directional communication, workflow between participants, the handling and vetting of shared information, and lessons learned from the technology and processes overall. The CAISS pilot will transition to an operational program in 2018 and will be available for voluntary participation from industry asset owners and operators.

## **Analysis**

E-ISAC management is making strategic investments in hiring and training skilled security analysts, identifying and leveraging additional technology, enhancing relationships with and access to government analysis sources, and developing strategic vendor relationships. Working with the NERC IT department, the E-ISAC is building a high-capacity data warehouse to support increasingly complex analytical needs. The data warehouse will assimilate all of the data feeds (including CRISP data) and allow greater correlation and pattern analysis by E-ISAC staff.

Building and maintaining highly skilled cyber and physical security analysis teams is a focus for the E-ISAC, and resource additions are necessary to provide the advanced skills required for analysis in an evolving and complex threat environment. The E-ISAC will also evaluate and where appropriate contract with outside service providers with security analysis expertise to support highly specialized analytical needs, as well as to supplement in-house capabilities.

The E-ISAC is also evaluating several strategic vendor relationships to provide additional data sources from an even wider range of industry participants to both strengthen and enhance existing programs, such as CRISP and CAISS. Available data sources, together with associated technological and analytical capabilities, will be identified, evaluated and, as appropriate, piloted with E-ISAC members to ensure viability.

## **Engagement**

Successful engagement with the electric sector and other stakeholders is critical to cyber and physical security risk identification and mitigation. There are many factors affecting increasing industry engagement, but perhaps the most vital is the trust of the members that shared information is protected. The E-ISAC has made and continues to make significant investments in physical and cyber security systems, procedures, training, and testing to ensure the security of industry data, and adopted a code of conduct to programmatically safeguard information shared by members.

After a successful pilot phase with several Large Public Power Council members, the E-ISAC recently launched an industry augmentation program that embeds industry security analysts at the E-ISAC to interact with E-ISAC staff, observe data collection and handling procedures, and share their own expertise with E-ISAC personnel. Participants also provide valuable feedback regarding their organizations' security practices and needs, which helps inform ongoing and future practices and programs within the E-ISAC.

The E-ISAC also regularly interacts with industry members, in coordination with the National Rural Electric Cooperative Association (NRECA), American Public Power Association (APPA), EEI, and CEA, by providing analyst briefings and information regarding E-ISAC programs and services. Through regional security events, such as NRECA's Rural Cooperative Cybersecurity Capabilities Program, the E-ISAC ensures that actionable security information is available across the industry landscape. The location of GridSecCon is rotated through a different Regional Entity each year. The E-ISAC is committed to being responsive to the needs of the wide range of industry members.

As described above, the new E-ISAC portal includes a user community capability that will allow groups of stakeholders with similar security concerns to collaborate directly with E-ISAC staff on a trusted, secure platform. Building on lessons learned from CRISP participants, the user communities will bring together expertise regarding common areas of issue and build trust through increased interaction among stakeholders.

Additionally, the E-ISAC is continually working to strengthen relationships between industry and government. These relationships are practiced regularly during GridEx and other exercises, and help build understanding between stakeholders that would be vital in responding to any crisis to the grid. Interfacing

smoothly with the government intelligence community would bring with it increased access to government-informed threat information and analysis, and a proposed specific function of additional E-ISAC staff. The E-ISAC is also engaged in regular communications with the DOE, DHS, and the FERC Office of Energy and Infrastructure Security, as well as continuing to build on its cross sector relationships with the other ISACs (financial sector, water, communications, and nuclear).

### **2019 Goals and Deliverables**

The E-ISAC remains focused on furtherance of the strategic efforts discussed above as 2019 marks the second year of the *E-ISAC Long-Term Strategy*. The following discusses areas of increased resource needs to fulfill strategic efforts in 2019 and the overall impact to the E-ISAC budget.

### **Resources for 2019 Strategy**

Watch Operations is the principal entry and egress point for information sharing between the E-ISAC and its members and partners. Information—both required reporting as well as voluntary shares—flows into the organization via portal postings, emails, phone calls, and other means and receives initial analysis by Watch Officers to determine (1) the severity of the event, (2) if it is part of an ongoing series of related event, and (3) whether it rises to the level that requires a “deeper dive” by cyber and physical security subject matter experts. The results of that analysis are shared in a format of greatest benefit to the recipient (operational intelligence for network defenders, recommended actions for leadership, the CBP, etc.). In effect, Watch Operations is responsible for sharing the “so what” that best allows the stakeholders to take the appropriate actions.

With the full support and encouragement of the MEC, the E-ISAC has evaluated resource requirements and options to phase in a 24x7 capability to more rapidly respond to threats outside of normal business hours, beyond a Watch Officer duty rotation. Details of this evaluation are available in the attachment to Exhibit E, *Expanding E-ISAC Operations to Include 24x7 Onsite Operations*.

The E-ISAC also requires expertise necessary to maintain critical links with the intelligence community, which is vital to supporting core analytical and information sharing functions. Key responsibilities of the Government Intelligence Interface team include (1) gathering intelligence community information relevant to the electricity sector and making timely reports of this information (edited as appropriate to avoid disclosure of classified information) available to industry through the E-ISAC, (2) providing electricity sector subject matter expertise required by the intelligence community to inform their intelligence efforts and enhance electricity sector security, (3) facilitating recurring threat update briefings with industry leadership and technical management at both secret and higher classification levels, and (4) supporting collaborative analysis of information between the E-ISAC and the intelligence community.

In support of the needs discussed above, in 2019 resources are being added to the E-ISAC as follows: four cyber analysts, four Watch officers (two for 24x7 capabilities), and one addition to the Government Intelligence Interface team. This increase is primarily to address immediate needs for increased analytical capabilities and expanded watch capabilities outside standard working hours as a first phase in providing the necessary resources for 24x7 operations. In addition, to support E-ISAC operations, two corporate support positions are being added, one in IT (business requirements analyst) and one in the finance area (budget analyst), as further outlined in the long-term strategy.

Additionally, the nature of evolving security threats requires ongoing specialized training and education for E-ISAC staff. As mentioned in the analysis section above, each technically-focused staff member requires significant resources to stay current in their field of expertise and obtain or maintain their certifications. Training requirements for 2019 have been identified and are reflected in personnel expense.

### **Budget Impacts of 2019 Strategy**

The total budget increase for E-ISAC in 2019 is \$5.5M, of which \$3.5M is directly attributed to the costs for the second year of the E-ISAC long-term strategy, with the remaining \$2.0M increase due primarily to the resulting allocation of indirect costs. Building on the resources and foundation put in place in the 2018 BP&B, the E-ISAC 2019 budget reflects a continued measured approach in strengthening the required resources and technology required to support the three primary elements of the E-ISAC's long-term strategy: information sharing, analysis, and engagement.

### **Resource Requirements**

#### **Personnel**

The increase of 9 positions (8.46 FTEs) is to address the analytical capabilities discussed above in support of the long-term strategy for the E-ISAC. An additional two positions (1.88 FTEs) are being added to Administrative Programs areas for E-ISAC support activities.

#### **Consultants and Contracts**

Consultant and contract expenses for the E-ISAC for 2019, including CRISP, are approximately \$8.3M, which is an increase of \$886k from the 2018 budget. CRISP's consultant and contracts expenses are \$6.5M, which is \$166k more than was in the 2018 budget. Total E-ISAC increases in 2019 are largely due to funding for GridEx planning, funding for vendor support costs to advance CRISP and other cyber security program participation by smaller municipal utilities, further enhancing the E-ISAC portal capabilities, and strengthening overall analytical capacity and capabilities. A detailed breakdown of the budgeted 2018 and 2019 costs is provided in *Exhibit B – Consultant and Contractor Costs*.

#### **Other Costs**

The \$250k increase for leasehold improvements is for facility costs associated with the growth in the E-ISAC in support of the E-ISAC long-term strategy. The \$200k increase for computer and software capital expenditures is attributed to the upgrade for SAFNR, for which the total capital expenditure of \$600k is split between Situation Awareness and the E-ISAC.



Section A – 2019 Business Plan and Budget Program Area and Department Detail

Statement of Activities and Fixed Assets Expenditures					
2018 Budget & Projection, and 2019 Budget					
E-ISAC (including CRISP)					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 14,297,524	\$ 14,297,524	\$ -	\$ 19,627,897	\$ 5,330,373
Assessment Stabilization Reserve - Penalties	134,783	134,783	-	155,517	20,735
<b>Total NERC Funding</b>	<b>\$ 14,432,307</b>	<b>\$ 14,432,307</b>	<b>\$ -</b>	<b>\$ 19,783,414</b>	<b>\$ 5,351,107</b>
Third-Party Funding	\$ 7,324,253	\$ 7,219,381	\$ (104,872)	\$ 7,486,353	\$ 162,101
Testing Fees	-	-	-	-	-
Services & Software	-	-	-	-	-
Workshops	70,000	70,000	-	70,000	-
Interest	24,038	75,459	51,421	55,859	31,822
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 21,850,597</b>	<b>\$ 21,797,147</b>	<b>\$ (53,451)</b>	<b>\$ 27,395,627</b>	<b>\$ 5,545,030</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 4,634,838	\$ 4,326,752	\$ (308,087)	\$ 6,297,594	\$ 1,662,756
Payroll Taxes	290,702	256,721	(33,982)	384,429	93,727
Benefits	578,849	551,542	(27,306)	825,677	246,828
Retirement Costs	499,793	410,639	(89,154)	672,423	172,630
<b>Total Personnel Expenses</b>	<b>\$ 6,004,182</b>	<b>\$ 5,545,653</b>	<b>\$ (458,529)</b>	<b>\$ 8,180,123</b>	<b>\$ 2,175,942</b>
<b>Meeting Expenses</b>					
Meetings	\$ 127,000	\$ 127,000	\$ -	\$ 127,000	\$ -
Travel	291,000	319,206	28,206	291,000	-
Conference Calls	-	9,455	9,455	-	-
<b>Total Meeting Expenses</b>	<b>\$ 418,000</b>	<b>\$ 455,661</b>	<b>\$ 37,661</b>	<b>\$ 418,000</b>	<b>\$ -</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ 7,391,794	\$ 7,491,594	\$ 99,800	\$ 8,278,000	\$ 886,206
Office Rent	-	-	-	-	-
Office Costs	907,330	909,443	2,113	903,196	(4,134)
Professional Services	250,000	204,366	(45,634)	250,000	(0)
Miscellaneous	500	500	-	500	-
Depreciation	85,136	101,397	16,261	118,296	33,160
<b>Total Operating Expenses</b>	<b>\$ 8,634,760</b>	<b>\$ 8,707,300</b>	<b>\$ 72,540</b>	<b>\$ 9,549,992</b>	<b>\$ 915,232</b>
<b>Total Direct Expenses</b>	<b>\$ 15,056,942</b>	<b>\$ 14,708,614</b>	<b>\$ (348,328)</b>	<b>\$ 18,148,115</b>	<b>\$ 3,091,173</b>
<b>Indirect Expenses</b>	<b>\$ 6,519,415</b>	<b>\$ 6,039,624</b>	<b>\$ (479,790)</b>	<b>\$ 9,004,572</b>	<b>\$ 2,485,157</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 21,576,357</b>	<b>\$ 20,748,238</b>	<b>\$ (828,118)</b>	<b>\$ 27,152,687</b>	<b>\$ 5,576,330</b>
<b>Change in Assets</b>	<b>\$ 274,241</b>	<b>\$ 1,048,908</b>	<b>\$ 774,668</b>	<b>\$ 242,940</b>	<b>\$ (31,301)</b>
<b>Fixed Assets</b>					
Depreciation	\$ (85,136)	\$ (101,397)	\$ (16,261)	\$ (118,296)	\$ (33,160)
Computer & Software CapEx	100,000	100,000	-	300,000	200,000
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	150,000	150,000	-	400,000	250,000
Allocation of Fixed Assets	109,377	(226,162)	(335,538)	(338,764)	(448,141)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ 274,241</b>	<b>\$ (77,559)</b>	<b>\$ (351,800)</b>	<b>\$ 242,940</b>	<b>\$ (31,301)</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 21,850,597</b>	<b>\$ 20,670,680</b>	<b>\$ (1,179,918)</b>	<b>\$ 27,395,627</b>	<b>\$ 5,545,030</b>
<b>FTEs</b>	<b>29.14</b>	<b>23.22</b>	<b>(5.92)</b>	<b>37.60</b>	<b>8.46</b>

## Training, Education, and Personnel Certification

Training, Education, and Personnel Certification (in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	5.88	3.76	(2.12)
Direct Expenses	\$ 1,708,013	\$ 1,369,674	\$ (338,339)
Indirect Expenses	1,314,398	889,330	(425,069)
Other Non-Operating Expenses	-	-	-
Inc(Dec) in Fixed Assets	20,613	(35,379)	(55,991)
TOTAL BUDGET	\$ 3,043,024	\$ 2,223,625	\$ (819,399)

### Background and Scope

#### Training and Education

The Training and Education program provides oversight for coordination and delivery of learning materials, resources, and activities to allow for training and education of (1) ERO Enterprise staff supporting statutory and delegation-related activities and (2) BPS industry participants consistent with ERO functional program requirements.

The Training and Education program supports NERC's responsibilities to develop, adopt, and obtain approval of Reliability Standards and to monitor, enforce, and achieve compliance with the mandatory standards. Section 901 of the NERC ROP addresses the program's obligations to industry stakeholders and ERO Enterprise staff. The responsibility to participate in the program is shared among the NERC departments,<sup>35</sup> in conjunction with the ERO Enterprise working groups.

NERC's Continuing Education program acknowledges high-quality learning activities within the electric utility industry by approving continuing education providers that meet NERC guidelines and standards. System Operator Certification, which is detailed below, is maintained by completing NERC-approved continuing education courses and activities. The OC's Personnel Subcommittee, composed of industry training experts, provides oversight of the Continuing Education program. Section 902 of the NERC ROP addresses the specific continuing education program expectations and activities.

#### Personnel Certification

The System Operator Certification program ensures that personnel operating the BPS have the skills, training, and qualifications needed to operate the system reliably. NERC maintains credentials for over 7,500 System Operator credential holders who work in various industry areas across North America. NERC's System Operator Certification exam is designed to test specific knowledge of job skills and Reliability Standards, and prepares operators for complying with requirements of Reliability Standards and appropriately operating the BPS during normal and emergency operations. The System Operator Certification program is governed by the NERC Personnel Certification Governance Committee (PCGC), an industry group of operations experts, trainers, and supervisors. Certification exams are created by the PCGC's Exam Working Group (EWG), an industry group of operations subject matter experts. Under the PCGC oversight, the EWG reviews and updates job tasks and certification exams. Section 600 of the NERC ROP addresses the Personnel Certification activities in the area of System Operator Certification.

<sup>35</sup> The Human Resources department is also engaged in training initiatives.

## Key Efforts Underway

### Training and Education

The ERO provides learning materials, resources, and activities to assist industry and ERO Enterprise staff in their understanding of key program areas. These areas include:

- Reliability Standards;
- Risk-based compliance monitoring and enforcement;
- Organization Registration and Certification;
- Event Analysis, cause analysis, Performance Analysis, and lessons learned;
- RASA; and
- Continuing education for System Operators.

### Personnel Certification

The Personnel Certification department is performing the following activities:

- Continuing to update the System Operator Certification Exam Item Bank to ensure relevance to current Reliability Standards and promote reliability of the BPS;
- Developing the exam “skills assessment” process to better assess the skills and knowledge of System Operators;
- Developing a strategic plan for the System Operator Certification program; and
- Evaluating credential review and rationalization to maintain credentials.

Additionally, the PCGC approved and launched the System Operator Certification Continuing Education Database (SOCCED) to a new platform in 2018. The new platform will provide accurate and meaningful data to assist with the System Operator Certification program.

## 2019 Goals and Deliverables

### Training and Education

The annual NERC and ERO Enterprise Learning Priorities Plan articulates and prioritizes the accumulated learning needs for the ERO Enterprise and the potential delivery vehicles supporting achievement of the *ERO Enterprise Operating Plan* goals. Development and management of the annual plan is exercised through monthly meetings to ensure priorities are reviewed and updated based on the changing business landscape informed through input received by the various functional program managers on behalf of their respective programs, ERO Enterprise working groups, and leadership teams.

An objective-based approach describing audience needs facilitates identification and formulation of products throughout the year. It inspires modular (interchangeable parts or building blocks) thought in implementing a cross-cutting multi-use product model. Production is accomplished by combining in-house expertise and tools with vendor support to increase bandwidth that positively impacts the quality and timeliness of customer service.

NERC program leads spearhead the effort to identify gaps in program knowledge and associated learning needs of their employees, industry stakeholders, and ERO Enterprise partners. The following objectives serve as foundational building blocks for ongoing learning development work and will inform the priorities of focus in 2019 and beyond:

- Educate industry on managing risk to the reliability of the BPS based on the results of technical assessment and analysis, standards development, and human performance knowledge.
- Enhance ERO Enterprise compliance monitoring personnel performance through a deeper understanding of ERO Enterprise compliance monitoring processes and technical aspects of the BPS operations.
- Improve NERC employee understanding of NERC functions and core technical knowledge for regulating the BES.

NERC will deliver training and education products and resources by hosting workshops and webinars, as well as computer-based and instructor-led training courses. The responsibility for subject matter expertise input to the learning development process is shared among multiple departments at NERC. The Training and Education department provides coordination and synchronization efforts for shared NERC and ERO Enterprise learning responsibilities in addition to advancing and improving the skills of the NERC operating staff. The Human Resources department funds and manages the delivery of individual corporate employee training and continuing education programs in concert with the coordination efforts of the Training and Education department.

The Continuing Education program evaluates and revises the current program criteria as reflected in the program manual. The evaluation considers the growth and maturation of industry programs, as well as ongoing research in the area of adult learning to ensure that the Continuing Education program efforts improve core objectives in addition to fostering improvement of training and promoting quality industry training programs in general. The Continuing Education program will remain focused on NERC System Operator credential maintenance in 2019. The program will share funding responsibilities with the Personnel Certification program for SOCCED and the associated help desk tool.

### **Personnel Certification**

With the successful delivery of the certification exams using Linear on the Fly Testing (LOFT), which is the dynamic creation of exams, the PCGC has reduced the exam delivery cycle from 36 months to a dynamic process every time an exam is initiated by a candidate. As part of the ongoing exam development cycle, the EWG will continue to develop and analyze new items for future certification exams and ensure relevancy to current Reliability Standards.

In 2019, the PCGC will focus on further development of the System Operator Certification program strategic plan, which will include but is not limited to analyzing data from the System Operator Certification program survey and white papers to the industry. The PCGC is dedicated to enhancing the System Operator Certification program to assure reliable operation of the BPS. Key deliverables for the System Operator Certification program include:

- Annual analysis of the System Operator Certification Exam Item Bank;
- New exam items;
- Enhancement to the credential maintenance tool; and
- Strategic plan action items for program enhancements.

Personnel Certification will continue to work with industry stakeholders and the exam development vendor to create certification exams that will promote reliability of the BPS.

## **Resource Requirements**

### **Personnel**

The 2.12 reduction in FTEs is the result of the elimination of one open position from the Training, Education, and Personnel Certification department and the reallocation of resources to realign staff with current needs.

### **Consultants and Contracts**

Consultant and contract expenses decreased to \$335k for 2019 from \$348k in 2018, primarily due to decreased costs to support the continuing education program, partially offset by an increase in support costs for course development. A detailed breakdown of 2018 and 2019 budgeted expenses is shown in *Exhibit B – Consultant and Contract Costs*.

### **Other Costs**

The \$64k increase for office costs is due primarily to software subscription and support costs for the new database system, which is being reclassified from contracts and consultants in the 2018 budget.

Section A – 2019 Business Plan and Budget Program Area and Department Detail

<b>Statement of Activities and Fixed Assets Expenditures</b>					
<b>2018 Budget &amp; Projection, and 2019 Budget</b>					
<b>TRAINING, EDUCATION, and PERSONNEL CERTIFICATION</b>					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ 1,309,031	\$ 1,309,031	\$ -	\$ 569,839	\$ (739,192)
Assessment Stabilization Reserve - Penalties	17,391	17,391	-	7,586	(9,805)
<b>Total NERC Funding</b>	<b>\$ 1,326,422</b>	<b>\$ 1,326,422</b>	<b>\$ -</b>	<b>\$ 577,426</b>	<b>\$ (748,997)</b>
Third-Party Funding					
Testing Fees	1,790,000	1,689,757	(100,243)	1,790,000	-
Services & Software	-	-	-	-	-
Workshops	-	-	-	-	-
Interest	4,060	17,839	13,779	4,873	814
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ 3,120,482</b>	<b>\$ 3,034,018</b>	<b>\$ (86,464)</b>	<b>\$ 2,372,299</b>	<b>\$ (748,183)</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 701,307	\$ 532,876	\$ (168,431)	\$ 461,613	\$ (239,694)
Payroll Taxes	52,088	43,197	(8,892)	34,613	(17,475)
Benefits	95,207	73,777	(21,430)	78,388	(16,820)
Retirement Costs	79,353	62,239	(17,113)	51,167	(28,185)
<b>Total Personnel Expenses</b>	<b>\$ 927,956</b>	<b>\$ 712,089</b>	<b>\$ (215,867)</b>	<b>\$ 625,781</b>	<b>\$ (302,175)</b>
<b>Meeting Expenses</b>					
Meetings	\$ 44,250	\$ 44,250	\$ -	\$ 44,250	\$ -
Travel	17,000	16,353	(647)	17,000	-
Conference Calls	-	6,735	6,735	1,200	1,200
<b>Total Meeting Expenses</b>	<b>\$ 61,250</b>	<b>\$ 67,338</b>	<b>\$ 6,088</b>	<b>\$ 62,450</b>	<b>\$ 1,200</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ 598,900	\$ 598,900	\$ -	\$ 497,000	\$ (101,900)
Office Rent	-	-	-	-	-
Office Costs	117,969	118,197	228	182,024	64,055
Professional Services	-	-	-	-	-
Miscellaneous	500	500	-	500	-
Depreciation	1,439	1,919	480	1,919	480
<b>Total Operating Expenses</b>	<b>\$ 718,808</b>	<b>\$ 719,516</b>	<b>\$ 708</b>	<b>\$ 681,443</b>	<b>\$ (37,364)</b>
<b>Total Direct Expenses</b>	<b>\$ 1,708,013</b>	<b>\$ 1,498,942</b>	<b>\$ (209,071)</b>	<b>\$ 1,369,674</b>	<b>\$ (338,339)</b>
<b>Indirect Expenses</b>	<b>\$ 1,314,398</b>	<b>\$ 1,295,320</b>	<b>\$ (19,078)</b>	<b>\$ 889,330</b>	<b>\$ (425,069)</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (A)</b>	<b>\$ 3,022,411</b>	<b>\$ 2,794,262</b>	<b>\$ (228,149)</b>	<b>\$ 2,259,004</b>	<b>\$ (763,408)</b>
<b>Change in Assets</b>	<b>\$ 98,071</b>	<b>\$ 239,756</b>	<b>\$ 141,686</b>	<b>\$ 113,295</b>	<b>\$ 15,224</b>
<b>Fixed Assets</b>					
Depreciation	\$ (1,439)	\$ (1,919)	\$ (480)	\$ (1,919)	\$ (480)
Computer & Software CapEx	-	-	-	-	-
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	22,052	(48,505)	(70,557)	(33,460)	(55,511)
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ 20,613</b>	<b>\$ (50,424)</b>	<b>\$ (71,037)</b>	<b>\$ (35,379)</b>	<b>\$ (55,991)</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 3,043,024</b>	<b>\$ 2,743,838</b>	<b>\$ (299,186)</b>	<b>\$ 2,223,625</b>	<b>\$ (819,399)</b>
<b>FTEs</b>	<b>5.88</b>	<b>4.98</b>	<b>(0.90)</b>	<b>3.76</b>	<b>(2.12)</b>

## Administrative Programs

Administrative Programs (in whole dollars)						
	Direct Expenses and Fixed Assets			FTEs		
	2018 Budget	2019 Budget	Increase (Decrease)	2018 Budget	2019 Budget	Increase (Decrease)
General & Administrative	\$ 10,096,147	\$ 10,654,921	\$ 558,774	15.98	14.10	(1.88)
Legal and Regulatory	2,914,377	3,878,791	964,414	10.34	13.16	2.82
Information Technology	11,266,626	11,696,532	429,907	22.33	23.50	1.18
Human Resources & Administration	1,704,459	2,562,371	857,913	2.82	9.40	6.58
Finance and Accounting	4,008,326	2,553,747	(1,454,579)	15.98	7.52	(8.46)
<b>Total Administrative Programs</b>	<b>\$ 29,989,934</b>	<b>\$ 31,346,363</b>	<b>\$ 1,356,429</b>	<b>67.45</b>	<b>67.68</b>	<b>0.23</b>

### Program Scope and Functional Description

NERC's Administrative Programs area includes the budget for all business and administrative functions of the organization, including (1) General & Administrative, which includes Board fees and expenses, the CEO, CRO and support staff, communications, external affairs and governmental relations, and office rent; (2) Legal and Regulatory; (3) Information Technology; (4) Human Resources & Administration; (5) Finance and Accounting; and (6) other general administrative expenses necessary to support program area activities. These functions are necessary to the existence and functioning of the organization and support the performance of NERC's ERO statutory activities. The costs of the Administrative Programs functions are allocated to the statutory programs as indirect expenses. The resource requirements and comparative budget information for each of these functions are described below.

### Technical Committees and Members' Forum Program

While NERC management and staff will continue to interact with and support numerous reliability-related forums (e.g., the NATF and NAGF), NERC's 2019 budget does not contain specific funding for any forum activities.

### General & Administrative

#### Background and Scope

The General & Administrative area is responsible for the administration and general management of the organization. Expenses allocated in this area include office rent as well as personnel and related costs of (1) the CEO, the CRO, and their support staff; (3) communications, external affairs, and government relations staff; and (4) Board costs. The 1.88 decrease in FTEs is the result of resource allocations to realign staff with current needs. Consultant and contract expenses for this area are increasing \$140k due to consulting work for strategic support for the E-ISAC and effectiveness and efficiency initiative.

The following table details the Board costs included in the total costs of the General and Administrative area.

Board of Trustee Expenses	Budget	Budget	Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
<b>Meeting and Travel Expenses</b>				
Quarterly Board Meetings	\$ 185,000	\$ 185,000	\$ -	0.0%
Trustee Travel	130,000	130,000	-	0.0%
<b>Total</b>	<b>\$ 315,000</b>	<b>\$ 315,000</b>	<b>\$ -</b>	<b>0.0%</b>
<b>Professional Services</b>				
Independent Trustee Fees	\$ 1,237,500	\$ 1,410,000	\$ 172,500	13.9%
Trustee Search Fees	100,000	100,000	-	0.0%
<b>Total</b>	<b>\$ 1,337,500</b>	<b>\$ 1,510,000</b>	<b>\$ 172,500</b>	<b>12.9%</b>
<b>Total</b>	<b>\$ 1,652,500</b>	<b>\$ 1,825,000</b>	<b>\$ 172,500</b>	<b>10.4%</b>

The increase in independence trustees fees is due to (1) the results of the 2018 annual review and periodic independent study of trustee compensation, which recommended, subject to approval by the Board, a \$5,000 increase per trustee each year for 2019–2021, and (2) the addition of a trustee per the Board’s decision to search for this new trustee in 2018 instead of 2019. This decision was made to reduce the number of trustee searches that would need to be conducted in 2019 as a result of the coinciding term expirations of two current trustees.

## Legal and Regulatory

### Background and Scope

The Legal and Regulatory department supports the following key NERC program areas: Compliance Analysis, Organization Certification and Registration, RASA, RRM, and Reliability Standards. In addition, the Legal and Regulatory department is responsible for providing a wide range of legal support to the NERC management team regarding antitrust, corporate, commercial, insurance, contract, employment, real estate, copyright, tax, legislation, and other legal matters. The department also addresses legal and regulatory matters that arise in connection with the delegation agreements with the Regional Entities. Lastly, the Legal and Regulatory department also includes the internal audit and corporate risk management functions.

### Resource Requirements

#### Personnel

The increase of three positions (2.82 FTEs) is the result of resource allocations to realign staff with current needs.

#### Professional Services

Outside law firms and consultants supporting this area are budgeted and tracked as Professional Services. The Professional Services budget for 2019 increased \$50k as compared to 2018 primarily due to added support costs for the E-ISAC strategy.



## Information Technology

### Background and Scope

NERC's IT department plan includes capital and operating expenses required to support, build, configure, and enhance applications that serve registered entities, Regional Entities, and NERC staff. The plan also includes work related to ERO Enterprise data analysis, as well as ongoing NERC and E-ISAC internal operations.

The focus of budget funding for 2019 and 2020 is primarily on applications designed to better support effectiveness and consistency across the ERO Enterprise in the areas of Reliability Standards, Compliance Monitoring, Enforcement, Registration, and the associated assessment of reliability risk. These applications include the CMEP Technology Project and complementary solutions for entity registration and standards data. The entity registration application will consolidate core registration functions currently distributed across three applications into a single registration application. In similar fashion, the three applications used across NERC and the Regional Entities for enforcement processing will be replaced by a single common application that also provides compliance monitoring functionality. Additionally, a standards database solution will be developed to work in concert with the compliance and enforcement application. These investments will provide broad benefits across the ERO Enterprise in terms of the effectiveness and efficiency of operations and meeting reliability goals. Additionally, by providing more tools and systems to registered and Regional Entities, associated economies of scale will result from these investments, increasing value across the ERO Enterprise in the years to come.

The 2019–2021 planning period also includes improvements to NERC's public facing website (NERC.com), funding for GADS solar data (GADS Solar), GADS wind data (GADS Wind), and a rewrite or replacement of the Resource Adequacy application.

The IT budget is broken down into four categories as follows:

- **ERO Enterprise new functionality** – Items listed in this category are those items designed to add, enhance, or improve capabilities for registered entities, Regional Entities, and NERC staff. This includes the Entity Registration application, the CMEP Technology Project, NERC.com, and other applications.
- **ERO Enterprise infrastructure and support** – Items listed in this category are those infrastructure and support items required for applications used by registered entities, Regional Entities, and NERC staff. Items include security and applications used by the ERO Enterprise such as The Events Analysis Management System (TEAMS), the Bulk Electric System Notification and Exception System tool (BESnet), the Standards Balloting System (SBS), the Reliability Coordinator Information System (RCIS), User Management and Records (UMR), and numerous other applications.
- **NERC new functionality** – There is no new functionality targeted for NERC in the 2019–2021 planning period. The budget continues to be heavily focused on improving the registered entity and Regional Entity experience.
- **NERC infrastructure and support** – Items listed in this category are primarily those items required to maintain and run the internal office infrastructure and support NERC staff operations, including business continuity and disaster recovery. Items include server hardware and software licenses, network equipment, data and telecommunication circuits, and data storage, as well as office administrative applications (e.g., Microsoft Office) and user hardware such as laptops and peripherals.

A further discussion of each item is outlined below.

### **ERO Enterprise New Functionality**

As noted above, this category is primarily those applications or systems designed to improve or add capability to registered entities, Regional Entities, and NERC staff. Over the past two years, IT has successfully deployed a number of new applications and functionalities for the ERO Enterprise that have now moved into support. In 2019 and beyond, IT will continue that trend with a heavy focus on Entity Registration and the CMEP Technology Project.

- **Entity Registration** – The objective of the Entity Registration application is to take the core registration functions currently distributed across three systems—the OATI Compliance Data Management System (webCDMS), Guidance Compliance Information Tracking System (CITS), and Guidance CRATS—and move those functions to a single, consolidated registration system. Doing so will allow for an expansion of current functionality, more control over the future of the application, and ultimate reduction in costs through the long-term transfer of the remaining functions provided by those three systems into a single, common system.

This program is being implemented via multiple projects over four years. This first project in 2017 addressed the registration, tracking, and management of CFRs. Subsequent projects will address Joint Registration Organizations (JROs), tracking coordinated oversight of MRREs, consolidating all existing entity registration functions into a single platform, adding validation of business relationships and functional responsibilities, and the capability to integrate reliability and compliance data for risk analysis purposes (supporting the creation of an entity’s risk profile).

- **CMEP Technology Project** – IT will work closely with the Regional Entities through 2020 to evaluate and implement strategic investments in tools that replace the current three applications mentioned above with a single, consolidated application. The scope of the project includes how Reliability Standards and entity registration data will be integrated with the tool, as well as how best to support the various parts of the CMEP process (e.g., analysis of risk, development of implementation plans and audit schedules, actual compliance monitoring, and enforcement processing). For more information on the CMEP Technology Project, see *Exhibit F – CMEP Technology Project*.

Funding for any capital investments in these areas will be subject to review and approval as part of the BP&B application in the year when such investments are proposed to be made. Prior to actual start of each project, the project will be reviewed through the enterprise information technology investment planning process to ensure the project’s estimated costs and benefits are reasonable and justify investment. For more information on this process, see *Robust Planning for New Capital Projects* section below.

- **Additional tools** – IT will continue to support the business in future years through the provision of software products that meet the analysis, communication, data collection, and analysis needs of the ERO Enterprise. Examples include the collection and analysis of solar generation performance data, further analysis of wind generation performance data, additional data collection and analysis to support and enhance reliability assessments, and further improvement of the effectiveness and efficiency of communications with stakeholders and industry participants.

### **ERO Enterprise Infrastructure and Support**

This category primarily consists of items used by registered entities, Regional Entities, and NERC staff. IT has worked closely with the Regional Entities to design and configure a number of ERO Enterprise applications, with a bias toward using commercial-off-the-shelf (COTS) technology whenever possible. Infrastructure and support for these COTS tools (such as SharePoint and the Dynamics xRM platform), as

well as custom built applications developed in the past, require ongoing investment to maintain continuous operations. For many applications and systems, this includes the cost of maintaining development, quality assurance, and staging and production environments, which are required to ensure the security and operational integrity and stability of the multiple applications supported for the ERO Enterprise, including the necessary redundancy and business continuity hardware, network and licenses to ensure operational availability of these important business assets. These applications and systems are monitored, tested (including penetration and vulnerability testing), and maintained in a manner as to ensure the highest level of integrity, security, and availability to the roughly 4,000 users across North America.

IT continues to place emphasis on ensuring the environment is configured in a manner consistent with enterprise best practices, ensuring the security and integrity of the environment while allowing ERO Enterprise users to obtain the information and resources required to perform various analyses. Ongoing support for new applications, such as The Event Analysis Management System (TEAMS), the Misoperations Information Data Analysis System (MIDAS), the Standards Balloting System (SBS), and the Reliability Assessment Data System (RADS), in addition to numerous older ERO Enterprise products (such as GADS, TADS, and DADS), make up this portion of the IT budget.

### **NERC New Functionality**

There is no new functionality planned for the NERC environment in the 2019–2021 planning period.

### **NERC Infrastructure and Support**

As previously noted, NERC infrastructure and support are those items required to maintain and support the internal infrastructure for NERC staff, to include those items necessary for business continuity and disaster recovery. Items such as file servers, network equipment, storage, Microsoft Office (Word, Excel, PowerPoint, Email, SharePoint, etc.), along with security and telecommunications, are required to ensure staff have the necessary tools and technology to perform their daily operational functions. Emphasis continues to be placed on optimizing the amount of effort placed on NERC infrastructure and support in order to minimize spend on internal office steady state operations, allowing a larger portion of IT resources to focus on new ERO Enterprise functionality as well as ERO Enterprise infrastructure and support. Examples of items included in internal operations are outlined below:

- **CRATS** – This compliance database is used to track violations, mitigation plans, and reporting required by NERC as the ERO. The database has additional modules, such as the Reliability Standards, Technical Feasibility Exceptions (TFEs), and Registration module, which contains a list of all registered entities. Funding requirements include ongoing maintenance for the CRATS compliance tool. As noted above, the CRATS application will be replaced in 2020 by an enterprise CMEP tool used by NERC, the Regional Entities, and registered entities. Reduced funding for support of the CRATS application in 2020 and beyond will be required for historical purposes.
- **Meeting manager, ERO membership, central repository of curtailment events** – NERC maintains a number of legacy applications. Many of the legacy applications were developed and implemented five to ten years ago and are unable to benefit from contemporary application development. Some of these applications may have to be completely rewritten, or moved to the xRM application platform, as IT was able to do with Application Broker, NERC MyAccount, and the User Management Program (UMP) in 2016. Funding in 2019–2021 is required for ongoing maintenance and enhancements until the applications can be rewritten or moved to the xRM platform or, in some cases, potentially divested or transferred to industry support.
- **Quarterly penetration and vulnerability testing of all NERC networks and systems** – Expert consulting services to provide intrusion detection and vulnerability testing of NERC.com and NERC’s network, applications, and systems, is an essential requirement for operations. NERC is

subject to frequent intrusion attempts where external parties try to gain access to its systems. Any vulnerability identified is documented and provided to NERC IT for rapid remediation.

- **NERC security program** – NERC’s IT department performs a number of technology initiatives to ensure the security of the network and infrastructure. In order to continually improve security, a more holistic approach is required that implements technology improvements and constructs an overarching security program to ensure all aspects of security have been considered, including information classification, review of retention policies, and enforcement of security guidelines. Security remains an intensive focus area throughout the 2019–2021 budget cycle and increasing cyber security threats will continue to put pressure on the IT budget to meet demands.

### **Robust Planning for New Capital Projects**

NERC has adopted an enterprise IT investment planning methodology that ensures only projects with compelling and approved business cases are funded. The approval process uses four approval gates:

- Business unit sponsor approval;
- NERC vice president/chief technology officer (CTO) approval;
- ERO Technology Leadership Team (TLT) (comprised of the NERC CEO and three Regional Entity CEOs) approval; and
- Approval from all NERC and Regional Entity CEOs.

NERC’s planning process and associated approval gates result in thorough review of both costs and benefits of the proposed technology project prior to moving forward with the project. The benefits of a given project are evaluated within the context of six identified value domains:

- Reducing reliability risk (the project is expected to address one or more identified risks to reliability);
- Increasing capability (the project is expected to make possible activities or analysis that are not currently possible given existing process, resource, or system limitations);
- Reducing corporate risk (the project is expected to address one or more corporate risks, such as reputational risk, contract risk, or litigation risk);
- Increasing work quality (the project is expected to reduce the probability of errors or provide information of better quality);
- Increasing productivity (the project is expected to increase the amount of work that can be completed within the same amount of time); and
- Reducing cost (the project is expected to provide a net reduction in costs related to the area(s) being addressed by the project).

As projects progress, complete, and mature, periodic evaluations of the manifesting benefits against the projections used within the business case are performed. This helps to create organizational discipline by ensuring projections are realistic and not unreasonably optimistic. NERC also considers potential benefits to the Regional Entities and registered entities when considering potential IT investments, which ensures recognition of Regional Entity staffing and budget impacts within the business case analysis, identifying economies of scale, and benefits to ERO Enterprise stakeholders through IT investment.

## Resource Requirements

### Personnel

The 1.18 FTE increase is the result of the addition of one position in support of the E-ISAC long-term strategy and the reallocation of resources to realign staff with current needs.

### Consultants and Contracts

The consultant and contract budget decreased slightly to \$2.0M in 2019 from \$2.1M in 2018. A detailed breakdown of 2018 and 2019 budgeted expenses are shown in *Exhibit B – Consultant and Contract Costs*.

### IT Office Costs

The below table shows the major categories of IT Office Costs, and a short description of certain categories follows thereafter. Explanations for the major areas of increase from the 2018 budget to the 2019 budget are provided in Table B-8 in Section B.

Office Costs	Budget		Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
Telephone	\$ 162,100	\$ 96,351	\$ (65,749)	-40.6%
Internet	358,920	219,750	(139,170)	-38.8%
Computer Supplies	98,100	177,000	78,900	80.4%
Software License and Support*	1,773,030	2,336,000	562,970	31.8%
Subscription and Publications	126,200	131,000	4,800	3.8%
Dues	2,500	2,500	-	0.0%
Express Shipping	7,500	7,500	-	0.0%
Audio/Visual and Hardware Lease**	640,336	752,529	112,193	17.5%
<b>Total</b>	<b>\$ 3,168,686</b>	<b>\$ 3,722,630</b>	<b>\$ 553,944</b>	<b>17.5%</b>

\*Combined Software and Maintenance/Service Agreement accounts to streamline accounting activities

\*\*Combined Audio/Visual and Hardware Lease accounts to streamline accounting activities

### Telephone

Telephone costs are items associated with cellular phone, satellite phone (for business continuity), mobile laptop cellular air card, and Session Internet Protocol (SIP) data circuits.

### Internet

Internet expense is comprised of both primary and secondary data circuits to ensure continuous capability in the event of primary service provider failure.

### Computer Supplies

Computer supplies are expense items required for infrastructure support.

### Software License and Support

Includes non-capital software subscription and license costs, and related support agreements. Also includes costs for support and service agreements related to NERC infrastructure management software, data center co-location, offsite backup of data, and network and security monitoring.

### Audio/Visual and Hardware Leases

Consists of lease payments for audio visual equipment, computers, laptops, servers, and switches that were leased, in lieu of purchasing, beginning in January 2017.

## Fixed Asset (Capital) Expenses

The following table presents a summary of NERC’s IT 2019 fixed asset (capital) budget<sup>36</sup> compared to the 2018 budget:

IT Capital Budget	Budget 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	
			Variance Budget	Variance %
Hardware (storage, servers)	\$ 705,000	\$ 465,000	(240,000)	-34.0%
Other Equipment	370,000	425,000	55,000	14.9%
Disaster Recovery	100,000	-	(100,000)	-100.0%
NERC Software Licenses	301,000	120,000	(181,000)	-60.1%
<b>Total</b>	<b>\$ 1,476,000</b>	<b>\$ 1,010,000</b>	<b>\$ (466,000)</b>	<b>-31.6%</b>

As in prior years, the goal of the fixed assets (capital) program for the 2019–2021 planning period is to provide access, visibility, and analysis of data from many different sources. This requires ongoing investments in hardware, software, and associated tools. The overarching theme is to securely gather, analyze, and maintain data across the ERO Enterprise to support ERO operations. Adding the capability to centralize and mine data—in addition to foundational elements such as the Microsoft xRM application, SharePoint 2013, and disaster recovery and enhanced security—sets the stage for vastly improved reporting and business intelligence. It also allows the capability for collaboration and sharing of information vital to the ERO’s mission.

In addition to the investments described in the preceding paragraph to support efficiency and consistency across the ERO Enterprise, the 2019 budget also includes the cost of network assets, software, servers, laptops, security, and other hardware to support daily operations.

## Human Resources & Administration

### Background and Scope

Human Resources & Administration primarily includes human resources and facilities and meeting planning functions. NERC’s human resources functions include staffing, benefits administration, employee relations, performance and compensation management, and training and development. Management has implemented a robust, objective, and auditable performance management system to track corporate and individual performance against pre-established goals, objectives, and measures. Each year NERC continues to refine and improve this system.

### Leadership, Management, and Professional and Administrative Staff Training and Development

As part of the ERO Enterprise’s ongoing efforts to engage and retain highly qualified talent with the leadership and technical skills to support its mission, NERC’s executives, managers, and professional and support staff participate in ongoing training and development to improve competencies critical to success and succession planning for critical roles. As such, NERC will continue to invest in learning opportunities in several areas. First, Human Resources will continue to host and optimize an e-learning platform, SkillSoft, to provide staff resources for improving soft and technical skills. Second, Human Resources will provide broad-based staff development training through real-world access via tours of and training on control centers, electric substations, and power generation plants. Finally, staff will have access to additional

<sup>36</sup> NERC’s total 2019 fixed asset (capital) budget is \$4.8M and includes \$3.3M for ERO Application Development. These ERO projects are managed by NERC’s IT department but the costs are budgeted in the applicable NERC program area.

education, including but not limited to degree-oriented university education, pursuit of specialized certifications, and other in-house and external training that provides essential competencies and skills development that will lead to improved organization performance.

### **Compensation Strategy**

NERC relies on data and advisory from multiple perspectives to hire and retain the necessary technical and other staff to support the goals and objectives in the company's operating plan. Under the mandate of the Board Corporate Governance and Human Resources Committee (CGHRC), NERC performs periodic market compensation studies to benchmark the pay practices of similar organizations and roles for which NERC hires. To ensure that NERC is able to attract the best-qualified staff to meet our mission, the CGHRC recommended a compensation philosophy of paying between the 50<sup>th</sup> and 75<sup>th</sup> percentiles, which has historically enabled the company to hire appropriate skills at prevailing market rates. Management will continue to closely monitor market conditions through periodic compensation studies and real-time pay trends of our candidate pool and expect that our pay philosophy will sustain the ability to hire qualified talent consistent with appropriate market levels.

### **Compensation Consulting**

Consultants are periodically retained to examine appropriate compensation based on current market data. This ensures that decisions affecting compensation are made in light of the current market climate and that qualified employees are attracted and retained within a defined total remuneration range. NERC also periodically retains compensation subject matter experts to perform periodic assessments of the Board compensation model to ensure alignment with market practices.

### **Surveys**

NERC periodically retains a vendor to conduct Board and committee effectiveness surveys to identify improvement opportunities. Human Resources will also launch additional surveys as appropriate, based on business needs, which may include periodic internal climate surveys.

### **Succession Planning**

Minimizing disruption of knowledge, skill, and experience of key staff is critical to the company's success. Human Resource works with senior management to identify essential roles and develop strategies to build succession and contingency plans for any loss of staff.

### **Human Resources Products and Services Automation**

Human Resource will continue to operate, maintain, and investigate investment in additional electronic platforms for Human Resource support services that reduce administrative burden and improve employee access to tools and information.

## **Resource Requirements**

### **Personnel**

The increase of seven positions (6.58 FTEs) is primarily the result of a reclassification from the finance and accounting department to human resources and administration to better reflect actual activities and functions.

### **Consultants and Contracts**

The consultant and contract budget increased to \$690k in 2019 from \$640k in 2018 primarily due to increased funding for human resources and compensation-related consulting services. A detailed breakdown of 2018 and 2019 budgeted expenses is shown in *Exhibit B – Consultant and Contract Costs*.

## **Miscellaneous Expenses**

Miscellaneous expenses include community responsibility and employee engagement, the year-end employee appreciation event, and employee rewards and recognition.

## **Finance and Accounting**

### **Background and Scope**

NERC's Finance and Accounting department manages all finance and accounting functions, including employee payroll, 401(k), 457(b), and 457(f) plans, travel and expense reporting, monthly financial reporting, sales and use tax, and insurance. This area also holds primary responsibility for the development of the annual BP&B. Over the past several years, NERC's Finance and Accounting department implemented additional policies, procedures, and controls governing day-to-day practices including contract and personnel procurements, expense reimbursement, and back office systems and procedures. The department will continue to refine, improve and, where necessary, implement additional procedures and controls.

### **Resource Requirements**

#### **Personnel**

The reduction of eight positions (7.52 FTEs) is primarily the result of a reclassification from the finance and accounting department to the human resources and administration department to better reflect actual activities and functions.

#### **Consultants and Contracts**

The consultant and contract budget increased to \$475k in 2019 from \$427k in 2018 primarily for outside auditor consulting support. A detailed breakdown of 2018 and 2019 budgeted expenses is shown in *Exhibit B – Consultant and Contact Costs*.



Section A – 2019 Business Plan and Budget Program Area and Department Detail

Statement of Activities and Fixed Assets Expenditures					
2018 Budget & Projection, and 2019 Budget					
ADMINISTRATIVE SERVICES					
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)
<b>Funding</b>					
<b>ERO Funding</b>					
NERC Assessments	\$ (231,393)	\$ (231,393)	\$ -	\$ (1,067,980)	\$ (836,587)
Assessment Stabilization Reserve - Penalties	-	-	-	-	-
<b>Total NERC Funding</b>	<b>\$ (231,393)</b>	<b>\$ (231,393)</b>	<b>\$ -</b>	<b>\$ (1,067,980)</b>	<b>\$ (836,587)</b>
Third-Party Funding	\$ -	\$ -	\$ -	\$ -	\$ -
Testing Fees	-	-	-	-	-
Services & Software	-	-	-	-	-
Workshops	-	-	-	-	-
Interest	-	-	-	-	-
Miscellaneous	-	-	-	-	-
<b>Total Funding</b>	<b>\$ (231,393)</b>	<b>\$ (231,393)</b>	<b>\$ -</b>	<b>\$ (1,067,980)</b>	<b>\$ (836,587)</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
Salaries	\$ 11,625,482	\$ 12,266,032	\$ 640,550	\$ 11,965,297	\$ 339,815
Payroll Taxes	651,076	643,202	(7,875)	666,617	15,541
Benefits	1,443,502	1,601,455	157,953	1,610,374	166,872
Retirement Costs	1,010,928	979,171	(31,757)	1,032,835	21,907
<b>Total Personnel Expenses</b>	<b>\$ 14,730,988</b>	<b>\$ 15,489,860</b>	<b>\$ 758,872</b>	<b>\$ 15,275,124</b>	<b>\$ 544,135</b>
<b>Meeting Expenses</b>					
Meetings	\$ 375,500	\$ 375,500	\$ -	\$ 360,500	\$ (15,000)
Travel	570,000	531,026	(38,974)	570,000	-
Conference Calls	119,600	96,547	(23,053)	94,800	(24,800)
<b>Total Meeting Expenses</b>	<b>\$ 1,065,100</b>	<b>\$ 1,003,073</b>	<b>\$ (62,027)</b>	<b>\$ 1,025,300</b>	<b>\$ (39,800)</b>
<b>Operating Expenses</b>					
Consultants & Contracts	\$ 3,290,966	\$ 3,583,232	\$ 292,266	\$ 3,447,763	\$ 156,797
Office Rent	3,091,804	3,087,919	(3,885)	3,335,058	243,254
Office Costs	3,874,198	3,962,551	88,353	4,454,347	580,149
Professional Services	2,287,500	2,249,022	(38,478)	2,507,600	220,100
Miscellaneous	34,500	34,500	-	77,000	42,500
Depreciation	981,159	2,050,840	1,069,681	2,235,443	1,254,284
<b>Total Operating Expenses</b>	<b>\$ 13,560,127</b>	<b>\$ 14,968,064</b>	<b>\$ 1,407,937</b>	<b>\$ 16,057,212</b>	<b>\$ 2,497,084</b>
<b>Total Direct Expenses</b>	<b>\$ 29,356,216</b>	<b>\$ 31,460,998</b>	<b>\$ 2,104,782</b>	<b>\$ 32,357,635</b>	<b>\$ 3,001,419</b>
<b>Indirect Expenses</b>	<b>\$ (29,495,094)</b>	<b>\$ (31,626,096)</b>	<b>\$ (2,131,002)</b>	<b>\$ (32,571,806)</b>	<b>\$ (3,076,712)</b>
<b>Other Non-Operating Expenses</b>	<b>\$ 138,878</b>	<b>\$ 165,098</b>	<b>\$ 26,220</b>	<b>\$ 214,171</b>	<b>\$ 75,293</b>
<b>Total Expenses (A)</b>	<b>\$ 0</b>	<b>\$ -</b>	<b>\$ (0)</b>	<b>\$ -</b>	<b>\$ (0)</b>
<b>Change in Assets</b>	<b>\$ (231,393)</b>	<b>\$ (231,393)</b>	<b>\$ 0</b>	<b>\$ (1,067,980)</b>	<b>\$ (836,587)</b>
<b>Fixed Assets</b>					
Depreciation	\$ (981,159)	\$ (2,050,840)	\$ (1,069,681)	\$ (2,235,443)	\$ (1,254,284)
Computer & Software CapEx	301,000	301,000	-	120,000	(181,000)
Furniture & Fixtures CapEx	-	-	-	-	-
Equipment CapEx	1,175,000	565,559	(609,441)	890,000	(285,000)
Leasehold Improvements	-	-	-	-	-
Allocation of Fixed Assets	(494,841)	1,184,281	1,679,122	1,225,443	1,720,284
<b>Inc(Dec) in Fixed Assets (B)</b>	<b>\$ 0</b>	<b>\$ -</b>	<b>\$ (0)</b>	<b>\$ -</b>	<b>\$ (0)</b>
<b>TOTAL BUDGET (=A+B)</b>	<b>\$ 0</b>	<b>\$ -</b>	<b>\$ (0)</b>	<b>\$ -</b>	<b>\$ (0)</b>
<b>FTEs</b>	<b>67.45</b>	<b>66.42</b>	<b>(1.02)</b>	<b>67.68</b>	<b>0.23</b>

## Section B – Supplemental Financial Information

### Breakdown by Statement of Activity Sections

The following detailed schedules support the consolidated Statement of Activities.

### Table B-1 – Operating Reserve and Assessment Analysis

Operating Reserve and Assessment Analysis						
Statutory						
	Total Reserves	Future Obligation Reserve <sup>1</sup>	Operating Contingency Reserve	System Operator Certification Reserve	CRISP Reserve	Assessment Stabilization Reserve
<b>Beginning Operating Reserves Balance - 1/1/2018</b>	<b>\$ 9,844,365</b>	<b>\$ 3,015,787</b>	<b>\$ 3,680,094</b>	<b>\$ 477,484</b>	<b>\$ 500,000</b>	<b>\$ 2,171,000</b>
<b>Generation or (Use) from 2018 Operations</b>						
From 2018 budgeted operations	\$ (634,392)	\$ (480,457)	\$ (231,393)	\$ 77,458	\$ -	\$ -
From 2018 approved addition/(use) of reserves	-	-	-	-	-	-
Proceeds from financing activities (non-current portion only) <sup>2</sup>	1,432,000	-	1,432,000	-	-	-
Debt service <sup>3</sup>	(717,274)	-	(717,274)	-	-	-
Other addition/(use) of reserves <sup>4</sup>	(971,679)	(15,759)	(328,120)	(27,800)	-	(600,000)
<b>Projected Operating Reserves - 12/31/18</b>	<b>\$ 8,953,020</b>	<b>\$ 2,519,571</b>	<b>\$ 3,835,307</b>	<b>\$ 527,142</b>	<b>\$ 500,000</b>	<b>\$ 1,571,000</b>
<b>Required Working Capital and Operating Reserves - 12/31/19</b>						
Adjustment in funding to achieve required reserve balance	(331,783)	(480,457)	-	148,674	-	-
Penalty sanctions received 7/1/2017 - 6/30/2018 (See Table B-2)	500,000	-	-	-	-	500,000
Less: Assessment Stabilization Reserve Release - Penalties	(550,000)	-	-	-	-	(550,000)
<b>Total Adjustments to Reserves</b>	<b>\$ (381,783)</b>	<b>\$ (480,457)</b>	<b>\$ -</b>	<b>\$ 148,674</b>	<b>\$ -</b>	<b>\$ (50,000)</b>
<b>Assessment Reconciliation</b>						
2019 Expenses and Capital Expenditures	\$80,049,655					
Less: Assessment Stabilization Reserve Release - Penalties	(550,000)					
Adjustment in funding to achieve required reserve balance	148,674					
Less: Other Funding Sources	(9,696,353)					
Less: Proceeds from financing activities (non-current only)	(2,178,667)					
Plus: Debt service	1,110,687					
<b>2019 NERC Assessment</b>	<b>\$68,883,995</b>					

<sup>1</sup>As further explained in the discussion of the Working Capital Reserve amount in Exhibit D, the Future Obligations Reserve offsets future, non-current liabilities.

<sup>2</sup>Proceeds from financing activities amount is equal to two-thirds of the amount financed or to be financed in the year. See Exhibit D.

<sup>3</sup>Debt Service amount is equal to Annual Payments for Debt Service less Interest Expense. See Exhibit C.

<sup>4</sup>Represents transactions recorded only on the Statement of Financial Position (balance sheet) and do not impact the Statement of Activities (income statement), including recording of capitalized leases, amortization of future obligations, and funding the 457f plan.

## Table B-2 – Penalties

### Penalty Sanctions

The *NERC Policy – Accounting, Financial Statement and Budgetary Treatment of Penalties Imposed and Received for Violations of Reliability Standard*, as well as § 1107.2 of the ROP, specify that penalty monies received by NERC during the 12 months ended June 30 are to be used in the subsequent budget year to offset assessments. In 2015, the Board approved an updated *Working Capital and Operating Reserves Policy* that was approved by FERC. This updated policy allows NERC, with Board and FERC approval pursuant to § 1107.4 of the ROP, to place penalty funds into an Assessment Stabilization Reserve for use in future years to offset assessments. For the 2019 budget, subject to Board and FERC approval, NERC will deposit \$500k of penalty funds collected during the period July 1, 2017–June 30, 2018 into the Assessment Stabilization Reserve. NERC will also, subject to Board approval, use \$550k from the Assessment Stabilization Reserve to reduce 2019 assessments. The balance held in the Assessment Stabilization Reserve will be used for future assessment offsets.

### Allocation Method

Penalty sanctions released from the Asset Stabilization Reserve to offset 2019 assessments will be allocated to the following statutory programs to reduce assessments: (1) Reliability Standards, (2) Compliance Assurance, (3) Compliance Analysis, Organization Registration and Certification, (4) Compliance Enforcement, (5) RASA, (6) Situation Awareness, (7) Event Analysis, (8) Performance Analysis, (9) E-ISAC (including CRISP), and (10) Training and Education. Penalty sanctions are allocated based on the number of FTEs in the program divided by the aggregate total FTEs in the programs receiving the allocation.

All penalties received during the 12-month period ended June 30, 2018 are detailed in the table below, including the amount and date received.

Penalty Sanctions	Date Received	Amount Received
<b>Penalties received between 7/1/2017 and 6/30/2018</b>		
	November-17	\$ 500,000
		<u>\$ 500,000</u>
Penalties received prior to 6/30/2017, held in the assessment stabilization reserve		<u>\$ 1,571,000</u>
<b>Total penalties available on 1/1/2019 to offset assessments</b>		<u>\$ 2,071,000</u>
<b>Adjustments</b>		
Total penalties released to offset assessments in the 2019 Budget		<u>\$ (550,000)</u>
<b>Total penalties held in Assessment Stabilization Reserve 12/31/2019</b>		<u>\$ 1,521,000</u>

Table B-3 – Outside Funding

Outside Funding Breakdown By Program (Excludes Penalty Sanction)	Budget 2018	Budget 2019	Variance 2019 Budget v 2018 Budget
<b>Reliability Standards</b>			
Workshops	\$ 50,000	\$ 60,000	\$ 10,000
Interest Income Allocation	10,717	18,884	8,166
<b>Total</b>	<b>\$ 60,717</b>	<b>\$ 78,884</b>	<b>\$ 18,166</b>
<b>Compliance Analysis, Registration and Certification</b>			
Interest Income Allocation	\$ 6,495	\$ 12,183	\$ 5,688
<b>Total</b>	<b>\$ 6,495</b>	<b>\$ 12,183</b>	<b>\$ 5,688</b>
<b>Compliance Assurance</b>			
Interest Income Allocation	\$ 13,316	\$ 21,320	\$ 8,005
<b>Total</b>	<b>\$ 13,316</b>	<b>\$ 21,320</b>	<b>\$ 8,005</b>
<b>Compliance Enforcement</b>			
Interest Income Allocation	\$ 8,444	\$ 17,056	\$ 8,612
<b>Total</b>	<b>\$ 8,444</b>	<b>\$ 17,056</b>	<b>\$ 8,612</b>
<b>Reliability Assessment and System Analysis</b>			
Services and Software	\$ -	\$ -	\$ -
Workshops	25,000	25,000	-
Interest Income Allocation	9,743	19,493	9,750
<b>Total</b>	<b>\$ 34,743</b>	<b>\$ 44,493</b>	<b>\$ 9,750</b>
<b>Performance Analysis</b>			
Services and Software	\$ 50,000	\$ 40,000	\$ (10,000)
Interest Income Allocation	6,495	13,401	6,906
<b>Total</b>	<b>\$ 56,495</b>	<b>\$ 53,401</b>	<b>\$ (3,094)</b>
<b>Training, Education, and Personnel Certification</b>			
Testing Fees	\$ 540,000	\$ 540,000	\$ -
Certificate Renewals	650,000	650,000	-
Continuing Education Fees	600,000	600,000	-
Interest Income Allocation	4,060	4,873	814
<b>Total</b>	<b>\$ 1,794,060</b>	<b>\$ 1,794,873</b>	<b>\$ 814</b>
<b>Event Analysis</b>			
Workshops	\$ 40,000	\$ 40,000	\$ 0
Interest Income Allocation	7,794	14,620	6,825
<b>Total</b>	<b>\$ 47,794</b>	<b>\$ 54,620</b>	<b>\$ 6,825</b>
<b>Situation Awareness</b>			
Interest Income Allocation	\$ 3,897	\$ 7,310	\$ 3,413
<b>Total</b>	<b>\$ 3,897</b>	<b>\$ 7,310</b>	<b>\$ 3,413</b>
<b>E-ISAC</b>			
Third Party Funding (CRISP)	\$ 7,324,253	\$ 7,486,353	\$ 162,101
Workshops	70,000	70,000	-
Interest Income Allocation	24,038	55,859	31,822
<b>Total</b>	<b>\$ 7,418,290</b>	<b>\$ 7,612,213</b>	<b>\$ 193,922</b>
<b>Grand Total</b>	<b>\$ 9,444,253</b>	<b>\$ 9,696,353</b>	<b>\$ 252,101</b>

- Interest Income Allocation – The aggregate \$90k increase is the result of higher anticipated interest rates in 2019.
- Third Party Funding (CRISP) – The \$162k increase is due to the increase in NERC costs, which are funded equally by participants in CRISP and through assessments.

**Table B-4 – Personnel**

Personnel	Budget		Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
Salaries	\$ 31,791,098	\$ 33,810,276	\$ 2,019,179	6.4%
Payroll Taxes	1,949,557	2,044,880	95,324	4.9%
Benefits	3,988,886	4,673,208	684,322	17.2%
Retirement	3,239,565	3,423,826	184,261	5.7%
<b>Total</b>	<b>\$ 40,969,105</b>	<b>\$ 43,952,190</b>	<b>\$ 2,983,085</b>	<b>7.28%</b>
<b>FTEs</b>	199.28	204.92	5.64	2.8%
<b>Cost per FTE</b>				
Salaries	\$ 159,530	\$ 164,993	\$ 5,463	3.4%
Payroll Taxes	9,783	9,979	196	2.0%
Benefits	20,016	22,805	2,789	13.9%
Retirement	16,256	16,708	452	2.8%
<b>Total</b>	<b>\$ 205,586</b>	<b>\$ 214,485</b>	<b>\$ 8,899</b>	<b>4.33%</b>

Below is additional information on the components of personnel expense:

- Salaries – Total salary expense is comprised of base salaries, incentive compensation, deferred compensation, employment agency fees, and temporary office expenses. The 2019 budget for base salaries assumes a 3% increase over actual 2018 base salaries and is inclusive of market adjustments and promotions. The 2019 budget for incentive compensation is based on historical actuals and is comparable to prior years. The 2019 budgets for deferred compensation, employment agency fees, and temporary office expenses are generally consistent with 2018.
- Benefits are budgeted to increase 17.2% based on (1) a 7.5% increase in health and dental premiums and (2) an increase in training expenses to support staff development.
- There have been no changes to NERC's retirement plans.

**Table B-5 – Meetings**

Meetings	Budget		Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
Meetings	\$ 1,071,500	\$ 1,056,500	\$ (15,000)	-1.4%
Travel	2,204,000	2,184,000	(20,000)	-0.9%
Conference Calls	119,600	139,900	20,300	17.0%
<b>Total</b>	<b>\$ 3,395,100</b>	<b>\$ 3,380,400</b>	<b>\$ (14,700)</b>	<b>-0.4%</b>

**Table B-6 – Consultants and Contracts**

*NOTE: This table has been replaced by Exhibit B – Consultant and Contract Costs*

**Table B-7 – Rent**

Office Rent	Budget		Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
Office Rent	\$ 2,819,554	\$ 3,122,808	\$ 303,254	10.8%
Maintenance	272,250	212,250	(60,000)	-22.0%
<b>Total</b>	<b>\$ 3,091,804</b>	<b>\$ 3,335,058</b>	<b>\$ 243,254</b>	<b>7.9%</b>

- The \$303k increase in office rent is attributed to facility expansion for the Atlanta office to provide additional meeting space in order to reduce future offsite meeting expenses.
- The \$60k decrease in maintenance costs is due to a historical trend of lower facility maintenance costs.

Table B-8 – Office Costs

Office Costs	Budget		Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
Telephone	\$ 422,387	\$ 312,851	\$ (109,536)	-25.9%
Telephone Answering Service	2,750	1,200	(1,550)	-56.4%
Internet	383,966	241,500	(142,466)	-37.1%
Office Supplies	190,750	175,700	(15,050)	-7.9%
Computer Supplies	106,100	183,500	77,400	73.0%
Software License and Support*	2,954,942	4,140,834	1,185,892	40.1%
Subscription and Publications	194,970	228,420	33,450	17.2%
Dues	66,911	69,611	2,700	4.0%
Postage	15,540	10,540	(5,000)	-32.2%
Express Shipping	26,992	28,992	2,000	7.4%
Copying	115,842	117,642	1,800	1.6%
Audio/Visual and Hardware Lease	640,336	752,529	112,193	17.5%
Equipment Repair/Service Contract	132,497	132,497	-	0.0%
Bank Charges	25,000	25,000	-	0.0%
Merchant Card Fees	86,100	86,100	-	0.0%
<b>Total</b>	<b>\$ 5,365,084</b>	<b>\$ 6,506,917</b>	<b>\$ 1,141,833</b>	<b>21.3%</b>

\*Combined Software and Maintenance/Service Agreement accounts to streamline accounting activities

\*\*Combined Audio/Visual and Hardware Lease accounts to streamline accounting activities

- Telephone – The \$110k decrease is primarily related to lower conference call expenses due to a change in service providers.
- Internet – The \$142k decrease is the result of cost reductions through vendor negotiation.
- Computer Supplies – The \$77k increase, which is partially offset by the decrease in costs for office supplies, is due to higher spending than budget.
- Software License and Support – The \$1.2M increase is primarily the result of annual software subscription and support costs of \$459k for the new CMEP software tool, and a higher historical trend than previously budgeted in non-capital software and support expenses. The increase in 2019 is partially offset by a lower capital expenditure budget in NERC software costs.
- Audio/Visual and Hardware Lease – The \$112k increase is the result of anticipated leases of new computer and hardware equipment.

**Table B-9 – Professional Services**

Professional Services	Budget		Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
Independent Trustee Fees	\$ 1,237,500	\$ 1,410,000	\$ 172,500	13.9%
Trustee Search Fees	100,000	100,000	-	0.0%
Outside Legal	595,500	645,500	50,000	8.4%
Lobbying	72,000	72,000	-	0.0%
Accounting and Auditing Fees	128,000	128,000	-	0.0%
Insurance Commercial	231,000	225,000	(6,000)	-2.6%
Outside Services	173,500	177,100	3,600	2.1%
<b>Total</b>	<b>\$ 2,537,500</b>	<b>\$ 2,757,600</b>	<b>\$ 220,100</b>	<b>8.7%</b>

- Independent Trustee Fees – The \$172k increase in independence trustees fees is due to (1) the results of the 2018 annual review and periodic independent study of trustee compensation, which recommended, subject to approval by the Board, a \$5,000 increase per trustee every year for 2019–2021, and (2) the addition of a trustee per the Board’s decision to search for this new trustee in 2018 instead of 2019. This decision was made to reduce the number of trustee searches that would need to be conducted in 2019 as a result of the coinciding term expirations of two current trustees.
- Outside Legal – The \$50k increase is primarily due to support costs for the E-ISAC long-term strategy.

**Table B-10 – Miscellaneous**

Miscellaneous Expenses	Budget		Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
Miscellaneous Expense	\$ 7,000	\$ 7,000	\$ -	0.0%
Employee Rewards and Recognition	25,500	48,000	22,500	88.2%
Community Responsibility & Employee Engagement	4,500	4,500	-	0.0%
Sponsorships	2,500	22,500	20,000	800.0%
<b>Total</b>	<b>\$ 39,500</b>	<b>\$ 82,000</b>	<b>\$ 42,500</b>	<b>107.6%</b>

- Employee Rewards and Recognition – The \$22k increase is due to additional budgeting for staff spot awards as part of the employee recognition program.
- Sponsorships – The \$20k increase is the result of a reclassification of expenses formerly budgeted under meetings that are more appropriately categorized as sponsorships.



**Table B-11 – Other Non-Operating Expenses**

Other Non-Operating Expenses	Budget		Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
Property and Other Tax Expense	\$ 50,000	\$ 120,000	\$ 70,000	140.0%
Interest Expense	88,878	94,171	5,293	6.0%
<b>Total</b>	<b>\$ 138,878</b>	<b>\$ 214,171</b>	<b>\$ 75,293</b>	<b>54.2%</b>

- Property and Other Tax Expense – The \$70k increase is due to federal excise taxes for parking and mass transit expenses, which is a new expense item and is based on recent changes to federal tax laws.
- Interest Expense – Budgeted interest expense is calculated based on expected draws on the capital financing loans and the projected interest rate on the loans. Refer to *Exhibit C – Capital Financing* for additional information related to debt repayment and the interest expense calculation.

**Table B-12 – Fixed Assets**

Fixed Assets	Budget		Variance	
	2018	2019	2019 Budget v 2018 Budget	Variance %
Depreciation	\$ (1,594,299)	\$ (3,446,022)	\$ (1,851,724)	116.1%
Computer & Software CapEx	2,549,000	3,488,000	939,000	36.8%
Furniture & Fixtures CapEx	-	-	-	0.0%
Equipment CapEx	1,175,000	890,000	(285,000)	-24.3%
Leasehold Improvements	150,000	400,000	250,000	166.7%
<b>Total</b>	<b>\$ 2,279,701</b>	<b>\$ 1,331,978</b>	<b>\$ (947,724)</b>	<b>-41.6%</b>

As discussed in the *Introduction and Executive Summary*, expenditures for fixed assets, excluding the reversal of depreciation expense, are budgeted to be \$904k more in 2019 compared to 2018. This increase is primarily due to increased expenditures on ERO Enterprise software projects and leasehold improvements for the E-ISAC.

**Table B-13 – 2019–2020 Projections**

**NOTE: Refer to the Executive Summary section on page 18**

NORTH AMERICAN ELECTRIC RELIABILITY COPORATION

Statement of Activities, Fixed Asset Expenditures, and Change in Working Capital by Program 2019 Budget	Statutory Activities																
	Statutory Total	Reliability Standards	Compliance Analysis, Organization Registration & Certification	Compliance Assurance	Compliance Enforcement	Reliability Assessment and System Analysis	Performance Analysis	Personnel Certification	Training and Continuing Education	Event Analysis	Situation Awareness	E-ISAC (Including CRISP)	General and Administrative (Includes Executive and Gov't Relations)	Legal and Regulatory	Information Technology	Human Resources	Accounting and Finance
<b>Funding</b>																	
<b>ERO Funding</b>																	
NERC Assessments	\$ 68,883,995	\$ 6,598,401	\$ 4,971,365	\$ 8,835,237	\$ 6,787,076	\$ 7,924,404	\$ 5,132,484	\$ -	\$ 569,839	\$ 5,239,131	\$ 4,266,141	\$ 19,627,897	\$ (1,067,980)	\$ -	\$ -	\$ -	\$ -
Assessment Stabilization Reserve - Penalties	550,000	58,793	37,931	66,379	53,103	60,690	41,724	-	7,586	45,517	22,759	155,517	-	-	-	-	-
<b>Total NERC Funding</b>	<b>\$ 69,433,995</b>	<b>\$ 6,657,194</b>	<b>\$ 5,009,296</b>	<b>\$ 8,901,616</b>	<b>\$ 6,840,179</b>	<b>\$ 7,985,094</b>	<b>\$ 5,174,208</b>	<b>\$ -</b>	<b>\$ 577,426</b>	<b>\$ 5,284,648</b>	<b>\$ 4,288,899</b>	<b>\$ 19,783,414</b>	<b>\$ (1,067,980)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
Third-Party Funding (CRISP)	\$ 7,486,353	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7,486,353	\$ -	\$ -	\$ -	\$ -	\$ -
Testing Fees	1,790,000	-	-	-	-	-	-	1,190,000	600,000	-	-	-	-	-	-	-	-
Services & Software	40,000	-	-	-	-	-	40,000	-	-	-	-	-	-	-	-	-	-
Workshops	195,000	60,000	-	-	-	25,000	-	-	-	40,000	-	70,000	-	-	-	-	-
Interest	185,000	18,884	12,183	21,320	17,056	19,493	13,401	2,437	2,437	14,620	7,310	55,859	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Funding (A)</b>	<b>\$ 79,130,349</b>	<b>\$ 6,736,078</b>	<b>\$ 5,021,479</b>	<b>\$ 8,922,937</b>	<b>\$ 6,857,235</b>	<b>\$ 8,029,587</b>	<b>\$ 5,227,610</b>	<b>\$ 1,192,437</b>	<b>\$ 1,179,862</b>	<b>\$ 5,339,268</b>	<b>\$ 4,296,209</b>	<b>\$ 27,395,627</b>	<b>\$ (1,067,980)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Expenses</b>																	
<b>Personnel Expenses</b>																	
Salaries	\$ 33,810,276	\$ 2,031,580	\$ 1,596,696	\$ 2,526,754	\$ 1,991,052	\$ 2,588,128	\$ 1,581,929	\$ 258,133	\$ 203,480	\$ 1,903,950	\$ 865,683	\$ 6,297,594	\$ 3,171,684	\$ 2,668,537	\$ 3,636,270	\$ 1,323,436	\$ 1,165,371
Payroll Taxes	2,044,880	134,348	98,909	166,873	126,256	156,888	104,052	17,873	16,740	113,420	58,475	384,429	153,490	144,000	229,379	72,392	67,355
Benefits	4,673,208	297,782	232,391	441,671	198,145	355,375	186,375	32,946	45,441	264,308	182,721	825,677	385,794	321,006	505,765	233,718	164,092
Retirement Costs	3,423,826	224,171	178,558	278,308	218,788	285,005	176,656	28,276	22,891	210,479	95,435	672,423	110,027	288,847	398,226	111,126	124,609
<b>Total Personnel Expenses</b>	<b>\$ 43,952,190</b>	<b>\$ 2,687,881</b>	<b>\$ 2,106,554</b>	<b>\$ 3,413,605</b>	<b>\$ 2,534,240</b>	<b>\$ 3,385,397</b>	<b>\$ 2,049,012</b>	<b>\$ 337,228</b>	<b>\$ 288,553</b>	<b>\$ 2,492,158</b>	<b>\$ 1,202,314</b>	<b>\$ 8,180,123</b>	<b>\$ 3,820,995</b>	<b>\$ 3,422,391</b>	<b>\$ 4,769,639</b>	<b>\$ 1,740,671</b>	<b>\$ 1,521,427</b>
<b>Meeting Expenses</b>																	
Meetings	\$ 1,056,500	\$ 105,000	\$ 2,250	\$ 200,000	\$ 2,000	\$ 121,000	\$ 11,000	\$ 32,000	\$ 12,250	\$ 81,500	\$ 2,000	\$ 127,000	\$ 332,500	\$ 6,000	\$ 7,000	\$ 10,000	\$ 5,000
Travel	2,184,000	220,000	150,500	375,000	47,500	250,000	80,000	7,000	10,000	150,000	33,000	291,000	363,000	55,000	72,000	5,000	75,000
Conference Calls	139,900	18,000	5,400	8,000	2,400	6,500	3,600	1,200	-	-	-	-	20,400	2,400	72,000	-	-
<b>Total Meeting Expenses</b>	<b>\$ 3,380,400</b>	<b>\$ 343,000</b>	<b>\$ 158,150</b>	<b>\$ 583,000</b>	<b>\$ 51,900</b>	<b>\$ 377,500</b>	<b>\$ 94,600</b>	<b>\$ 40,200</b>	<b>\$ 22,250</b>	<b>\$ 231,500</b>	<b>\$ 35,000</b>	<b>\$ 418,000</b>	<b>\$ 715,900</b>	<b>\$ 63,400</b>	<b>\$ 151,000</b>	<b>\$ 15,000</b>	<b>\$ 80,000</b>
<b>Operating Expenses</b>																	
Consultants & Contracts	\$ 15,043,318	\$ 50,000	\$ -	\$ 50,000	\$ 161,000	\$ 625,000	\$ 653,565	\$ 162,000	\$ 335,000	\$ -	\$ 1,280,990	\$ 8,278,000	\$ 240,000	\$ -	\$ 2,042,763	\$ 690,000	\$ 475,000
Office Rent	3,335,058	-	-	-	-	-	-	-	-	-	-	3,335,058	-	-	-	-	-
Office Costs	6,506,917	38,200	16,600	247,400	230,050	217,710	76,290	76,400	105,624	47,500	93,600	903,196	541,797	39,000	3,722,630	5,100	145,820
Professional Services	2,757,600	-	-	-	-	-	-	-	-	-	-	250,000	1,764,000	353,500	-	59,100	331,000
Miscellaneous	82,000	500	500	500	500	500	500	500	500	500	500	23,000	500	500	52,500	500	
Depreciation	3,446,022	257,774	111,677	-	105,014	225,375	295,995	-	1,919	85,582	8,948	118,296	378,405	1,857,039	-	-	-
<b>Total Operating Expenses</b>	<b>\$ 31,170,916</b>	<b>\$ 346,474</b>	<b>\$ 128,777</b>	<b>\$ 297,900</b>	<b>\$ 496,564</b>	<b>\$ 1,068,585</b>	<b>\$ 1,026,350</b>	<b>\$ 238,400</b>	<b>\$ 443,043</b>	<b>\$ 133,582</b>	<b>\$ 1,384,038</b>	<b>\$ 9,549,992</b>	<b>\$ 6,282,260</b>	<b>\$ 393,000</b>	<b>\$ 7,622,932</b>	<b>\$ 806,700</b>	<b>\$ 952,320</b>
<b>Total Direct Expenses</b>	<b>\$ 78,503,506</b>	<b>\$ 3,377,356</b>	<b>\$ 2,393,481</b>	<b>\$ 4,294,505</b>	<b>\$ 3,082,704</b>	<b>\$ 4,831,482</b>	<b>\$ 3,169,962</b>	<b>\$ 615,828</b>	<b>\$ 753,846</b>	<b>\$ 2,857,240</b>	<b>\$ 2,621,352</b>	<b>\$ 18,148,115</b>	<b>\$ 10,819,155</b>	<b>\$ 3,878,791</b>	<b>\$ 12,543,571</b>	<b>\$ 2,562,371</b>	<b>\$ 2,553,747</b>
<b>Indirect Expenses</b>	<b>\$ -</b>	<b>\$ 3,446,152</b>	<b>\$ 2,223,324</b>	<b>\$ 3,890,817</b>	<b>\$ 3,112,654</b>	<b>\$ 3,557,318</b>	<b>\$ 2,445,656</b>	<b>\$ 444,665</b>	<b>\$ 444,665</b>	<b>\$ 2,667,989</b>	<b>\$ 1,333,994</b>	<b>\$ 9,004,572</b>	<b>\$ (11,033,326)</b>	<b>\$ (3,878,791)</b>	<b>\$ (12,543,571)</b>	<b>\$ (2,562,371)</b>	<b>\$ (2,553,747)</b>
<b>Other Non-Operating Expenses</b>	<b>\$ 214,171</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 214,171</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (B)</b>	<b>\$ 78,717,677</b>	<b>\$ 6,823,508</b>	<b>\$ 4,616,805</b>	<b>\$ 8,185,322</b>	<b>\$ 6,195,358</b>	<b>\$ 8,388,800</b>	<b>\$ 5,615,618</b>	<b>\$ 1,060,493</b>	<b>\$ 1,198,511</b>	<b>\$ 5,525,228</b>	<b>\$ 3,955,347</b>	<b>\$ 27,152,687</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ (0)</b>	<b>\$ 0</b>
<b>Change in Assets</b>	<b>\$ 412,672</b>	<b>\$ (87,430)</b>	<b>\$ 404,674</b>	<b>\$ 737,614</b>	<b>\$ 661,877</b>	<b>\$ (359,213)</b>	<b>\$ (388,009)</b>	<b>\$ 131,944</b>	<b>\$ (18,649)</b>	<b>\$ (185,960)</b>	<b>\$ 340,863</b>	<b>\$ 242,940</b>	<b>\$ (1,067,980)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 0</b>	<b>\$ (0)</b>
<b>Fixed Assets</b>																	
Depreciation	\$ (3,446,022)	\$ (257,774)	\$ (111,677)	\$ -	\$ (105,014)	\$ (225,375)	\$ (295,995)	\$ -	\$ (1,919)	\$ (85,582)	\$ (8,948)	\$ (118,296)	\$ (378,405)	\$ -	\$ (1,857,039)	\$ -	\$ -
Computer & Software CapEx	3,488,000	300,000	600,000	884,000	884,000	-	-	-	-	-	400,000	300,000	-	-	120,000	-	-
Furniture & Fixtures CapEx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment CapEx	890,000	-	-	-	-	-	-	-	-	-	-	-	-	-	890,000	-	-
Leasehold Improvements	400,000	-	-	-	-	-	-	-	-	-	-	400,000	-	-	-	-	-
Allocation of Fixed Assets	(0)	(129,656)	(83,649)	(146,386)	(117,109)	(133,838)	(92,014)	(16,730)	(16,730)	(100,379)	(50,189)	(338,764)	378,405	-	847,039	-	-
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>\$ 1,331,978</b>	<b>\$ (87,430)</b>	<b>\$ 404,674</b>	<b>\$ 737,614</b>	<b>\$ 661,877</b>	<b>\$ (359,213)</b>	<b>\$ (388,009)</b>	<b>\$ (16,730)</b>	<b>\$ (18,649)</b>	<b>\$ (185,960)</b>	<b>\$ 340,863</b>	<b>\$ 242,940</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>TOTAL BUDGET (=B+C)</b>	<b>\$ 80,049,655</b>	<b>\$ 6,736,078</b>	<b>\$ 5,021,479</b>	<b>\$ 8,922,937</b>	<b>\$ 6,857,235</b>	<b>\$ 8,029,587</b>	<b>\$ 5,227,610</b>	<b>\$ 1,043,763</b>	<b>\$ 1,179,862</b>	<b>\$ 5,339,268</b>	<b>\$ 4,296,209</b>	<b>\$ 27,395,627</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ (0)</b>	<b>\$ 0</b>
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ (919,306)</b>	<b>\$ 0</b>	<b>\$ -</b>	<b>\$ 0</b>	<b>\$ -</b>	<b>\$ 0</b>	<b>\$ (0)</b>	<b>\$ 148,674</b>	<b>\$ (0)</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ -</b>	<b>\$ (1,067,980)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 0</b>	<b>\$ (0)</b>
<b>FTEs</b>	<b>204.92</b>	<b>14.57</b>	<b>9.40</b>	<b>16.45</b>	<b>13.16</b>	<b>15.04</b>	<b>10.34</b>	<b>1.88</b>	<b>1.88</b>	<b>11.28</b>	<b>5.64</b>	<b>37.60</b>	<b>14.10</b>	<b>13.16</b>	<b>23.50</b>	<b>9.40</b>	<b>7.52</b>

## Section C – Non-Statutory Activity

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NERC has no non-statutory activities.

# Exhibit A – Application of NERC Section 215 Criteria

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## DISCUSSION OF HOW THE NERC MAJOR ACTIVITIES IN THE 2019 BUSINESS PLAN AND BUDGET MEET THE NERC WRITTEN CRITERIA FOR DETERMINING WHETHER A RELIABILITY ACTIVITY IS ELIGIBLE TO BE FUNDED UNDER FEDERAL POWER ACT SECTION 215

### I. Introduction

This Exhibit discusses how the major activities in NERC’s 2019 Business Plan and Budget meet the NERC written criteria for determining whether a reliability activity is eligible to be funded under §215 of the Federal Power Act (“FPA §215”). This Exhibit is intended to satisfy Recommendation No. 38 resulting from the financial performance of NERC conducted by the Commission’s Division of Audits (“DA”) in 2012-2013 and adopted by the Commission in its November 2, 2012 order on NERC’s 2013 Business Plan and Budget.<sup>37</sup> NERC submitted the written criteria to the Commission in a compliance filing dated February 21, 2013 in Docket No. FA11-21-000.<sup>38</sup> The Commission approved the NERC written criteria, with modifications, in an order issued in that docket on April 18, 2013.<sup>39</sup> The NERC written criteria as used in this Exhibit incorporate the modifications specified in the Compliance Order.<sup>40</sup>

### II. Reliability Standards Program 2018 Major Activities

The major activities of the Reliability Standards Program are described at pages 20–22 of the 2019 Business Plan and Budget. The Reliability Standards Program carries out the ERO’s responsibility to develop, adopt, obtain approval of, and modify as and when appropriate, mandatory Reliability Standards to assure the Bulk Electric System (BES) is planned, operated, maintained, and secured to minimize risks of cascading failures, avoid damages to major equipment, or limit interruptions. The major activity areas for this program include (1) providing project management and leadership to the reliability standard development process to deliver high-quality, continent-wide reliability standards, both new and modified, to address reliability risks identified through the Reliability Risk Management Process (RRMP), including standard development outreach activities, facilitation of drafting team activities, drafting support, assisting drafting teams in adhering to the processes in the *Standard Processes Manual*, and ensuring that the quality of documents produced are appropriate for approval by industry and the NERC Board; (2) facilitating continent-wide industry engagement in the standard development processes; and (3) conducting industry balloting on standards, disseminating information on standards and the standard development processes, and supporting regulatory filings and proceedings relating to standards. Additionally, the Reliability Standards Program provides technical advice and final quality review for Regional Entity standards development processes, presents proposed regional standards to the NERC Board, and prepares submissions for approval of regional standards to the applicable regulatory authorities in the U.S. and Canada.

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<sup>37</sup> *North American Electric Reliability Corporation, Order Accepting 2013 Business Plan and Budget of the North American Electric Reliability Corporation and Ordering Compliance Filing*, 141 FERC ¶ 61,086 (2012) (“2013 Budget Order”). Recommendation 38, as adopted in the 2013 Budget Order, is: “In its annual business plan and budget filings, [NERC should] provide an explanation as to why the proposed activities to be undertaken by each program area for the budget year are statutory, including, at a minimum: a description and the purpose of the major activities to be taken by each program area and an explanation for why the activity is a statutory activity.” *Id.* at P 16.

<sup>38</sup> *Compliance Filing of the North American Electric Reliability Corporation in Response to Paragraph 30 of November 2, 2012 Commission Order – NERC Written Criteria for Determining Whether a Reliability Activity is Eligible to be Funded Under Federal Power Act Section 215*, filed February 1, 2013 in Docket No. FA 11-21-000 (“February 1, 2013 Compliance Filing”).

<sup>39</sup> *North American Electric Reliability Corporation, Order on Compliance*, 143 FERC ¶ 61,052 (2013) (“Compliance Order”).

<sup>40</sup> For ease of reference, the complete NERC written criteria, as modified in accordance with the Compliance Order, are provided at the end of this Exhibit.

For 2019, the major activities of the Reliability Standards Program will continue to focus on (1) selection of standards projects to be undertaken based on the nature of the reliability issue, and whether a standard or another solution is most appropriate to address the issue; (2) addressing Commission directives and responding to Commission orders as necessary through the standards process; (3) implementing the results of the comprehensive review of standards conducted in 2017 and completed in 2018 by initiating projects to modify or retire standards; and (4) facilitating smooth transitions to new standards, including by working with the NERC Compliance Assurance, Compliance Enforcement, Organization Registration, Reliability Assurance, Reliability Assessment and System Analysis (RASA), and Performance Analysis groups to develop guidelines, webinars, and other activities to support auditor and industry training for new standards. In 2019, the Reliability Standards Program, in conjunction with stakeholders, will determine whether there is a need to make further improvements to Reliability Standards through periodic reviews that include a measured review of the contents of standards, considering whether the requirements could more effectively mitigate risks to the Bulk Power System (BPS); whether the standards are results-based and drafted with high quality; whether the standards are concise or if the number of requirements could be reduced; and whether compliance expectations are clear.

The major activities of the Reliability Standards Program satisfy the following criteria:

- I.A: Is the activity necessary or appropriate for Reliability Standards development projects pursuant to the NERC Rules of Procedure (ROP)?
- I.B: Is the activity necessary or appropriate for providing guidance and assistance to Regional Entities in carrying out Regional Reliability Standards development activities?
- I.C: Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information for Reliability Standards development, including for purposes of identifying areas in which new Reliability Standards could be developed, existing Reliability Standards could be revised, or existing Reliability Standards could be eliminated?
- I.D: Is the activity necessary or appropriate for the provision of training and education concerning Reliability Standards development processes, procedures, and topics for/to (i) NERC personnel, (ii) Regional Entity personnel, (iii) industry personnel?
- II.F.1: Is the activity necessary or appropriate for the provision of training, education and dissemination of information for/to (i) NERC personnel, (ii) Regional Entity personnel, and (iii) industry personnel with respect to compliance monitoring and enforcement topics and topics concerning reliability risks identified through compliance monitoring and enforcement activities, such as (1) Requirements of Reliability Standards, including how to comply and how to demonstrate compliance? This includes development of guidance and interpretation documents.
- IV: Is the activity one that was required or directed by a Commission order issued pursuant to §215? (Reliability Standards development projects are often initiated in response to directives in Commission orders).
- V: Is the activity one that is required or specified by, or carries out, the provisions of NERC's ROP that have been approved by the Commission as "Electric Reliability Organization Rules" (defined in 18 C.F.R. §39.1) pursuant to FPA §215(f)? (The applicable ROP

provisions for the Reliability Standards Program are §300 and Appendix 3A.)

- VI: Is the activity necessary or appropriate for the supervision and oversight of Regional Entities in the performance of their delegated responsibilities in accordance with FPA §215, 18 C.F.R. Part 39, the Commission-approved delegation agreement between NERC and the Regional Entity, the NERC ROP, and applicable provisions of Commission orders?
- IX. Is the activity necessary or appropriate for NERC and Regional Entity committees, subcommittees and working groups engaged in activities encompassed by one or more of the other criteria?
- X. Is the activity necessary or appropriate for the analysis and evaluation of activities encompassed by one or more of the other criteria for the purpose of identifying means of performing the activities more effectively and efficiently?

**III. Compliance Assurance, Compliance Analysis, Organization Registration and Certification, and Compliance Enforcement Program Area 2019 Major Activities**

The major activities of the Compliance Assurance, Compliance Analysis, Organization Registration and Certification, and Compliance Enforcement Program Area are described on pages 24-27, 29-31, and 33-37 of the 2019 Business Plan and Budget. This Program Area is comprised of three operational groups: (1) Compliance Assurance, (2) Compliance Analysis, Organization Registration and Certification, and (3) Compliance Enforcement.

The Compliance Assurance group works collaboratively with the Regional Entities to ensure effective implementation of risk-based compliance monitoring under the Compliance Monitoring and Enforcement Program (“CMEP”) across the entire ERO Enterprise. This group’s activities include the following major activities and functions: (1) oversight of the Regional Entities’ implementation of the risk-based compliance monitoring program and the NERC Rules of Procedure (ROP), including ensuring that Regional Entities monitor registered entities for compliance according to their specific facts and circumstances, developing customized compliance oversight plans (COPs) for each registered entity based on its inherent risk assessment (IRA), evaluation of controls in place to mitigate the inherent risks, and other factors; (2) overseeing Regional Entities’ IRAs of registered entities; (3) oversight of the quality implementation of the risk-based compliance monitoring program; (4) development and execution of the annual CMEP Implementation Plan; (5) oversight of use of necessary compliance-related processes, procedures, IT platforms, tools and templates; (6) development and delivery of education and training for ERO Enterprise staff; (7) training and outreach activities for the Critical Infrastructure Protection (CIP) Reliability Standards; (8) coordinating with the NERC Standards department to assist in smooth transition for standards from development to enforceability and to provide feedback on risks seen in the field that are not addressed by a standard, as well as information on whether a standard is too broad; and (9) supporting Regional Entity and industry committees, working groups and task forces, such as the ERO Compliance Monitoring Group, NERC Compliance and Certification Committee (CCC) and NERC Critical Infrastructure Protection Committee (CIPC). Compliance Assurance provides training to Regional Entity staff on the important elements of risk-based compliance monitoring. Compliance Assurance is also participating, in conjunction with the Regional Entities, on the development and implementation of a common CMEP tool through the CMEP Technology Project.

The ongoing and new major activities of the Compliance Assurance group for 2019 will include: (1) continuing to mature the risk-based compliance program, including ongoing oversight of the risk-based

CMEP, IRAs, internal controls, coordinated oversight of Multi-Region Registered Entities, and ensuring that COPs are addressing the relevant risks; (2) working with NERC Enforcement and IT and with Regional Entity staffs on development of the CMEP Process tool; (3) supporting the continued successful implementation of CIP V5 standards and subsequent enhancements as they become effective; (4) monitoring and supporting effective implementation and monitoring of the Physical Security Reliability Standard; (5) enhancing and implementing training to support monitoring of compliance with Reliability Standards, integrating principles from the Compliance Monitoring Competency Guide; (6) continuing to provide feedback to the Standards Program through integration of the standards and compliance functions for clear stakeholder implementation, and feedback on risks seen on the field that are not addressed by a standard or where a standard is too broad, supporting this effort through a common set of Reliability Standard Audit Worksheets (RSAWs), guidance, and outreach; (7) supporting international CMEP activities including reliability and security subject matter expertise and outreach; and (8) providing support and leadership to applicable committees and subcommittees including the CIPC and the CCC. Additionally, in conjunction with the dissolution of the SPP Regional Entity, NERC, through the Compliance Assurance Group, will take responsibility for the Compliance Enforcement Authority (CEA) activities with respect to the SPP Regional Transmission Organization (RTO) registered functions. NERC expects to assume responsibility as the CEA for the SPP RTO in the second half of 2018, and anticipates that this responsibility will continue for at least the ensuing two years.

Compliance Analysis, Organization Registration and Certification is comprised of two groups: Registration and Reliability Assurance (the latter group includes Compliance Analysis and Organization Certification). These groups are responsible for a range of requirements and activities embodied in Section 500 and Appendices 5A and 5B of the NERC ROP, including providing technical resource support to the standards development, compliance monitoring, and enforcement functions. Major activities of these groups include: (1) Registration - identifying and registering BES users, owners, and operators that are responsible for compliance with Commission-approved Reliability Standards; (2) Certification - evaluation and certification of the competency of Reliability Coordinators (RC), Balancing Authorities (BA), and Transmission Operators (TOP) to perform their respective responsibilities and that they continue to maintain these capabilities; (3) Reliability assurance - conducting activities to reasonably assure the ERO that certain actions have been taken as reported in response to NERC Alerts or guidance to industry; (4) Oversight - providing oversight of Regional Entity implementation of regional registration, compliance, certification, investigation, and complaint programs and processes; (5) Investigations - conducting investigations to identify possible violations of Reliability Standards in response to complaints, BES disturbances, or other triggers, including participating on all Regional Entity-led investigations and as observers as requested on Commission-led reliability investigations and inquiries; (6) Compliance evaluations - working with Regional Entity staff to confirm that qualified events and disturbances are evaluated against the relevant Reliability Standards and to ensure formal compliance monitoring occurs if indicated; and (7) Complaints - addressing formal complaints that allege violations of Reliability Standards. Specific major activities of Compliance Analysis, Organization Registration and Certification for 2018 will include continuing to conduct NERC-led panels on registration requests; continuing to implement registration program improvements and certification program improvements identified in prior years, including conducting training as necessary; and evaluating BES disturbances and events for potential gaps in compliance monitoring or reliability standards.

The Registration group continues to implement areas for improvement in registration processes identified in 2016, including conducting NERC-led Review Panels on registration requests and identifying process improvements; changes to applicable provisions of the NERC ROP; reviewing the Coordinated Functional Registration processes and model efficiencies; supporting the entity registration xRM data base (a centralized entity registration system) initiative; conducting a thorough review of the NERC website for

registration-related modifications; and continuing regional Entity oversight activities. In addition, the Registration group is assisting in managing the transition of registered entities formerly in the SPP Regional Entity (SPP RE) to SERC and Midwest Reliability Organization (MRO), due to the termination of the SPP Regional Delegation Agreement and dissolution of the SPP RE.

During 2019, the Registration and Reliability Assurance groups will continue to conduct NERC-led Panel Reviews on registration requests; continue to implement Registration program improvements including conducting additional actions identified by this project; begin the registration xRM initiative; continue to monitor the transition of registered entities from the SPP RE to SERC and MRO; monitor and support changing footprints, functional relationships, and model changes in the Western interconnection, especially with respect to the RC role; ensure proper oversight of Regional Entities for the Certification program; respond to industry changes requiring certification review, with emphasis on control center relocations, Energy Management System replacements, and RC, BA and TOP footprint changes; evaluate BES disturbances and events for potential gaps in compliance monitoring or Reliability Standards; and support the ongoing joint Commission, NERC and Regional Entity restoration and recovery initiatives.

The Compliance Enforcement group is responsible for overseeing enforcement processes, the application of Penalties or sanctions, and activities to mitigate and prevent recurrence of noncompliance with Reliability Standards. This group works collaboratively with the Regional Entities to ensure consistent and effective implementation of the risk-based CMEP. It also focuses on ensuring that the ERO Enterprise dedicates resources to the matters that pose the greatest risk to reliability. The Compliance Enforcement group monitors Regional Entities' enforcement processes and provides oversight over the outcomes of such processes, to ensure due process, identify best practices and process efficiency opportunities, and promote consistency among Regional Entities' business practices; collects and analyzes compliance enforcement data and trends to assist with identification of emerging risks and help to inform development of enforcement policy and processes; files Notices of Penalty ("NOP") and other submittals associated with noncompliance discovered through Regional Entity compliance monitoring and enforcement activities; processes and files NOPs and other submittals discovered through NERC-led investigations and audits; collaborates with other NERC departments, including Reliability Assurance, Reliability Standards, and Event Analysis; and delivers training to ERO Enterprise staff and registered entities. Compliance Enforcement also conducts other outreach activities that focus on self-logging, compliance exceptions, and risk assessment of noncompliances.

Compliance Enforcement continues to identify areas for improvement and promotion of consistency through training, guidance, or other adjustments. Compliance Enforcement performs oversight of the Regional Entity enforcement programs through review of the processes, supporting evidence and other information provided by the Regional Entities, and communicates findings and recommendation to the Regional Entities to ensure consistent implementation of the CMEP. Compliance Enforcement provides training to Regional Entity staffs on the most important elements of risk-based enforcement. In addition, Compliance Enforcement is participating in developing and implementing a common CMEP tool through the CMEP Technology Project. During 2019, the major activities of the Compliance Enforcement group will include continuing to refine and improve the risk-based CMEP processes; continuing to implement in a transparent manner the risk-focused ERO Enterprise enforcement philosophy; expanding the feedback loop of information from Compliance Enforcement to Standards and other program areas; and working with Compliance Assurance, IT, and Regional Entities to develop application business requirements and test business functionality for the new CMEP tool.

The major activities of the Compliance Assurance, Compliance Analysis, Organization Registration and Certification, and Compliance Enforcement Program Area satisfy the following criteria:



- I.A: Is the activity necessary or appropriate for Reliability Standards development projects pursuant to the NERC ROP?
- I.C: Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information for Reliability Standards development, including for purposes of identifying areas in which new Reliability Standards could be developed, existing Reliability Standards could be revised, or existing Reliability Standards could be eliminated?
- II.A: Is the activity necessary or appropriate for the identification and registration of users, owners, and operators of the Bulk Power System that are required to comply with Requirements of Reliability Standards applicable to the reliability functions for which they are registered?
- II.B: Is the activity necessary or appropriate for the Certification of Reliability Coordinators, Transmission Operators and Balancing Authorities as having the requisite personnel, qualifications and facilities and equipment needed to perform these reliability functions in accordance with the applicable Requirements of Reliability Standards?
- II.D: Is the activity necessary or appropriate for conducting, participating in or overseeing compliance monitoring and enforcement activities pursuant to the NERC ROP and (through the Regional Entities) the Commission-approved delegation agreements?
- II.E: Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information to monitor and enforce compliance with Reliability Standards, including evaluating the effectiveness of current compliance monitoring and enforcement processes, the need for new or revised compliance monitoring and enforcement processes, and the need for new or different means of training and education on compliance with Reliability Standards.
- II.F: Is the activity necessary or appropriate for the provision of training, education and dissemination of information for/to (i) NERC personnel, (ii) Regional Entity personnel, and (iii) industry personnel with respect to compliance monitoring and enforcement topics and topics concerning reliability risks identified through compliance monitoring and enforcement activities, such as: (1) Requirements of Reliability Standards, including how to comply and how to demonstrate compliance? This includes development of guidance and interpretation documents. (2) Compliance monitoring and enforcement processes, including how to conduct them, how to participate in them, and the expectations for the process? This includes development of guidance documents. (3) Disseminating, through workshops, webinars, Advisories/Recommendations/Essential Actions, and other publications, “lessons learned” information on compliance concerns and reliability risks obtained through compliance monitoring and enforcement activities, monitoring and investigation of Bulk Power System major events, off-normal occurrences and near miss events, and other Bulk Power System monitoring activities? (4) Registered Entity internal processes for compliance with Reliability Standards, such as development, implementation and maintenance of internal reliability compliance programs?
- V: Is the activity one that is required or specified by, or carries out, the provisions of NERC’s ROP that have been approved by the Commission as “Electric Reliability Organization

Rules” (defined in 18 C.F.R. §39.1) pursuant to FPA §215(f)? (The applicable ROP provisions for these major activities are §400 and 500 and Appendices 4B, 4C, 5A, 5B and 5C.)

- VI: Is the activity necessary or appropriate for the supervision and oversight of Regional Entities in the performance of their delegated responsibilities in accordance with FPA §215, 18 C.F.R. Part 39, the Commission-approved delegation agreement between NERC and the Regional Entity, the NERC ROP, and applicable provisions of Commission orders?
- IX: Is the activity necessary or appropriate for NERC and Regional Entity committees, subcommittees and working groups engaged in the activities encompassed by one or more of the other criteria?
- X: Is the activity necessary or appropriate for the analysis and evaluation of activities encompassed by one or more of the other criteria for the purpose of identifying means of performing the activities more effectively and efficiently?

#### **IV. Reliability Assessment and System Analysis Program 2019 Major Activities**

The major activities of the Reliability Assessment and System Analysis (RASA) Program are described at pages 39-44 of the 2019 Business Plan and Budget. The RASA Program is comprised of the Reliability Assessment, System Analysis, and Advanced Analytics and Modeling (AAM) groups. The RASA Program carries out the ERO’s responsibility to conduct assessments of the reliability and adequacy of the BES to provide insight and guidance about reliability risks, which provide a foundation for development of new, or modifications to existing, Reliability Standards, or other initiatives focused on enhancing reliability. The majority of RASA’s activities directly address the risk priorities established by the NERC Reliability Issues Steering Committee (RISC). RASA focuses on developing a technical framework and understanding of the emerging reliability risks facing the industry, and providing guidance and insights to stakeholders. The principal activity areas of the RASA Program include: independent assessments and reports on the overall reliability and adequacy of the BES, and associated reliability risks that could impact the short-term, mid-term and long-term planning horizons and other reliability issues requiring an in-depth analysis; support for development and improvement of long-term sustainable interconnection-based power flow, dynamic and load models that exhibit the accuracy and fidelity reflecting actual BES reliability performance and dynamic conditions; interconnection-wide analysis of steady-state and dynamic conditions, including frequency, Essential Reliability Services (ERS), stability, short circuit ratio, and oscillatory behavior aspects; advancement of industry and the ERO’s understanding of power system characteristics and behaviors by gathering larger phasor measurement unit datasets of data for advanced data analytics and modeling improvements; assurance oversight that electrical elements necessary for reliable operation of the BES are identified, requiring these elements to follow applicable Reliability Standards; and establishing reliability leadership and consistent, technically sound insights and recommendations that position industry and policy-makers to enhance reliability through effective outreach and communications.

The RASA Program works with industry leaders to create a reliability strategy that is relevant, timely, and effective at addressing the most important reliability risks, through reviewing and addressing key priority risks identified by the RISC; synthesizing information identified through analysis and assessment efforts; extracting and prioritizing the associated reliability risks; sharing and integrating risk analysis insights across the ERO Enterprise; and translating that knowledge into actionable guidance and recommendations for NERC management, the Board, industry, and government policy makers. RASA provides reports and recommendations regarding anticipated conditions that could impact reliability,

security and stability of the BPS. RASA conducts reliability assessments to evaluate the expected reliability of the BES through extensive deterministic and probabilistic analyses to identify potential reliability risks and mitigation approaches. Key assessments include the Long-Term Reliability Assessment (supplemented by the Probabilistic Assessment), Summer and Winter Reliability Assessments, and Special Reliability Assessments (selected based on high priority/high risk issues that require an independent assessment from the ERO). A significant ongoing effort focuses on the continued development of effective ERS. As part of its reliability assessment activities, RASA collects, maintains, and annually publishes the Electricity Supply and Demand database, which includes 10-year projections for the North American BPS.

The System Analysis group of RASA focuses on understanding the technical behavior of the North American grid, as the foundation for identifying crucial aspects of performance that are important for sustaining overall reliability. The System Analysis Group focuses on power system analysis to understand and evaluate BPS characteristics, behavior and performance due to the changing resource mix and integration of new technology; the use of advance software capabilities to conduct power system analysis; and providing technical support, implementation and outreach to industry. The System Analysis activities also support the following objectives: leading and improving NERC’s analytical capabilities to address a broad range of engineering topics; conducting analysis and assessments in response to Commission directives; supporting Reliability Standards development with subject matter expertise; supporting and leading technical analysis of emerging risks requiring advanced analytics and interconnection-wide assessment; and conducting detailed forensic analyses of significant system disturbances.

The AAM group of RASA focuses on emerging reliability risks to the BPS through advanced system analysis techniques and modeling capabilities, working collaboratively with NERC stakeholders including the Planning Committee (PC), Operating Committee (OC), and technical subgroups. The AAM’s key focus areas include: the State of Modeling Report; inverter-based resource performance; integration of increased levels of distributed energy resources; synchrophasor technology; power plant modeling verification; dynamic load modeling; analysis of the changing nature of end-use loads; assessments of case quality and fidelity for interconnection-wide cases released by Reliability Standard MOD-032 designees; addressing deficiencies in interconnection-wide models and providing industry education on key modeling topics; and coordinating with the PC’s Methods for Establishing IROLs Task Force and supporting improvements to methods, practices and tools used for establishing Interconnection Reliability Operating Limits.

RASA coordinates and administers the activities of the NERC PC and its subgroups. RASA also coordinates with Regional Entity counterparts through the ERO Reliability Assessment and Performance Analysis Group to collaborate on and provide oversight for reliability assessment and reliability risk analysis functions. RASA also works closely with other organizations such as the Electric Power Research Institute (EPRI), Department of Energy (DOE), Institute of Electrical and Electronics Engineers (IEEE), Institute of Nuclear Power Operations (INPO), North American Transmission Forum (NATF), North American Generation Forum (NAGF), Canadian Electricity Association (CEA), Interstate Natural Gas Association of America, and Natural Gas Supply Association, on a number of energy industry reliability issues such as geomagnetic disturbances, vegetation management, variable generation integration, and interdependency of gas and electric systems.

The ongoing and new major activities of the RASA Program for 2019, in support of goals and objectives in the *ERO Enterprise Operating Plan*, include: (1) ensuring that the Inverter-Based Resource Performance Task Force completes its scope of work on schedule and implements the recommendations needed to maintain reliability, including addressing any gaps in Reliability Standards; collaborating with Planning

Coordinators to expand development of interconnection-wide models with expected dispatches to support effective long-term planning assessments; working with stakeholders to develop and share knowledge and information supporting BPS resilience; improving resource adequacy assessments with increased probabilistic and risk analysis; conducting interconnection-wide analysis of steady-state and dynamic conditions, including frequency, ERS, stability, short circuit ratio, and oscillatory behavior aspects to support NERC’s reliability assessments and improve industry planning; performing model validations at the interconnection level and comparing with internal transmission owner models; gathering additional system performance data (e.g., on balancing and frequency performance, renewables, and ERS) to advance analytics and improve modeling; increasing the focus of technical analysis and assessment on natural gas, wind, and solar resources and fuel availability; developing technical references and guidelines that advance and improve reliability using new technologies; and developing quality and fidelity assessments of interconnection models.

The major activities of the RASA Program satisfy the following criteria:

- I.A: Is the activity necessary or appropriate for Reliability Standards development projects pursuant to the NERC ROP?
- I.C.1: Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information for Reliability Standards development, including for purposes of identifying areas in which new Reliability Standards could be developed, existing Reliability Standards could be revised, or existing Reliability Standards could be eliminated, such as: (1) Measuring reliability performance – past, present and future; publishing or disseminating the results of such measurements; analyzing the results of such measurements; identifying and analyzing risks to reliability of the Bulk Power System based on such measurements; and/or identifying approaches to mitigating or eliminating such risks?
- II.A: Is the activity necessary or appropriate for the identification and registration of users, owners, and operators of the Bulk Power System that are required to comply with Requirements of Reliability Standards applicable to the reliability functions for which they are registered?
- III.A: Is the activity necessary or appropriate for the preparation or dissemination of long-term, seasonal, and special assessments of the reliability and adequacy of the Bulk Power System?
- III.B: Is the activity necessary or appropriate for measuring reliability performance – past, present and future; publishing or disseminating the results of such measurements; analyzing the results of such measurements; identifying and analyzing risks to reliability of the Bulk Power System based on such measurements; and/or identifying approaches to mitigating or eliminating such risks?
- III.F: Is the activity necessary or appropriate for the development and dissemination of Advisories/Recommendations/Essential Actions regarding lessons learned and potential reliability risks to users, owners, and operators of the Bulk Power System?
- IV: Is the activity one that was required or directed by a Commission order issued pursuant to §215? (FERC orders directed NERC to develop and implement a revised definition of

“Bulk Electric System” and a procedure for requesting and receiving exceptions from the BES definition, and subsequently approved NERC’s proposed revised BES definition and its proposed BES exception procedure.)

- V. Is the activity one that is required or specified by, or carries out, the provisions of NERC’s ROP that have been approved by the Commission as “Electric Reliability Organization Rules” (defined in 18 C.F.R. §39.1) pursuant to FPA §215(f)? (The applicable ROP provisions for major activities of the RASA Program are §801-806, §809-810, and Appendix 5C.)
- VI: Is the activity necessary or appropriate for the supervision and oversight of Regional Entities in the performance of their delegated responsibilities in accordance with FPA §215, 18 C.F.R. Part 39, the Commission-approved delegation agreement between NERC and the Regional Entity, the NERC ROP, and applicable provisions of Commission orders?
- IX: Is the activity necessary or appropriate for NERC and Regional Entity committees, subcommittees and working groups engaged in activities encompassed by one or more of the other criteria?
- X: Is the activity necessary or appropriate for the analysis and evaluation of activities encompassed by one or more of the other criteria for the purpose of identifying means of performing the activities more effectively and efficiently?

V. **Reliability Risk Management (Situation Awareness, Event Analysis and Performance Analysis) 2019 Major Activities**

The major activities of the Reliability Risk Management (RRM) group, which is comprised of the Situation Awareness Department, the Event Analysis Department, and the Performance Analysis (PA) group, are described at pages 47-49, 51-52, and 54-58 of the 2019 Business Plan and Budget. The RRM group carries out the ERO’s responsibility to perform assessments (including real-time and near-real-time continual awareness, detailed analysis of significant events, and longer-term broad performance assessments) of the reliability and adequacy of the BPS, including identifying potential issues of concern relating to system, equipment, entity, and human performance. The RRM groups have five primary functions: (1) BPS awareness, (2) event and root cause analysis, (3) assessment of human performance challenges that affect reliability and identification of improvement opportunities, (4) continent-wide analysis and reporting of BPS performance, and (5) support of the NERC OC. Through awareness and continuous assessment, RRM identifies potential reliability risks, analyzes events in detail, ensures that industry is well informed of system events, emerging trends, risk analysis, and lessons learned, and provides data and analysis to inform other aspects of NERC’s statutory functions.

The Situation Awareness department along, with the Regional Entities, monitors BPS conditions, significant occurrences and emerging risks, and threats across the 14 Reliability Coordinator regions in North America, to maintain an understanding of conditions and situations that could impact reliable operations. Situation Awareness also supports development and publication of NERC Alerts and awareness products, and facilitates information sharing among industry, Regional Entities and government during crisis situations and major system disturbances. Situation Awareness is engaged in enhancement, replacement, streamlining or modification of several reliability-related situation awareness and monitoring tools, including the SAFNR software application; operation and maintenance pending replacement of the current secure NERC Alert tool; refreshing the Reliability Coordinator Information

System application; and continuing to set conditions to bring limited Synchrophasor data into NERC for wide-area situational awareness and event triage applications. The Situation Awareness Department uses the following reliability-related tools to support its activities: Resource Adequacy (Area Control Error Frequency) Tool; Inadvertent Interchange; Frequency Monitoring and Analysis Tool; Intelligent Alarms Tool; Genscape (PowerIQ and PowerRT tools); and the Process Information (PI) Historian System.

The ongoing and new major activities of the Situation Awareness department for 2019 include: ensuring that the ERO is aware of all BES events above a threshold of impact; enabling the sharing of information and data to facilitate wide-area situational awareness; during crisis situations, facilitating the exchange of information among industry, Regions, and U.S. and Canadian governments; keeping the industry informed of emerging reliability threats and risks, including any expected actions; conducting the annual NERC Monitoring and Situational Awareness Conference and Human Performance Conference; administering the NERC Alerts process as specified in §810 of the ROP to issue Advisory (Level 1) Alerts on significant and emerging reliability and security related topics, and facilitate the tracking of actions specified in Recommendation (Level 2) and Essential Action (Level 3) Alerts; and performing oversight as per the Situation Awareness Oversight Plan of the activities and performance of the Regional staffs. Situation Awareness will also continue to focus on the upgrade to the SAFNR application.

The Event Analysis department performs assessments of the reliability and adequacy of the BES to identify potential issues of concern related to system, equipment, entity, and human performance that may indicate a need to develop remediation strategies, action plans, or data used to revise or retire Reliability Standards or consider new Reliability Standards. Event Analysis analyzes and determines the causes of events, promptly assures tracking of corrective actions to prevent recurrence, and provides lessons learned to the industry. Event Analysis analyzes all reportable events for sequence of events, root cause, risks to reliability, and mitigation and keeps the industry well-informed of system events, emerging trends, risk analysis, lessons learned, and expected actions. Event Analysis conducts in-depth analyses of approximately 150 events per year on average. Event Analysis ensures that reporting and analysis of events are consistent, to allow for wide-area assessment of trends and risks. Additionally, Event Analysis identifies human error risks and precursor factors that allow human error to affect BES reliability, and educates industry regarding such risks, precursors, and related mitigation methods. Event analysis also supports compliance and standards training initiatives and trending and analysis to identify emerging reliability risks. Event Analysis works in collaboration with and supports the activities of other groups involved in human performance analysis including the NERC OC's Event Analysis Subcommittee, the WECC Human Performance Working Group, and others. Event Analysis also collaborates with industry groups including the NATF, NAGF, and trade associations.

The ongoing and new major activities for 2019 for the Event Analysis group include: (1) Working with Regional Entities to obtain and review information from registered entities on qualifying events and disturbances in order to advance awareness of events above a threshold level; facilitating analysis of root and contributing causes, risks to reliability, wide-area assessments and remediation efforts; and disseminating information regarding events in a timely manner. (2) Ensuring that all reportable events are analyzed for sequence of events, root cause, risk to reliability, and mitigation. (3) Continuing to refine risk-based methodologies to support better identification of reliability risks, including use of more sophisticated cause codes for analysis. (4) Conducting training (webinars, workshops and conference support) to inform industry and the ERO of lessons learned, root cause analysis, trends, human performance, and extreme weather preparedness and recommendations. (5) Developing reliability recommendations and Alerts as needed, and tracking industry accountability for critical reliability recommendations. (6) Ensuring that industry is well informed of system events, emerging trends, risk analysis, lessons learned, and expected actions. (7) Conducting major event analysis and reporting of

major findings and recommendations that will improve reliability. (8) Performing oversight of the event-analysis-related activities and performance of the Regional Entities. The Event Analysis department will also support several top priority reliability risk projects being led by the Performance Analysis group. Additionally, in 2019, the System Analysis group will focus on analysis in the area of inverters and inverter technologies, due to the rapid increase in renewable resources using these technologies.

Performance Analysis, which consists of Balancing and Frequency Control (BF&C) and Data Analytics (DA), provides statistical analysis and support to the ERO Enterprise, as well as outreach for the ERO Enterprise to electric industry organizations. Trends, findings, and recommendations from PA serve as technical input to Reliability Standards and standards project prioritization, compliance process improvements, event analyses, reliability assessment, and critical infrastructure protection efforts. PA's analyses of BES performance offer analytical insights that lead toward the prioritization of specific actionable risk control steps for industry. PA's analyses and results are summarized in the annual State of Reliability (SOR) report, which provides guidance and recommendations for enhanced BPS reliability. PA has added Generator Availability Data System (GADS) wind data to the data collected under ROP §1600, requiring the development of a new software tool to enable this. In 2019, the DA group will begin development of the system for solar data collection.

BF&C provides support and services necessary for the real-time operation of the BPS in the areas of balancing resources and demand, interconnection frequency, interchange scheduling, and control performance. BF&C provides technical assistance in the development and administration of the NERC Balancing (BAL) standards, including BAL-001, BAL-002, BAL-003, BAL-004 and BAL-006, as well as in performing analysis and developing annual reports and informational filings required by Commission directives in its orders that approved BAL standards. BF&C performs the ongoing tasks assigned to the ERO in Attachment A to Reliability Standard BAL-003-1, Frequency Response and Frequency Bias Setting, and the Procedure for ERO Support, including calculation and posting of Minimum Frequency Bias Settings for each Balancing Authority (BA) and, calculation and assignment of BA Frequency Response Obligations for the upcoming year, and calculation and assignment of BA annual Frequency Bias Settings and L10 values for implementation into BA control systems. BF&C supports the NERC OC's Resources Subcommittee (RS), Frequency Working Group, Inadvertent Exchange Working Group and Reserves Working Group, including through maintaining the RS website and the Balancing Authority Submittal Site, which provide operational information and a submittal mechanism for requirements under the BAL standards; and through webinars, technical white papers, reliability guidelines, and other outreach. BF&C also provides data collection, analysis and reporting for five ESR measures to support the OC's ESR Working Group. BF&C participated in the specification, development and installation of a PI Historian system that allows NERC to retrieve, analyze and report on data that is hosted and analyzed by external parties. BF&C continues to participate in the implementation and enhancement of, including obtaining data maintained by third parties for, the PI Historian System.

DA is responsible for collection, management and analysis of data related to the performance of five areas of BPS operations: transmission, conventional generation, wind generation, protection system misoperations and demand response. DA provides application training and end-user support to reporting entities and Regional Entity staffs. DA works with stakeholders through working groups associated with industry sectors reporting performance data, to define and revise reporting requirements and related applications. DA performs analysis to identify potential risks relating to system, equipment, entity or organizational performance that may indicate, among other things, a need to develop remediation strategies, improvements to reporting applications, new data collection or analysis tools, or creation, revision or retirement of Reliability Standards. DA's analyses provide the foundation for the annual SOR Report, the annual Misoperations report, and technical papers for industry. During 2019, DA will

participate in several Information Technology projects, including: planning and deployment of the solar data collection system; continued refinement and implementation of the data sharing process to comply with Order No. 824; and continued planning and collection of ROP §1600 data requests, including but not limited to Geomagnetic disturbance studies and cyber and physical security data.

New and ongoing major activities for Performance Analysis in 2019 will include: issuing the annual SOR Report and guidelines, recommendations and Alerts as needed (including verification and validation of data and information through Regional Entities and technical committees); providing support and leadership to the NERC OC, Operating Reliability Subcommittee and the RS and its working groups, with emphasis on balancing operations and analysis, administration of BAL standards, and performance-based outreach to functional entities responsible for real-time BPS reliability; continuing administration of the BAL standards; providing technical assistance to NERC Compliance and Enforcement, emphasizing BAL-003-1 Frequency Response; providing technical assistance to Compliance Assurance and Compliance Enforcement with emphasis on BAL-003-1 for the BA performance requirements that became effective in 2017; developing the Frequency Response Annual Analysis Report; developing quarterly BPS performance reports using PI Historian data and functionality to support the OC and the RS; overseeing and evaluating reliability trends that identify reliability risks, by analyzing data contained in the GADS, Transmission Availability Data System (TADS), and Demand Response Availability Data System (DADS); supporting Reliability Standards development by providing subject matter expertise; continuing to provide leadership and support to the NERC PC's subcommittees, working groups, and task forces, including the Performance Analysis Subcommittee and its subgroups; assisting in development of approaches to registration and providing input to NERC staff in support of development of CMEP risk elements; conducting major event investigations, analyses, and reporting of major findings, recommendations and lessons learned that will improve reliability; and providing insight on merging system protection issues, and handing off any issues with future implications to RASA. Additionally, major efforts in 2019 will include development of the technical report to be filed with the Commission in accordance with directives in Order No. 794; and expansion of the PI Historian to include high speed frequency data from the University of Tennessee and interconnection inertia data to support the RS and the ERSWG.

The major activities of the RRM group satisfy the following criteria:

- I.A: Is the activity necessary or appropriate for Reliability Standards development projects pursuant to the NERC ROP?
- I.C.1: Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information for Reliability Standards development, including for purposes of identifying areas in which new Reliability Standards could be developed, existing Reliability Standards could be revised, or existing Reliability Standards could be eliminated, such as: (1) Measuring reliability performance – past, present and future; publishing or disseminating the results of such measurements; analyzing the results of such measurements; identifying and analyzing risks to reliability of the Bulk Power System based on such measurements; and/or identifying approaches to mitigating or eliminating such risks? (2) Monitoring, event analysis and investigation of Bulk Power System major events, off-normal occurrences and near miss events?
- I.C.2: Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information for Reliability Standards development, including for purposes of identifying areas in which new Reliability Standards could be developed, existing Reliability Standards could be revised, or existing Reliability Standards could be



eliminated, such as: (2) Monitoring, event analysis and investigations of Bulk Power System major events, off-normal occurrences and near-miss events?

- II.E: Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information to monitor and enforce compliance with Reliability Standards, including evaluating the effectiveness of current compliance monitoring and enforcement processes, the need for new or revised compliance monitoring and enforcement processes, and the need for new or different means of training and education on compliance with Reliability Standards, such as: (1) Measuring reliability performance – past, present and future; publishing or disseminating the results of such measurements; analyzing the results of such measurements; identifying and analyzing risks to reliability of the Bulk Power System based on such measurements; and/or identifying approaches to mitigating or eliminating such risks? (2) Monitoring, event analysis and investigation of Bulk Power System major events, off-normal occurrences, and near miss events?
- II.F.3: Is the activity necessary or appropriate for the provision of training, education and dissemination of information for/to (i) NERC personnel, (ii) Regional Entity personnel, and (iii) industry personnel with respect to compliance monitoring and enforcement topics and topics concerning reliability risks identified through compliance monitoring and enforcement activities, such as: (3) Disseminating, through workshops, webinars, Advisories, Recommendations, Essential Actions, and other publications; “lessons learned” information on compliance concerns and reliability risks obtained through compliance monitoring and enforcement activities; monitoring and investigation of Bulk Power System major events, off-normal occurrences and near miss events, and other Bulk Power System monitoring activities?
- II.G: Is the activity necessary or appropriate for the development and provision of tools and services that are useful for the provision of adequate reliability, because they relate specifically to compliance with existing Reliability Standards and they proactively help avert Reliability Standard violations and Bulk Power System disturbances?
- III.A: Is the activity necessary or appropriate for the preparation or dissemination of long-term, seasonal, and special assessments of the reliability and adequacy of the Bulk Power System?
- III.B: Is the activity necessary or appropriate for measuring reliability performance – past, present and future; publishing or disseminating the results of such measurements; analyzing the results of such measurements; identifying and analyzing risks to reliability of the Bulk Power System based on such measurements; and/or identifying approaches to mitigating or eliminating such risks?
- III.C: Is the activity necessary or appropriate for investigating, analyzing, evaluating, and disseminating information concerning, the causes of major events and off-normal occurrences, and/or providing coordination assistance, technical expertise and other assistance to users, owners, and operators of the Bulk Power System in connection with Bulk Power System major events and off-normal occurrences, but not real-time operational control of the Bulk Power System?
- III.D: Is the activity necessary or appropriate for awareness of circumstances on the Bulk Power

System and to contribute to understanding risks to reliability?

- III.E: Is the activity necessary or appropriate for gathering, analyzing and sharing with and among industry and government participants, information regarding the physical or cyber security of the Bulk Power System?
- III.F: Is the activity necessary or appropriate for the development and dissemination of Advisories/Recommendations/Essential Actions regarding lessons learned and potential reliability risks to users, owners, and operators of the Bulk Power System?
- III.G: Is the activity necessary or appropriate for data collection and analysis of information regarding Bulk Power System reliability matters mandated by the Commission?
- IV: Is the activity one that was required or directed by a Commission order issued pursuant to FPA §215? (The applicable Commission orders include Order Nos. 794 and 824 which require data collection, availability and reporting.)
- V: Is the activity one that is required or specified by, or carries out, the provisions of NERC’s ROP that have been approved by the Commission as “Electric Reliability Organization Rules” (defined in 18 C.F.R. §39.1) pursuant to FPA §215(f)? (The applicable ROP provisions for these major activities are §801-811 and 1001 and Appendix 8.)
- IX. Is the activity necessary or appropriate for NERC and Regional Entity committees, subcommittees and working groups engaged in activities encompassed by one or more of the other criteria?

**VI. Electricity Information Sharing and Analysis Center 2019 Major Activities**

The major activities of the Electricity Information Sharing and Analysis Center (“E-ISAC”) are described at pages 60-65 of the 2019 Business Plan and Budget. The primary function of E-ISAC is to reduce cyber and physical risk to the electricity industry across North America by providing unique insights, leadership and coordination, and to be the trusted, timely, actionable resource of grid risk information and analysis to enhance electric reliability. The E-ISAC strategy has three primary focus areas: (1) Sharing information on cyber and physical threats to the reliability and security of the BPS with electric industry stakeholders; (2) analysis of threat information; and (3) engagement with electric sector and other stakeholders concerning security risk identification and mitigation. E-ISAC staff routinely engages stakeholders through monthly briefings and threat workshops covering timely cyber and physical security topics. E-ISAC manages and executes NERC’s responsibilities in the Cybersecurity Risk Information Sharing Program (“CRISP”) and acts as the program manager for CRISP. CRISP delivers real-time, relevant, and actionable cybersecurity risk information to E-ISAC member electricity asset owners and operators. E-ISAC also supports an annual grid security conference and a biennial Grid Security Exercise. In addition to voluntary reporting of security and threat information by industry participants, registered entities subject to Reliability Standard CIP-008-5 with High Impact and Medium Impact BES Cyber Systems are required to have processes in place for identifying Cyber Security Incidents, determining if a Cyber Security Incident is a Reportable Cyber Security Incident, and if so, notifying the E-ISAC. Further, in its Order No. 848 issued July 19, 2018 (164 FERC ¶161,033), FERC directed NERC to develop and submit modifications to Reliability Standards to provide for mandatory reporting to the E-ISAC (and other organizations) of Cyber Security Incidents that compromise, or attempt to compromise, a responsible entity’s Electronic Security Perimeter or associated Electronic Access Control or Monitoring Systems.”

The major activities of the E-ISAC satisfy the following criteria:

- I.C.1: Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information for Reliability Standards development, including for purposes of identifying areas in which new Reliability Standards could be developed, existing Reliability Standards could be revised, or existing Reliability Standards could be eliminated, such as: (1) Measuring reliability performance – past, present and future; publishing or disseminating the results of such measurements; analyzing the results of such measurements; identifying and analyzing risks to reliability of the Bulk Power System based on such measurements; and/or identifying approaches to mitigating or eliminating such risks? (2) Monitoring, event analysis and investigation of Bulk Power System major events, off-normal occurrences and near-miss events?
- III.D: Is the activity necessary or appropriate for awareness of circumstances on the Bulk Power System and to contribute to understanding risks to reliability.
- III.E: Is the activity necessary or appropriate for gathering, analyzing and sharing with and among industry and government participants, information regarding the physical or cyber security of the Bulk Power System.
- III.F: Is the activity necessary or appropriate for the development and dissemination of Advisories/Recommendations/Essential Actions regarding lessons learned and potential reliability risks to users, owners, and operators of the Bulk Power System?
- V: Is the activity one that is required or specified by, or carries out, the provisions of NERC’s ROP that have been approved by the Commission as “Electric Reliability Organization Rules” (defined in 18 C.F.R. §39.1) pursuant to FPA §215(f)? (The applicable ROP provisions for these major activities are §810 and 1003.)
- IX. Is the activity necessary or appropriate for NERC and Regional Entity committees, subcommittees and working groups engaged in activities encompassed by one or more of the other criteria?

## **VII. Training, Education, and Personnel Certification Program 2019 Major Activities**

The major activities of the Training, Education, and Personnel Certification Program are described at pages 67-69 of the 2019 Business Plan and Budget. The major activities of this program include oversight and coordination of the delivery of training programs to ERO Enterprise staff supporting statutory and delegation-related activities; as well as training and education for BPS industry participants consistent with ERO functional program requirements. The Training and Education Program supports the ERO’s responsibilities to develop, adopt, and obtain approval of Reliability Standards and to monitor, enforce and achieve compliance with the mandatory standards. Additionally, the Continuing Education program approves continuing education providers that meet NERC guidelines and standards

The Training and Education Program also supports NERC’s System Personnel Certification Program, which ensure that personnel operating the BPS have the skills, training and qualifications needed to operate the BPS reliably. This Program maintains the credentials required to work in various industry areas across North America for over 7,500 system operators. NERC’s System Operator Certification exam tests specific knowledge of job skills and Reliability Standards and prepares operators for complying with requirements

of Reliability Standards and appropriately operating the BES during normal and emergency operations. The Training and Education program provides learning materials, resources and activities to assist industry and ERO Enterprise staff in their understanding of key program areas including Reliability Standards; risk-based compliance monitoring and enforcement; organization registration and certification; event analysis, cause analysis, performance analysis and lessons learned; Reliability Assessment and System Analysis; and continuing education for system operators.

The major activities of the Training and Education Program for 2019 include implementing the annual NERC and ERO Enterprise Learning Priorities Plan which articulates and prioritizes the accumulated learning needs of the ERO Enterprise and the potential delivery vehicles supporting achievement of the goals of the *ERO Enterprise Operating Plan*. The focus for 2019 (and beyond) includes educating industry on managing risk to the reliability of the BPS based on results of technical assessment and analysis, standards development, and human performance knowledge; enhancing ERO Enterprise compliance monitoring personnel performance through a deeper understanding of ERO Enterprise compliance monitoring processes and technical aspect of BPS operations; and improving NERC employee's understanding of NERC functions and core technical knowledge of the BPS. Training and education will be delivered through workshops, webinars, and computer-based and instructor-led training courses. The Continuing Education program will evaluate and revise current program criteria as reflected in the Continuing Education program manual. The Continuing Education Program will remain focused on NERC System Operator credential maintenance. The Personnel Certification Program will continue to implement Linear on the Fly Testing, which dynamically creates an exam each time an exam is initiated by a candidate, and will work with industry stakeholders and the exam development vendor to create certification exams that promote BPS reliability. The Exam Working Group of the NERC Personnel Certification Governance Committee (PCGC) will continue to develop and analyze new items for future certification exams and work to ensure relevance to current Reliability Standards. The PCGC will continue to focus on further development of the System Operator Certification program strategic plan to ensure reliable operation of the BPS, including continuing annual analysis of the System Operator Certification Exam Item Bank; identification of new exam items; developing enhancements to the credential maintenance tool; and other program enhancements.

The major activities of the Training, Education, and Personnel Certification Program satisfy the following criteria:

- I.D: Is the activity necessary or appropriate for the provision of training and education concerning Reliability Standards development processes, procedures and topics for/to (i) NERC personnel, (ii) Regional Entity personnel, and (iii) industry personnel?
  
- II.C: Is the activity necessary or appropriate for the Certification of system operating personnel as qualified to carry out the duties and responsibilities of their positions in accordance with the Requirements of applicable Reliability Standards?
  
- II.F: Is the activity necessary or appropriate for the provision of training, education and dissemination of information for/to (i) NERC personnel, (ii) Regional Entity personnel, and (iii) industry personnel with respect to compliance monitoring and enforcement topics and topics concerning reliability risks identified through compliance monitoring and enforcement activities, such as: (1) Requirements of Reliability Standards, including how to comply and how to demonstrate compliance? This includes development of guidance and interpretation documents. (2) Compliance monitoring and enforcement processes, including how to conduct them, how to participate in them, and the expectations for the

processes? This includes development of guidance documents. (3) Disseminating, through workshops, webinars, Advisories/Recommendations/Essential Actions, and other publications, “lessons learned” information on compliance concerns and reliability risks obtained through compliance monitoring and enforcement activities, monitoring and investigation of Bulk Power System major events, off-normal occurrences and near miss events, and other Bulk Power System monitoring activities. (4) Registered Entity internal processes for compliance with Reliability Standards, such as development, implementation and maintenance of internal reliability compliance programs?

- V: Is the activity one that is required or specified by, or carries out, the provisions of NERC’s ROP that have been approved by the Commission as “Electric Reliability Organization Rules” (defined in 18 C.F.R. §39.1) pursuant to FPA §215(f)? (The applicable ROP provision for the major activities of the Training, Education and Personnel Certification Program are §600 and §900.)
- VI: Is the activity necessary or appropriate for the supervision and oversight of Regional Entities in the performance of their delegated responsibilities in accordance with FPA §215, 18 C.F.R. Part 39, the Commission-approved delegation agreement between NERC and the Regional Entity, the NERC ROP, and applicable provisions of Commission orders?

### **VIII. Administrative Services 2019 Major Activities**

NERC’s Administrative Services Departments are Technical Committees and Member Forums (for which no funding for activities is budgeted for 2019), General and Administrative, Legal and Regulatory, Information Technology (“IT”), Human Resources & Administration, and Finance and Accounting. The major activities of these departments are described at pages 72-81 of the 2019 Business Plan and Budget.

General and Administrative is responsible for the administration and general management of the organization and includes the Chief Executive Officer and Chief Reliability Officer, Board of Trustees costs, communications, external affairs and government relations, and Office Rent.

Legal and Regulatory provides legal support to the organization, including to management, and the Reliability Standards, Compliance Analysis, Organization Registration and Certification, RASA, and Reliability Risk Management Programs, as well as general corporate legal support in areas including antitrust, corporate, commercial, insurance, contracts, employment, real estate, copyright, tax, and other areas, and legal and regulatory support in connection with delegation agreements with Regional Entities. Legal and Regulatory also includes the internal audit and corporate risk management functions.

IT supports, builds, configures, and enhances applications that serve registered entities, Regional Entities, and NERC staff, including ERO Enterprise data analysis and ongoing NERC and E-ISAC internal operations. IT’s budgeted activities for 2019 are in the following categories: (1) ERO Enterprise new functionality; (2) maintaining ERO Enterprise infrastructure and support; and (3) maintaining NERC infrastructure and support. The focus of IT’s budgeted activities is applications designed to better support effectiveness and consistency across the ERO Enterprise in the areas of Reliability Standards, Compliance Monitoring, Enforcement, Registration and the associated assessment of reliability risk. These applications include the CMEP Technology Project and complementary solutions for entity registration and standards data. IT’s budgeted activities for 2019 also include improvements to NERC’s public-facing website, funding for solar and wind data in the Generator Availability Data System, and a rewrite or replacement of the Resource Adequacy Application. IT is also responsible for certain Office Costs including telephone,

internet, computer supplies, software licenses and support, subscriptions and publications, and audio/visual and hardware leases.

Human Resources & Administration includes NERC’s human resources and facilities and meeting planning functions, including staffing, benefits administration, employee relations, performance and compensation management, succession planning, and management and professional and administrative staff training and development. Under the direction of the NERC Board Corporate Governance and Human Resources Committee, Human Resources & Administration also develops compensation strategy and performs or obtains (through consultants) compensation studies, effectiveness studies, and other compensation and staffing related studies as needed.

Finance and Accounting manages all finance and accounting functions of NERC, including employee payroll, 401(k), 457(b) and 457(f) plans, travel and expense reporting, monthly financial reporting, sales and use tax, insurance, and development of the annual business plan and budget.

The major activities of NERC’s Administrative Services Departments satisfy the following criteria:

- I.A: Is the activity necessary or appropriate for Reliability Standards development projects pursuant to the NERC ROP?
- II.A: Is the activity necessary or appropriate for the identification and registration of users, owners, and operators of the Bulk Power System that are required to comply with Requirements of Reliability Standards applicable to the reliability functions for which they are registered?
- II.D: Is the activity necessary or appropriate for conducting, participating in or overseeing compliance monitoring and enforcement activities pursuant to the NERC ROP and (through the Regional Entities) the Commission-approved delegation agreements?
- III.C: Is the activity necessary or appropriate for investigating, analyzing, evaluating, and disseminating information concerning, the causes of major events and off-normal occurrences, and/or providing coordination assistance, technical expertise and other assistance to users, owners, and operators of the Bulk Power System in connection with Bulk Power System major events and off-normal occurrences, but not real-time operational control of the Bulk Power System?
- V: Is the activity one that is required or specified by, or carries out, the provisions of NERC’s ROP that have been approved by the Commission as “Electric Reliability Organization Rules” (defined in 18 C.F.R. §39.1) pursuant to FPA §215(f)? (The applicable ROP provision for the major activities of Finance and Accounting is §1100.)
- VI: Is the activity necessary or appropriate for the supervision and oversight of Regional Entities in the performance of their delegated responsibilities in accordance with FPA §215, 18 C.F.R. Part 39, the Commission-approved delegation agreement between NERC and the Regional Entity, the NERC ROP, and the applicable provisions of Commission orders.
- IX: Is the activity necessary or appropriate for NERC and Regional Entity committees,

subcommittees and working groups engaged in activities encompassed by one or more of the other criteria?

- XI: Is the activity a governance or administrative/overhead function, activity or service necessary or appropriate for the activities encompassed by the other criteria and, in general, necessary and appropriate to operate a functioning organization?

**NERC WRITTEN CRITERIA FOR DETERMINING  
WHETHER AN ACTIVITY IS ELIGIBLE TO BE FUNDED  
UNDER SECTION 215 OF THE FEDERAL POWER ACT**

For purposes of internal management approval of a proposed new activity or group of related activities (“major activity”), the proposed activity or major activity must be shown to fall within at least one of the criteria listed below. When sub-criteria are listed below a roman numeral numbered major criterion, the proposed activity should be a positive answer to at least one of the sub-criteria. Conversely, an activity that falls under a sub-criterion should pertain to the subject matter of the major criterion.

NERC’s annual business plan and budget will describe how each major activity falls within one or more of the criteria listed below. If the major activity is substantially the same as a major activity that was shown to fall within the criteria in a previous year’s business plan and budget, the current year’s business plan and budget can refer to the prior year business plan and budget.

A determination that an activity falls within FPA §215 does not necessarily mean that NERC will propose or undertake such activity. The determination of whether an activity falling under FPA §215 should or will be undertaken in a given budget year will be addressed in the context of the applicable business plan and budget and will include opportunities for stakeholder input.

The criteria listed below are not necessarily each distinct from the others. An activity or major activity may fall within more than one of the criteria listed below.

- I. Is the activity necessary or appropriate for the development of Reliability Standards?
  - A. Is the activity necessary or appropriate for Reliability Standards development projects pursuant to the NERC ROP?
  - B. Is the activity necessary or appropriate for providing guidance and assistance to Regional Entities in carrying out Regional Reliability Standards development activities?
  - C. Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information for Reliability Standards development, including for purposes of identifying areas in which new Reliability Standards could be developed, existing Reliability Standards could be revised, or existing Reliability Standards could be eliminated, such as:
    1. Measuring reliability performance – past, present and future; publishing or disseminating the results of such measurements; analyzing the results of such measurements; identifying and analyzing risks to reliability of the Bulk Power System<sup>41</sup> based on such measurements; and/or identifying approaches to mitigating or eliminating such risks?

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<sup>41</sup> This document uses the term “Bulk Power System” because that is the term defined and used in FPA §215. NERC recognizes that a different term, “Bulk Electric System,” is used to define the current reach of reliability standards.

2. Monitoring, event analysis and investigation of Bulk Power System major events, off-normal occurrences and near miss events?
  - D. Is the activity necessary or appropriate for the provision of training and education concerning Reliability Standards development processes, procedures and topics for/to (i) NERC personnel, (ii) Regional Entity personnel, and (iii) industry personnel?
- II. Is the activity necessary or appropriate for the monitoring and enforcement of compliance with Reliability Standards?
- A. Is the activity necessary or appropriate for the identification and registration of users, owners, and operators of the Bulk Power System that are required to comply with Requirements of Reliability Standards applicable to the reliability functions for which they are registered?
  - B. Is the activity necessary or appropriate for the Certification of Reliability Coordinators, Transmission Operators and Balancing Authorities as having the requisite personnel, qualifications and facilities and equipment needed to perform these reliability functions in accordance with the applicable Requirements of Reliability Standards?
  - C. Is the activity necessary or appropriate for the Certification of system operating personnel as qualified to carry out the duties and responsibilities of their positions in accordance with the Requirements of applicable Reliability Standards?<sup>42</sup>
  - D. Is the activity necessary or appropriate for conducting, participating in or overseeing compliance monitoring and enforcement activities pursuant to the NERC ROP and (through the Regional Entities) the Commission-approved delegation agreements?
  - E. Is the activity necessary or appropriate for information gathering, collection and analysis activities to obtain information to monitor and enforce compliance with Reliability Standards, including evaluating the effectiveness of current compliance monitoring and enforcement processes, the need for new or revised compliance monitoring and enforcement processes, and the need for new or different means of training and education on compliance with Reliability Standards, such as:
    1. Measuring reliability performance – past, present and future; publishing or disseminating the results of such measurements; analyzing the results of such measurements; identifying and analyzing risks to reliability of the Bulk Power System based on such measurements; and/or identifying approaches to mitigating or eliminating such risks?
    2. Monitoring, event analysis and investigation of Bulk Power System major events, off-normal occurrences, and near miss events?
  - F. Is the activity necessary or appropriate for the provision of training, education and dissemination of information for/to (i) NERC personnel, (ii) Regional Entity personnel, and (iii) industry personnel with respect to compliance monitoring and enforcement topics and topics concerning reliability risks identified through compliance monitoring and enforcement activities, such as:

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<sup>42</sup> Although certification of system operating personnel is an activity falling within the scope of, and eligible to be funded pursuant to, FPA §215, NERC strives to fully fund the costs of this activity through fees charged to participants.



1. Requirements of Reliability Standards, including how to comply and how to demonstrate compliance? This includes development of guidance and interpretation documents.
  2. Compliance monitoring and enforcement processes, including how to conduct them, how to participate in them, and the expectations for the processes? This includes development of guidance documents.
  3. Disseminating, through workshops, webinars, Advisories, Recommendations, Essential Actions, and other publications; “lessons learned” information on compliance concerns and reliability risks obtained through compliance monitoring and enforcement activities; monitoring and investigation of Bulk Power System major events, off-normal occurrences and near miss events, and other Bulk Power System monitoring activities?
  4. Registered Entity internal processes for compliance with Reliability Standards, such as development, implementation and maintenance of internal reliability compliance programs?
- G. Is the activity necessary or appropriate for the development and provision of tools and services that are useful for the provision of adequate reliability, because they relate specifically to compliance with existing Reliability Standards and they proactively help avert Reliability Standard violations and Bulk Power System disturbances?
- III. Is the activity necessary or appropriate for conducting and disseminating periodic assessments of the reliability of the Bulk Power System or monitoring the reliability of the Bulk Power System?
- A. Is the activity necessary or appropriate for the preparation or dissemination of long-term, seasonal, and special assessments of the reliability and adequacy of the Bulk Power System?
  - B. Is the activity necessary or appropriate for measuring reliability performance – past, present and future; publishing or disseminating the results of such measurements; analyzing the results of such measurements; identifying and analyzing risks to reliability of the Bulk Power System based on such measurements; and/or identifying approaches to mitigating or eliminating such risks?
  - C. Is the activity necessary or appropriate for investigating, analyzing, evaluating, and disseminating information concerning, the causes of major events and off-normal occurrences, and/or providing coordination assistance, technical expertise and other assistance to users, owners, and operators of the Bulk Power System in connection with Bulk Power System major events and off-normal occurrences, but not real-time operational control of the Bulk Power System?
  - D. Is the activity necessary or appropriate for awareness of circumstances on the Bulk Power System and to contribute to understanding risks to reliability?
  - E. Is the activity necessary or appropriate for gathering, analyzing and sharing with and among industry and government participants, information regarding the physical or cyber security of the Bulk Power System?
  - F. Is the activity necessary or appropriate for the development and dissemination of Advisories/Recommendations/Essential Actions regarding lessons learned and potential reliability risks to users, owners, and operators of the Bulk Power System?

- G. Is the activity necessary or appropriate for data collection and analysis of information regarding Bulk Power System reliability matters mandated by the Commission?
- IV. Is the activity one that was required or directed by a Commission order issued pursuant to FPA §215? Justification of an activity as a FPA §215 activity based on this category must reference the particular Commission order and directive.
- V. Is the activity one that is required or specified by, or carries out, the provisions of NERC’s ROP that have been approved by the Commission as “Electric Reliability Organization Rules” (defined in 18 C.F.R. §39.1) pursuant to FPA §215(f)?
- VI. Is the activity necessary or appropriate for the supervision and oversight of Regional Entities in the performance of their delegated responsibilities in accordance with FPA §215, 18 C.F.R. Part 39, the Commission-approved delegation agreement between NERC and the Regional Entity, the NERC ROP, and applicable provisions of Commission orders?
- VII. Is the activity necessary or appropriate to maintain NERC’s certification as the Electric Reliability Organization? This Criterion includes conducting periodic assessments of NERC’s and the Regional Entities’ performance as the Electric Reliability Organization as required by 18 C.F.R. §39.3(c).
- VIII. Does the activity respond to or is it necessary or appropriate for audits of NERC and the Regional Entities conducted by the Commission?
- IX. Is the activity necessary or appropriate for NERC and Regional Entity committees, subcommittees and working groups engaged in activities encompassed by one or more of the other criteria?
- X. Is the activity necessary or appropriate for the analysis and evaluation of activities encompassed by one or more of the other criteria for the purpose of identifying means of performing the activities more effectively and efficiently?
- XI. Is the activity a governance or administrative/overhead function, activity or service necessary or appropriate for the activities encompassed by the other criteria and, in general, necessary and appropriate to operate a functioning organization? (Should NERC perform any non-FPA §215 activities, the costs of governance and administrative/overhead functions must be appropriately allocated.)
- NERC’s current governance and administrative/overhead functions are carried out in the following program areas:
- A. Technical Committees and Members’ Forum Programs
  - B. General and administrative (includes, but is not limited to, executive, board of trustees, communications, government affairs, and facilities and related services).
  - C. Legal and Regulatory.
  - D. Information Technology
  - E. Human Resources
  - F. Accounting and Finance.

The following matters are excluded from the scope of FPA §215 activities. While a list of non-FPA §215 activities would be infinite, the following excluded matters are listed here because they are expressly referred to in FPA §215, the Commission’s ERO regulations and/or a Commission order issued pursuant to FPA §215:

- A. Developing or enforcing requirements to enlarge Bulk Power System facilities, or to construct new transmission capacity or generation capacity, or requirements for adequacy or safety of electric facilities or services.
- B. Activities entailing Real-time operational control of the Bulk Power System.
- C. Activities pertaining to facilities used in the local distribution of electricity.

## Exhibit B – Consultant and Contract Costs

Consultants & Contracts	2018 Budget	2019 Budget	Increase (Decrease)
<b>Reliability Standards</b>			
Standards Development Support		\$ 50,000	\$ 50,000
<b>Total</b>		<b>\$ 50,000</b>	<b>\$ 50,000</b>
<b>Compliance Assurance</b>			
Risk-Based Compliance Monitoring Implementation	\$ 50,000	\$ 50,000	\$ -
<b>Total</b>	<b>\$ 50,000</b>	<b>\$ 50,000</b>	<b>\$ -</b>
<b>Compliance Enforcement</b>			
CRATS		\$ 161,000	\$ 161,000
<b>Total</b>		<b>\$ 161,000</b>	<b>\$ 161,000</b>
<b>Reliability Assessment and System Analysis</b>			
Reliability Effects of GMD	\$ 100,000	\$ 200,000	\$ 100,000
Reliability Consulting Support	\$ 425,000	\$ 425,000	\$ -
<b>Total</b>	<b>\$ 525,000</b>	<b>\$ 625,000</b>	<b>\$ 100,000</b>
<b>Performance Analysis</b>			
GADS/TADS/DADS	\$ 572,030	\$ 653,565	\$ 81,535
<b>Total</b>	<b>\$ 572,030</b>	<b>\$ 653,565</b>	<b>\$ 81,535</b>
<b>Situation Awareness</b>			
Reliability Tools	\$ 600,595	\$ 614,110	\$ 13,515
Secure Alerting System	\$ 96,000	\$ 98,880	\$ 2,880
SAFNR - Phase II	\$ 523,900	\$ 493,000	\$ (30,900)
Communication Network	\$ 75,000	\$ 75,000	\$ -
<b>Total</b>	<b>\$ 1,295,495</b>	<b>\$ 1,280,990</b>	<b>\$ (14,505)</b>
<b>E-ISAC</b>			
Security Consulting	\$ 33,000	\$ 33,000	\$ -
GridEx Support	\$ 142,000	\$ 550,000	\$ 408,000
Program-Level Capabilities	\$ 770,000	\$ 725,000	\$ (45,000)
Software and Services	\$ 105,200		\$ (105,200)
Portal Improvement		\$ 462,500	\$ 462,500
Events and Outreach	\$ 50,000	\$ 50,000	\$ -
CRISP	\$ 6,291,594	\$ 6,457,500	\$ 165,906
<b>Total</b>	<b>\$ 7,391,794</b>	<b>\$ 8,278,000</b>	<b>\$ 886,206</b>
<b>Personnel Certification</b>			
System Operator Testing Expenses	\$ 58,500	\$ 62,000	\$ 3,500
System Operator Examination Development	\$ 50,000	\$ 50,000	\$ -
Job Task Analysis	\$ 42,000		\$ (42,000)
Database License	\$ 25,200		\$ (25,200)
SOCCE Database Improvements	\$ 75,000	\$ 50,000	\$ (25,000)
<b>Total</b>	<b>\$ 250,700</b>	<b>\$ 162,000</b>	<b>\$ (88,700)</b>
<b>Training and Education</b>			
Continuing Education Program	\$ 133,200	\$ 85,000	\$ (48,200)
ERO Enterprise Learning Portal	\$ 103,150	\$ 105,000	\$ 1,850
ERO Enterprise and Industry Course Development	\$ 76,850	\$ 110,000	\$ 33,150
NERC Staff Technical Training	\$ 35,000	\$ 35,000	\$ -
<b>Total</b>	<b>\$ 348,200</b>	<b>\$ 335,000</b>	<b>\$ (13,200)</b>
<b>General and Administrative</b>			
Communications Support	\$ 20,000	\$ 20,000	\$ -
ERO Enterprise Effectiveness Survey	\$ 80,000	\$ 20,000	\$ (60,000)
Executive Consulting		\$ 200,000	\$ 200,000
<b>Total</b>	<b>\$ 100,000</b>	<b>\$ 240,000</b>	<b>\$ 140,000</b>
<b>Information Technology</b>			
ERO Data Analytics	\$ 1,277,966	\$ 1,307,763	\$ 29,797
Applications Enhancements, Consulting, and Help Desk Support	\$ 846,000	\$ 735,000	\$ (111,000)
<b>Total</b>	<b>\$ 2,123,966</b>	<b>\$ 2,042,763</b>	<b>\$ (81,203)</b>
<b>Human Resources</b>			
Training and Development	\$ 400,000	\$ 400,000	\$ -
Compensation Consulting	\$ 175,000	\$ 225,000	\$ 50,000
Employee, Industry, and Board Surveys	\$ 40,000	\$ 40,000	\$ -
HR Consulting Services	\$ 25,000	\$ 25,000	\$ -
<b>Total</b>	<b>\$ 640,000</b>	<b>\$ 690,000</b>	<b>\$ 50,000</b>
<b>Finance and Accounting</b>			
Internal Controls and Outside Auditor Consulting Support	\$ 220,000	\$ 300,000	\$ 80,000
Finance and Accounting Support	\$ 207,000	\$ 175,000	\$ (32,000)
<b>Total</b>	<b>\$ 427,000</b>	<b>\$ 475,000</b>	<b>\$ 48,000</b>
<b>Total Consultants &amp; Contracts</b>	<b>\$ 13,724,185</b>	<b>\$ 15,043,318</b>	<b>\$ 1,319,133</b>

## Exhibit C – Capital Financing

The company initiated a capital financing program in January 2014 as a funding source for major software application development projects that primarily benefit the ERO Enterprise. The total size of the original non-revolving credit facility was \$7.5M and was used to finance a portion of NERC's capital expenditures (including IT hardware and software application development costs) made through December 2016. A similar non-revolving credit facility was closed in November 2016, totaling \$5.0M, and is available to finance certain capital expenditures made from January 2017 to December 2019. The interest rate for both credit facilities is floating and equal to LIBOR plus 275 basis points. NERC projects the average interest rate during 2019 will be 4.5%. Authorized annual borrowings under the facilities are limited to the amount approved by the Board and FERC in each year's BP&B. Borrowings under the credit facilities are amortized over a three-year period, and can be prepaid without penalty.

As further discussed in the *Introduction and Executive Summary* and set forth in the table below, NERC has a 2019 proposed capital budget of approximately \$4.8M, of which it is proposing to finance \$3.3M.

NERC Capital Budget	Budget 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	
			Variance Budget	Variance %
ERO Application Development	\$ 2,148,000	\$ 3,268,000	\$ 1,120,000	52.1%
Hardware (storage, servers)	805,000	565,000	(240,000)	-29.8%
Other Equipment	370,000	425,000	55,000	14.9%
Disaster Recovery	100,000	-	(100,000)	-100.0%
NERC Software Licenses	301,000	120,000	(181,000)	-60.1%
Leasehold Improvements	150,000	400,000	250,000	166.7%
<b>Total</b>	<b>\$ 3,874,000</b>	<b>\$ 4,778,000</b>	<b>\$ 904,000</b>	<b>23.3%</b>

In the 2019 budget, NERC plans to finance \$3,268,000 for ERO Enterprise application development projects. The tables below show projected year-end outstanding debt and the future annual payments for debt service.

	Year-End Outstanding Debt Balance				
	Prior Years Actual	2018 Projected	2019 Budget	2020 Projected	2021 Projected
Prior Years (2015 - 2017 Borrowing)	\$ 1,144,852	\$ 427,578	\$ 32,891	\$ -	\$ -
2018 Projection	-	2,148,000	1,432,000	716,000	-
2019 Budgeted	-	-	3,268,000	2,178,667	1,089,333
2020 Projected	-	-	-	2,007,000	1,338,000
2021 Projected	-	-	-	-	1,300,000
<b>Total Outstanding Balance</b>	<b>\$ 1,144,852</b>	<b>\$ 2,575,578</b>	<b>\$ 4,732,891</b>	<b>\$ 4,901,667</b>	<b>\$ 3,727,333</b>

	Future Annual Payments for Debt Service				
		2018 Projected	2019 Budget	2020 Projected	2021 Projected
Prior Years - Principal		\$ 717,274	\$ 394,692	\$ 32,891	\$ -
2018 Projection		-	716,000	716,000	716,000
2019 Budgeted		-	-	1,089,333	1,089,333
2020 Projected		-	-	-	669,000
2021 Projected		-	-	-	-
Interest Expense		32,727	94,175	177,203	172,239
<b>Total Principal and Interest Costs</b>	<b>\$ -</b>	<b>\$ 750,001</b>	<b>\$ 1,204,867</b>	<b>\$ 2,015,427</b>	<b>\$ 2,646,572</b>

## Exhibit D – Working Capital and Operating Reserve Amounts

In September 2015, FERC approved NERC's proposed amendments to its *Working Capital and Operating Reserve Policy*, which had been approved by the Board. A number of changes were made to the policy, including:

- Clarifying the definition of working capital to represent funding needed for cash flow purposes due to the timing of the receipt of funds and the payment of expenses.
- Creating four separate categories of operating reserves:
  1. A **Future Obligation Reserve** for funds being held to satisfy obligations that will be settled in a future year. Examples include leases, certain contracts, and credit agreements. These reserves were previously included within the definition of working capital, but are more accurately classified as a form of operating reserve.
  2. Continuation of a separate category of reserves for the Operator Certification Program called the **System Operator Certification Reserve**.
  3. Elimination of the Known and Unforeseen Contingency categories of operating reserves and creating a single category of contingency reserves called the **Operating Contingency Reserve**.
  4. Creation of a separate category of reserves for CRISP called the **CRISP Reserve**.

### Working Capital

Based on its 2018 cash flow projection and taking into account the historic manner in which NERC's assessments have been billed and paid, NERC does not anticipate needing access to working capital in 2019 to meet monthly cash flow needs. While individual reserve categories are increasing and decreasing based on operating needs and uses, the budget in total does not reflect additional net funding for reserves. In the unlikely event NERC experiences a temporary cash flow shortage, it has the ability to either request authorization from the FAC and Board to temporarily access operating contingency reserve funds, or draw on its \$4M line of credit, as long as NERC is in compliance with the covenants under its bank credit agreement.

### Operating Reserves

Total operating reserves are budgeted to be \$6.9M at December 31, 2019 among all four categories, or \$6.4M excluding the \$500k CRISP Reserve. The Future Obligation Reserve is budgeted to be \$2.0M and is primarily funds held to offset future liabilities under lease agreements for the Atlanta and Washington, DC, offices. System Operator Certification Reserves are budgeted at \$676k, and the Operating Contingency Reserve is budgeted for \$3.8M. The CRISP Reserve, budgeted at \$500k, is held pursuant to the terms of the Master Services Agreement between NERC and participating utilities, which calls for a separate third-party funded reserve established to fund certain contingencies in connection with CRISP.

### Assessment Stabilization Reserve

In addition to the foregoing reserves, the amended policy also provides for an Assessment Stabilization Reserve. The goal of the Assessment Stabilization Reserve is to mitigate assessment volatility and have percentage changes in annual assessments track, within a reasonable band, percentage changes in the company's total annual budget, with the total budget reflecting prudent fiscal discipline and good stewardship. Assessment stabilization funds will be used when available to help stabilize assessments and mitigate year-to-year swings in assessments. Those swings primarily result from the year-to-year variations in collections of penalty funds to be applied to offset assessments, but could also result from other factors like surplus funds available from a prior period, the need to replenish the Operating Contingency Reserve, or significant but relatively short-term operating or capital spending needs. Subject to FERC approval, NERC will deposit the \$500k of penalty funds collected during the period July 1, 2017–June 30, 2018 into the Assessment Stabilization Reserve. NERC will also, subject to FERC approval, release \$550k from the Assessment Stabilization Reserve to reduce U.S. assessments for 2019.

## Exhibit E – E-ISAC Long-Term Strategy

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### Executive Summary

The Electricity Information Sharing and Analysis Center (E-ISAC), operated by the North American Electric Reliability Corporation (NERC), executed a significant improvement initiative over the past two years based on findings and recommendations developed by the Electricity Subsector Coordinating Council (ESCC) in 2015. Looking forward, the electricity industry would like the E-ISAC to become an indispensable resource for security information sharing and analysis, and to be the centerpiece for building a highly engaged community of security professionals.

To carry forth this vision, the E-ISAC must undergo continuous improvement and evolution that reflects the changing threat landscape, changing technologies and business processes inside the industry, and changing customer expectations for a highly reliable and secure electricity infrastructure that is increasingly more integrated with insecure infrastructures such as the public Internet. This will require additional resources for people, technology, and facilities above what has been budgeted in previous years.

This strategic plan builds on the ESCC’s earlier recommendations and discusses improvements needed in 2017 to address current threats, a look at the mid-term range of 2018-2022 to address emerging threats, and what the E-ISAC might look like beyond 2023 if the forecasted issues continue to develop.

The plan was developed with guidance from the ESCC and from NERC leadership. It recognizes the need for sound fiscal planning, recognizes the growing threats to the grid from human and cyber actors, and highlights the need for a more robust security information sharing and analysis capability within NERC.

At a recent planning session with C-level executives, one utility CEO said he wanted to “transform the EISAC into an intelligence collecting and analytical capability that industry literally cannot do without,” which resonated strongly among the other executives. To achieve this goal we must get the E-ISAC to a maturity level where industry completely trusts it to gather, hold, analyze, and distribute highly sensitive security information.

Specific financial projections, technology requirements, staffing, and facility improvements are being developed and will be incorporated in the NERC strategic plan and the NERC business plan and budget.

### Background

The Electricity Information Sharing and Analysis Center (E-ISAC) is operated by the North American Electric Reliability Corporation (NERC).<sup>43</sup> It was established by NERC at the request of the U.S. Department of Energy in 1999 to serve as a focal point for voluntary information sharing within the electricity subsector. By 2006, the ISAC was widely used in the subsector for collecting, analyzing, and distributing voluntarily-shared security information and was a key component of NERC’s overall electric reliability mission. NERC’s Board of Trustees oversees the budget and activities of the E-ISAC in the same manner as other NERC divisions.

NERC assumed the role of the Electric Reliability Organization (ERO) in 2006 and began a multi-year effort to develop enforceable reliability and security standards for owners, operators, and users of the Bulk-Power System. As the standards were completed and compliance monitoring began, the ISAC remained the place where security incidents were reported, but the voluntary nature of reporting from electricity entities shifted towards mandatory reporting from entities required to be compliant with NERC’s Critical Infrastructure Protection (CIP) standards. By 2014, voluntary sharing with the E-ISAC had greatly diminished in favor of mandatory reporting, but the desire

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<sup>43</sup> Initially called the Electricity Sector Information Sharing and Analysis Center (ES-ISAC), the name was changed in September 2015 to the Electricity Information Sharing and Analysis Center (E-ISAC) as part of a rebranding and role-clarification initiative.

for voluntary sharing within the subsector remained strong. The following year a perceived problem of internal NERC cross-sharing of security information was addressed when NERC implemented the employee code of conduct that bars voluntarily shared security information from being forwarded to NERC’s compliance and enforcement teams. Also in 2015 the E-ISAC finished a separation project that includes physical and electronic barriers to protect the information voluntarily shared by industry members.

In late 2014, the Electricity Subsector Coordinating Council (ESCC) initiated a strategic review of the E-ISAC. In June 2015, the ESCC published its key findings and recommendations, which fell into four major areas of improvement for the E-ISAC:

- Strengthen the governance structure and processes to increase effectiveness and responsiveness
- Improve the quality and value of the products by identifying member needs and expectations
- Advance the analysis capabilities by continuing to upgrade operational and staff capabilities
- Advance the information collection capabilities through enhanced member engagement, better tools or sensors, and an improved portal

A C-level advisory team from the ESCC (the Member Executive Committee, or MEC) was established in 2015 to help enable the implementation of the ESCC’s recommendations, which included a new vision for the E-ISAC to become the electricity industry’s leading, trusted source for analysis and sharing of security information. As of April 2017, much progress has been made toward realizing this vision and now we look forward to the next five years and beyond while asking the question, “how do we transform the E-ISAC into an intelligence collecting and analytical capability industry cannot do without?” To begin this process, the following section looks back at known threats and ahead at the anticipated evolving nature of future threats targeting the electricity industry.

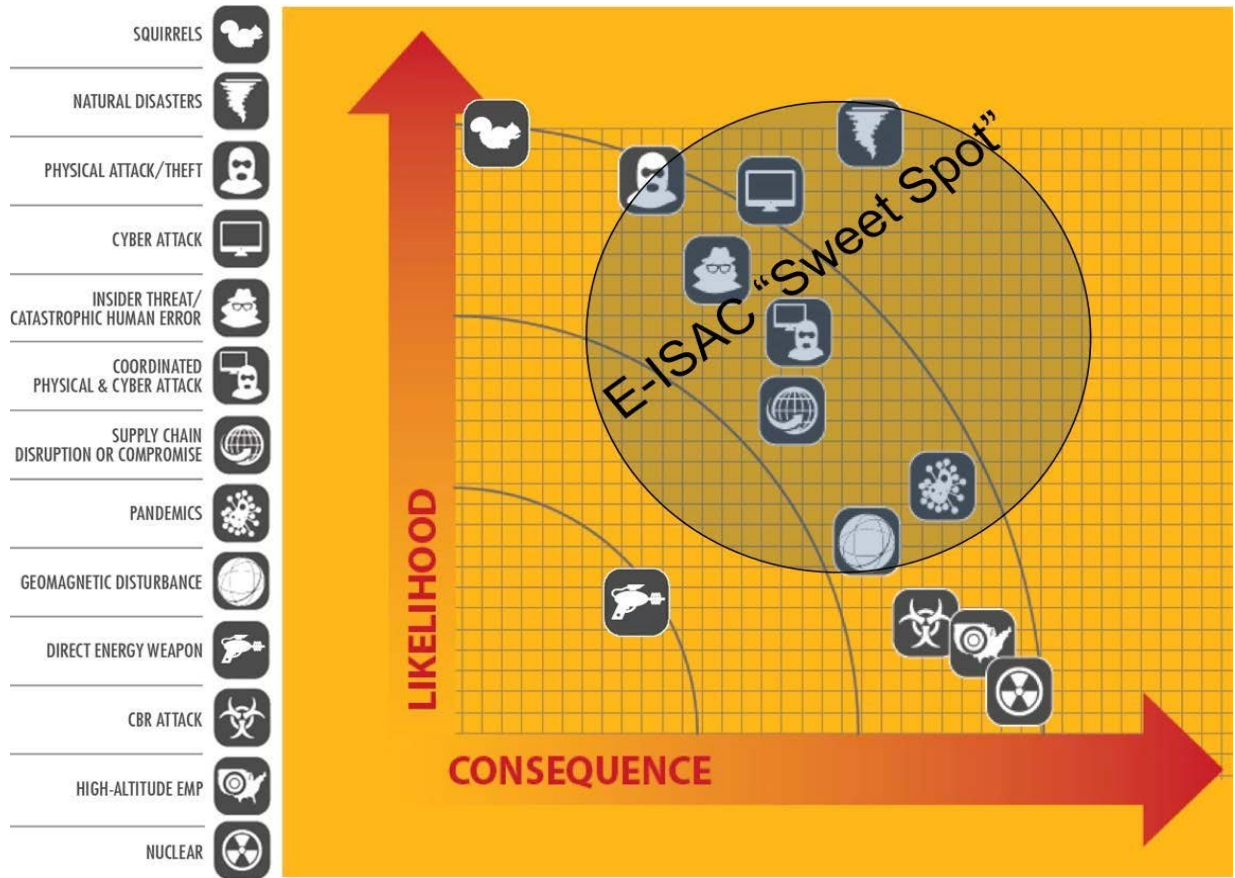
### **The Changing Threat Landscape**

A study conducted for the ESCC by the Chertoff Group in 2014<sup>44</sup> found that a range of threats target the electric power grid. These threats can be approximately related to each other by using a likelihood versus consequence plotting. We feel that the E-ISAC’s “sweet spot” is roughly along the 45-degree line as depicted in the graphic below.

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<sup>44</sup> “Addressing Dynamic Threats to the Electric Power Grid Through Resilience” <https://www.chertoffgroup.com/files/docs/Addressing-Dynamic-Threats.compressed.pdf>





Industry by itself cannot protect the grid from all hazards, and likewise neither can the government. A strong partnership between industry and government for security is required, and in fact has been in place for many years. At the center of this partnership is the ESCC, which serves as a bridge between the public and private sectors for strategic security policy coordination and to develop unity of messaging during a crisis. In addition, timely and actionable information sharing, collaboration, and analysis are the cornerstones of good security practices within the electricity industry. The E-ISAC’s role is to facilitate voluntary sharing and collaboration, and to provide unique insights into emerging security issues that are affecting the sector. In January 2017 the E-ISAC and the MEC met in person to discuss the future of the E-ISAC relative to changing threats, changing industry dynamics, and a changing environment. While physical threats resulting in theft, vandalism, disruption, or destruction will always be present, the group recognized that cyber threats and other types of threats are evolving and will require adaptive change throughout industry and especially with respect to the E-ISAC. The group agreed that future threats industry needed to monitor and mitigate included:

- Near-term (0–2 years)
  - Nation state threats, advanced persistent threats, the Internet of Things (IoT), Distributed Denial of Service (DDoS) attacks, and ransomware
  - Data breaches and intellectual property theft
  - Insiders, physical damage, coordinated attacks, and third-party risks
- Mid-term (3–5 years)
  - Increased reliance on gas generation
  - Distribution system vulnerabilities via networked control systems

- Growth of demand response technologies with low security
- Distributed energy resources
- Reliability of communications networks
- Long-term (5–10 years)
  - Higher replacement rate of components and systems
  - Increased cost of operations due to higher security costs
  - Ability to run manually might be lost
  - Computers attacking computers

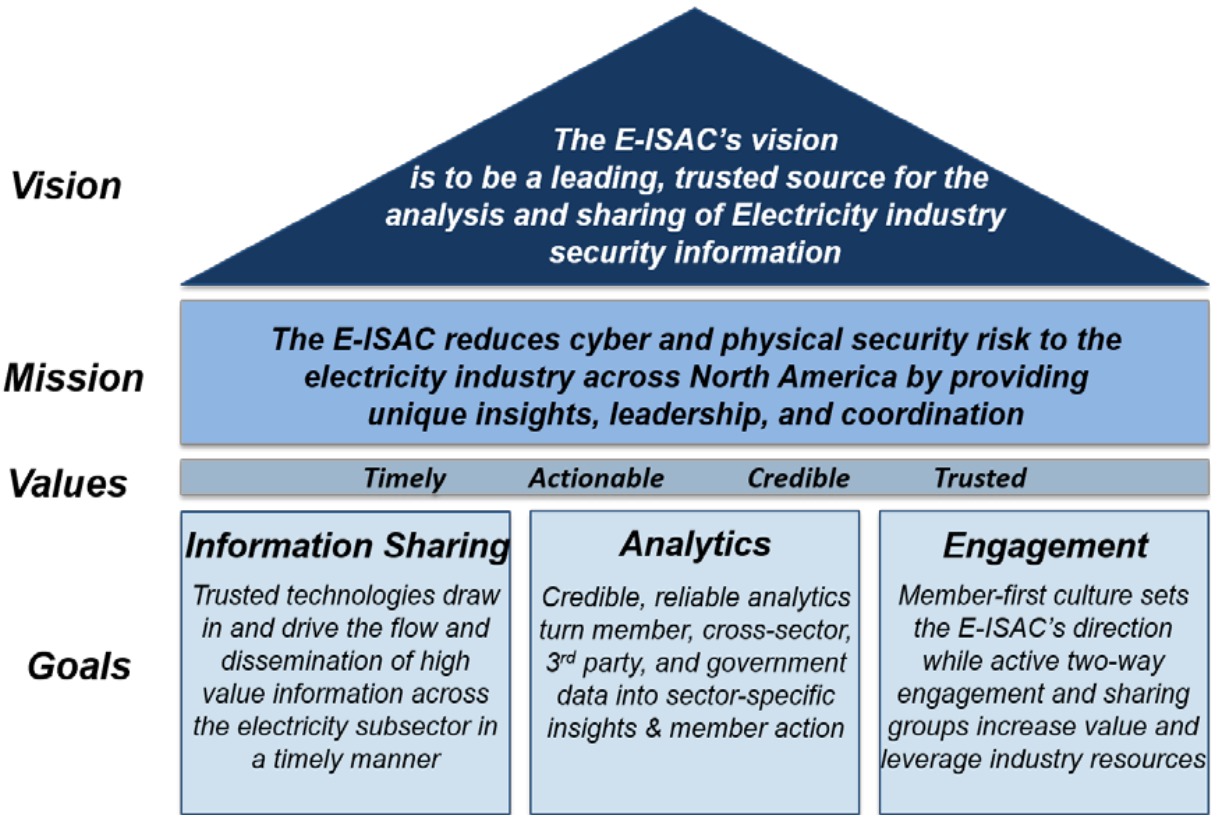
The remainder of this plan discusses improvements needed in 2017 to address current threats, a look at the mid-term range of 2018–2022 to address emerging threats, and what the E-ISAC might look like beyond 2023 if the forecasted issues continue to develop.

### **The Need for a Strategic Plan**

Given that quite a bit of work was accomplished over the past two years to improve the E-ISAC, it is reasonable to ask why a long-term strategic plan is needed. Looking externally, there are three primary drivers:

- Security threats continue to evolve and become more dangerous
  - Ukraine, IoT, and ransomware attacks are indicators
  - Geopolitical tensions and changing societal trends make North America a target
- Customer expectations for highly reliable energy continue to increase
  - Electricity entities need to be more agile and responsive to real-time risks
  - Rapid technology changes also increase the risk landscape
- More robust understanding and measurement of grid resiliency and security
  - Need new tools for collecting and analyzing grid security metrics data

Since the publication of the ESCC’s strategic review in 2015, the E-ISAC has solidified vision, mission, values and goals statements as shown in the graphic below. The three “goals” columns represent parts of a rising spiral of membership engagements: bringing in more information improves the analytical process, which in turn drives more engagement, which then brings in more information, which improves analytics, and so forth.

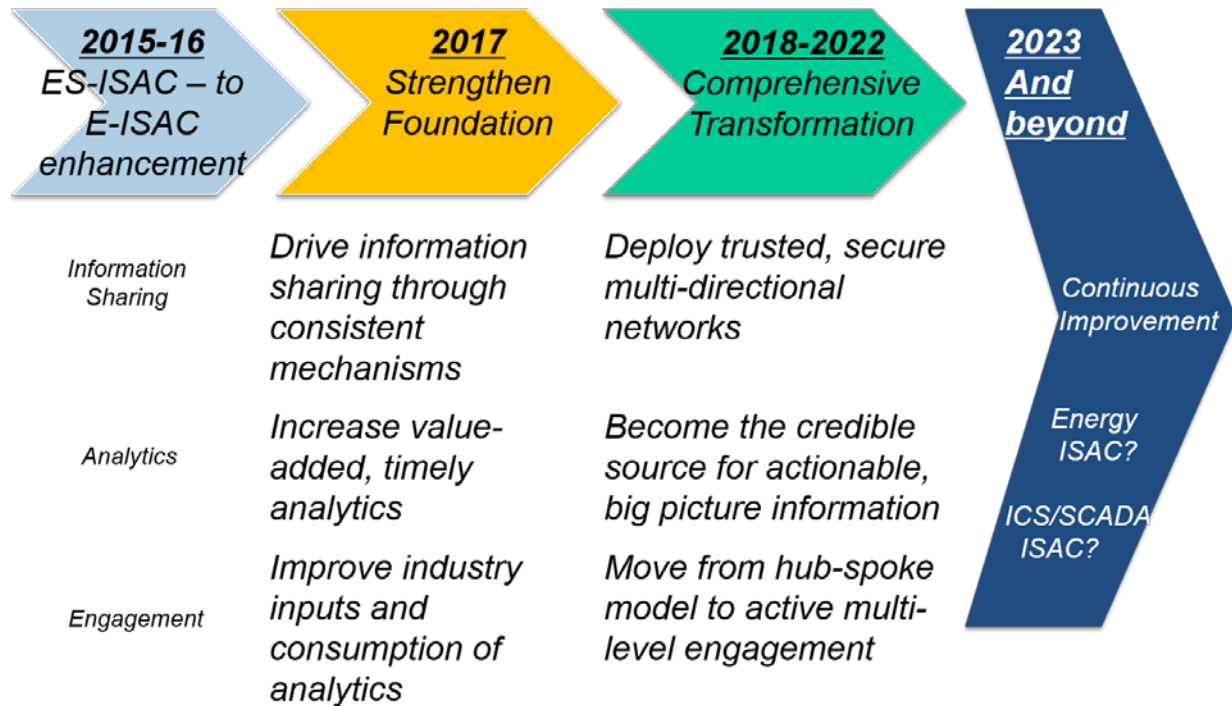


This process takes the E-ISAC to new levels as it gets better at information collection, analysis, and dissemination and represents the core capabilities of the E-ISAC. The MEC and the E-ISAC developed a related strategy for the improvement of the E-ISAC’s products and services that builds upon the pillars shown in the graphic above, and is working on a technology roadmap in partnership with NERC’s Information Technology team that also follows this method. Both of these more tactical plans support the goals and objectives of the E-ISAC’s long-term strategic plan.

**Transforming the E-ISAC: 2017 and Beyond**

In the coming years, NERC should build on the foundation of the 2015 ESCC recommendations, and position the E-ISAC to provide more robust security information for better understanding of security weaknesses and strengths across the ERO. By addressing the three primary drivers outlined above, NERC can transform the E-ISAC into a world-class intelligence collecting and analytical capability for the electricity industry. To accomplish this, the E-ISAC must achieve a maturity level where industry completely trusts it to gather, hold, analyze, and distribute highly sensitive security information, with no fear that information voluntarily submitted to the E-ISAC would ever be used for a compliance enforcement action or investigation.

As we strengthen the foundation built over the past two years, the E-ISAC should undertake a comprehensive multi-year transformation to build capabilities that include trusted, secure, multidirectional networks and a movement from a hub/spoke model to a very active multi-level engagement. The E-ISAC strives to be the industry’s most credible source for actionable, big picture information. This roadmap is illustrated in the graphic below.



2015 and 2016 were foundation-building years, set in motion by the ESCC strategic review and the publication of the findings and recommendations. In 2015, NERC implemented an employee code of conduct, completed a physical and logical separation of the E-ISAC from other parts of NERC, hired strategic leadership and key industry experts, and rebuilt the organization with new internal functional groups. Also that year, the name was changed from the ES-ISAC to the E-ISAC and new logos, color schemes, and branding were launched. In 2016, the old web portal was upgraded with the intention of setting in motion a completely new platform capability that will launch later in 2017. Over the past two years, membership engagement and information sharing grew rapidly, new products and services were launched, and the third Grid Security Exercise (GridEx III) was successfully administered by the E-ISAC. The impact of these initial changes on the E-ISAC’s capability to respond to real-world incidents was validated by the Ukraine grid attacks in December 2015, denial of service attacks from Internet of Things (IoT) devices in October 2016, and the second Ukraine event along with the Grizzly Steppe incident at the end of December 2016.

As was pointed out frequently in the past two years, the “IS” and the “A” in “ISAC” define the two primary strategic themes that must be in place for the organization to be successful. In 2017, the E-ISAC is deploying new information sharing and analysis tools such as the Cyber Automated Information Sharing System (CAISS) and an Event Visualization Tool (EVT) to increase the speed and ease of sharing cyber threat information. While the Cybersecurity Risk Information Sharing Program (CRISP) has enhanced visibility and understanding of cyber threats for the electricity industry, processing classified information takes time. As information comes in from CRISP sensors and goes to the Pacific Northwest National Laboratory, the E-ISAC will leverage a new unclassified data storage and analytics capability inside the E-ISAC so that more actionable information can be sent to industry on a timelier basis. Later this year we anticipate that alerts and technical information will flow securely between CAISS and CRISP in our efforts to expand our data collection beyond the current participant pool and to achieve a more comprehensive picture of industry threats than we have today.

The major technical effort in 2017 is a planned replacement of the current web portal with a new “platform” that will enable automatic information sharing, the creation of private discussion groups, data visualization, and many other features that the E-ISAC’s members requested. To support the new tools and the needs of the sector,

additional analysts will be hired in 2017. In addition, new partnerships are envisioned with organizations like the Computer Emergency Response Team Coordination Center (CERT/CC), and at the end of 2017, the E-ISAC will host the GridEx IV. In mid-April 2017, the internal structure of the E-ISAC was modified to align the staff to better serve the industry. There are now two major groups—one focused on operations and analysis and the other on programs and member engagement. Some minor facility improvements are also planned for 2017.

Looking forward, the next five years (2018-2022) will focus on transforming the E-ISAC into a world-class intelligence collecting and analytical capability for the electricity industry. To achieve this goal, the E-ISAC should increase its capability to collect security intelligence; increase the number of specialized analysts; acquire additional data storage, management, and sharing technologies; and increase the E-ISAC's access to classified networks and facilities.

#### **New Intelligence Collection – To Support Better Unclassified Information Sharing**

Some new collection capabilities coming online in 2017 such as CAISS and the Department of Energy's CYOTE project will bring additional intelligence, but the E-ISAC should also consider more active monitoring of public and private networks for new threats, perhaps collecting data from sensors in Operational Technology (OT) networks, and increasing the ability to monitor social media and other open sources. Some of that new collection could be done by others as a service that the E-ISAC would pay for.

#### **Access to Classified Networks and Facilities – To Improve Sharing of Highly Sensitive Information**

While the majority of the E-ISAC's staff hold US government security clearances, the facility inside of NERC operates at the unclassified level. This requires E-ISAC staff to travel to government facilities in order to view and analyze classified data. On the industry side, very few entities have access to classified facilities and most do not have staff with appropriate clearances. To support the strategic goal of better information sharing, both the E-ISAC and industry members should have increased access to classified data and classified information sharing networks. Relationships with government partners need to be leveraged to make valuable classified data and analysis rapidly available to asset owners and operators.

#### **More Analysts – To Improve the E-ISAC's Analytical Capabilities**

The E-ISAC should hire technical analysts with specializations in fields such as industrial control system security, end-point (host) security, network security, cloud security, and penetration testing. Over the next three to five years an estimated ten or more analysts should be hired at a rate of two or three per year so that the annual increase of NERC's budget is minimized.

#### **Acquisition of New Technologies – To Improve Industry Engagement**

As more data is collected, the E-ISAC should acquire additional data storage, management, and sharing technologies. These technologies must be as secure as possible, given that the risk of a targeted data breach will increase as the E-ISAC improves its capability to give early warning to industry about threats and vulnerabilities discovered via data analysis. Specific technologies needed in the next five years include event visualization via the new platform, predictive analysis based on artificial intelligence, real-time threat feeds to members, a customized platform experience for each user, and federated information sharing.

Beyond 2023 security challenges will continue to expand, requiring additional resources and perhaps a different relationship across the energy industry. Due to commonality of threats across all energy companies, rapid growth of vulnerable control systems, and a convergence of lines of business within the industry, we must consider whether or not the E-ISAC should remain focused only on electricity, or if it should expand to include all energy owners/operators (electricity, gas, oil, and natural gas).

Other items to consider beyond 2023 include the size and location of the E-ISAC facility and potential partnerships with the research community. Due to limitations of the NERC budget, some of these new capabilities would need outside funding from the government or perhaps grants from large industry companies.

### **Other MEC Guidance**

Several questions were presented to the MEC membership about the long-term future of the E-ISAC. Most of the questions were answered in the discussion paragraphs above. The remaining questions not previously discussed and the MEC's summarized responses are below.

#### **Should the E-ISAC move to 24/7 operations?**

Not immediately but the decision should be based on changing situations and activity levels. This response is driven by the reality of the cost for the additional staff, and by the reality that very little data is submitted to the E-ISAC for analysis outside of normal business hours. But, as the E-ISAC's capabilities and data collection grow, there will likely be a point in the next 3-5 years when it might be necessary to move to round-the-clock operations.

#### **What is the E-ISAC's relationship with other ISACs?**

There is concern that other ISACs (the Financial Services ISAC, or FS-ISAC, is a recent example) will attempt to recruit electric utilities to pay for special analytical services in order to cover expanding costs. The consensus view of the MEC is that the E-ISAC should not discourage members from taking advantage of services offered by other ISACs, and should try to learn about those new capabilities with an eye towards developing them organically within the E-ISAC when appropriate. Services offered by other ISACs should be viewed as additional intelligence sources. Additionally, the E-ISAC should develop stronger information sharing partnerships with other ISACs and increase the level of cross-sector engagement.

#### **Should the E-ISAC have an international relationship?**

The E-ISAC, as part of NERC, currently has members in Canada and Mexico. The MEC recommended that the E-ISAC consider establishing formal information sharing relationships with other countries such as Japan or the United Kingdom. Because no other countries are interconnected with the North American grid beyond the US, Canada, and Mexico, any future information sharing relationship with entities in other countries would be at a very high level and must preserve the privacy of North American entities that are voluntarily sharing with the E-ISAC.

#### **Should the E-ISAC accept funding from sources beyond NERC assessments?**

Government funding may be necessary to cover costs of the recommended expansions of technical capabilities, staff, and facilities. MEC members cautioned about any potential "attached strings" that come with government grants. Beyond 2018, some member companies have expressed interest in a model like CRISP where companies can pay for additional services, or perhaps moving to a tierbased pricing model.

### **Conclusion and Next Steps**

The next several years present an opportunity to transform the E-ISAC into a world-class intelligence collecting and analytical capability for the electricity industry; and an opportunity to support NERC's overall initiatives to better understand the current security posture of the North American grid. As threats, technologies, and business process change, the E-ISAC, in order to be as valuable as it can to the industry, must evolve to a maturity level where industry completely trusts it to gather, hold, analyze, and distribute highly sensitive security information. Specific financial projections, technology requirements, staffing, and facility improvements are being developed and will be incorporated in the NERC strategic plan and the NERC business plan and budget.

Towards this transformation, for the near term (remainder of 2017 and all of 2018), the E-ISAC plans to:

- Hire additional analysts
- Increase the in-house data storage and analysis capabilities
- Grow the CRISP and CAISS programs
- Deliver a world-class information sharing platform well before GridEx IV
- Grow membership engagement via the new platform
- Increase engagement with other ISACs and information sharing partners
- Increase engagement with Canada and Mexico
- Provide higher quality grid security metrics data to support NERC’s data collection initiatives

## Attachment

# Expanding E-ISAC Operations to Include 24x7 Onsite Operations

At the request of the ESCC’s MEC, the E-ISAC evaluated the benefits of and requirements for expanding operations to include certain 24x7 onsite capabilities. The purpose of this document is to outline: (1) the value of expanding the E-ISAC’s operations to include 24x7 on-site capabilities; (2) a recommendation as to the level of 24x7 onsite capabilities the E-ISAC should implement; and (3) the staffing and other requirements necessary to implement such capabilities.

This document is organized as follows:

- *Section I* provides an executive summary of the E-ISAC’s proposal for expanding its operations to 24x7 onsite capabilities.
- *Section II* provides an overview of the E-ISAC’s existing organization structure, hours of operation, and staffing levels.
- *Section III* discusses the value of expanding E-ISAC operations to include 24x7 onsite capabilities.
- *Section IV* provides the E-ISAC’s proposal with respect to the level of 24x7 capabilities it should offer.
- *Section V* discusses staffing requirements for expanded operations.

### Section I: Executive Summary

As discussed further below, the E-ISAC recommends expanding its operations to include certain 24x7 onsite capabilities. Specifically, the E-ISAC would incrementally expand its operations to have one to two E-ISAC personnel onsite at all times to monitor data feeds, respond to member inquiries, and conduct physical and cyber security analysis. 24x7 onsite capabilities could provide significant benefits to members, including (1) timely analysis and information sharing regarding developing physical or cyber security incidents that are discovered or occur outside of normal hours, and (2) the continued development of actionable intelligence during the overnight and weekend hours to enhance industry’s preparation for, and response to, any potential physical or cyber security threat or incident.

As the value of expanding E-ISAC operations to include 24x7 capabilities depends, in large part, on increasing the flow of data into the E-ISAC to warrant the additional resources, the E-ISAC recommends accomplishing the expansion to 24x7 onsite capabilities in stages through 2020. Using a phased approach would (1) allow the expansion to 24x7 onsite capabilities to move in parallel with the E-ISAC’s plans to increase data flow and deploy additional analytical tools and capabilities, and (2) provide the E-ISAC the ability to reassess the timing of additional projected resources needs on an annual basis during its budget approval process based on data flow and work demands.

The E-ISAC proposes that during 2019, the E-ISAC expand its Monday-Friday operations from 6:00 a.m.-6:00 p.m. to a full 24x5 (minus weekends and holidays), with one watch officer assigned to each after-hours period (see Table 1). In 2020, the E-ISAC proposes to move to a full 24x7 operations by adding onsite staff during weekends and holidays. This proposed plan and resources needs for future years (beyond 2020) will continue to be subject to review and approval in the context of NERC’s annual budget approval process, and will primarily augment the 24x7 nature of the watch.



## Section II: E-ISAC Organization Structure, Hours of Operation, and Staffing Levels

### E-ISAC Organizational Structure

The E-ISAC is separated into two components: (1) Partnerships and Engagement, and (2) Operations. Partnerships and Engagement consists of cross-sector coordination, member outreach, and policy and coordination. The Operations component is the interface for all information sharing and analysis. Operations consists of three teams: Watch Operations, Cyber Analysis and Context, and Physical Security Analysis.

**Watch Operations** – All information the E-ISAC receives is routed through the Watch Operations team, which performs initial analysis and then passes the information for detailed action to the respective analysis teams. Watch Operations monitors the operations email account for member and cross-sector sharing, manages the E-ISAC portal, reviews and edits (when necessary, to remove attribution) member postings on the portal, and has primary responsibility for all E-ISAC postings on the portal.

**Cyber Analysis and Context** – The E-ISAC Cyber Analysis and Context team performs detailed analysis on the cyber security-related information shared by E-ISAC members and partners. The team’s goal is to analyze that information to develop and share actionable indicators and the cyber security “big picture” with members and partners. This effort includes vetting information shared by government and cross-sector partners for validity to include the “so what” factor on how certain indicators would apply to a sector. Additionally, the Cyber Analysis and Context team performs analysis of malware samples submitted to the E-ISAC to identify and disseminate indicators that can be used to detect infections or mitigate malware command and control communications.

**Physical Security Analysis** – The Physical Security Analysis team performs detailed analysis on all physical security events shared with the E-ISAC. When a report is received, the Physical Security Analysis team reviews the information and, as necessary, contacts the relevant entity to seek more detailed information, to determine if there is a bigger threat to the sector. This is especially important in instances of sabotage, vandalism, and explosive devices. The Physical Security Analysis team engages with law enforcement and state fusion centers to help build situational awareness and identify adversary tools, techniques, and procedures that can be shared with industry physical security teams to increase their awareness and protect against similar activity.

### E-ISAC Watch Operations Hours of Operation and Staffing Levels

The E-ISAC Watch Operations currently operates with personnel onsite (at 1325 G Street, NW Suite 600, Washington, DC 20005) Monday through Friday from 6 a.m. to 6 p.m. Unless there is an event the necessitates increased after-hours staffing, the only after-hours support to members is provided by a Watch Operations duty officer, rotated through the Watch Operations team on a weekly basis, who monitors the 24-hour incident reporting line. The Watch Operations duty officer is not located onsite outside of normal operating hours.

The E-ISAC Watch Operations is currently staffed as follows:

- One (1) Chief, Watch Operations
- Five (5) Watch Officers:
  1. Watch Manager – Supervisor-level oversight of Watch Officers
  2. Watch Officer: Daily Operations – Watch Floor facility maintenance, tour scheduling, morning situation awareness products, etc.
  3. Watch Officer: Metrics and Reporting (Vacant) – Provides metrics on Watch Operations to NERC and E-ISAC leadership (portal visitors and usage, support ticket tracking, etc.)
  4. Watch Officer: Technical Assessments – Quick-hit, but deeper-dive analysis of cyber event reporting

5. Watch Officer: Open Source Intelligence (Vacant) – Development and production of all analytical products produced by Watch Operations

The E-ISAC's 2019 budget includes the augmentation of existing capabilities with the following additional personnel:

1. Watch Officer: Security Analysis – Specializes in analyzing and information sharing of physical security-specific events
2. Watch Officer: Interagency Liaison – Rotates between the National Cybersecurity and Communications Integration Center (NCCIC) watch floor or other entities with standing information-sharing programs

### Section III: Value of Expanding to Include 24x7 Onsite Capabilities

As noted above, the E-ISAC does not operate on a 24x7 basis. As the E-ISAC continue to mature, however, there are benefits to be gained by expanding operations to include certain 24x7 onsite operations. The following is a discussion of the benefits of having 24x7 capabilities.

**Increased Capability to Address Events Outside of Normal Hours** – To date, there have been only a few events that have occurred outside of normal business hours that required substantive analysis and immediate communication with stakeholders. Such events, however, could become more common as the risk to the nation's critical infrastructure increases.<sup>45</sup> Business hours in many of the nation states that pose the greatest cyber threats to U.S. interests – e.g., Russia, China, Iran, and Democratic People's Republic of Korea<sup>46</sup> – are generally opposite those in North America. Hackers may also target members and partners in North America during reduced staffing periods (e.g. overnight, holidays, and weekends).<sup>47</sup> With an onsite 24x7 staffing presence, the E-ISAC would improve its ability to timely analyze and respond to potential events that occur outside of normal business hours.

**Development of Actionable Intelligence for Daytime Staff** – As the E-ISAC continues to develop and establish new data sources, 24x7 onsite staffing would allow the E-ISAC additional time to perform analysis to develop and share actionable intelligence with member night shift personnel or to have reports available for daytime staff to assess at the beginning of their work day. Rapid access to information is critical when network defenders are working through the Cyber Kill Chain model to remediate cyber-attacks.<sup>48</sup>

The value of and need for 24x7 onsite capabilities is dependent on increased flow of data into the E-ISAC. Without increased data and additional tools and capabilities to analyze the data, the move towards 24x7 may not provide the intended benefits described above or warrant the additional expenditure of resources. To that end, the E-ISAC is already taking steps to increase data sharing from members and seeking new data sources to which it has access:

- **Member Engagement** – The E-ISAC is currently engaging in a number of efforts to improve the data flow from E-ISAC members. Among other things, the E-ISAC expects increased data flow from: (1) the Industry Augmentation Program; (2) expanding the number of CRISP companies to provide additional insight in the classified threats facing our members' information technology systems,<sup>49</sup> and (3) developing advanced analytics capabilities (e.g., the Cyber Automated Information Sharing System). The E-ISAC is also taking steps to increase membership overall.

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<sup>45</sup> Two such events include attacks by the hacker group WannaCry, which was believed to be responsible for network compromises primarily located in Asia, and the Petya/NotPetya ransomware attack that affected computers across Europe.

<sup>46</sup> Based on the [Worldwide Threat Assessment of the US Intelligence Community](#)

<sup>47</sup> <https://www.curotec.com/insights/christmas-hackers-attacks-increase-around-holidays/>

<sup>48</sup> Research has been conducted on how the Cyber Kill Chain model can specifically apply to the sector. For one such endeavor, see the SANS Institute report [The Industrial Control System Cyber Kill Chain](#)

<sup>49</sup> Pacific Northwest National Laboratory, located in Washington State, is a key source of CRISP analysis. Moving to 24x7 operations will expand the opportunities for analysts in Washington, D.C. to communicate with their counterparts at the lab.

- **Government Partnerships** – The E-ISAC is renewing and expanding relationships with federal government partners (e.g., Departments of Energy and Homeland Security, FBI, Canadian Cyber Incident Response Centre) to increase information sharing and data flows, and gaining additional credentialed access where appropriate. These relationships will expand access to government-informed information and analysis.
- **International Partnerships** – The E-ISAC is expanding partnerships with international counterparts. During the June 2017 cyberattacks that began in the Ukraine and spread across Europe, the E-ISAC worked with analysts at the National Cyber Security Centre in the U.K. to assess the tactics, techniques, and procedures being used by the adversary and to provide updated information to members.<sup>50</sup> The E-ISAC is also fostering a relationship with the nascent Japan Electricity Information Sharing and Analysis Center, and the Canadian Cyber Incident Response Center. The information gained from these international engagements will help provide a more complete assessment of, and ability to act on, attacks against international electricity sector partners which could also threaten the North American grid.
- **Strategic Vendor Partnerships** – The E-ISAC is focused on developing strategic relationships with intelligence-reporting providers to provide insight into threats facing the sector’s industrial control system technologies.<sup>51</sup>

## Section IV: Recommended Level of 24x7 Onsite Capabilities

Given the value that 24x7 operations could provide to its members and partners, the E-ISAC recommends expanding the role of the Watch Operations team to include certain 24x7 onsite capabilities. Depending on the level of data flow into the E-ISAC, the goal is to have always have one-to-two E-ISAC Watch Officers onsite outside normal business hours.

The responsibilities of the Watch Officers onsite after normal business hours would shift slightly from the duties traditionally conducted by Watch Officers during normal business hours (i.e., monitor and respond to incoming information and perform a “quick hit” initial analysis of incoming data). For Watch Officers that staff the night, weekend and holiday hours, the nature of their responsibilities shift more towards analysis. Baring a substantial security event, after-hours communication and data flow from members and partners—including international partners—is not expected to be as extensive as that received during normal business hours. As such, while a primary focus would continue to be monitoring data feeds and responding to member and partner inquiries, the after-hours onsite Watch Officer would focus more on analysis of data and the development of actionable intelligence reports for daytime staff.

## Section V: Staffing Requirements for Expanded Operations

The E-ISAC recommends that expansion to 24x7 capabilities to the level discussed in the previous section be accomplished in stages through 2020 and beyond. Using a phased approach will allow the expansion to move in parallel with the E-ISAC’s plans to increase data flow and deploy additional analytical tools and capabilities. As noted, the value of expanding operations to include 24x7 capabilities depends, in large part, on increasing the data flow in order to warrant the additional resources. A phased approach would provide the ability to reassess the timing of additional projected resource needs on an annual basis during NERC’s budget approval process. The E-ISAC recommends that the expansion proceed as outlined below.

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<sup>50</sup> E-ISAC portal posting [Update 2 - Continuing Cyber Attacks Affecting U.S., Overseas Entities](#)

<sup>51</sup> Pilots are currently being negotiated with Dragos and N-Dimension.

**Table 1: Watch Officer Assignments and Coverage**

Year	Monday–Friday 6:00 a.m.–6:00 p.m.	Monday–Friday 2:30–11:00 p.m.	Monday–Friday 10:00 p.m.–6:30 a.m.	Weekends/Holidays 12:00 a.m.–12:00 p.m.
2018	Maintain current planned staffing levels	N/A	N/A	N/A
2019	Add two watch officers from 2018 levels	Add one watch officer	Add one watch officer	N/A
2020	Add one watch officer from 2019 levels	Maintain staffing level from 2019	Maintain staffing level from 2019	Add two watch officers
2021	Add one watch officer from 2020 levels	Add one watch officer from 2020 levels	Add one watch officer from 2020 levels	Maintain staffing level from 2020

The table below provides the recommended phase-in plan for additional personnel required to meet the expanded operations for each of the next three years.

**Table 2: Watch Officer Totals and Cost**

Year	Increased Watch Personnel for Regular Hours (2018 Long-Term Strategy)	Proposed Additional Watch Personnel for 24x7 Coverage (Incremental to 2018 Long-Term Strategy)	Total Proposed Watch Staffing, including 24x7 Watch Capabilities	Estimated Incremental Cost (including salary, incentive, benefits) (24x7 Watch Capabilities)	Running Total for Estimated Incremental Cost (24x7 Watch Capabilities)
2018	1	0	6	N/A	-
2019	2	2	10	\$370,000	\$370,000
2020	1	2	13	\$370,000	\$740,000
2021	1	2	16	\$370,000	\$1,110,000

As noted above, this proposed plan and resources needs for future years (2020 and beyond) will be subject to review and approval in the context of NERC’s annual budget approval process.

## Exhibit F – CMEP Technology Project

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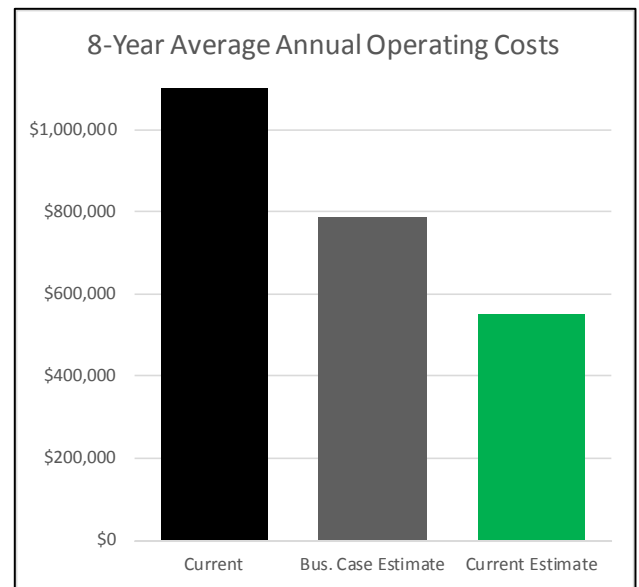
### What is it?

As the ERO Enterprise matured to a risk-based approach in its regulatory posture, a more comprehensive system to manage and analyze compliance monitoring and enforcement information became necessary. The CMEP Technology Project began in 2014 to meet that need with the goal of improving and standardizing processes in the Compliance Monitoring and Enforcement Program (CMEP) across the ERO Enterprise. The new project will align the business processes of NERC and the Regional Entities on a single platform; improve documentation, sharing and analysis of compliance work activities; and make CMEP activities more effective and efficient across the ERO Enterprise; thus enhancing the reliability and security of the grid.

### Why are we doing it?

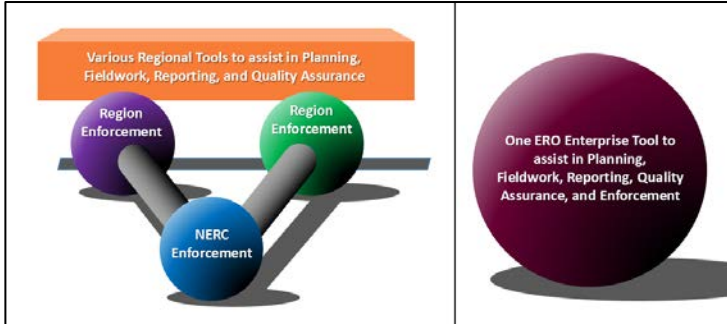
The CMEP Technology Project is designed to promote greater efficiencies in compliance monitoring and enforcement work, better using ERO Enterprise resources and lowering costs, while offering alignment on a single platform across the Enterprise based on a commercial product designed specifically for managing risk and verifying compliance. NERC and the Regional Entities evaluated the benefits of unifying processes and systems to ensure consistency in monitoring compliance with NERC Reliability Standards and judged this effort as a necessary step in the evolution of the ERO model. The NERC Board of Trustees approved the project at their quarterly meeting on November 9, 2017. Benefits include:

- **Consistency.** Moving to a common platform with a single common way for registered entities to interact with the ERO Enterprise on compliance and enforcement will aid significantly in addressing potential gaps in consistency.
- **Cost Management.** By moving to a common platform, economies of scale can significantly reduce, by almost 50%, annual cash expenses incurred for procurement of tools and services that support implementation of the CMEP across the ERO Enterprise.
- **Productivity.** Because of the large number of staff both within the ERO Enterprise and at registered entities that are working to assure reliability through verification of compliance with the Reliability Standards, there is a significant potential for improvements in productivity. These enhancements will reduce the effort of documenting compliance and allow for more focus on ensuring reliability.
- **Effectiveness.** In addition to the benefits provided by implementing consistent processes across the ERO Enterprise, moving to a product specifically designed to support management of risk and verifying compliance will help ensure focus is kept on those things that matter most to reliability. Fine tuning of our processes to align more closely with industry standard best practices and guidelines will also improve the quality of our work.
- **Cyber Security.** As threats against critical infrastructure have grown, a continuously improving cyber security posture has become an essential part of operations. This implementation will elevate our information protection strategy to ensure we continue to provide the high levels of confidentiality demanded by our industry.



## How are we doing it?

In the past several years, a number of companies have developed sets of tools to support the three areas of Governance, Risk, and Compliance (GRC). These tools align well with our mission as the ERO Enterprise: assisting in ensuring information can be shared across a large and geographically dispersed leadership team, supporting the analysis and management of risks and threats, and having robust mechanisms for documenting and tracking compliance with both regulations and internal policies and procedures.

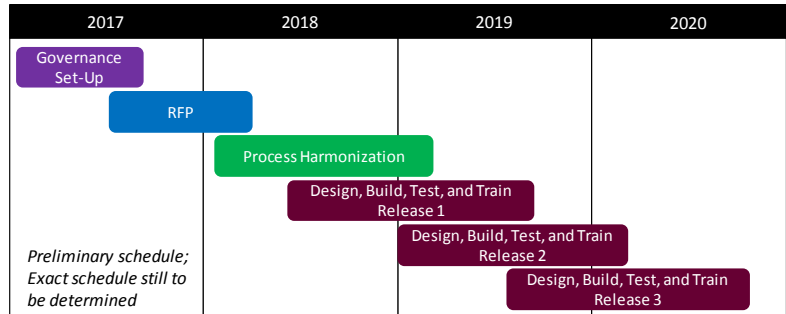


While the various products, tools, templates and file transfers in use today across the ERO Enterprise have been effective for ensuring reliability and verifying compliance, the amount of manual work that is required to maintain and share the information contained within them is intensive. The time is appropriate to bring everything together within a single suite of tools. To help ensure that the organizational change required is scoped to a manageable size, NERC and the Regions are planning the implementation as a set of three defined functional releases.

## When is this happening?

Work has already begun on implementing this vision. Initial feasibility workshops were conducted with NERC and Regional Entity leaders in 2014 and 2015, leading to the development of a long-term roadmap and a Request for Information to vendors, which led to a Request for Proposal and selection of a vendor earlier in 2018.

Work in progress includes several cycles of process harmonization intended to ensure alignment between NERC and each of the Regional Entities prior to implementation. While consistency between Regions is a core element of this effort, the accommodation of appropriate regional differences is intended to be addressed within the tool as well. As processes are aligned and confirmed, elements of those processes will be built and tested within the tool, leading to structured releases of functionality.



Additional development to centralize the management and administration of information related to NERC Reliability Standards and registered entities will be undertaken. Integration to transfer data will also be developed. Information security will be a key design consideration for both systems, which will provide high levels of confidentiality and access control.

## Who is working on this?

NERC and the Regional Entities began this effort by evaluating consultants with experience implementing GRC systems. Deloitte, identified by Gartner as a “visionary leader” in Risk Management Consulting Services, was selected to assist the ERO Enterprise with this effort. Deloitte has extensive knowledge of the electric utility industry and the ERO through prior projects and engagements. Next, NERC and the Regions developed and issued an RFP that resulted in the review of a number of potential tools to determine both their organizational and technical capabilities to meet the unique needs of the ERO Enterprise. Nasdaq BWISE was selected as the vendor and tool of choice for the CMEP Technology Project.

## How can I get involved?

The project team is working with the Compliance and Certification Committee and their Alignment Working Group to ensure the perspectives of registered entities are considered. In addition to reaching out to the members of the CCC, feel free to contact anyone with the ERO Enterprise with questions, concerns, or suggestions.

For more information, go to <https://www.nerc.com/ResourceCenter/Pages/CMEPTechnologyProject.aspx>.

# Exhibit G – Situation Awareness for FERC, NERC, and the Regional Entities (SAFNR)

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## Overview

The Situation Awareness for FERC, NERC, and the Regional Entities (SAFNR) tool, initiated in February 2010, is a system composed of hardware, software, and communication (network) capabilities, providing near real-time information about the current operating conditions of the BPS. SAFNR provides valuable information from a wide-area view about BPS impacts from hurricanes, hot and cold weather extremes, and varying system conditions. However, NERC’s Bulk Power System Awareness (BPSA) staff’s ability to accurately understand BPS current conditions has declined over the years as the technology has aged. Enhancing SAFNR will incorporate functionality elements piloted during GridEx IV and address the recommendations from both the *GridEx IV Executive Tabletop* and *GridEx IV Distributed Play Lessons Learned Report*.

## Background

NERC and the Regional Entities monitor operating conditions on the BPS in North America to maintain an awareness of situations that may impact or have the potential to impact the reliable operation of the grid. As called for in the ROP,<sup>52</sup> the Situation Awareness program enables NERC to initiate timely communications with key stakeholders, including Reliability Coordinators, FERC, Canadian and Mexican governmental agencies, the DHS, and the E-ISAC. Awareness of system events also enables NERC to identify risks for mitigation through its Events Analysis process, permits and promotes the development of lessons learned, and contributes to the ability to trend reliability performance. Similarly, FERC monitors conditions on the BPS in the United States for comparable purposes. Situation Awareness has three essential elements: the ability to perceive, comprehend, and then project that understanding into the future. More simply stated, it is the “What?”, “So what?”, and finally, “Now what?” regarding the status of the grid.

The system has the capability to include data for electric system facilities operating at 230 kV and above and generation units at 500 MW and above and provides near-real time situational awareness information, with data provided by Reliability Coordinators, Balancing Authorities, and Transmission Operators. SAFNR provides the ability to monitor and be aware of the current conditions and assess forecasted conditions on the BPS. The tool also supports the ability to understand and clearly communicate normal system conditions (or conditions of heightened risk to reliability) among Reliability Coordinators, Regional Entities, NERC and FERC.

SAFNR was procured using specifications and technology from 2010, making the technology platform quite dated relative to the latest available tools. With the insights and experience gained from the years of successful use, enhancements and advanced capabilities are envisioned for rapid and accurate situational awareness that protects the proprietary nature of the information while maximizing the understanding of the system conditions, especially during emergencies.

While a successful tool deployment has been maintained and used successfully for more than eight years, NERC BPSA staff cannot efficiently or cost effectively update the underlying power system information or real-time data feeds on risks to reliability, such as severe weather, flooding, and wildfires, as well as available information on interconnection frequency, Balancing Authority ACE, and aggregated customer outages. The tool has been used to support the GridEx exercise, but also demonstrated its shortcomings when aiming for a more precise wide-area view of system conditions. Enhancing SAFNR will incorporate functionality elements piloted during GridEx IV that provided the E-ISAC and the ESCC with more timely and understandable information. Further, these

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<sup>52</sup> Section 1000 contains NERC’s responsibilities for Situation Awareness and Critical Infrastructure Protection (CIP), including its role as the E-ISAC. Additional expectations are outlined in Sections 807, 808, and 810 regarding analysis of events and the dissemination of lessons learned, advisories, recommendations, and essential actions.



improvements address the *GridEx IV Executive Tabletop Report* recommendation that states that NERC and the E-ISAC should enhance their ability to provide reliable, timely, and accurate information regarding the state of grid reliability and security threats and events.

## Next Steps

NERC IT's Project Management Office will guide this project through the normal process, including development of a business case, managing the RFP, negotiating with vendors and developers, and ultimately ensuring the successful implementation of the new tool. This approach can be summarized as follows:

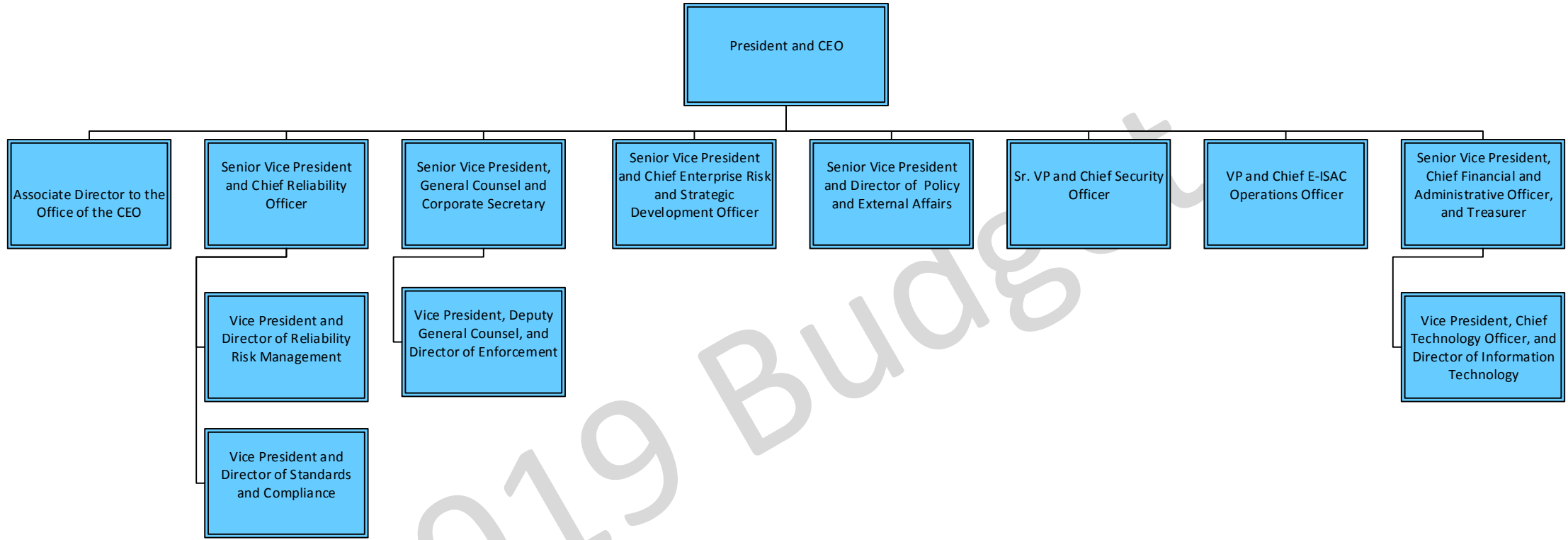
- Development of a business opportunity and assessment analysis
  - Current state and future state
- Financial analysis
  - Capital and operational costs
  - Return on investment
- Project governance and gated approvals
  - Executive sponsorship
  - Tollgates
  - Leadership review (e.g., ERO TLT)
  - Monthly financial review
- Project execution
  - Project management oversight
  - Project communications
  - Project scheduling and resource management
  - Contract/vendor management
- Change management and training
  - Regional and registered entity engagement and communications
  - Business value analysis and benefits realization

## Appendix 1 – NERC Staff Organization Chart

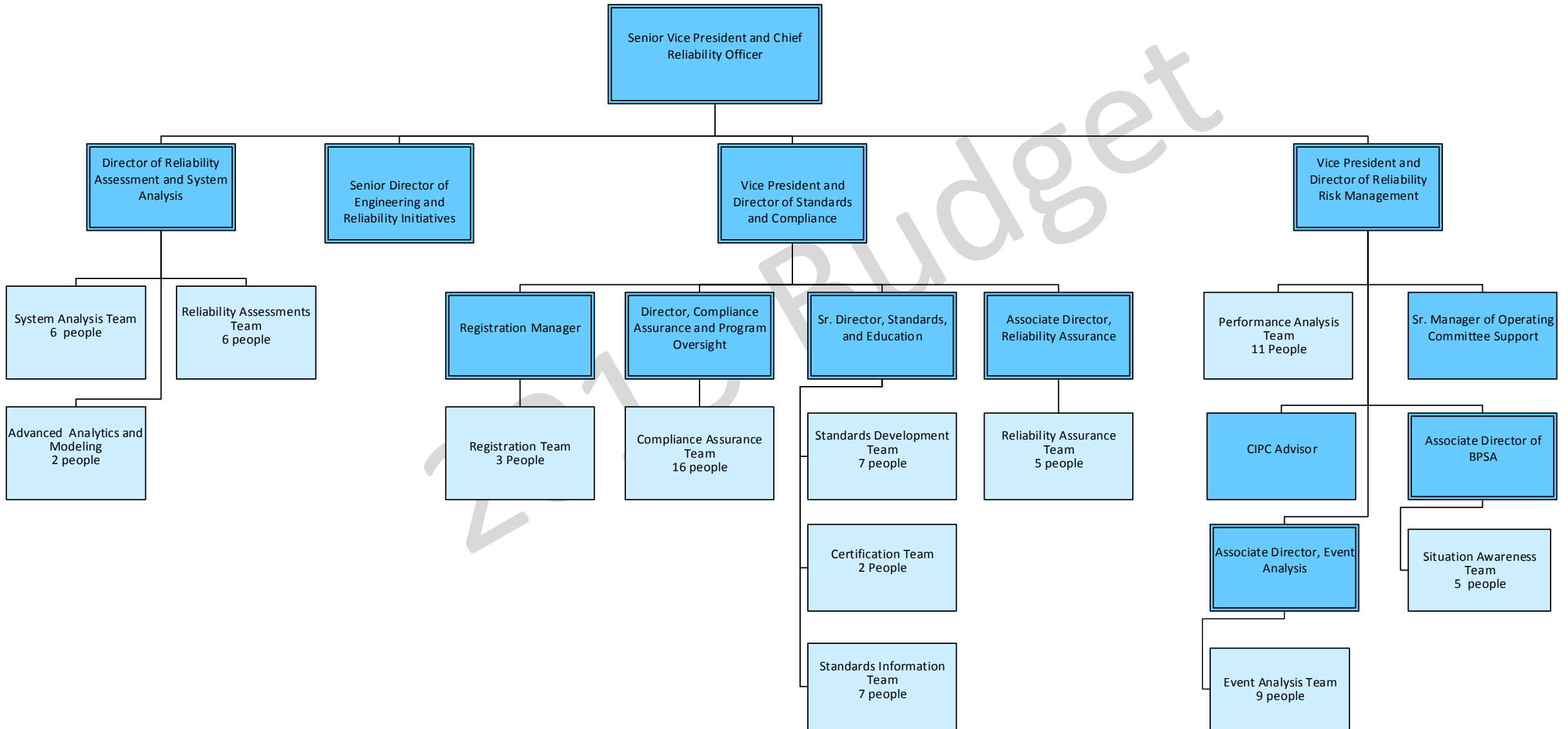
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See subsequent pages for NERC's Organization Chart.

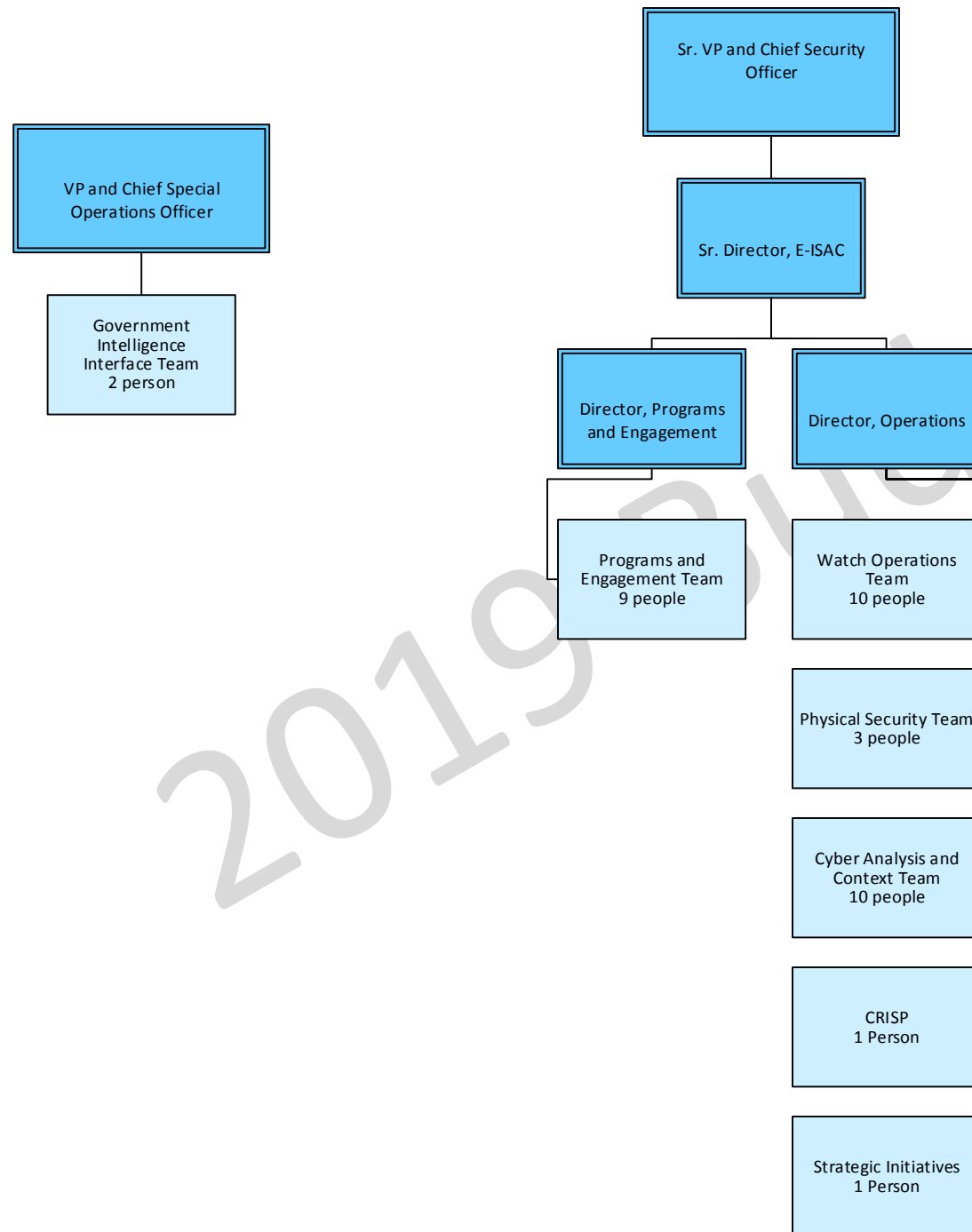
# NERC Staff Organization Chart – Budget 2019



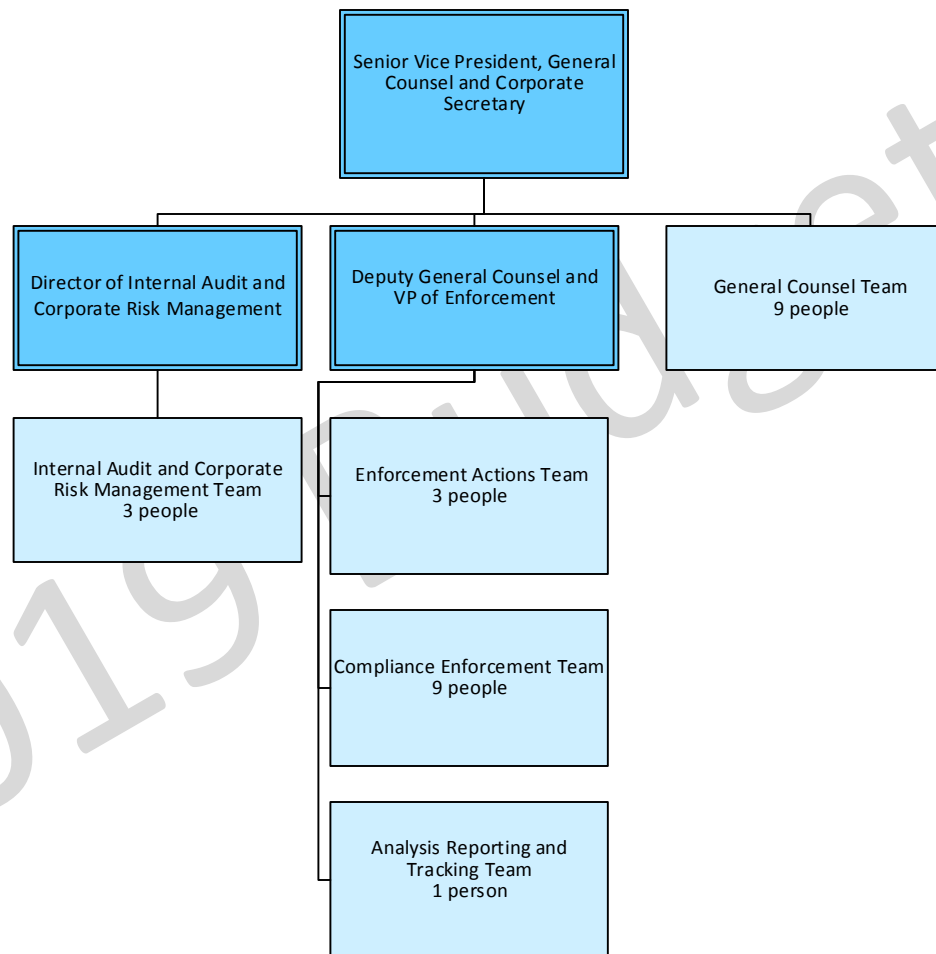
# Reliability Standards, Reliability Assurance, Reliability Assessment and System Oversight, Performance Analysis, Event Analysis, Situation Awareness, Operator Certification



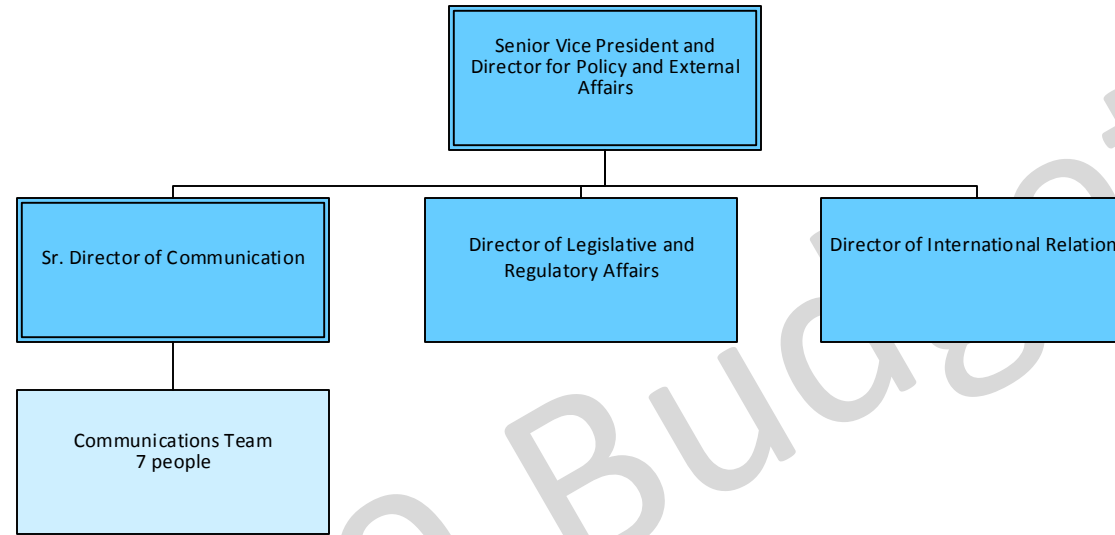
# Electricity Information Sharing and Analysis Center



## Legal and Regulatory Compliance Enforcement

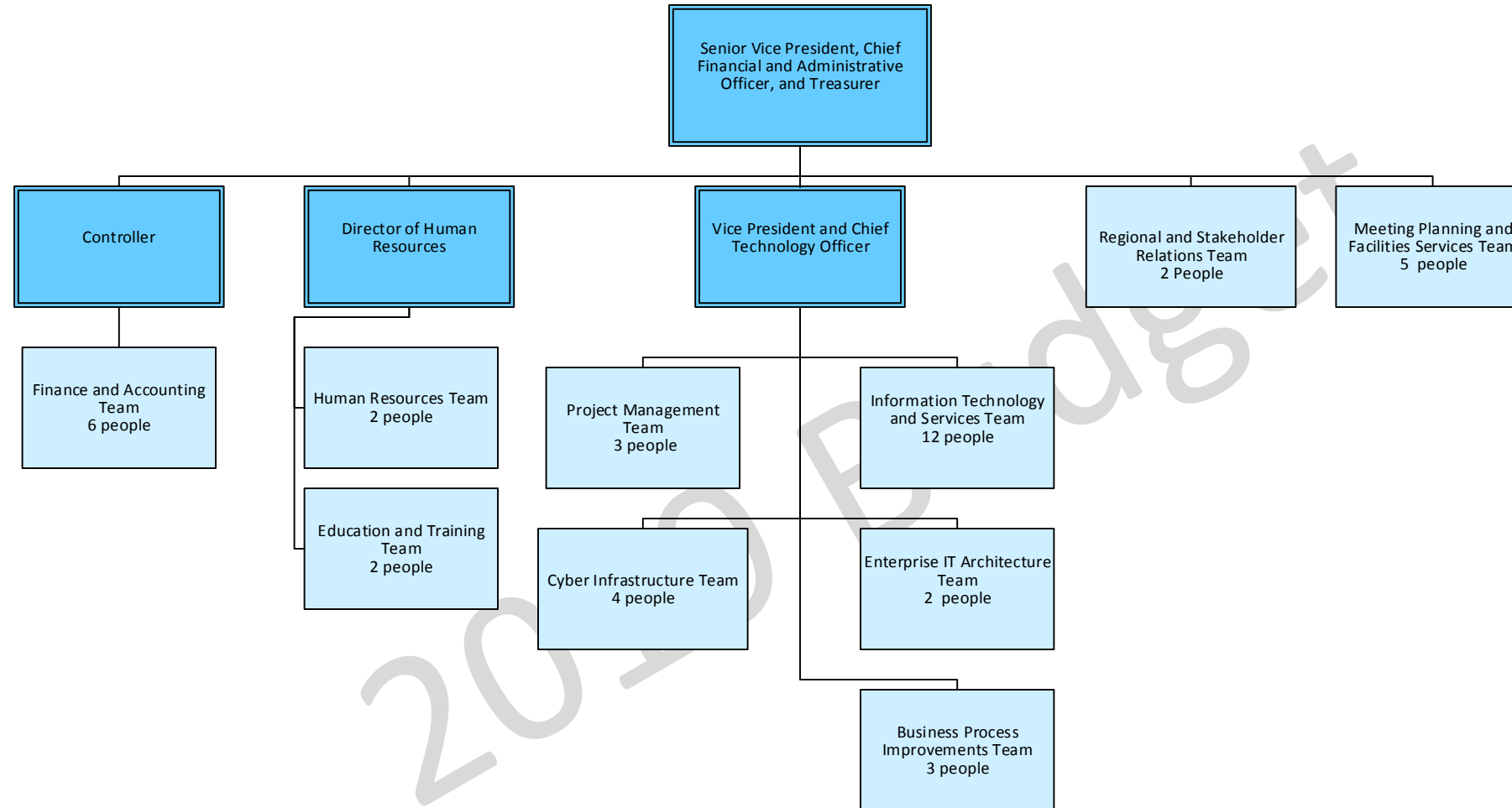


## Policy and External Affairs



2019 Budget

# Information Technology, Human Resources, and Accounting & Finance





2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	FRCC	1074	Alachua, City of	U.S.	135,500	135,500			0.058%	0.058%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	FRCC	1075	Bartow, City of	U.S.	295,000	295,000			0.127%	0.127%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.007%
2017	FRCC	1076	Chattahoochee, City of	U.S.	36,900	36,900			0.016%	0.016%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	FRCC	1077	Florida Keys Electric Cooperative Assn	U.S.	750,000	750,000			0.322%	0.322%	0.000%	0.000%	0.017%	0.017%	0.000%	0.000%	0.019%
2017	FRCC	1078	Florida Power & Light Co.	U.S.	114,357,000	114,357,000			49.139%	49.139%	0.000%	0.000%	2.570%	2.570%	0.000%	0.000%	2.906%
2017	FRCC	1079	Florida Public Utilities Company	U.S.	350,000	350,000			0.150%	0.150%	0.000%	0.000%	0.008%	0.008%	0.000%	0.000%	0.009%
2017	FRCC	1080	Gainesville Regional Utilities	U.S.	1,811,300	1,811,300			0.778%	0.778%	0.000%	0.000%	0.041%	0.041%	0.000%	0.000%	0.046%
2017	FRCC	1081	Homestead, City of	U.S.	596,000	596,000			0.256%	0.256%	0.000%	0.000%	0.013%	0.013%	0.000%	0.000%	0.015%
2017	FRCC	1082	JEA	U.S.	12,520,000	12,520,000			5.380%	5.380%	0.000%	0.000%	0.281%	0.281%	0.000%	0.000%	0.318%
2017	FRCC	1083	Lakeland Electric	U.S.	3,086,000	3,086,000			1.326%	1.326%	0.000%	0.000%	0.069%	0.069%	0.000%	0.000%	0.078%
2017	FRCC	1626	Lee County Electric Cooperative, Inc	U.S.	4,068,000	4,068,000			1.748%	1.748%	0.000%	0.000%	0.091%	0.091%	0.000%	0.000%	0.103%
2017	FRCC	1661	City of Lake Worth	U.S.	470,000	470,000			0.202%	0.202%	0.000%	0.000%	0.011%	0.011%	0.000%	0.000%	0.012%
2017	FRCC	1084	Mount Dora, City of	U.S.	91,900	91,900			0.039%	0.039%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	FRCC	1085	New Smyrna Beach, Utilities Commission of	U.S.	434,000	434,000			0.186%	0.186%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	FRCC	1086	Orlando Utilities Commission	U.S.	6,101,300	6,101,300			2.622%	2.622%	0.000%	0.000%	0.137%	0.137%	0.000%	0.000%	0.155%
2017	FRCC	1087	Duke Energy Florida	U.S.	40,748,100	40,748,100			17.510%	17.510%	0.000%	0.000%	0.916%	0.916%	0.000%	0.000%	1.036%
2017	FRCC	1088	Quincy, City of	U.S.	130,700	130,700			0.056%	0.056%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	FRCC	1089	Reedy Creek Improvement District	U.S.	1,211,000	1,211,000			0.520%	0.520%	0.000%	0.000%	0.027%	0.027%	0.000%	0.000%	0.031%
2017	FRCC	1090	St. Cloud, City of (OUC)	U.S.	769,000	769,000			0.330%	0.330%	0.000%	0.000%	0.017%	0.017%	0.000%	0.000%	0.020%
2017	FRCC	1091	Tallahassee, City of	U.S.	2,758,000	2,758,000			1.185%	1.185%	0.000%	0.000%	0.062%	0.062%	0.000%	0.000%	0.070%
2017	FRCC	1092	Tampa Electric Company	U.S.	20,296,000	20,296,000			8.721%	8.721%	0.000%	0.000%	0.456%	0.456%	0.000%	0.000%	0.516%
2017	FRCC	1603	City of Vero Beach	U.S.	757,000	757,000			0.325%	0.325%	0.000%	0.000%	0.017%	0.017%	0.000%	0.000%	0.019%
2017	FRCC	1093	Wauchula, City of	U.S.	65,000	65,000			0.028%	0.028%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.002%
2017	FRCC	1094	Williston, City of	U.S.	36,200	36,200			0.016%	0.016%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	FRCC	1095	Winter Park, City of	U.S.	442,100	442,100			0.190%	0.190%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	FRCC	1724	Moore Haven, City of	U.S.	15,000	15,000			0.006%	0.006%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	FRCC	1072	Florida Municipal Power Agency	U.S.	5,984,400	5,984,400			2.572%	2.572%	0.000%	0.000%	0.134%	0.134%	0.000%	0.000%	0.152%
2017	FRCC	1073	Seminole Electric Cooperative	U.S.	14,404,000	14,404,000			6.189%	6.189%	0.000%	0.000%	0.324%	0.324%	0.000%	0.000%	0.366%
TOTAL FRCC					232,719,400	232,719,400	-	-	100.000%	100.000%	0.000%	0.000%	5.229%	5.229%	0.000%	0.000%	5.914%
2017	MRO	1199	Basin Electric Power Cooperative	U.S.	19,376,180	19,376,180	-	-	3.992%	3.992%	0.000%	0.000%	0.435%	0.435%	0.000%	0.000%	0.492%
2017	MRO	1201	Central Iowa Power Cooperative (CIPCO)	U.S.	2,831,165	2,831,165	-	-	0.583%	0.583%	0.000%	0.000%	0.064%	0.064%	0.000%	0.000%	0.072%
2017	MRO	1204	Corn Belt Power Cooperative	U.S.	1,969,812	1,969,812	-	-	0.406%	0.406%	0.000%	0.000%	0.044%	0.044%	0.000%	0.000%	0.050%
2017	MRO	1207	Dairyland Power Cooperative	U.S.	5,509,070	5,509,070	-	-	1.135%	1.135%	0.000%	0.000%	0.124%	0.124%	0.000%	0.000%	0.140%
2017	MRO	1210	Great River Energy	U.S.	13,144,443	13,144,443	-	-	2.708%	2.708%	0.000%	0.000%	0.295%	0.295%	0.000%	0.000%	0.334%
2017	MRO	1222	Minnkota Power Cooperative, Inc.	U.S.	3,832,290	3,832,290	-	-	0.790%	0.790%	0.000%	0.000%	0.086%	0.086%	0.000%	0.000%	0.097%
2017	MRO	1230	Nebraska Public Power District	U.S.	13,689,668	13,689,668	-	-	2.820%	2.820%	0.000%	0.000%	0.308%	0.308%	0.000%	0.000%	0.348%
2017	MRO	1232	Omaha Public Power District	U.S.	11,172,502	11,172,502	-	-	2.302%	2.302%	0.000%	0.000%	0.251%	0.251%	0.000%	0.000%	0.284%
2017	MRO	1240	Western Area Power Administration (UM)	U.S.	9,268,980	9,268,980	-	-	1.910%	1.910%	0.000%	0.000%	0.208%	0.208%	0.000%	0.000%	0.236%
2017	MRO	1239	Western Area Power Administration (LM)	U.S.	45,883	45,883	-	-	0.009%	0.009%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	MRO	1217	Manitoba Hydro	CAN	23,893,599		23,893,599		4.923%	0.000%	4.923%	0.000%	0.537%	0.000%	0.537%	0.000%	0.000%
2017	MRO	1235	SaskPower	CAN	24,779,000		24,779,000		5.105%	0.000%	5.105%	0.000%	0.557%	0.000%	0.557%	0.000%	0.000%
2017	MRO	1195	Alliant Energy (Alliant East - WPL & Alliant West IPL)	U.S.	29,095,886	29,095,886	-	-	5.994%	5.994%	0.000%	0.000%	0.654%	0.654%	0.000%	0.000%	0.739%
2017	MRO	1710	Dahlberg Electric Company	U.S.	111,972	111,972	-	-	0.023%	0.023%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	MRO	1216	Madison, Gas and Electric	U.S.	3,383,670	3,383,670	-	-	0.697%	0.697%	0.000%	0.000%	0.076%	0.076%	0.000%	0.000%	0.086%
2017	MRO	1220	MidAmerican Energy Company	U.S.	25,664,492	25,664,492	-	-	5.287%	5.287%	0.000%	0.000%	0.577%	0.577%	0.000%	0.000%	0.652%
2017	MRO	1221	Minnesota Power	U.S.	12,915,759	12,915,759	-	-	2.661%	2.661%	0.000%	0.000%	0.290%	0.290%	0.000%	0.000%	0.328%
2017	MRO	1226	Montana-Dakota Utilities Co.	U.S.	3,251,539	3,251,539	-	-	0.670%	0.670%	0.000%	0.000%	0.073%	0.073%	0.000%	0.000%	0.083%
2017	MRO	1711	North Central Power Company	U.S.	37,156	37,156	-	-	0.008%	0.008%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	MRO	1231	NorthWestern Energy	U.S.	1,557,326	1,557,326	-	-	0.321%	0.321%	0.000%	0.000%	0.035%	0.035%	0.000%	0.000%	0.040%
2017	MRO	1712	NorthWestern Wisconsin	U.S.	185,796	185,796	-	-	0.038%	0.038%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.005%
2017	MRO	1233	Otter Tail Power Company	U.S.	4,975,311	4,975,311	-	-	1.025%	1.025%	0.000%	0.000%	0.112%	0.112%	0.000%	0.000%	0.126%
2017	MRO	1664	Wisconsin Public Service (WPS)	U.S.	11,692,550	11,692,550	-	-	2.409%	2.409%	0.000%	0.000%	0.263%	0.263%	0.000%	0.000%	0.297%
2017	MRO	1665	Upper Peninsula Power Company (UPPCO)	U.S.	683,680	683,680	-	-	0.141%	0.141%	0.000%	0.000%	0.015%	0.015%	0.000%	0.000%	0.017%
2017	MRO	1244	Xcel Energy Company (NSP)	U.S.	43,456,066	43,456,066	-	-	8.953%	8.953%	0.000%	0.000%	0.976%	0.976%	0.000%	0.000%	1.104%
2017	MRO	1196	Ames Municipal Electric System	U.S.	756,072	756,072	-	-	0.156%	0.156%	0.000%	0.000%	0.017%	0.017%	0.000%	0.000%	0.019%
2017	MRO	1604	Atlantic Municipal Utilities	U.S.	81,220	81,220	-	-	0.017%	0.017%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	MRO	1713	Bloomer Electric & Water Co.	U.S.	55,261	55,261	-	-	0.011%	0.011%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	MRO	1714	Village of Caddott	U.S.	13,720	13,720	-	-	0.003%	0.003%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	MRO	1200	Cedar Falls Municipal Utilities	U.S.	517,738	517,738	-	-	0.107%	0.107%	0.000%	0.000%	0.012%	0.012%	0.000%	0.000%	0.013%
2017	MRO	1477	Central Minnesota Municipal Power Agency (CMMPA)	U.S.	390,178	390,178	-	-	0.080%	0.080%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.010%
2017	MRO	1716	Eldridge Electric and Water Utilities	U.S.	42,377	42,377	-	-	0.009%	0.009%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	MRO	1203	City of Escanaba	U.S.	137,824	137,824	-	-	0.028%	0.028%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.004%
2017	MRO	1205	Falls City Water & Light Department	U.S.	58,855	58,855	-	-	0.012%	0.012%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	MRO	1206	Fremont Department of Utilities	U.S.	432,646	432,646	-	-	0.089%	0.089%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	MRO	1208	Geneseo Municipal Utilities	U.S.	64,636	64,636	-	-	0.013%	0.013%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.002%
2017	MRO	1209	Grand Island Utilities Department	U.S.	759,468	759,468	-	-	0.156%	0.156%	0.000%	0.000%	0.017%	0.017%	0.000%	0.000%	0.019%
2017	MRO	1717	Great Lakes Utilities	U.S.	1,476,412	1,476,412	-	-	0.304%	0.304%	0.000%	0.000%	0.033%	0.033%	0.000%	0.000%	0.038%
2017	MRO	1718	City of Guttenberg	U.S.	18,847	18,847	-	-	0.004%	0.004%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	MRO	1606	Harlan Municipal Utilities	U.S.	16,813	16,813	-	-	0.003%	0.003%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	MRO	1211	Hastings Utilities	U.S.	429,051	429,051	-	-	0.088%	0.088%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	MRO	1212	Heartland Consumers Power District	U.S.	434,617	434,617	-	-	0.090%	0.090%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	MRO	1213	Hutchinson Utilities Commission	U.S.	290,592	290,592	-	-	0.060%	0.060%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.007%
2017	MRO	1719	City of Kasota	U.S.	3,249	3,249	-	-	0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	MRO	1215	Lincoln Electric System	U.S.	3,204,566	3,204,566	-	-	0.660%	0.660%	0.000%	0.000%	0.072%	0.072%	0.000%	0.000%	0.081%
2017	MRO	1223	Missouri River Energy Services	U.S.	2,695,437	2,695,437	-	-	0.555%	0.555%	0.000%	0.000%	0.061%	0.061%	0.000%	0.000%	0.068%
2017	MRO	1224	MN Municipal Power Agency (MMPA)	U.S.	1,554,303	1,554,303	-	-	0.320%	0.320%	0.000%	0.000%	0.035%	0.035%	0.000%	0.000%	0.039%
2017	MRO	1607	Montezuma Municipal Light & Power	U.S.	25,244	25,244	-	-	0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	MRO	1227	Municipal Energy Agency of Nebraska	U.S.	943,023	943,023	-	-	0.194%	0.194%	0.000%	0.000%	0.021%	0.021%	0.000%	0.000%	0.024%
2017	MRO	1228	Muscatine Power and Water	U.S.	878,182	878,182	-	-	0.181%	0.181%	0.000%	0.000%	0.020%	0.020%	0.000%	0.000%	0.022%
2017	MRO	1229	Nebraska City Utilities	U.S.	129,117	129,117	-	-	0.027%	0.027%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	MRO	1720	Resale Power Group of Iowa	U.S.	563,492	563,492	-	-	0.116%	0.116%	0.000%	0.000%	0.013%	0.013%	0.000%	0.000%	0.014%
2017	MRO	1721	Rice Lake Utilities	U.S.	165,419	165,419	-	-	0.034%	0.034%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.004%
2017	MRO	1234	Rochester Public Utilities	U.S.	2,335	2,335	-	-	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	MRO	1236	Southern Minnesota Municipal Power Agency	U.S.	2,782,217	2,782,217	-	-	0.573%	0.573%	0.000%	0.000%	0.063%	0.063%	0.000%	0.000%	0.071%
2017	MRO	1722	City of Spooner	U.S.	31,674	31,674	-	-	0.007%	0.007%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	MRO	1241	Willmar Municipal Utilities	U.S.	249,549	249,549	-	-	0.051%	0.051%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.006%
2017	MRO	1242	Wisconsin Public Power, Inc. (East and West regions)	U.S.	5,292,675	5,292,675	-	-	1.090%	1.090%	0.000%	0.000%	0.119%	0.119%	0.000%	0.000%	0.135%
2017	MRO		Wolverine Power Marketing Cooperative	U.S.	35,850	35,850	-	-	0.007%	0.007%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SPP-MRO-SERC		Arkansas Electric Cooperative Corporation	U.S.	3,792,311	3,792,311	-	-	0.781%	0.781%	0.000%	0.000%	0.085%	0.085%	0.000%	0.000%	0.096%
2017	SPP-MRO	1246	American Electric Power	U.S.	37,025,653	37,025,653	-	-	7.628%	7.628%	0.000%	0.000%	0.832%	0.832%	0.000%	0.000%	0.941%
2017	SPP-MRO	1707	AEP-VEMCO	U.S.	646,206	646,206	-	-	0.133%	0.133%	0.000%	0.000%	0.015%	0.015%	0.000%	0.000%	0.016%
2017	SPP-MRO	1247	Board of Public Utilities (Kansas City KS)	U.S.	2,421,483	2,421,483	-	-	0.499%	0.499%	0.000%	0.000%	0.054%	0.054%	0.000%	0.000%	0.062%
2017	SPP-MRO	1620	Board of Public Utilities, City of McPherson, Kansas	U.S.	1,059,362	1,059,362	-	-	0.218%	0.218%	0.000%	0.000%	0.024%	0.024%	0.000%	0.000%	0.027%
2017	SPP-MRO	1647	Carthage City Water & Light	U.S.	301,124	301,124	-	-	0.062%	0.062%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.008%
2017	SPP-MRO	1469	Central Valley Electric Cooperative	U.S.	818,642	818,642	-	-	0.169%	0.169%	0.000%	0.000%	0.018%	0.018%	0.000%	0.000%	0.021%
2017	SPP-MRO	1556	City of Bentonville	U.S.	694,607	694,607	-	-	0.143%	0.143%	0.000%	0.000%	0.016%	0.016%	0.000%	0.000%	0.018%

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	SPP-MRO	1709	City of Nixa	U.S.	161,277	161,277			0.033%	0.033%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.004%
2017	SPP-MRO	1703	City of Chanute	U.S.	503,616	503,616			0.104%	0.104%	0.000%	0.000%	0.011%	0.011%	0.000%	0.000%	0.013%
2017	SPP-MRO	1248	Independence Power & Light (Independence, MO)	U.S.	1,041,162	1,041,162			0.215%	0.215%	0.000%	0.000%	0.023%	0.023%	0.000%	0.000%	0.026%
2017	SPP-MRO	1436	City Utilities of Springfield, MO	U.S.	3,108,521	3,108,521			0.640%	0.640%	0.000%	0.000%	0.070%	0.070%	0.000%	0.000%	0.079%
2017	SPP-MRO	1437	East Texas Electric Coop, Inc.	U.S.	430,647	430,647			0.089%	0.089%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	SPP-MRO	1250	The Empire District Electric Company	U.S.	5,156,586	5,156,586			1.062%	1.062%	0.000%	0.000%	0.116%	0.116%	0.000%	0.000%	0.131%
2017	SPP-MRO	1470	Farmers' Electric Coop	U.S.	287,916	287,916			0.059%	0.059%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.007%
2017	SPP-MRO	1438	Golden Spread Electric Coop	U.S.	4,970,209	4,970,209			1.024%	1.024%	0.000%	0.000%	0.112%	0.112%	0.000%	0.000%	0.126%
2017	SPP-MRO	1251	Grand River Dam Authority	U.S.	5,213,255	5,213,255			1.074%	1.074%	0.000%	0.000%	0.117%	0.117%	0.000%	0.000%	0.132%
2017	SPP-MRO	1252	Kansas City Power & Light (KCPL)	U.S.	15,476,525	15,476,525			3.189%	3.189%	0.000%	0.000%	0.348%	0.348%	0.000%	0.000%	0.393%
2017	SPP-MRO	1439	Kansas Electric Power Coop., Inc	U.S.	2,109,123	2,109,123			0.435%	0.435%	0.000%	0.000%	0.047%	0.047%	0.000%	0.000%	0.054%
2017	SPP-MRO	1440	Kansas Municipal Energy Agency (KCPL)	U.S.	1,576,773	1,576,773			0.325%	0.325%	0.000%	0.000%	0.035%	0.035%	0.000%	0.000%	0.040%
2017	SPP-MRO	1637	Kansas Power Pool	U.S.	874,058	874,058			0.180%	0.180%	0.000%	0.000%	0.020%	0.020%	0.000%	0.000%	0.022%
2017	SPP-MRO	1598	KCP&L GMOC (Greater Missouri Operations Company)	U.S.	8,505,620	8,505,620			1.752%	1.752%	0.000%	0.000%	0.191%	0.191%	0.000%	0.000%	0.216%
2017	SPP-MRO	1472	Lea County Electric Coop	U.S.	1,212,968	1,212,968			0.250%	0.250%	0.000%	0.000%	0.027%	0.027%	0.000%	0.000%	0.031%
2017	SPP-MRO	1441	Midwest Energy Inc.	U.S.	1,788,935	1,788,935			0.369%	0.369%	0.000%	0.000%	0.040%	0.040%	0.000%	0.000%	0.045%
2017	SPP-MRO-SERC		Missouri Joint Municipal Electric Utility Commission	U.S.	445,643	445,643			0.092%	0.092%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	SPP-MRO	1442	Northeast Texas Electric Cooperative, Inc.	U.S.	3,129,216	3,129,216			0.645%	0.645%	0.000%	0.000%	0.070%	0.070%	0.000%	0.000%	0.080%
2017	SPP-MRO	1255	Oklahoma Gas and Electric Co.	U.S.	28,455,704	28,455,704			5.863%	5.863%	0.000%	0.000%	0.639%	0.639%	0.000%	0.000%	0.723%
2017	SPP-MRO	1444	Oklahoma Municipal Power Auth	U.S.	2,846,675	2,846,675			0.586%	0.586%	0.000%	0.000%	0.064%	0.064%	0.000%	0.000%	0.072%
2017	SPP-MRO	1651	Paragould Light, Water & Cable	U.S.	585,598	585,598			0.121%	0.121%	0.000%	0.000%	0.013%	0.013%	0.000%	0.000%	0.015%
2017	SPP-MRO	1725	People's Electric Cooperative	U.S.	494,865	494,865			0.102%	0.102%	0.000%	0.000%	0.011%	0.011%	0.000%	0.000%	0.013%
2017	SPP-MRO	1473	Roosevelt County Electric Coop	U.S.	151,197	151,197			0.031%	0.031%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.004%
2017	SPP-MRO	1257	Xcel Energy Company (Southwestern Public Service)	U.S.	21,489,392	21,489,392			4.427%	4.427%	0.000%	0.000%	0.483%	0.483%	0.000%	0.000%	0.546%
2017	SPP-MRO	1256	Sunflower Electric Power Cooperative	U.S.	4,504,839	4,504,839			0.928%	0.928%	0.000%	0.000%	0.101%	0.101%	0.000%	0.000%	0.114%
2017	SPP-MRO	1445	Tex - La Electric Cooperative of Texas	U.S.	488,582	488,582			0.101%	0.101%	0.000%	0.000%	0.011%	0.011%	0.000%	0.000%	0.012%
2017	SPP-MRO	1475	Tri County Electric Coop	U.S.	350,534	350,534			0.072%	0.072%	0.000%	0.000%	0.008%	0.008%	0.000%	0.000%	0.009%
2017	SPP-MRO	1260	Westar Energy, Inc.	U.S.	21,019,021	21,019,021			4.330%	4.330%	0.000%	0.000%	0.472%	0.472%	0.000%	0.000%	0.534%
2017	SPP-MRO	1259	Western Farmers Electric Cooperative	U.S.	8,403,689	8,403,689			1.731%	1.731%	0.000%	0.000%	0.189%	0.189%	0.000%	0.000%	0.214%
2017	SPP-MRO	1501	West Texas Municipal Power Agency	U.S.	2,782,892	2,782,892			0.573%	0.573%	0.000%	0.000%	0.063%	0.063%	0.000%	0.000%	0.071%
<b>TOTAL MRO</b>					<b>485,380,880</b>	<b>436,708,281</b>	<b>48,672,599</b>	<b>-</b>	<b>100.000%</b>	<b>89.972%</b>	<b>10.028%</b>	<b>0.000%</b>	<b>10.906%</b>	<b>9.812%</b>	<b>1.094%</b>	<b>0.000%</b>	<b>11.098%</b>
2017	NPCC	1336	New England	U.S.	121,220,000	121,220,000			20.033%	20.033%	0.000%	0.000%	2.724%	2.724%	0.000%	0.000%	3.081%
2017	NPCC	1339	New York	U.S.	156,370,000	156,370,000			25.842%	25.842%	0.000%	0.000%	3.514%	3.514%	0.000%	0.000%	3.974%
2017	NPCC	1337	Ontario	Canada	132,091,000		132,091,000		21.830%	0.000%	21.830%	0.000%	2.968%	0.000%	2.968%	0.000%	
2017	NPCC		Quebec	Canada	170,703,000		170,703,000		28.211%	0.000%	28.211%	0.000%	3.836%	0.000%	3.836%	0.000%	
2017	NPCC	1705	New Brunswick	Canada	13,796,000		13,796,000		2.280%	0.000%	2.280%	0.000%	0.310%	0.000%	0.310%	0.000%	
2017	NPCC	1340	Nova Scotia	Canada	10,917,000		10,917,000		1.804%	0.000%	1.804%	0.000%	0.245%	0.000%	0.245%	0.000%	
<b>TOTAL NPCC</b>					<b>605,097,000</b>	<b>277,590,000</b>	<b>327,507,000</b>	<b>-</b>	<b>100.000%</b>	<b>45.875%</b>	<b>54.125%</b>	<b>0.000%</b>	<b>13.596%</b>	<b>6.237%</b>	<b>7.359%</b>	<b>0.000%</b>	<b>7.054%</b>
2017	RF	1102	Cannelton Utilities	U.S.	14,171	14,171			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	RF	1106	City of Croswell	U.S.	39,270	39,270			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	RF	1490	City of Lansing	U.S.	2,178,494	2,178,494			0.250%	0.250%	0.000%	0.000%	0.049%	0.049%	0.000%	0.000%	0.055%
2017	RF	1120	Cloverland Electric Cooperative	U.S.	744,657	744,657			0.085%	0.085%	0.000%	0.000%	0.017%	0.017%	0.000%	0.000%	0.019%
2017	RF	1122	CMS ERM Michigan LLC	U.S.	176,076	176,076			0.020%	0.020%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.004%
2017	RF	1124	Constellation New Energy (MECS-CONS)	U.S.	1,202,920	1,202,920			0.138%	0.138%	0.000%	0.000%	0.027%	0.027%	0.000%	0.000%	0.031%
2017	RF	1123	Constellation New Energy (MECS-DET)	U.S.	1,349,692	1,349,692			0.155%	0.155%	0.000%	0.000%	0.030%	0.030%	0.000%	0.000%	0.034%

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	RF	1126	Consumers Energy Company	U.S.	33,248,491	33,248,491			3.814%	3.814%	0.000%	0.000%	0.747%	0.747%	0.000%	0.000%	0.845%
2017	RF	1128	Detroit Edison Company	U.S.	44,587,232	44,587,232			5.114%	5.114%	0.000%	0.000%	1.002%	1.002%	0.000%	0.000%	1.133%
2017	RF	1166	Duke Energy Indiana	U.S.	29,452,371	29,452,371			3.378%	3.378%	0.000%	0.000%	0.662%	0.662%	0.000%	0.000%	0.748%
2017	RF	1135	Ferdinand Municipal Light & Water	U.S.	49,598	49,598			0.006%	0.006%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	RF	1646	FirstEnergy Solutions (MECS-CONS)	U.S.	857,115	857,115			0.098%	0.098%	0.000%	0.000%	0.019%	0.019%	0.000%	0.000%	0.022%
2017	RF	1549	FirstEnergy Solutions (MECS-DET)	U.S.	1,033,511	1,033,511			0.119%	0.119%	0.000%	0.000%	0.023%	0.023%	0.000%	0.000%	0.026%
2017	RF	1145	Hoosier Energy	U.S.	7,476,941	7,476,941			0.858%	0.858%	0.000%	0.000%	0.168%	0.168%	0.000%	0.000%	0.190%
2017	RF	1148	Indiana Municipal Power Agency (DUKE CIN)	U.S.	3,044,276	3,044,276			0.349%	0.349%	0.000%	0.000%	0.068%	0.068%	0.000%	0.000%	0.077%
2017	RF	1485	Indiana Municipal Power Agency (NIPSCO)	U.S.	423,172	423,172			0.049%	0.049%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	RF	1486	Indiana Municipal Power Agency (SIGE)	U.S.	589,177	589,177			0.068%	0.068%	0.000%	0.000%	0.013%	0.013%	0.000%	0.000%	0.015%
2017	RF	1149	Indianapolis Power & Light Co.	U.S.	13,798,463	13,798,463			1.583%	1.583%	0.000%	0.000%	0.310%	0.310%	0.000%	0.000%	0.351%
2017	RF	1553	Integrus Energy Services (MECS-CONS)	U.S.	437,574	437,574			0.050%	0.050%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	RF	1554	Integrus Energy Services (MECS-DET)	U.S.	626,251	626,251			0.072%	0.072%	0.000%	0.000%	0.014%	0.014%	0.000%	0.000%	0.016%
2017	RF	1666	Integrus Energy Services	U.S.	295,628	295,628			0.034%	0.034%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.008%
2017	RF	1614	Just Energy (MECS-DET)	U.S.	8,535	8,535			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	RF	1154	Michigan Public Power Agency	U.S.	3,781,218	3,781,218			0.434%	0.434%	0.000%	0.000%	0.085%	0.085%	0.000%	0.000%	0.096%
2017	RF	1155	Michigan South Central Power Agency	U.S.	705,981	705,981			0.081%	0.081%	0.000%	0.000%	0.016%	0.016%	0.000%	0.000%	0.018%
2017	RF	1158	MidAmerican Energy Company Retail	U.S.	16,970	16,970			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	RF	1163	Northern Indiana Public Service Co.	U.S.	17,514,746	17,514,746			2.009%	2.009%	0.000%	0.000%	0.394%	0.394%	0.000%	0.000%	0.445%
2017	RF	1164	Ontonagon County Rural Electrification Assoc.	U.S.	27,798	27,798			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	RF	1265	PJM Interconnection, LLC	U.S.	664,258,237	664,258,237			76.195%	76.195%	0.000%	0.000%	14.925%	14.925%	0.000%	0.000%	16.881%
2017	RF	1172	Calpine Energy Solutions (k.n.a.Noble Americas Energy Solutions (MECS-CONS))	U.S.	383,129	383,129			0.044%	0.044%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.010%
2017	RF	1171	Calpine Energy Solutions (k.n.a.Noble Americas Energy Solutions (MECS-DET))	U.S.	602,634	602,634			0.069%	0.069%	0.000%	0.000%	0.014%	0.014%	0.000%	0.000%	0.015%
2017	RF	1176	Direct Energy (fka:Strategic Energy,LLC) (MECS-CONS)	U.S.	191,510	191,510			0.022%	0.022%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.005%
2017	RF	1174	Direct Energy (fka:Strategic Energy,LLC) (MECS-DET)	U.S.	908,353	908,353			0.104%	0.104%	0.000%	0.000%	0.020%	0.020%	0.000%	0.000%	0.023%
2017	RF	1581	Spartan Renewable Energy	U.S.	91,331	91,331			0.010%	0.010%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	RF		Spartan Renewable Energy (MI UP)	U.S.	55,228	55,228			0.006%	0.006%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	RF	1180	Thumb Electric Cooperative	U.S.	180,092	180,092			0.021%	0.021%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.005%
2017	RF	1662	Ohio Valley Electric Corporation	U.S.	405,145	405,145			0.046%	0.046%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.010%
2017	RF	1181	Vectren Energy Delivery of IN	U.S.	5,080,806	5,080,806			0.583%	0.583%	0.000%	0.000%	0.114%	0.114%	0.000%	0.000%	0.129%
2017	RF	1184	Wabash Valley Power Association Inc. (DUKE CIN)	U.S.	2,815,495	2,815,495			0.323%	0.323%	0.000%	0.000%	0.063%	0.063%	0.000%	0.000%	0.072%
2017	RF	1488	Wabash Valley Power Association Inc.(NIPSCO)	U.S.	1,696,109	1,696,109			0.195%	0.195%	0.000%	0.000%	0.038%	0.038%	0.000%	0.000%	0.043%
2017	RF	1185	Wisconsin Electric Power Co.	U.S.	27,453,163	27,453,163			3.149%	3.149%	0.000%	0.000%	0.617%	0.617%	0.000%	0.000%	0.698%
2017	RF	1189	Wolverine Power Marketing Cooperative	U.S.	757,819	757,819			0.087%	0.087%	0.000%	0.000%	0.017%	0.017%	0.000%	0.000%	0.019%
2017	RF	1191	Wolverine Power Supply Cooperative	U.S.	2,671,685	2,671,685			0.306%	0.306%	0.000%	0.000%	0.060%	0.060%	0.000%	0.000%	0.068%
2017	RF	1190	Wolverine Power Marketing Cooperative(MECS-DET)	U.S.	558,524	558,524			0.064%	0.064%	0.000%	0.000%	0.013%	0.013%	0.000%	0.000%	0.014%
			TOTAL RELIABILITYFIRST		871,789,589	871,789,589	-	-	100.000%	100.000%	0.000%	0.000%	19.588%	19.588%	0.000%	0.000%	22.155%
2017	SERC	1267	Alabama Municipal Electric Authority	U.S.	3,358,401	3,358,401			0.326%	0.326%	0.000%	0.000%	0.075%	0.075%	0.000%	0.000%	0.085%
2017	SERC	1268	Alabama Power Company	U.S.	56,129,688	56,129,688			5.456%	5.456%	0.000%	0.000%	1.261%	1.261%	0.000%	0.000%	1.426%
2017	SERC	1269	Ameren - Illinois	U.S.	41,102,000	41,102,000			3.995%	3.995%	0.000%	0.000%	0.924%	0.924%	0.000%	0.000%	1.045%
2017	SERC	1271	Ameren - Missouri	U.S.	36,180,000	36,180,000			3.517%	3.517%	0.000%	0.000%	0.813%	0.813%	0.000%	0.000%	0.919%
2017	SERC	1273	Associated Electric Cooperative Inc.	U.S.	18,890,793	18,890,793			1.836%	1.836%	0.000%	0.000%	0.424%	0.424%	0.000%	0.000%	0.480%
2017	SERC	1582	Beauregard Electric Cooperative, Inc.	U.S.	1,107,602	1,107,602			0.108%	0.108%	0.000%	0.000%	0.025%	0.025%	0.000%	0.000%	0.028%
2017	SERC	1462	Benton Utility District	U.S.	250,113	250,113			0.024%	0.024%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.006%
2017	SERC	1274	Big Rivers Electric Corporation	U.S.	3,673,173	3,673,173			0.357%	0.357%	0.000%	0.000%	0.083%	0.083%	0.000%	0.000%	0.093%
2017	SERC	1275	Black Warrior EMC	U.S.	399,520	399,520			0.039%	0.039%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.010%
2017	SERC	1276	Blue Ridge EMC	U.S.	1,352,829	1,352,829			0.131%	0.131%	0.000%	0.000%	0.030%	0.030%	0.000%	0.000%	0.034%
2017	SERC	1628	Brazos Electric Power Cooperative, Inc.	U.S.	467,620	467,620			0.045%	0.045%	0.000%	0.000%	0.011%	0.011%	0.000%	0.000%	0.012%

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	SERC	1463	Canton, MS	U.S.	128,254	128,254			0.012%	0.012%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	SERC	1277	Central Electric Power Cooperative Inc.	U.S.	16,725,435	16,725,435			1.626%	1.626%	0.000%	0.000%	0.376%	0.376%	0.000%	0.000%	0.425%
2017	SERC	1667	Century Aluminum - Hawesville	U.S.	1,690,381	1,690,381			0.164%	0.164%	0.000%	0.000%	0.038%	0.038%	0.000%	0.000%	0.043%
2017	SERC	1668	Century Aluminum - Sebree	U.S.	3,362,247	3,362,247			0.327%	0.327%	0.000%	0.000%	0.076%	0.076%	0.000%	0.000%	0.085%
2017	SERC	1278	City of Blountstown FL	U.S.	36,190	36,190			0.004%	0.004%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1279	City of Camden SC	U.S.	187,339	187,339			0.018%	0.018%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.005%
2017	SERC	1280	City of Collins MS	U.S.	44,945	44,945			0.004%	0.004%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1281	City of Columbia MO	U.S.	1,170,456	1,170,456			0.114%	0.114%	0.000%	0.000%	0.026%	0.026%	0.000%	0.000%	0.030%
2017	SERC	1282	City of Conway AR (Conway Corporation)	U.S.	991,407	991,407			0.096%	0.096%	0.000%	0.000%	0.022%	0.022%	0.000%	0.000%	0.025%
2017	SERC	1284	City of Evergreen AL	U.S.	54,500	54,500			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1285	City of Hampton GA	U.S.	30,711	30,711			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1286	City of Hartford AL	U.S.	31,077	31,077			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1287	City of Henderson (KY) Municipal Power & Light	U.S.	612,803	612,803			0.060%	0.060%	0.000%	0.000%	0.014%	0.014%	0.000%	0.000%	0.016%
2017	SERC	1288	City of North Little Rock AR (DENL)	U.S.	922,357	922,357			0.090%	0.090%	0.000%	0.000%	0.021%	0.021%	0.000%	0.000%	0.023%
2017	SERC	1289	City of Orangeburg SC Department of Public Utilities	U.S.	813,000	813,000			0.079%	0.079%	0.000%	0.000%	0.018%	0.018%	0.000%	0.000%	0.021%
2017	SERC	1290	City of Robertsdale AL	U.S.	81,000	81,000			0.008%	0.008%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	SERC	1291	City of Ruston LA (DERS)	U.S.	272,915	272,915			0.027%	0.027%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.007%
2017	SERC	1292	Seneca Light & Power	U.S.	163,978	163,978			0.016%	0.016%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.004%
2017	SERC	1115	City of Springfield (CWLP)	U.S.	1,708,151	1,708,151			0.166%	0.166%	0.000%	0.000%	0.038%	0.038%	0.000%	0.000%	0.043%
2017	SERC	1465	City of Thayer, MO	U.S.	19,916	19,916			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%
2017	SERC	1293	City of Troy AL	U.S.	415,700	415,700			0.040%	0.040%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.011%
2017	SERC	1294	City of West Memphis AR (West Memphis Utilities)	U.S.	380,733	380,733			0.037%	0.037%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.010%
2017	SERC	1583	Claiborne Electric Cooperative, Inc.	U.S.	640,552	640,552			0.062%	0.062%	0.000%	0.000%	0.014%	0.014%	0.000%	0.000%	0.016%
2017	SERC	1584	Concordia Electric Cooperative, Inc.	U.S.	209,903	209,903			0.020%	0.020%	0.000%	0.000%	0.005%	0.005%	0.000%	0.000%	0.005%
2017	SERC	1726	Cube Hydro Carolinas	U.S.	14,458	14,458			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	SERC	1283	Dalton Utilities	U.S.	1,806,387	1,806,387			0.176%	0.176%	0.000%	0.000%	0.041%	0.041%	0.000%	0.000%	0.046%
2017	SERC	1585	Dixie Electric Membership Corporation	U.S.	2,149,385	2,149,385			0.209%	0.209%	0.000%	0.000%	0.048%	0.048%	0.000%	0.000%	0.055%
2017	SERC	1295	Dominion Virginia Power	U.S.	85,011,366	85,011,366			8.263%	8.263%	0.000%	0.000%	1.910%	1.910%	0.000%	0.000%	2.160%
2017	SERC	1296	Duke Energy Carolinas, LLC	U.S.	84,062,584	84,062,584			8.171%	8.171%	0.000%	0.000%	1.889%	1.889%	0.000%	0.000%	2.136%
2017	SERC	1466	Durant, MS	U.S.	25,094	25,094			0.002%	0.002%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1478	LG&E and KU Services Co as agent for LG&E Co and KU Co	U.S.	33,611,358	33,611,358			3.267%	3.267%	0.000%	0.000%	0.755%	0.755%	0.000%	0.000%	0.854%
2017	SERC	1297	East Kentucky Power Cooperative	U.S.	13,156,334	13,156,334			1.279%	1.279%	0.000%	0.000%	0.296%	0.296%	0.000%	0.000%	0.334%
2017	SERC	1298	East Mississippi Electric Power Association	U.S.	410,452	410,452			0.040%	0.040%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.010%
2017	SERC	1669	Electricities of North Carolina Inc	U.S.	11,592,845	11,592,845			1.127%	1.127%	0.000%	0.000%	0.260%	0.260%	0.000%	0.000%	0.295%
2017	SERC	1300	EnergyUnited EMC	U.S.	2,517,130	2,517,130			0.245%	0.245%	0.000%	0.000%	0.057%	0.057%	0.000%	0.000%	0.064%
2017	SERC	1301	Entergy	U.S.	118,406,188	118,406,188			11.509%	11.509%	0.000%	0.000%	2.660%	2.660%	0.000%	0.000%	3.009%
2017	SERC	1302	Fayetteville (NC) Public Works Commission	U.S.	2,083,866	2,083,866			0.203%	0.203%	0.000%	0.000%	0.047%	0.047%	0.000%	0.000%	0.053%
2017	SERC	1303	Florida Public Utilities (FL Panhandle Load)	U.S.	306,095	306,095			0.030%	0.030%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.008%
2017	SERC	1304	French Broad EMC	U.S.	502,644	502,644			0.049%	0.049%	0.000%	0.000%	0.011%	0.011%	0.000%	0.000%	0.013%
2017	SERC	1305	Georgia Power Company	U.S.	84,894,745	84,894,745			8.252%	8.252%	0.000%	0.000%	1.908%	1.908%	0.000%	0.000%	2.157%
2017	SERC	1306	Georgia System Optns Corporation	U.S.	38,909,099	38,909,099			3.782%	3.782%	0.000%	0.000%	0.874%	0.874%	0.000%	0.000%	0.989%
2017	SERC	1479	Greenwood (MS) Utilities Commission	U.S.	279,403	279,403			0.027%	0.027%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.007%
2017	SERC	1307	Greenwood (SC) Commissioners of Public Works	U.S.	316,439	316,439			0.031%	0.031%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.008%
2017	SERC	1308	Gulf Power Company	U.S.	11,395,597	11,395,597			1.108%	1.108%	0.000%	0.000%	0.256%	0.256%	0.000%	0.000%	0.290%
2017	SERC	1586	Haywood EMC	U.S.	306,654	306,654			0.030%	0.030%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.008%
2017	SERC		Hoosier Energy REC, Inc	U.S.	401,175	401,175			0.039%	0.039%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.010%
2017	SERC	1309	Illinois Municipal Electric Agency	U.S.	1,895,200	1,895,200			0.184%	0.184%	0.000%	0.000%	0.043%	0.043%	0.000%	0.000%	0.048%
2017	SERC	1480	Itta Bena, MS	U.S.	13,811	13,811			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	SERC	1587	Jefferson Davis Electric Cooperative, Inc.	U.S.	262,174	262,174			0.025%	0.025%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.007%

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	SERC	1617	Kentucky Municipal Power	U.S.	653,191	653,191			0.063%	0.063%	0.000%	0.000%	0.015%	0.015%	0.000%	0.000%	0.017%
2017	SERC	1481	Kosciusko, MS	U.S.	73,119	73,119			0.007%	0.007%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	SERC	1482	Leland, MS	U.S.	29,889	29,889			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1313	McCormick Commission of Public Works	U.S.	16,341	16,341			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	SERC	1314	Mississippi Power Company	U.S.	10,130,093	10,130,093			0.985%	0.985%	0.000%	0.000%	0.228%	0.228%	0.000%	0.000%	0.257%
2017	SERC	1630	Mt. Carmel Public Utility	U.S.	103,272	103,272			0.010%	0.010%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.003%
2017	SERC	1315	Municipal Electric Authority of Georgia	U.S.	10,809,000	10,809,000			1.051%	1.051%	0.000%	0.000%	0.243%	0.243%	0.000%	0.000%	0.275%
2017	SERC	1316	N.C. Electric Membership Corp.	U.S.	12,702,195	12,702,195			1.235%	1.235%	0.000%	0.000%	0.285%	0.285%	0.000%	0.000%	0.323%
2017	SERC	1588	Northeast Louisiana Power Cooperative, Inc.	U.S.	262,464	262,464			0.026%	0.026%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.007%
2017	SERC	1574	Northern Virginia Electric Cooperative	U.S.	4,706,854	4,706,854			0.457%	0.457%	0.000%	0.000%	0.106%	0.106%	0.000%	0.000%	0.120%
2017	SERC	1319	Old Dominion Electric Cooperative	U.S.	4,975,189	4,975,189			0.484%	0.484%	0.000%	0.000%	0.112%	0.112%	0.000%	0.000%	0.126%
2017	SERC	1618	Osceola (Arkansas) Municipal Light and Power	U.S.	155,810	155,810			0.015%	0.015%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.004%
2017	SERC	1320	Owensboro (KY) Municipal Utilities	U.S.	812,635	812,635			0.079%	0.079%	0.000%	0.000%	0.018%	0.018%	0.000%	0.000%	0.021%
2017	SERC	1321	Piedmont EMC in Duke and Progress Areas	U.S.	504,135	504,135			0.049%	0.049%	0.000%	0.000%	0.011%	0.011%	0.000%	0.000%	0.013%
2017	SERC	1323	Piedmont Municipal Power Agency (PMPA)	U.S.	2,338,860	2,338,860			0.227%	0.227%	0.000%	0.000%	0.053%	0.053%	0.000%	0.000%	0.059%
2017	SERC	1589	Pointe Coupee Electric Memb. Corp.	U.S.	259,826	259,826			0.025%	0.025%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.007%
2017	SERC	1266	PowerSouth Energy	U.S.	8,636,599	8,636,599			0.839%	0.839%	0.000%	0.000%	0.194%	0.194%	0.000%	0.000%	0.219%
2017	SERC	1330	Prairie Power, Inc.	U.S.	1,535,015	1,535,015			0.149%	0.149%	0.000%	0.000%	0.034%	0.034%	0.000%	0.000%	0.039%
2017	SERC	1706	Duke Energy Progress	U.S.	45,904,781	45,904,781			4.462%	4.462%	0.000%	0.000%	1.031%	1.031%	0.000%	0.000%	1.167%
2017	SERC	1325	Rutherford EMC	U.S.	1,306,902	1,306,902			0.127%	0.127%	0.000%	0.000%	0.029%	0.029%	0.000%	0.000%	0.033%
2017	SERC	1631	Sam Rayburn G&T Electric Cooperative Inc.	U.S.	1,783,514	1,783,514			0.173%	0.173%	0.000%	0.000%	0.040%	0.040%	0.000%	0.000%	0.045%
2017	SERC	1326	South Carolina Electric & Gas Company	U.S.	23,114,816	23,114,816			2.247%	2.247%	0.000%	0.000%	0.519%	0.519%	0.000%	0.000%	0.587%
2017	SERC	1327	South Carolina Public Service Authority	U.S.	8,588,567	8,588,567			0.835%	0.835%	0.000%	0.000%	0.193%	0.193%	0.000%	0.000%	0.218%
2017	SERC	1590	South Louisiana Electric Cooperative Association	U.S.	577,068	577,068			0.056%	0.056%	0.000%	0.000%	0.013%	0.013%	0.000%	0.000%	0.015%
2017	SERC	1328	Cooperative Energy (formerly SMEPA)	U.S.	9,616,043	9,616,043			0.935%	0.935%	0.000%	0.000%	0.216%	0.216%	0.000%	0.000%	0.244%
2017	SERC	1329	Southern Illinois Power Cooperative	U.S.	1,570,438	1,570,438			0.153%	0.153%	0.000%	0.000%	0.035%	0.035%	0.000%	0.000%	0.040%
2017	SERC	1591	Southwest Louisiana Electric Membership Corporation	U.S.	2,449,955	2,449,955			0.238%	0.238%	0.000%	0.000%	0.055%	0.055%	0.000%	0.000%	0.062%
2017	SERC	1619	Southwestern Electric Cooperative, Inc.	U.S.	419,781	419,781			0.041%	0.041%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.011%
2017	SERC	1331	Tennessee Valley Authority	U.S.	155,211,406	155,211,406			15.086%	15.086%	0.000%	0.000%	3.487%	3.487%	0.000%	0.000%	3.944%
2017	SERC	1632	Tex-La Electric Cooperative of Texas, Inc	U.S.	208,469	208,469			0.020%	0.020%	0.000%	0.000%	0.005%	0.005%	0.000%	0.000%	0.005%
2017	SERC	1332	Tombigbee Electric Cooperative Inc.	U.S.	121,131	121,131			0.012%	0.012%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	SERC	1594	Town of Sharpsburg, N.C.	U.S.	19,458	19,458			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	SERC	1595	Town of Stantonburg, N.C. JRO	U.S.	55,573	55,573			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1333	Town of Waynesville NC	U.S.	92,379	92,379			0.009%	0.009%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	SERC	1334	Town of Winnsboro SC	U.S.	62,000	62,000			0.006%	0.006%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.002%
2017	SERC	1335	Town of Winterville NC	U.S.	54,003	54,003			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1597	Washington-St. Tammany Electric Cooperative, Inc.	U.S.	1,029,251	1,029,251			0.100%	0.100%	0.000%	0.000%	0.023%	0.023%	0.000%	0.000%	0.026%
2017	SERC	1435	Arkansas Electric Cooperative Corporation	U.S.	10,250,834	10,250,834			0.996%	0.996%	0.000%	0.000%	0.230%	0.230%	0.000%	0.000%	0.261%
2017	SERC	1557	City of Clarksdale, Mississippi	U.S.	156,418	156,418			0.015%	0.015%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.004%
2017	SERC	1708	City of Abbeville	U.S.	137,537	137,537			0.013%	0.013%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	SERC	1558	Hope Water & Light (HWL)	U.S.	294,430	294,430			0.029%	0.029%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.007%
2017	SERC	1559	City of Minden	U.S.	138,210	138,210			0.013%	0.013%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.004%
2017	SERC	1249	Cleco Power LLC	U.S.	11,205,486	11,205,486			1.089%	1.089%	0.000%	0.000%	0.252%	0.252%	0.000%	0.000%	0.285%
2017	SERC	1648	Jonesboro City Water & Light	U.S.	1,389,314	1,389,314			0.135%	0.135%	0.000%	0.000%	0.031%	0.031%	0.000%	0.000%	0.035%
2017	SERC	1649	Kennett Board of Public Works	U.S.	136,607	136,607			0.013%	0.013%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	SERC	1471	Lafayette Utilities System	U.S.	2,054,903	2,054,903			0.200%	0.200%	0.000%	0.000%	0.046%	0.046%	0.000%	0.000%	0.052%
2017	SERC	1253	Louisiana Energy & Power Authority (LEPA)	U.S.	957,078	957,078			0.093%	0.093%	0.000%	0.000%	0.022%	0.022%	0.000%	0.000%	0.024%
2017	SERC	1650	Malden Board of Public Works	U.S.	49,737	49,737			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1443	Missouri Joint Municipal Electric Utility Commission	U.S.	2,072,115	2,072,115			0.201%	0.201%	0.000%	0.000%	0.047%	0.047%	0.000%	0.000%	0.053%

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	SERC	1639	OzMo Ozark Missouri, West Plains MO	U.S.	188,693	188,693			0.018%	0.018%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.005%
2017	SERC	1652	Piggott Municipal Light, Water & Sewer	U.S.	36,524	36,524			0.004%	0.004%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	SERC	1653	Poplar Bluff Municipal Utilities	U.S.	371,235	371,235			0.036%	0.036%	0.000%	0.000%	0.008%	0.008%	0.000%	0.000%	0.009%
2017	SERC	1636	City of Prescott	U.S.	81,986	81,986			0.008%	0.008%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	SERC	1561	Public Service Commission of Yazoo City of Mississippi	U.S.	116,966	116,966			0.011%	0.011%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	SERC	1654	Sikeston Board of Municipal Utilities	U.S.	372,304	372,304			0.036%	0.036%	0.000%	0.000%	0.008%	0.008%	0.000%	0.000%	0.009%
TOTAL SERC					1,028,836,571	1,028,836,571	-	-	100.000%	100.000%	0.000%	0.000%	23.117%	23.117%	0.000%	0.000%	26.146%
TOTAL SPP					-	-	-	-	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	TRE	1019	ERCOT	U.S.	359,022,162	359,022,162			100.000%	100.000%	0.000%	0.000%	8.067%	8.067%	0.000%	0.000%	9.124%
TOTAL ERCOT					359,022,162	359,022,162	-	-	100.000%	100.000%	0.000%	0.000%	8.067%	8.067%	0.000%	0.000%	9.124%
2017	WECC		Alberta Electric System Operator	Canada	62,244,032		62,244,032		7.173%	0.000%	7.173%	0.000%	1.399%	0.000%	1.399%	0.000%	0.000%
2017	WECC		British Columbia Hydro & Power Authority	Canada	63,896,653		63,896,653		7.364%	0.000%	7.364%	0.000%	1.436%	0.000%	1.436%	0.000%	0.000%
2017	WECC		Centro Nacional de Control de Energia	Mexico	13,232,487			13,232,487	1.525%	0.000%	0.000%	1.525%	0.297%	0.000%	0.000%	0.297%	0.000%
2017	WECC		Ajo Improvement District	U.S.	10,917	10,917			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Arizona Public Service Company	U.S.	29,054,370	29,054,370			3.348%	3.348%	0.000%	0.000%	0.653%	0.653%	0.000%	0.000%	0.738%
2017	WECC		City of Williams	U.S.	44,759	44,759			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Electrical Districts 3	U.S.	85,237	85,237			0.010%	0.010%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	WECC		Aguila Irrigation District - APS	U.S.	33,128	33,128			0.004%	0.004%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Buckeye Water Conservation and Drainage District - APS	U.S.	22,444	22,444			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Electrical District No. 6 of Pinal County - APS	U.S.	2,153	2,153			0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Electrical District No. 7 of Maricopa County - APS	U.S.	50,354	50,354			0.006%	0.006%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Electrical District No. 8 of Maricopa County - APS	U.S.	361,508	361,508			0.042%	0.042%	0.000%	0.000%	0.008%	0.008%	0.000%	0.000%	0.009%
2017	WECC		Harquahala Valley Power Districts - APS	U.S.	114,457	114,457			0.013%	0.013%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	WECC		Maricopa County Municipal Water Conservation Dist No. 1 - APS	U.S.	51,680	51,680			0.006%	0.006%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		McMullen Valley Water Conservation & Drainage District - APS	U.S.	124,395	124,395			0.014%	0.014%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	WECC		Roosevelt Irrigation District - APS	U.S.	40,913	40,913			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Tonopah Irrigation District - APS	U.S.	27,165	27,165			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Navajo Tribal Utility Authority-Arizona	U.S.	50,356	50,356			0.006%	0.006%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Tohono O'Odham Utility Authority	U.S.	61,695	61,695			0.007%	0.007%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.002%
2017	WECC		Town of Wickenburg	U.S.	26,553	26,553			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Avista Corporation	U.S.	9,675,178	9,675,178			1.115%	1.115%	0.000%	0.000%	0.217%	0.217%	0.000%	0.000%	0.246%
2017	WECC		Kaiser Aluminum Fabricated Products LLC	U.S.	309,947	309,947			0.036%	0.036%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.008%
2017	WECC		Pend Oreille County PUD No. 1	U.S.	1,017,642	1,017,642			0.117%	0.117%	0.000%	0.000%	0.023%	0.023%	0.000%	0.000%	0.026%
2017	WECC		PUD No. 2 of Grant County	U.S.	92,247	92,247			0.011%	0.011%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	WECC		Bonneville Power Administration-Power Services	U.S.	6,362,959	6,362,959			0.733%	0.733%	0.000%	0.000%	0.143%	0.143%	0.000%	0.000%	0.162%
2017	WECC		Bonneville Power Administration-Hydro	U.S.	202,705	202,705			0.023%	0.023%	0.000%	0.000%	0.005%	0.005%	0.000%	0.000%	0.005%
2017	WECC		Bonneville Power Administration-Transmission	U.S.	51,706,599	51,706,599			5.959%	5.959%	0.000%	0.000%	1.162%	1.162%	0.000%	0.000%	1.314%
2017	WECC		City of Redding	U.S.	798,841	798,841			0.092%	0.092%	0.000%	0.000%	0.018%	0.018%	0.000%	0.000%	0.020%
2017	WECC		City of Roseville	U.S.	1,249,280	1,249,280			0.144%	0.144%	0.000%	0.000%	0.028%	0.028%	0.000%	0.000%	0.032%
2017	WECC		Modesto Irrigation District	U.S.	2,623,552	2,623,552			0.302%	0.302%	0.000%	0.000%	0.059%	0.059%	0.000%	0.000%	0.067%
2017	WECC		Sacramento Municipal Utility District	U.S.	11,598,647	11,598,647			1.337%	1.337%	0.000%	0.000%	0.261%	0.261%	0.000%	0.000%	0.295%
2017	WECC		Western Area Power Administration-Sierra Nevada Region	U.S.	1,987,830	1,987,830			0.229%	0.229%	0.000%	0.000%	0.045%	0.045%	0.000%	0.000%	0.051%
2017	WECC		California Independent System Operator	U.S.	229,121,130	229,121,130			26.406%	26.406%	0.000%	0.000%	5.148%	5.148%	0.000%	0.000%	5.823%
2017	WECC		El Paso Electric Company	U.S.	8,426,939	8,426,939			0.971%	0.971%	0.000%	0.000%	0.189%	0.189%	0.000%	0.000%	0.214%
2017	WECC		Idaho Power Company	U.S.	15,787,953	15,787,953			1.820%	1.820%	0.000%	0.000%	0.355%	0.355%	0.000%	0.000%	0.401%
2017	WECC		Imperial Irrigation District	U.S.	3,743,508	3,743,508			0.431%	0.431%	0.000%	0.000%	0.084%	0.084%	0.000%	0.000%	0.095%

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	WECC		Los Angeles Department of Water and Power	U.S.	28,793,447	28,793,447			3.318%	3.318%	0.000%	0.000%	0.647%	0.647%	0.000%	0.000%	0.732%
2017	WECC		City of Henderson	U.S.	41,152	41,152			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		City of Las Vegas	U.S.	41,677	41,677			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		City of North Las Vegas	U.S.	23,469	23,469			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Clark County Water Reclamation District	U.S.	81,468	81,468			0.009%	0.009%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	WECC		Colorado River Commission of Nevada	U.S.	472,536	472,536			0.054%	0.054%	0.000%	0.000%	0.011%	0.011%	0.000%	0.000%	0.012%
2017	WECC		Las Vegas Valley Water District	U.S.	108,278	108,278			0.012%	0.012%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.003%
2017	WECC		Nevada Power Company dba NV Energy	U.S.	31,306,340	31,306,340			3.608%	3.608%	0.000%	0.000%	0.703%	0.703%	0.000%	0.000%	0.796%
2017	WECC		MGM Resorts International	U.S.	936,357	936,357			0.108%	0.108%	0.000%	0.000%	0.021%	0.021%	0.000%	0.000%	0.024%
2017	WECC		Switch-North	U.S.	5,780	5,780			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Switch-South	U.S.	296,619	296,619			0.034%	0.034%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.008%
2017	WECC		Wynn Las Vegas	U.S.	183,596	183,596			0.021%	0.021%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.005%
2017	WECC		Overton Power District No. 5	U.S.	395,749	395,749			0.046%	0.046%	0.000%	0.000%	0.009%	0.009%	0.000%	0.000%	0.010%
2017	WECC		Southern Nevada Water Authority	U.S.	120,912	120,912			0.014%	0.014%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	WECC		Basin Electric Power Cooperative	U.S.	799,330	799,330			0.092%	0.092%	0.000%	0.000%	0.018%	0.018%	0.000%	0.000%	0.020%
2017	WECC		Big Horn County Electric Cooperative	U.S.	38,434	38,434			0.004%	0.004%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		NorthWestern Corp. dba NorthWestern Energy, LLC	U.S.	9,441,724	9,441,724			1.088%	1.088%	0.000%	0.000%	0.212%	0.212%	0.000%	0.000%	0.240%
2017	WECC		Western Area Power Administration-Upper Great Plains Region	U.S.	8,002	8,002			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		PacifiCorp West (PACW)	U.S.	21,567,018	21,567,018			2.486%	2.486%	0.000%	0.000%	0.485%	0.485%	0.000%	0.000%	0.548%
2017	WECC		Constellation New Energy	U.S.	349,466	349,466			0.040%	0.040%	0.000%	0.000%	0.008%	0.008%	0.000%	0.000%	0.009%
2017	WECC		3 Phases Renewables	U.S.	220	220			0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Avangrid Renewables	U.S.	103,249	103,249			0.012%	0.012%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.003%
2017	WECC		Calpine Energy Solutions, LLC./Noble Americas Energy Solutions, LLC	U.S.	1,636,654	1,636,654			0.189%	0.189%	0.000%	0.000%	0.037%	0.037%	0.000%	0.000%	0.042%
2017	WECC		PacifiCorp (IPC)	U.S.	2,086	2,086			0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		PacifiCorp (EasternBalAuth)	U.S.	49,834,039	49,834,039			5.743%	5.743%	0.000%	0.000%	1.120%	1.120%	0.000%	0.000%	1.266%
2017	WECC		PacifiCorp (Portland)	U.S.	4,445	4,445			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		PacifiCorp (WAPA-CO-MO)	U.S.	116,076	116,076			0.013%	0.013%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	WECC		Portland General Electric Company	U.S.	17,596,703	17,596,703			2.028%	2.028%	0.000%	0.000%	0.395%	0.395%	0.000%	0.000%	0.447%
2017	WECC		Shell Energy North America	U.S.	74,824	74,824			0.009%	0.009%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	WECC		Arkansas River Power Authority (ARPA)	U.S.	267,593	267,593			0.031%	0.031%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.007%
2017	WECC		Black Hills Colorado Electric	U.S.	2,055,374	2,055,374			0.237%	0.237%	0.000%	0.000%	0.046%	0.046%	0.000%	0.000%	0.052%
2017	WECC		Burlington	U.S.	31,202	31,202			0.004%	0.004%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Colorado Springs Utilities	U.S.	60,450	60,450			0.007%	0.007%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.002%
2017	WECC		Grand Valley Power	U.S.	248,669	248,669			0.029%	0.029%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.006%
2017	WECC		Holy Cross Energy	U.S.	1,036,635	1,036,635			0.119%	0.119%	0.000%	0.000%	0.023%	0.023%	0.000%	0.000%	0.026%
2017	WECC		Intermountain Rural Electric Association	U.S.	2,232,568	2,232,568			0.257%	0.257%	0.000%	0.000%	0.050%	0.050%	0.000%	0.000%	0.057%
2017	WECC		Municipal Energy Agency of Nebraska	U.S.	170,398	170,398			0.020%	0.020%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.004%
2017	WECC		Platte River Power Authority	U.S.	3,228,640	3,228,640			0.372%	0.372%	0.000%	0.000%	0.073%	0.073%	0.000%	0.000%	0.082%
2017	WECC		Public Service Company of Colorado (Xcel)	U.S.	30,398,462	30,398,462			3.503%	3.503%	0.000%	0.000%	0.683%	0.683%	0.000%	0.000%	0.773%
2017	WECC		Public Service Company of Colorado (Xcel)-(WAPA-CO-MO)	U.S.	115,284	115,284			0.013%	0.013%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	WECC		Raton Public Service	U.S.	43,612	43,612			0.005%	0.005%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Town of Center	U.S.	14,886	14,886			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Tri-State Generation & Transmission Assoc. Inc - Reliability	U.S.	2,641,443	2,641,443			0.304%	0.304%	0.000%	0.000%	0.059%	0.059%	0.000%	0.000%	0.067%
2017	WECC		Western Area Power - Loveland, CO	U.S.	169,011	169,011			0.019%	0.019%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.004%
2017	WECC		Yampa Valley Electric Association	U.S.	560,999	560,999			0.065%	0.065%	0.000%	0.000%	0.013%	0.013%	0.000%	0.000%	0.014%
2017	WECC		City of Aztec Electric Dept	U.S.	36,550	36,550			0.004%	0.004%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		City of Gallup	U.S.	221,471	221,471			0.026%	0.026%	0.000%	0.000%	0.005%	0.005%	0.000%	0.000%	0.006%
2017	WECC		Jicarilla Apache Nation Power Authority	U.S.	23,054	23,054			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		Kit Carson Electric Inc	U.S.	294,677	294,677			0.034%	0.034%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.007%



2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	WECC		Navajo Tribal Utility Authority-New Mexico	U.S.	198,362	198,362			0.023%	0.023%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.005%
2017	WECC		Public Service Company of New Mexico	U.S.	9,141,458	9,141,458			1.054%	1.054%	0.000%	0.000%	0.205%	0.205%	0.000%	0.000%	0.232%
2017	WECC		The Incorporated County of Los Alamos	U.S.	612,170	612,170			0.071%	0.071%	0.000%	0.000%	0.014%	0.014%	0.000%	0.000%	0.016%
2017	WECC		Tri-State Generation & Transmission Association, Inc.	U.S.	2,769,627	2,769,627			0.319%	0.319%	0.000%	0.000%	0.062%	0.062%	0.000%	0.000%	0.070%
2017	WECC		US Dept of Energy - Kirtland AFB	U.S.	425,052	425,052			0.049%	0.049%	0.000%	0.000%	0.010%	0.010%	0.000%	0.000%	0.011%
2017	WECC		Public Utility District No. 1 of Chelan County	U.S.	1,859,763	1,859,763			0.214%	0.214%	0.000%	0.000%	0.042%	0.042%	0.000%	0.000%	0.047%
2017	WECC		Okanogan PUD	U.S.	663,971	663,971			0.077%	0.077%	0.000%	0.000%	0.015%	0.015%	0.000%	0.000%	0.017%
2017	WECC		PUD No. 1 of Douglas County	U.S.	917,441	917,441			0.106%	0.106%	0.000%	0.000%	0.021%	0.021%	0.000%	0.000%	0.023%
2017	WECC		Douglas Palisades / PUD No. 1 of DC	U.S.	20,468	20,468			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%
2017	WECC		PUD No. 2 of Grant County	U.S.	4,771,009	4,771,009			0.550%	0.550%	0.000%	0.000%	0.107%	0.107%	0.000%	0.000%	0.121%
2017	WECC		Puget Sound Energy, Inc.	U.S.	24,489,796	24,489,796			2.822%	2.822%	0.000%	0.000%	0.550%	0.550%	0.000%	0.000%	0.622%
2017	WECC		Salt River Project	U.S.	29,902,054	29,902,054			3.446%	3.446%	0.000%	0.000%	0.672%	0.672%	0.000%	0.000%	0.760%
2017	WECC		Seattle City Light	U.S.	9,963,742	9,963,742			1.148%	1.148%	0.000%	0.000%	0.224%	0.224%	0.000%	0.000%	0.253%
2017	WECC		Barrick Goldstrike Mines Inc.	U.S.	1,387,742	1,387,742			0.160%	0.160%	0.000%	0.000%	0.031%	0.031%	0.000%	0.000%	0.035%
2017	WECC		City of Fallon	U.S.	92,245	92,245			0.011%	0.011%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	WECC		Mt. Wheeler Power	U.S.	552,994	552,994			0.064%	0.064%	0.000%	0.000%	0.012%	0.012%	0.000%	0.000%	0.014%
2017	WECC		Truckee Donner Public Utility District	U.S.	161,518	161,518			0.019%	0.019%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.004%
2017	WECC		Beartooth Electric Cooperative	U.S.	77,005	77,005			0.009%	0.009%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	WECC		City of Tacoma DBA Tacoma Power	U.S.	5,006,565	5,006,565			0.577%	0.577%	0.000%	0.000%	0.112%	0.112%	0.000%	0.000%	0.127%
2017	WECC		Tucson Electric Power Company	U.S.	14,848,416	14,848,416			1.711%	1.711%	0.000%	0.000%	0.334%	0.334%	0.000%	0.000%	0.377%
2017	WECC		Merced Irrigation District	U.S.	519,312	519,312			0.060%	0.060%	0.000%	0.000%	0.012%	0.012%	0.000%	0.000%	0.013%
2017	WECC		Turlock Irrigation District	U.S.	2,179,005	2,179,005			0.251%	0.251%	0.000%	0.000%	0.049%	0.049%	0.000%	0.000%	0.055%
2017	WECC		Basin Electric Power Cooperative	U.S.	2,319,412	2,319,412			0.267%	0.267%	0.000%	0.000%	0.052%	0.052%	0.000%	0.000%	0.059%
2017	WECC		Black Hills Colorado Electric/Cheyenne Light Fuel & Power	U.S.	4,386,123	4,386,123			0.505%	0.505%	0.000%	0.000%	0.099%	0.099%	0.000%	0.000%	0.111%
2017	WECC		Black Hills State University South Dakota	U.S.	20,948	20,948			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%
2017	WECC		City of Page	U.S.	72,314	72,314			0.008%	0.008%	0.000%	0.000%	0.002%	0.002%	0.000%	0.000%	0.002%
2017	WECC		Colorado Springs Utilities	U.S.	4,607,995	4,607,995			0.531%	0.531%	0.000%	0.000%	0.104%	0.104%	0.000%	0.000%	0.117%
2017	WECC		Deseret Generation & Transmission Cooperative	U.S.	116,200	116,200			0.013%	0.013%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.003%
2017	WECC		City of Farmington	U.S.	993,038	993,038			0.114%	0.114%	0.000%	0.000%	0.022%	0.022%	0.000%	0.000%	0.025%
2017	WECC		Municipal Energy Agency of Nebraska	U.S.	630,349	630,349			0.073%	0.073%	0.000%	0.000%	0.014%	0.014%	0.000%	0.000%	0.016%
2017	WECC		Navajo Tribal Utility Authority-Colorado	U.S.	216,337	216,337			0.025%	0.025%	0.000%	0.000%	0.005%	0.005%	0.000%	0.000%	0.005%
2017	WECC		Navajo Agricultural Products Industry (NAPI)	U.S.	3,279	3,279			0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Nebraska Public Power Marketing	U.S.	6,603	6,603			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Francis E. Warren Air Force Base	U.S.	12,103	12,103			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Town of Fredonia	U.S.	10,451	10,451			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Tri-State Generation & Transmission Assoc. Inc - Reliability	U.S.	7,866,215	7,866,215			0.907%	0.907%	0.000%	0.000%	0.177%	0.177%	0.000%	0.000%	0.200%
2017	WECC		Western Area Power Administration - CRSP	U.S.	1,918,249	1,918,249			0.221%	0.221%	0.000%	0.000%	0.043%	0.043%	0.000%	0.000%	0.049%
2017	WECC		Western Area Power - Loveland, CO	U.S.	1,834,005	1,834,005			0.211%	0.211%	0.000%	0.000%	0.041%	0.041%	0.000%	0.000%	0.047%
2017	WECC		Wyoming Municipal Power Agency	U.S.	219,215	219,215			0.025%	0.025%	0.000%	0.000%	0.005%	0.005%	0.000%	0.000%	0.006%
2017	WECC		Basin Electric Power Cooperative	U.S.	147,139	147,139			0.017%	0.017%	0.000%	0.000%	0.003%	0.003%	0.000%	0.000%	0.004%
2017	WECC		Montana-Dakota Utilities Co.	U.S.	22,738	22,738			0.003%	0.003%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%
2017	WECC		NorthWestern Corp. dba NorthWestern Energy, LLC	U.S.	302,542	302,542			0.035%	0.035%	0.000%	0.000%	0.007%	0.007%	0.000%	0.000%	0.008%
2017	WECC		Western Area Power Administration-Upper Great Plains Region	U.S.	355,785	355,785			0.041%	0.041%	0.000%	0.000%	0.008%	0.008%	0.000%	0.000%	0.009%
2017	WECC		Aha Macav Power Service	U.S.	14,656	14,656			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Bureau of Reclamation (Desalter) - c/o DSW EMMO	U.S.	109	109			0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Bureau of Reclamation (Wellfield)	U.S.	6,874	6,874			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Central Arizona Water Conservation District	U.S.	2,279,451	2,279,451			0.263%	0.263%	0.000%	0.000%	0.051%	0.051%	0.000%	0.000%	0.058%
2017	WECC		City of Mesa	U.S.	267,299	267,299			0.031%	0.031%	0.000%	0.000%	0.006%	0.006%	0.000%	0.000%	0.007%
2017	WECC		Needles Public Utilities Authority	U.S.	31,707	31,707			0.004%	0.004%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NEL (MWh)	U.S. NEL	Canada NEL	Mexico NEL	% of RE total	US Total	Canada Total	Mexico Total	% of ERO Total	US Total	Canada Total	Mexico Total	% of ERO - US Only
2017	WECC		Colorado River Agency-Bureau of Indian Affairs	U.S.	17,713	17,713			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Electrical District #2 - Coolidge Generating Station	U.S.	9,210	9,210			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Electrical District #2	U.S.	189,507	189,507			0.022%	0.022%	0.000%	0.000%	0.004%	0.004%	0.000%	0.000%	0.005%
2017	WECC		Silver State Energy Association	U.S.	656,415	656,415			0.076%	0.076%	0.000%	0.000%	0.015%	0.015%	0.000%	0.000%	0.017%
2017	WECC		Arizona Electric Power Cooperative, Inc	U.S.	3,484,373	3,484,373			0.402%	0.402%	0.000%	0.000%	0.078%	0.078%	0.000%	0.000%	0.089%
2017	WECC		U.S. Army Yuma Proving Ground	U.S.	19,644	19,644			0.002%	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Wellton-Mohawk Irrigation & Drainage District	U.S.	5,084	5,084			0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	WECC		Western Area Power Administration-Desert Southwest Region	U.S.	1,627,924	1,627,924			0.188%	0.188%	0.000%	0.000%	0.037%	0.037%	0.000%	0.000%	0.041%
TOTAL WECC					867,701,562	728,328,390	126,140,685	13,232,487	100.000%	83.938%	14.537%	1.525%	19.497%	16.365%	2.834%	0.297%	18.509%
TOTAL ERO					4,450,547,164	3,934,994,393	502,320,284	13,232,487	700.000%	619.785%	78.690%	1.525%	100.000%	88.416%	11.287%	0.297%	100.000%
<b>Summary by Regional Entity</b>					<b>Total NEL (MWh)</b>	<b>U.S. NEL</b>	<b>Canada NEL</b>	<b>Mexico NEL</b>									
2017	FRCC				232,719,400	232,719,400	-	-	100.000%	100.000%	0.000%	0.000%	5.229%	5.229%	0.000%	0.000%	5.914%
2017	MRO				485,380,880	436,708,281	48,672,599	-	100.000%	89.972%	10.028%	0.000%	10.906%	9.812%	1.094%	0.000%	11.098%
2017	NPCC				605,097,000	277,590,000	327,507,000	-	100.000%	45.875%	54.125%	0.000%	13.596%	6.237%	7.359%	0.000%	7.054%
2017	RF				871,789,589	871,789,589	-	-	100.000%	100.000%	0.000%	0.000%	19.588%	19.588%	0.000%	0.000%	22.155%
2017	SERC				1,028,836,571	1,028,836,571	-	-	100.000%	100.000%	0.000%	0.000%	23.117%	23.117%	0.000%	0.000%	26.146%
2017	SPP				-	-	-	-	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2017	TRE				359,022,162	359,022,162	-	-	100.000%	100.000%	0.000%	0.000%	8.067%	8.067%	0.000%	0.000%	9.124%
2017	WECC				867,701,562	728,328,390	126,140,685	13,232,487	100.000%	83.938%	14.537%	1.525%	19.497%	16.365%	2.834%	0.297%	18.509%
Total					4,450,547,164	3,934,994,393	502,320,284	13,232,487	700.000%	619.785%	78.690%	1.525%	100.000%	88.416%	11.287%	0.297%	100.000%

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

APPENDIX 2-B

Data Year	Regional Entity	ID	Entity	Country	Total ERO Assessments (NERC, RE & WIRAB Costs)				Total NERC Assessments				Total Regional Entity Assessments (Including WIRAB Assessments)			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	FRCC	1074	Alachua, City of	U.S.	5,544	5,544	-	-	2,151	2,151	-	-	3,393	3,393	-	-
2017	FRCC	1075	Bartow, City of	U.S.	12,071	12,071	-	-	4,683	4,683	-	-	7,388	7,388	-	-
2017	FRCC	1076	Chattahoochee, City of	U.S.	1,510	1,510	-	-	586	586	-	-	924	924	-	-
2017	FRCC	1077	Florida Keys Electric Cooperative Assn	U.S.	30,688	30,688	-	-	11,906	11,906	-	-	18,782	18,782	-	-
2017	FRCC	1078	Florida Power & Light Co.	U.S.	4,679,182	4,679,182	-	-	1,815,373	1,815,373	-	-	2,863,809	2,863,809	-	-
2017	FRCC	1079	Florida Public Utilities Company	U.S.	14,321	14,321	-	-	5,556	5,556	-	-	8,765	8,765	-	-
2017	FRCC	1080	Gainesville Regional Utilities	U.S.	74,114	74,114	-	-	28,754	28,754	-	-	45,360	45,360	-	-
2017	FRCC	1081	Homestead, City of	U.S.	24,387	24,387	-	-	9,461	9,461	-	-	14,925	14,925	-	-
2017	FRCC	1082	JEA	U.S.	512,285	512,285	-	-	198,750	198,750	-	-	313,535	313,535	-	-
2017	FRCC	1083	Lakeland Electric	U.S.	126,271	126,271	-	-	48,989	48,989	-	-	77,282	77,282	-	-
2017	FRCC	1626	Lee County Electric Cooperative, Inc	U.S.	166,452	166,452	-	-	64,578	64,578	-	-	101,874	101,874	-	-
2017	FRCC	1661	City of Lake Worth	U.S.	19,231	19,231	-	-	7,461	7,461	-	-	11,770	11,770	-	-
2017	FRCC	1084	Mount Dora, City of	U.S.	3,760	3,760	-	-	1,459	1,459	-	-	2,301	2,301	-	-
2017	FRCC	1085	New Smyrna Beach, Utilities Commission of	U.S.	17,758	17,758	-	-	6,890	6,890	-	-	10,869	10,869	-	-
2017	FRCC	1086	Orlando Utilities Commission	U.S.	249,649	249,649	-	-	96,856	96,856	-	-	152,793	152,793	-	-
2017	FRCC	1087	Duke Energy Florida	U.S.	1,667,303	1,667,303	-	-	646,860	646,860	-	-	1,020,443	1,020,443	-	-
2017	FRCC	1088	Quincy, City of	U.S.	5,348	5,348	-	-	2,075	2,075	-	-	3,273	3,273	-	-
2017	FRCC	1089	Reedy Creek Improvement District	U.S.	49,551	49,551	-	-	19,224	19,224	-	-	30,327	30,327	-	-
2017	FRCC	1090	St. Cloud, City of (OUC)	U.S.	31,465	31,465	-	-	12,208	12,208	-	-	19,258	19,258	-	-
2017	FRCC	1091	Tallahassee, City of	U.S.	112,850	112,850	-	-	43,782	43,782	-	-	69,068	69,068	-	-
2017	FRCC	1092	Tampa Electric Company	U.S.	830,458	830,458	-	-	322,191	322,191	-	-	508,267	508,267	-	-
2017	FRCC	1603	City of Vero Beach	U.S.	30,974	30,974	-	-	12,017	12,017	-	-	18,957	18,957	-	-
2017	FRCC	1093	Wauchula, City of	U.S.	2,660	2,660	-	-	1,032	1,032	-	-	1,628	1,628	-	-
2017	FRCC	1094	Williston, City of	U.S.	1,481	1,481	-	-	575	575	-	-	907	907	-	-
2017	FRCC	1095	Winter Park, City of	U.S.	18,090	18,090	-	-	7,018	7,018	-	-	11,071	11,071	-	-
2017	FRCC	1724	Moore Haven, City of	U.S.	614	614	-	-	238	238	-	-	376	376	-	-
2017	FRCC	1072	Florida Municipal Power Agency	U.S.	244,866	244,866	-	-	95,000	95,000	-	-	149,866	149,866	-	-
2017	FRCC	1073	Seminole Electric Cooperative	U.S.	589,373	589,373	-	-	228,658	228,658	-	-	360,715	360,715	-	-
TOTAL FRCC					9,522,255	9,522,255	-	-	3,694,330	3,694,330	-	-	5,827,925	5,827,925	-	-
2017	MRO	1199	Basin Electric Power Cooperative	U.S.	924,946	924,946	-	-	307,589	307,589	-	-	617,357	617,357	-	-
2017	MRO	1201	Central Iowa Power Cooperative (CIPCO)	U.S.	135,149	135,149	-	-	44,944	44,944	-	-	90,206	90,206	-	-
2017	MRO	1204	Corn Belt Power Cooperative	U.S.	94,031	94,031	-	-	31,270	31,270	-	-	62,761	62,761	-	-
2017	MRO	1207	Dairyland Power Cooperative	U.S.	262,982	262,982	-	-	87,454	87,454	-	-	175,528	175,528	-	-
2017	MRO	1210	Great River Energy	U.S.	627,467	627,467	-	-	208,663	208,663	-	-	418,804	418,804	-	-
2017	MRO	1222	Minnkota Power Cooperative, Inc.	U.S.	182,939	182,939	-	-	60,836	60,836	-	-	122,103	122,103	-	-
2017	MRO	1230	Nebraska Public Power District	U.S.	653,494	653,494	-	-	217,318	217,318	-	-	436,175	436,175	-	-
2017	MRO	1232	Omaha Public Power District	U.S.	533,333	533,333	-	-	177,359	177,359	-	-	355,974	355,974	-	-
2017	MRO	1240	Western Area Power Administration (UM)	U.S.	442,466	442,466	-	-	147,141	147,141	-	-	295,325	295,325	-	-
2017	MRO	1239	Western Area Power Administration (LM)	U.S.	2,190	2,190	-	-	728	728	-	-	1,462	1,462	-	-
2017	MRO	1217	Manitoba Hydro	CAN	1,147,187	-	1,147,187	-	382,641	-	382,641	-	764,546	-	764,546	-
2017	MRO	1235	SaskPower	CAN	1,189,698	-	1,189,698	-	396,820	-	396,820	-	792,877	-	792,877	-
2017	MRO	1195	Alliant Energy (Alliant East - WPL & Alliant West IPL)	U.S.	1,388,929	1,388,929	-	-	461,886	461,886	-	-	927,043	927,043	-	-
2017	MRO	1710	Dahlberg Electric Company	U.S.	5,345	5,345	-	-	1,778	1,778	-	-	3,568	3,568	-	-
2017	MRO	1216	Madison, Gas and Electric	U.S.	161,524	161,524	-	-	53,714	53,714	-	-	107,809	107,809	-	-
2017	MRO	1220	MidAmerican Energy Company	U.S.	1,225,127	1,225,127	-	-	407,414	407,414	-	-	817,713	817,713	-	-
2017	MRO	1221	Minnesota Power	U.S.	616,550	616,550	-	-	205,033	205,033	-	-	411,517	411,517	-	-
2017	MRO	1226	Montana-Dakota Utilities Co.	U.S.	155,216	155,216	-	-	51,617	51,617	-	-	103,599	103,599	-	-
2017	MRO	1711	North Central Power Company	U.S.	1,774	1,774	-	-	590	590	-	-	1,184	1,184	-	-
2017	MRO	1231	NorthWestern Energy	U.S.	74,341	74,341	-	-	24,722	24,722	-	-	49,619	49,619	-	-
2017	MRO	1712	NorthWestern Wisconsin	U.S.	8,869	8,869	-	-	2,949	2,949	-	-	5,920	5,920	-	-
2017	MRO	1233	Otter Tail Power Company	U.S.	237,503	237,503	-	-	78,981	78,981	-	-	158,522	158,522	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total ERO Assessments (NERC, RE & WIRAB Costs)				Total NERC Assessments				Total Regional Entity Assessments (Including WIRAB Assessments)			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	MRO	1664	Wisconsin Public Service (WPS)	U.S.	558,159	558,159	-	-	185,615	185,615	-	-	372,544	372,544	-	-
2017	MRO	1665	Upper Peninsula Power Company (UPPCO)	U.S.	32,636	32,636	-	-	10,853	10,853	-	-	21,783	21,783	-	-
2017	MRO	1244	Xcel Energy Company (NSP)	U.S.	2,074,430	2,074,430	-	-	689,848	689,848	-	-	1,384,582	1,384,582	-	-
2017	MRO	1196	Ames Municipal Electric System	U.S.	36,092	36,092	-	-	12,002	12,002	-	-	24,090	24,090	-	-
2017	MRO	1604	Atlantic Municipal Utilities	U.S.	3,877	3,877	-	-	1,289	1,289	-	-	2,588	2,588	-	-
2017	MRO	1713	Bloomer Electric & Water Co.	U.S.	2,638	2,638	-	-	877	877	-	-	1,761	1,761	-	-
2017	MRO	1714	Village of Caddott	U.S.	655	655	-	-	218	218	-	-	437	437	-	-
2017	MRO	1200	Cedar Falls Municipal Utilities	U.S.	24,715	24,715	-	-	8,219	8,219	-	-	16,496	16,496	-	-
2017	MRO	1477	Central Minnesota Municipal Power Agency (CMMPA)	U.S.	18,626	18,626	-	-	6,194	6,194	-	-	12,432	12,432	-	-
2017	MRO	1716	Eldridge Electric and Water Utilities	U.S.	2,023	2,023	-	-	673	673	-	-	1,350	1,350	-	-
2017	MRO	1203	City of Escanaba	U.S.	6,579	6,579	-	-	2,188	2,188	-	-	4,391	4,391	-	-
2017	MRO	1205	Falls City Water & Light Department	U.S.	2,810	2,810	-	-	934	934	-	-	1,875	1,875	-	-
2017	MRO	1206	Fremont Department of Utilities	U.S.	20,653	20,653	-	-	6,868	6,868	-	-	13,785	13,785	-	-
2017	MRO	1208	Geneseo Municipal Utilities	U.S.	3,085	3,085	-	-	1,026	1,026	-	-	2,059	2,059	-	-
2017	MRO	1209	Grand Island Utilities Department	U.S.	36,254	36,254	-	-	12,056	12,056	-	-	24,198	24,198	-	-
2017	MRO	1717	Great Lakes Utilities	U.S.	70,478	70,478	-	-	23,437	23,437	-	-	47,041	47,041	-	-
2017	MRO	1718	City of Guttenberg	U.S.	900	900	-	-	299	299	-	-	600	600	-	-
2017	MRO	1606	Harlan Municipal Utilities	U.S.	803	803	-	-	267	267	-	-	536	536	-	-
2017	MRO	1211	Hastings Utilities	U.S.	20,481	20,481	-	-	6,811	6,811	-	-	13,670	13,670	-	-
2017	MRO	1212	Heartland Consumers Power District	U.S.	20,747	20,747	-	-	6,899	6,899	-	-	13,848	13,848	-	-
2017	MRO	1213	Hutchinson Utilities Commission	U.S.	13,872	13,872	-	-	4,613	4,613	-	-	9,259	9,259	-	-
2017	MRO	1719	City of Kasota	U.S.	155	155	-	-	52	52	-	-	104	104	-	-
2017	MRO	1215	Lincoln Electric System	U.S.	152,974	152,974	-	-	50,871	50,871	-	-	102,103	102,103	-	-
2017	MRO	1223	Missouri River Energy Services	U.S.	128,670	128,670	-	-	42,789	42,789	-	-	85,881	85,881	-	-
2017	MRO	1224	MN Municipal Power Agency (MMPA)	U.S.	74,197	74,197	-	-	24,674	24,674	-	-	49,523	49,523	-	-
2017	MRO	1607	Montezuma Municipal Light & Power	U.S.	1,205	1,205	-	-	401	401	-	-	804	804	-	-
2017	MRO	1227	Municipal Energy Agency of Nebraska	U.S.	45,016	45,016	-	-	14,970	14,970	-	-	30,046	30,046	-	-
2017	MRO	1228	Muscatine Power and Water	U.S.	41,921	41,921	-	-	13,941	13,941	-	-	27,980	27,980	-	-
2017	MRO	1229	Nebraska City Utilities	U.S.	6,164	6,164	-	-	2,050	2,050	-	-	4,114	4,114	-	-
2017	MRO	1720	Resale Power Group of Iowa	U.S.	26,899	26,899	-	-	8,945	8,945	-	-	17,954	17,954	-	-
2017	MRO	1721	Rice Lake Utilities	U.S.	7,896	7,896	-	-	2,626	2,626	-	-	5,271	5,271	-	-
2017	MRO	1234	Rochester Public Utilities	U.S.	111	111	-	-	37	37	-	-	74	74	-	-
2017	MRO	1236	Southern Minnesota Municipal Power Agency	U.S.	132,813	132,813	-	-	44,167	44,167	-	-	88,646	88,646	-	-
2017	MRO	1722	City of Spooner	U.S.	1,512	1,512	-	-	503	503	-	-	1,009	1,009	-	-
2017	MRO	1241	Willmar Municipal Utilities	U.S.	11,913	11,913	-	-	3,961	3,961	-	-	7,951	7,951	-	-
2017	MRO	1242	Wisconsin Public Power, Inc. (East and West regions)	U.S.	252,653	252,653	-	-	84,019	84,019	-	-	168,633	168,633	-	-
2017	MRO		Wolverine Power Marketing Cooperative	U.S.	1,711	1,711	-	-	569	569	-	-	1,142	1,142	-	-
2017	SPP-MRO-SERC		Arkansas Electric Cooperative Corporation	U.S.	181,031	181,031	-	-	60,201	60,201	-	-	120,829	120,829	-	-
2017	SPP-MRO	1246	American Electric Power	U.S.	1,767,466	1,767,466	-	-	587,768	587,768	-	-	1,179,698	1,179,698	-	-
2017	SPP-MRO	1707	AEP-VEMCO	U.S.	30,847	30,847	-	-	10,258	10,258	-	-	20,589	20,589	-	-
2017	SPP-MRO	1247	Board of Public Utilities (Kansas City KS)	U.S.	115,593	115,593	-	-	38,440	38,440	-	-	77,152	77,152	-	-
2017	SPP-MRO	1620	Board of Public Utilities, City of McPherson, Kansas	U.S.	50,570	50,570	-	-	16,817	16,817	-	-	33,753	33,753	-	-
2017	SPP-MRO	1647	Carthage City Water & Light	U.S.	14,375	14,375	-	-	4,780	4,780	-	-	9,594	9,594	-	-
2017	SPP-MRO	1469	Central Valley Electric Cooperative	U.S.	39,079	39,079	-	-	12,996	12,996	-	-	26,083	26,083	-	-
2017	SPP-MRO	1556	City of Bentonville	U.S.	33,158	33,158	-	-	11,027	11,027	-	-	22,131	22,131	-	-
2017	SPP-MRO	1709	City of Nixa	U.S.	7,699	7,699	-	-	2,560	2,560	-	-	5,139	5,139	-	-
2017	SPP-MRO	1703	City of Chanute	U.S.	24,041	24,041	-	-	7,995	7,995	-	-	16,046	16,046	-	-
2017	SPP-MRO	1248	Independence Power & Light (Independence, MO)	U.S.	49,701	49,701	-	-	16,528	16,528	-	-	33,173	33,173	-	-
2017	SPP-MRO	1436	City Utilities of Springfield, MO	U.S.	148,389	148,389	-	-	49,347	49,347	-	-	99,043	99,043	-	-
2017	SPP-MRO	1437	East Texas Electric Coop, Inc.	U.S.	20,557	20,557	-	-	6,836	6,836	-	-	13,721	13,721	-	-
2017	SPP-MRO	1250	The Empire District Electric Company	U.S.	246,156	246,156	-	-	81,859	81,859	-	-	164,297	164,297	-	-
2017	SPP-MRO	1470	Farmers' Electric Coop	U.S.	13,744	13,744	-	-	4,571	4,571	-	-	9,173	9,173	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

APPENDIX 2-B

Data Year	Regional Entity	ID	Entity	Country	Total ERO Assessments (NERC, RE & WIRAB Costs)				Total NERC Assessments				Total Regional Entity Assessments (Including WIRAB Assessments)			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	SPP-MRO	1438	Golden Spread Electric Coop	U.S.	237,259	237,259	-	-	78,900	78,900	-	-	158,359	158,359	-	-
2017	SPP-MRO	1251	Grand River Dam Authority	U.S.	248,861	248,861	-	-	82,758	82,758	-	-	166,103	166,103	-	-
2017	SPP-MRO	1252	Kansas City Power & Light (KCPL)	U.S.	738,791	738,791	-	-	245,684	245,684	-	-	493,108	493,108	-	-
2017	SPP-MRO	1439	Kansas Electric Power Coop., Inc	U.S.	100,682	100,682	-	-	33,482	33,482	-	-	67,200	67,200	-	-
2017	SPP-MRO	1440	Kansas Municipal Energy Agency (KCPL)	U.S.	75,269	75,269	-	-	25,031	25,031	-	-	50,239	50,239	-	-
2017	SPP-MRO	1637	Kansas Power Pool	U.S.	41,724	41,724	-	-	13,875	13,875	-	-	27,849	27,849	-	-
2017	SPP-MRO	1598	KCP&L GMOC (Greater Missouri Operations Company)	U.S.	406,026	406,026	-	-	135,023	135,023	-	-	271,003	271,003	-	-
2017	SPP-MRO	1472	Lea County Electric Coop	U.S.	57,903	57,903	-	-	19,255	19,255	-	-	38,647	38,647	-	-
2017	SPP-MRO	1441	Midwest Energy Inc.	U.S.	85,397	85,397	-	-	28,399	28,399	-	-	56,998	56,998	-	-
2017	SPP-MRO-SERC		Missouri Joint Municipal Electric Utility Commission	U.S.	21,273	21,273	-	-	7,074	7,074	-	-	14,199	14,199	-	-
2017	SPP-MRO	1442	Northeast Texas Electric Cooperative, Inc.	U.S.	149,377	149,377	-	-	49,675	49,675	-	-	99,702	99,702	-	-
2017	SPP-MRO	1255	Oklahoma Gas and Electric Co.	U.S.	1,358,369	1,358,369	-	-	451,723	451,723	-	-	906,646	906,646	-	-
2017	SPP-MRO	1444	Oklahoma Municipal Power Auth	U.S.	135,890	135,890	-	-	45,190	45,190	-	-	90,700	90,700	-	-
2017	SPP-MRO	1651	Paragould Light, Water & Cable	U.S.	27,954	27,954	-	-	9,296	9,296	-	-	18,658	18,658	-	-
2017	SPP-MRO	1725	People's Electric Cooperative	U.S.	23,623	23,623	-	-	7,856	7,856	-	-	15,767	15,767	-	-
2017	SPP-MRO	1473	Roosevelt County Electric Coop	U.S.	7,218	7,218	-	-	2,400	2,400	-	-	4,817	4,817	-	-
2017	SPP-MRO	1257	Xcel Energy Company (Southwestern Public Service)	U.S.	1,025,823	1,025,823	-	-	341,136	341,136	-	-	684,687	684,687	-	-
2017	SPP-MRO	1256	Sunflower Electric Power Cooperative	U.S.	215,044	215,044	-	-	71,513	71,513	-	-	143,532	143,532	-	-
2017	SPP-MRO	1445	Tex - La Electric Cooperative of Texas	U.S.	23,323	23,323	-	-	7,756	7,756	-	-	15,567	15,567	-	-
2017	SPP-MRO	1475	Tri County Electric Coop	U.S.	16,733	16,733	-	-	5,565	5,565	-	-	11,169	11,169	-	-
2017	SPP-MRO	1260	Westar Energy, Inc.	U.S.	1,003,369	1,003,369	-	-	333,669	333,669	-	-	669,701	669,701	-	-
2017	SPP-MRO	1259	Western Farmers Electric Cooperative	U.S.	401,161	401,161	-	-	133,405	133,405	-	-	267,755	267,755	-	-
2017	SPP-MRO	1501	West Texas Municipal Power Agency	U.S.	132,845	132,845	-	-	44,177	44,177	-	-	88,668	88,668	-	-
TOTAL MRO					23,183,705	20,846,820	2,336,885	-	7,712,036	6,932,574	779,462	-	15,471,669	13,914,246	1,557,423	-
2017	NPCC	1336	New England	U.S.	5,924,309	5,924,309	-	-	1,924,320	1,924,320	-	-	3,999,989	3,999,989	-	-
2017	NPCC	1339	New York	U.S.	7,651,580	7,651,580	-	-	2,482,313	2,482,313	-	-	5,169,267	5,169,267	-	-
2017	NPCC	1337	Ontario	Canada	3,582,527	-	3,582,527	-	1,418,177	-	1,418,177	-	2,164,350	-	2,164,350	-
2017	NPCC		Quebec	Canada	5,063,237	-	5,063,237	-	2,004,960	-	2,004,960	-	3,058,277	-	3,058,277	-
2017	NPCC	1705	New Brunswick	Canada	502,544	-	502,544	-	148,152	-	148,152	-	354,392	-	354,392	-
2017	NPCC	1340	Nova Scotia	Canada	431,965	-	431,965	-	174,829	-	174,829	-	257,136	-	257,136	-
TOTAL NPCC					23,156,162	13,575,889	9,580,272	-	8,152,751	4,406,633	3,746,117	-	15,003,411	9,169,256	5,834,155	-
2017	RF	1102	Cannelton Utilities	U.S.	570	570	-	-	225	225	-	-	346	346	-	-
2017	RF	1106	City of Croswell	U.S.	1,581	1,581	-	-	623	623	-	-	957	957	-	-
2017	RF	1490	City of Lansing	U.S.	87,698	87,698	-	-	34,583	34,583	-	-	53,116	53,116	-	-
2017	RF	1120	Cloverland Electric Cooperative	U.S.	29,977	29,977	-	-	11,821	11,821	-	-	18,156	18,156	-	-
2017	RF	1122	CMS ERM Michigan LLC	U.S.	7,088	7,088	-	-	2,795	2,795	-	-	4,293	4,293	-	-
2017	RF	1124	Constellation New Energy (MECS-CONS)	U.S.	48,425	48,425	-	-	19,096	19,096	-	-	29,329	29,329	-	-
2017	RF	1123	Constellation New Energy (MECS-DET)	U.S.	54,334	54,334	-	-	21,426	21,426	-	-	32,908	32,908	-	-
2017	RF	1126	Consumers Energy Company	U.S.	1,338,466	1,338,466	-	-	527,807	527,807	-	-	810,659	810,659	-	-
2017	RF	1128	Detroit Edison Company	U.S.	1,794,924	1,794,924	-	-	707,805	707,805	-	-	1,087,119	1,087,119	-	-
2017	RF	1166	Duke Energy Indiana	U.S.	1,185,648	1,185,648	-	-	467,545	467,545	-	-	718,103	718,103	-	-
2017	RF	1135	Ferdinand Municipal Light & Water	U.S.	1,997	1,997	-	-	787	787	-	-	1,209	1,209	-	-
2017	RF	1646	FirstEnergy Solutions (MECS-CONS)	U.S.	34,504	34,504	-	-	13,606	13,606	-	-	20,898	20,898	-	-
2017	RF	1549	FirstEnergy Solutions (MECS-DET)	U.S.	41,605	41,605	-	-	16,407	16,407	-	-	25,199	25,199	-	-
2017	RF	1145	Hoosier Energy	U.S.	300,995	300,995	-	-	118,694	118,694	-	-	182,302	182,302	-	-
2017	RF	1148	Indiana Municipal Power Agency (DUKE CIN)	U.S.	122,552	122,552	-	-	48,327	48,327	-	-	74,225	74,225	-	-
2017	RF	1485	Indiana Municipal Power Agency (NIPSCO)	U.S.	17,035	17,035	-	-	6,718	6,718	-	-	10,318	10,318	-	-
2017	RF	1486	Indiana Municipal Power Agency (SIGE)	U.S.	23,718	23,718	-	-	9,353	9,353	-	-	14,365	14,365	-	-
2017	RF	1149	Indianapolis Power & Light Co.	U.S.	555,477	555,477	-	-	219,045	219,045	-	-	336,432	336,432	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

APPENDIX 2-B

Data Year	Regional Entity	ID	Entity	Country	Total ERO Assessments (NERC, RE & WIRAB Costs)				Total NERC Assessments				Total Regional Entity Assessments (Including WIRAB Assessments)			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	RF	1553	Integrus Energy Services (MECS-CONS)	U.S.	17,615	17,615	-	-	6,946	6,946	-	-	10,669	10,669	-	-
2017	RF	1554	Integrus Energy Services (MECS-DET)	U.S.	25,211	25,211	-	-	9,941	9,941	-	-	15,269	15,269	-	-
2017	RF	1666	Integrus Energy Services	U.S.	11,901	11,901	-	-	4,693	4,693	-	-	7,208	7,208	-	-
2017	RF	1614	Just Energy (MECS-DET)	U.S.	344	344	-	-	135	135	-	-	208	208	-	-
2017	RF	1154	Michigan Public Power Agency	U.S.	152,218	152,218	-	-	60,025	60,025	-	-	92,193	92,193	-	-
2017	RF	1155	Michigan South Central Power Agency	U.S.	28,420	28,420	-	-	11,207	11,207	-	-	17,213	17,213	-	-
2017	RF	1158	MidAmerican Energy Company Retail	U.S.	683	683	-	-	269	269	-	-	414	414	-	-
2017	RF	1163	Northern Indiana Public Service Co.	U.S.	705,081	705,081	-	-	278,040	278,040	-	-	427,042	427,042	-	-
2017	RF	1164	Ontonagon County Rural Electrification Assoc.	U.S.	1,119	1,119	-	-	441	441	-	-	678	678	-	-
2017	RF	1265	PJM Interconnection, LLC	U.S.	26,740,677	26,740,677	-	-	10,544,842	10,544,842	-	-	16,195,836	16,195,836	-	-
2017	RF	1172	Calpine Energy Solutions (k.n.a.Noble Americas Energy Solutions (MECS-CONS))	U.S.	15,423	15,423	-	-	6,082	6,082	-	-	9,341	9,341	-	-
2017	RF	1171	Calpine Energy Solutions (k.n.a.Noble Americas Energy Solutions (MECS-DET))	U.S.	24,260	24,260	-	-	9,567	9,567	-	-	14,693	14,693	-	-
2017	RF	1176	Direct Energy (fka:Strategic Energy,LLC) (MECS-CONS)	U.S.	7,710	7,710	-	-	3,040	3,040	-	-	4,669	4,669	-	-
2017	RF	1174	Direct Energy (fka:Strategic Energy,LLC) (MECS-DET)	U.S.	36,567	36,567	-	-	14,420	14,420	-	-	22,147	22,147	-	-
2017	RF	1581	Spartan Renewable Energy	U.S.	3,677	3,677	-	-	1,450	1,450	-	-	2,227	2,227	-	-
2017	RF		Spartan Renewable Energy (MI UP)	U.S.	2,223	2,223	-	-	877	877	-	-	1,347	1,347	-	-
2017	RF	1180	Thumb Electric Cooperative	U.S.	7,250	7,250	-	-	2,859	2,859	-	-	4,391	4,391	-	-
2017	RF	1662	Ohio Valley Electric Corporation	U.S.	16,310	16,310	-	-	6,432	6,432	-	-	9,878	9,878	-	-
2017	RF	1181	Vectren Energy Delivery of IN	U.S.	204,535	204,535	-	-	80,656	80,656	-	-	123,879	123,879	-	-
2017	RF	1184	Wabash Valley Power Association Inc. (DUKE CIN)	U.S.	113,342	113,342	-	-	44,695	44,695	-	-	68,647	68,647	-	-
2017	RF	1488	Wabash Valley Power Association Inc.(NIPSCO)	U.S.	68,279	68,279	-	-	26,925	26,925	-	-	41,354	41,354	-	-
2017	RF	1185	Wisconsin Electric Power Co.	U.S.	1,105,167	1,105,167	-	-	435,808	435,808	-	-	669,359	669,359	-	-
2017	RF	1189	Wolverine Power Marketing Cooperative	U.S.	30,507	30,507	-	-	12,030	12,030	-	-	18,477	18,477	-	-
2017	RF	1191	Wolverine Power Supply Cooperative	U.S.	107,553	107,553	-	-	42,412	42,412	-	-	65,141	65,141	-	-
2017	RF	1190	Wolverine Power Marketing Cooperative(MECS-DET)	U.S.	22,484	22,484	-	-	8,866	8,866	-	-	13,618	13,618	-	-
<b>TOTAL RELIABILITYFIRST</b>					<b>35,095,152</b>	<b>35,095,152</b>	<b>-</b>	<b>-</b>	<b>13,839,321</b>	<b>13,839,321</b>	<b>-</b>	<b>-</b>	<b>21,255,831</b>	<b>21,255,831</b>	<b>-</b>	<b>-</b>
2017	SERC	1267	Alabama Municipal Electric Authority	U.S.	110,021	110,021	-	-	53,313	53,313	-	-	56,708	56,708	-	-
2017	SERC	1268	Alabama Power Company	U.S.	1,838,804	1,838,804	-	-	891,037	891,037	-	-	947,767	947,767	-	-
2017	SERC	1269	Ameren - Illinois	U.S.	1,346,498	1,346,498	-	-	652,478	652,478	-	-	694,020	694,020	-	-
2017	SERC	1271	Ameren - Missouri	U.S.	1,185,254	1,185,254	-	-	574,343	574,343	-	-	610,910	610,910	-	-
2017	SERC	1273	Associated Electric Cooperative Inc.	U.S.	618,861	618,861	-	-	299,884	299,884	-	-	318,977	318,977	-	-
2017	SERC	1582	Beauregard Electric Cooperative, Inc.	U.S.	36,285	36,285	-	-	17,583	17,583	-	-	18,702	18,702	-	-
2017	SERC	1462	Benton Utility District	U.S.	8,194	8,194	-	-	3,970	3,970	-	-	4,223	4,223	-	-
2017	SERC	1274	Big Rivers Electric Corporation	U.S.	120,333	120,333	-	-	58,310	58,310	-	-	62,023	62,023	-	-
2017	SERC	1275	Black Warrior EMC	U.S.	13,088	13,088	-	-	6,342	6,342	-	-	6,746	6,746	-	-
2017	SERC	1276	Blue Ridge EMC	U.S.	44,319	44,319	-	-	21,476	21,476	-	-	22,843	22,843	-	-
2017	SERC	1628	Brazos Electric Power Cooperative, Inc.	U.S.	15,319	15,319	-	-	7,423	7,423	-	-	7,896	7,896	-	-
2017	SERC	1463	Canton, MS	U.S.	4,202	4,202	-	-	2,036	2,036	-	-	2,166	2,166	-	-
2017	SERC	1277	Central Electric Power Cooperative Inc.	U.S.	547,924	547,924	-	-	265,510	265,510	-	-	282,414	282,414	-	-
2017	SERC	1667	Century Aluminum - Hawesville	U.S.	55,377	55,377	-	-	26,834	26,834	-	-	28,543	28,543	-	-
2017	SERC	1668	Century Aluminum - Sebree	U.S.	110,147	110,147	-	-	53,374	53,374	-	-	56,773	56,773	-	-
2017	SERC	1278	City of Blountstown FL	U.S.	1,186	1,186	-	-	575	575	-	-	611	611	-	-
2017	SERC	1279	City of Camden SC	U.S.	6,137	6,137	-	-	2,974	2,974	-	-	3,163	3,163	-	-
2017	SERC	1280	City of Collins MS	U.S.	1,472	1,472	-	-	713	713	-	-	759	759	-	-
2017	SERC	1281	City of Columbia MO	U.S.	38,344	38,344	-	-	18,581	18,581	-	-	19,764	19,764	-	-
2017	SERC	1282	City of Conway AR (Conway Corporation)	U.S.	32,478	32,478	-	-	15,738	15,738	-	-	16,740	16,740	-	-
2017	SERC	1284	City of Evergreen AL	U.S.	1,785	1,785	-	-	865	865	-	-	920	920	-	-
2017	SERC	1285	City of Hampton GA	U.S.	1,006	1,006	-	-	488	488	-	-	519	519	-	-
2017	SERC	1286	City of Hartford AL	U.S.	1,018	1,018	-	-	493	493	-	-	525	525	-	-
2017	SERC	1287	City of Henderson (KY) Municipal Power & Light	U.S.	20,075	20,075	-	-	9,728	9,728	-	-	10,347	10,347	-	-
2017	SERC	1288	City of North Little Rock AR (DENL)	U.S.	30,216	30,216	-	-	14,642	14,642	-	-	15,574	15,574	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total ERO Assessments (NERC, RE & WIRAB Costs)				Total NERC Assessments				Total Regional Entity Assessments (Including WIRAB Assessments)			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	SERC	1289	City of Orangeburg SC Department of Public Utilities	U.S.	26,634	26,634	-	-	12,906	12,906	-	-	13,728	13,728	-	-
2017	SERC	1290	City of Robertsdale AL	U.S.	2,654	2,654	-	-	1,286	1,286	-	-	1,368	1,368	-	-
2017	SERC	1291	City of Ruston LA (DERS)	U.S.	8,941	8,941	-	-	4,332	4,332	-	-	4,608	4,608	-	-
2017	SERC	1292	Seneca Light & Power	U.S.	5,372	5,372	-	-	2,603	2,603	-	-	2,769	2,769	-	-
2017	SERC	1115	City of Springfield (CWLP)	U.S.	55,959	55,959	-	-	27,116	27,116	-	-	28,843	28,843	-	-
2017	SERC	1465	City of Thayer, MO	U.S.	652	652	-	-	316	316	-	-	336	336	-	-
2017	SERC	1293	City of Troy AL	U.S.	13,618	13,618	-	-	6,599	6,599	-	-	7,019	7,019	-	-
2017	SERC	1294	City of West Memphis AR (West Memphis Utilities)	U.S.	12,473	12,473	-	-	6,044	6,044	-	-	6,429	6,429	-	-
2017	SERC	1583	Claiborne Electric Cooperative, Inc.	U.S.	20,984	20,984	-	-	10,169	10,169	-	-	10,816	10,816	-	-
2017	SERC	1584	Concordia Electric Cooperative, Inc.	U.S.	6,876	6,876	-	-	3,332	3,332	-	-	3,544	3,544	-	-
2017	SERC	1726	Cube Hydro Carolinas	U.S.	474	474	-	-	230	230	-	-	244	244	-	-
2017	SERC	1283	Dalton Utilities	U.S.	59,177	59,177	-	-	28,676	28,676	-	-	30,501	30,501	-	-
2017	SERC	1585	Dixie Electric Membership Corporation	U.S.	70,414	70,414	-	-	34,121	34,121	-	-	36,293	36,293	-	-
2017	SERC	1295	Dominion Virginia Power	U.S.	2,784,965	2,784,965	-	-	1,349,522	1,349,522	-	-	1,435,442	1,435,442	-	-
2017	SERC	1296	Duke Energy Carolinas, LLC	U.S.	2,753,883	2,753,883	-	-	1,334,461	1,334,461	-	-	1,419,422	1,419,422	-	-
2017	SERC	1466	Durant, MS	U.S.	822	822	-	-	398	398	-	-	424	424	-	-
2017	SERC	1478	LG&E and KU Services Co as agent for LG&E Co and KU Co	U.S.	1,101,105	1,101,105	-	-	533,567	533,567	-	-	567,538	567,538	-	-
2017	SERC	1297	East Kentucky Power Cooperative	U.S.	431,000	431,000	-	-	208,852	208,852	-	-	222,149	222,149	-	-
2017	SERC	1298	East Mississippi Electric Power Association	U.S.	13,446	13,446	-	-	6,516	6,516	-	-	6,931	6,931	-	-
2017	SERC	1669	Electricities of North Carolina Inc	U.S.	379,781	379,781	-	-	184,032	184,032	-	-	195,749	195,749	-	-
2017	SERC	1300	EnergyUnited EMC	U.S.	82,461	82,461	-	-	39,958	39,958	-	-	42,502	42,502	-	-
2017	SERC	1301	Entergy	U.S.	3,878,976	3,878,976	-	-	1,879,652	1,879,652	-	-	1,999,324	1,999,324	-	-
2017	SERC	1302	Fayetteville (NC) Public Works Commission	U.S.	68,267	68,267	-	-	33,081	33,081	-	-	35,187	35,187	-	-
2017	SERC	1303	Florida Public Utilities (FL Panhandle Load)	U.S.	10,028	10,028	-	-	4,859	4,859	-	-	5,169	5,169	-	-
2017	SERC	1304	French Broad EMC	U.S.	16,467	16,467	-	-	7,979	7,979	-	-	8,487	8,487	-	-
2017	SERC	1305	Georgia Power Company	U.S.	2,781,144	2,781,144	-	-	1,347,671	1,347,671	-	-	1,433,473	1,433,473	-	-
2017	SERC	1306	Georgia System Optns Corporation	U.S.	1,274,659	1,274,659	-	-	617,667	617,667	-	-	656,992	656,992	-	-
2017	SERC	1479	Greenwood (MS) Utilities Commission	U.S.	9,153	9,153	-	-	4,435	4,435	-	-	4,718	4,718	-	-
2017	SERC	1307	Greenwood (SC) Commissioners of Public Works	U.S.	10,367	10,367	-	-	5,023	5,023	-	-	5,343	5,343	-	-
2017	SERC	1308	Gulf Power Company	U.S.	373,319	373,319	-	-	180,901	180,901	-	-	192,418	192,418	-	-
2017	SERC	1586	Haywood EMC	U.S.	10,046	10,046	-	-	4,868	4,868	-	-	5,178	5,178	-	-
2017	SERC		Hoosier Energy REC, Inc	U.S.	13,142	13,142	-	-	6,368	6,368	-	-	6,774	6,774	-	-
2017	SERC	1309	Illinois Municipal Electric Agency	U.S.	62,087	62,087	-	-	30,086	30,086	-	-	32,001	32,001	-	-
2017	SERC	1480	Itta Bena, MS	U.S.	452	452	-	-	219	219	-	-	233	233	-	-
2017	SERC	1587	Jefferson Davis Electric Cooperative, Inc.	U.S.	8,589	8,589	-	-	4,162	4,162	-	-	4,427	4,427	-	-
2017	SERC	1617	Kentucky Municipal Power	U.S.	21,398	21,398	-	-	10,369	10,369	-	-	11,029	11,029	-	-
2017	SERC	1481	Kosciusko, MS	U.S.	2,395	2,395	-	-	1,161	1,161	-	-	1,235	1,235	-	-
2017	SERC	1482	Leland, MS	U.S.	979	979	-	-	474	474	-	-	505	505	-	-
2017	SERC	1313	McCormick Commission of Public Works	U.S.	535	535	-	-	259	259	-	-	276	276	-	-
2017	SERC	1314	Mississippi Power Company	U.S.	331,861	331,861	-	-	160,811	160,811	-	-	171,050	171,050	-	-
2017	SERC	1630	Mt. Carmel Public Utility	U.S.	3,383	3,383	-	-	1,639	1,639	-	-	1,744	1,744	-	-
2017	SERC	1315	Municipal Electric Authority of Georgia	U.S.	354,102	354,102	-	-	171,589	171,589	-	-	182,513	182,513	-	-
2017	SERC	1316	N.C. Electric Membership Corp.	U.S.	416,123	416,123	-	-	201,642	201,642	-	-	214,480	214,480	-	-
2017	SERC	1588	Northeast Louisiana Power Cooperative, Inc.	U.S.	8,598	8,598	-	-	4,167	4,167	-	-	4,432	4,432	-	-
2017	SERC	1574	Northern Virginia Electric Cooperative	U.S.	154,196	154,196	-	-	74,719	74,719	-	-	79,477	79,477	-	-
2017	SERC	1319	Old Dominion Electric Cooperative	U.S.	162,987	162,987	-	-	78,979	78,979	-	-	84,008	84,008	-	-
2017	SERC	1618	Osceola (Arkansas) Municipal Light and Power	U.S.	5,104	5,104	-	-	2,473	2,473	-	-	2,631	2,631	-	-
2017	SERC	1320	Owensboro (KY) Municipal Utilities	U.S.	26,622	26,622	-	-	12,900	12,900	-	-	13,722	13,722	-	-
2017	SERC	1321	Piedmont EMC in Duke and Progress Areas	U.S.	16,515	16,515	-	-	8,003	8,003	-	-	8,512	8,512	-	-
2017	SERC	1323	Piedmont Municipal Power Agency (PMPA)	U.S.	76,621	76,621	-	-	37,128	37,128	-	-	39,492	39,492	-	-
2017	SERC	1589	Pointe Coupee Electric Memb. Corp.	U.S.	8,512	8,512	-	-	4,125	4,125	-	-	4,387	4,387	-	-
2017	SERC	1266	PowerSouth Energy	U.S.	282,934	282,934	-	-	137,103	137,103	-	-	145,832	145,832	-	-

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APPENDIX 2-B

Data Year	Regional Entity	ID	Entity	Country	Total ERO Assessments (NERC, RE & WIRAB Costs)				Total NERC Assessments				Total Regional Entity Assessments (Including WIRAB Assessments)			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	SERC	1330	Prairie Power, Inc.	U.S.	50,287	50,287	-	-	24,368	24,368	-	-	25,919	25,919	-	-
2017	SERC	1706	Duke Energy Progress	U.S.	1,503,837	1,503,837	-	-	728,721	728,721	-	-	775,116	775,116	-	-
2017	SERC	1325	Rutherford EMC	U.S.	42,814	42,814	-	-	20,747	20,747	-	-	22,067	22,067	-	-
2017	SERC	1631	Sam Rayburn G&T Electric Cooperative Inc.	U.S.	58,428	58,428	-	-	28,313	28,313	-	-	30,115	30,115	-	-
2017	SERC	1326	South Carolina Electric & Gas Company	U.S.	757,239	757,239	-	-	366,939	366,939	-	-	390,301	390,301	-	-
2017	SERC	1327	South Carolina Public Service Authority	U.S.	281,361	281,361	-	-	136,340	136,340	-	-	145,021	145,021	-	-
2017	SERC	1590	South Louisiana Electric Cooperative Association	U.S.	18,905	18,905	-	-	9,161	9,161	-	-	9,744	9,744	-	-
2017	SERC	1328	Cooperative Energy (formerly SMEPA)	U.S.	315,021	315,021	-	-	152,651	152,651	-	-	162,370	162,370	-	-
2017	SERC	1329	Southern Illinois Power Cooperative	U.S.	51,447	51,447	-	-	24,930	24,930	-	-	26,517	26,517	-	-
2017	SERC	1591	Southwest Louisiana Electric Membership Corporation	U.S.	80,260	80,260	-	-	38,892	38,892	-	-	41,368	41,368	-	-
2017	SERC	1619	Southwestern Electric Cooperative, Inc.	U.S.	13,752	13,752	-	-	6,664	6,664	-	-	7,088	7,088	-	-
2017	SERC	1331	Tennessee Valley Authority	U.S.	5,084,712	5,084,712	-	-	2,463,921	2,463,921	-	-	2,620,791	2,620,791	-	-
2017	SERC	1632	Tex-La Electric Cooperative of Texas, Inc	U.S.	6,829	6,829	-	-	3,309	3,309	-	-	3,520	3,520	-	-
2017	SERC	1332	Tombigbee Electric Cooperative Inc.	U.S.	3,968	3,968	-	-	1,923	1,923	-	-	2,045	2,045	-	-
2017	SERC	1594	Town of Sharpsburg, N.C.	U.S.	637	637	-	-	309	309	-	-	329	329	-	-
2017	SERC	1595	Town of Stantonburg, N.C. JRO	U.S.	1,821	1,821	-	-	882	882	-	-	938	938	-	-
2017	SERC	1333	Town of Waynesville NC	U.S.	3,026	3,026	-	-	1,466	1,466	-	-	1,560	1,560	-	-
2017	SERC	1334	Town of Winnsboro SC	U.S.	2,031	2,031	-	-	984	984	-	-	1,047	1,047	-	-
2017	SERC	1335	Town of Winterville NC	U.S.	1,769	1,769	-	-	857	857	-	-	912	912	-	-
2017	SERC	1597	Washington-St.Tammany Electric Cooperative, Inc.	U.S.	33,718	33,718	-	-	16,339	16,339	-	-	17,379	17,379	-	-
2017	SERC	1435	Arkansas Electric Cooperative Corporation	U.S.	335,816	335,816	-	-	162,728	162,728	-	-	173,088	173,088	-	-
2017	SERC	1557	City of Clarksdale, Mississippi	U.S.	5,124	5,124	-	-	2,483	2,483	-	-	2,641	2,641	-	-
2017	SERC	1708	City of Abbeville	U.S.	4,506	4,506	-	-	2,183	2,183	-	-	2,322	2,322	-	-
2017	SERC	1558	Hope Water & Light (HWL)	U.S.	9,646	9,646	-	-	4,674	4,674	-	-	4,972	4,972	-	-
2017	SERC	1559	City of Minden	U.S.	4,528	4,528	-	-	2,194	2,194	-	-	2,334	2,334	-	-
2017	SERC	1249	Cleco Power LLC	U.S.	367,091	367,091	-	-	177,883	177,883	-	-	189,208	189,208	-	-
2017	SERC	1648	Jonesboro City Water & Light	U.S.	45,514	45,514	-	-	22,055	22,055	-	-	23,459	23,459	-	-
2017	SERC	1649	Kennett Board of Public Works	U.S.	4,475	4,475	-	-	2,169	2,169	-	-	2,307	2,307	-	-
2017	SERC	1471	Lafayette Utilities System	U.S.	67,318	67,318	-	-	32,621	32,621	-	-	34,698	34,698	-	-
2017	SERC	1253	Louisiana Energy & Power Authority (LEPA)	U.S.	31,354	31,354	-	-	15,193	15,193	-	-	16,161	16,161	-	-
2017	SERC	1650	Malden Board of Public Works	U.S.	1,629	1,629	-	-	790	790	-	-	840	840	-	-
2017	SERC	1443	Missouri Joint Municipal Electric Utility Commission	U.S.	67,882	67,882	-	-	32,894	32,894	-	-	34,988	34,988	-	-
2017	SERC	1639	OzMo Ozark Missouri, West Plains MO	U.S.	6,182	6,182	-	-	2,995	2,995	-	-	3,186	3,186	-	-
2017	SERC	1652	Piggott Municipal Light, Water & Sewer	U.S.	1,197	1,197	-	-	580	580	-	-	617	617	-	-
2017	SERC	1653	Poplar Bluff Municipal Utilities	U.S.	12,162	12,162	-	-	5,893	5,893	-	-	6,268	6,268	-	-
2017	SERC	1636	City of Prescott	U.S.	2,686	2,686	-	-	1,301	1,301	-	-	1,384	1,384	-	-
2017	SERC	1561	Public Service Commission of Yazoo City of Mississippi	U.S.	3,832	3,832	-	-	1,857	1,857	-	-	1,975	1,975	-	-
2017	SERC	1654	Sikeston Board of Municipal Utilities	U.S.	12,197	12,197	-	-	5,910	5,910	-	-	6,286	6,286	-	-
TOTAL SERC					33,704,596	33,704,596	-	-	16,332,381	16,332,381	-	-	17,372,215	17,372,215	-	-
TOTAL SPP					-	-	-	-	-	-	-	-	-	-	-	-
2017	TRE	1019	ERCOT	U.S.	18,947,337	18,947,337	-	-	5,699,337	5,699,337	-	-	13,248,000	13,248,000	-	-
TOTAL ERCOT					18,947,337	18,947,337	-	-	5,699,337	5,699,337	-	-	13,248,000	13,248,000	-	-
					-				-				-			
2017	WECC		Alberta Electric System Operator	Canada	1,533,210	-	1,533,210	-	656,732	-	656,732	-	876,478	-	876,478	-
2017	WECC		British Columbia Hydro & Power Authority	Canada	3,065,465	-	3,065,465	-	1,023,265	-	1,023,265	-	2,042,199	-	2,042,199	-
2017	WECC		Centro Nacional de Control de Energia	Mexico	634,833	-	-	634,833	211,910	-	-	211,910	422,923	-	-	422,923
2017	WECC		Ajo Improvement District	U.S.	513	513	-	-	173	173	-	-	340	340	-	-
2017	WECC		Arizona Public Service Company	U.S.	1,366,389	1,366,389	-	-	461,227	461,227	-	-	905,162	905,162	-	-
2017	WECC		City of Williams	U.S.	2,105	2,105	-	-	711	711	-	-	1,394	1,394	-	-
2017	WECC		Electrical Districts 3	U.S.	4,009	4,009	-	-	1,353	1,353	-	-	2,655	2,655	-	-



2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total ERO Assessments (NERC, RE & WIRAB Costs)				Total NERC Assessments				Total Regional Entity Assessments (Including WIRAB Assessments)			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	WECC		Aguila Irrigation District - APS	U.S.	1,558	1,558	-	-	526	526	-	-	1,032	1,032	-	-
2017	WECC		Buckeye Water Conservation and Drainage District - APS	U.S.	1,056	1,056	-	-	356	356	-	-	699	699	-	-
2017	WECC		Electrical District No. 6 of Pinal County - APS	U.S.	101	101	-	-	34	34	-	-	67	67	-	-
2017	WECC		Electrical District No. 7 of Maricopa County - APS	U.S.	2,368	2,368	-	-	799	799	-	-	1,569	1,569	-	-
2017	WECC		Electrical District No. 8 of Maricopa County - APS	U.S.	17,001	17,001	-	-	5,739	5,739	-	-	11,262	11,262	-	-
2017	WECC		Harquahala Valley Power Districts - APS	U.S.	5,383	5,383	-	-	1,817	1,817	-	-	3,566	3,566	-	-
2017	WECC		Maricopa County Municipal Water Conservation Dist No. 1 - APS	U.S.	2,430	2,430	-	-	820	820	-	-	1,610	1,610	-	-
2017	WECC		McMullen Valley Water Conservation & Drainage District - APS	U.S.	5,850	5,850	-	-	1,975	1,975	-	-	3,875	3,875	-	-
2017	WECC		Roosevelt Irrigation District - APS	U.S.	1,924	1,924	-	-	649	649	-	-	1,275	1,275	-	-
2017	WECC		Tonopah Irrigation District - APS	U.S.	1,278	1,278	-	-	431	431	-	-	846	846	-	-
2017	WECC		Navajo Tribal Utility Authority-Arizona	U.S.	2,368	2,368	-	-	799	799	-	-	1,569	1,569	-	-
2017	WECC		Tohono O'Odham Utility Authority	U.S.	2,901	2,901	-	-	979	979	-	-	1,922	1,922	-	-
2017	WECC		Town of Wickenburg	U.S.	1,249	1,249	-	-	422	422	-	-	827	827	-	-
2017	WECC		Avista Corporation	U.S.	455,011	455,011	-	-	153,590	153,590	-	-	301,421	301,421	-	-
2017	WECC		Kaiser Aluminum Fabricated Products LLC	U.S.	14,576	14,576	-	-	4,920	4,920	-	-	9,656	9,656	-	-
2017	WECC		Pend Oreille County PUD No. 1	U.S.	47,858	47,858	-	-	16,155	16,155	-	-	31,704	31,704	-	-
2017	WECC		PUD No. 2 of Grant County	U.S.	4,338	4,338	-	-	1,464	1,464	-	-	2,874	2,874	-	-
2017	WECC		Bonneville Power Administration-Power Services	U.S.	299,242	299,242	-	-	101,010	101,010	-	-	198,232	198,232	-	-
2017	WECC		Bonneville Power Administration-Hydro	U.S.	9,533	9,533	-	-	3,218	3,218	-	-	6,315	6,315	-	-
2017	WECC		Bonneville Power Administration-Transmission	U.S.	2,431,694	2,431,694	-	-	820,822	820,822	-	-	1,610,871	1,610,871	-	-
2017	WECC		City of Redding	U.S.	37,568	37,568	-	-	12,681	12,681	-	-	24,887	24,887	-	-
2017	WECC		City of Roseville	U.S.	58,752	58,752	-	-	19,832	19,832	-	-	38,920	38,920	-	-
2017	WECC		Modesto Irrigation District	U.S.	123,382	123,382	-	-	41,648	41,648	-	-	81,734	81,734	-	-
2017	WECC		Sacramento Municipal Utility District	U.S.	545,469	545,469	-	-	184,124	184,124	-	-	361,345	361,345	-	-
2017	WECC		Western Area Power Administration-Sierra Nevada Region	U.S.	93,485	93,485	-	-	31,556	31,556	-	-	61,929	61,929	-	-
2017	WECC		California Independent System Operator	U.S.	10,775,267	10,775,267	-	-	3,637,209	3,637,209	-	-	7,138,058	7,138,058	-	-
2017	WECC		El Paso Electric Company	U.S.	396,308	396,308	-	-	133,774	133,774	-	-	262,534	262,534	-	-
2017	WECC		Idaho Power Company	U.S.	742,487	742,487	-	-	250,628	250,628	-	-	491,859	491,859	-	-
2017	WECC		Imperial Irrigation District	U.S.	176,052	176,052	-	-	59,427	59,427	-	-	116,626	116,626	-	-
2017	WECC		Los Angeles Department of Water and Power	U.S.	1,354,118	1,354,118	-	-	457,085	457,085	-	-	897,033	897,033	-	-
2017	WECC		City of Henderson	U.S.	1,935	1,935	-	-	653	653	-	-	1,282	1,282	-	-
2017	WECC		City of Las Vegas	U.S.	1,960	1,960	-	-	662	662	-	-	1,298	1,298	-	-
2017	WECC		City of North Las Vegas	U.S.	1,104	1,104	-	-	373	373	-	-	731	731	-	-
2017	WECC		Clark County Water Reclamation District	U.S.	3,831	3,831	-	-	1,293	1,293	-	-	2,538	2,538	-	-
2017	WECC		Colorado River Commission of Nevada	U.S.	22,223	22,223	-	-	7,501	7,501	-	-	14,721	14,721	-	-
2017	WECC		Las Vegas Valley Water District	U.S.	5,092	5,092	-	-	1,719	1,719	-	-	3,373	3,373	-	-
2017	WECC		Nevada Power Company dba NV Energy	U.S.	1,472,296	1,472,296	-	-	496,976	496,976	-	-	975,320	975,320	-	-
2017	WECC		MGM Resorts International	U.S.	44,036	44,036	-	-	14,864	14,864	-	-	29,171	29,171	-	-
2017	WECC		Switch-North	U.S.	272	272	-	-	92	92	-	-	180	180	-	-
2017	WECC		Switch-South	U.S.	13,950	13,950	-	-	4,709	4,709	-	-	9,241	9,241	-	-
2017	WECC		Wynn Las Vegas	U.S.	8,634	8,634	-	-	2,915	2,915	-	-	5,720	5,720	-	-
2017	WECC		Overton Power District No. 5	U.S.	18,612	18,612	-	-	6,282	6,282	-	-	12,329	12,329	-	-
2017	WECC		Southern Nevada Water Authority	U.S.	5,686	5,686	-	-	1,919	1,919	-	-	3,767	3,767	-	-
2017	WECC		Basin Electric Power Cooperative	U.S.	37,591	37,591	-	-	12,689	12,689	-	-	24,902	24,902	-	-
2017	WECC		Big Horn County Electric Cooperative	U.S.	1,808	1,808	-	-	610	610	-	-	1,197	1,197	-	-
2017	WECC		NorthWestern Corp. dba NorthWestern Energy, LLC	U.S.	444,032	444,032	-	-	149,884	149,884	-	-	294,148	294,148	-	-
2017	WECC		Western Area Power Administration-Upper Great Plains Region	U.S.	376	376	-	-	127	127	-	-	249	249	-	-
2017	WECC		PacifiCorp West (PACW)	U.S.	1,014,269	1,014,269	-	-	342,368	342,368	-	-	671,901	671,901	-	-
2017	WECC		Constellation New Energy	U.S.	16,435	16,435	-	-	5,548	5,548	-	-	10,887	10,887	-	-
2017	WECC		3 Phases Renewables	U.S.	10	10	-	-	3	3	-	-	7	7	-	-
2017	WECC		Avangrid Renewables	U.S.	4,856	4,856	-	-	1,639	1,639	-	-	3,217	3,217	-	-
2017	WECC		Calpine Energy Solutions, LLC./Noble Americas Energy Solutions, LLC	U.S.	76,970	76,970	-	-	25,981	25,981	-	-	50,988	50,988	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total ERO Assessments (NERC, RE & WIRAB Costs)				Total NERC Assessments				Total Regional Entity Assessments (Including WIRAB Assessments)			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	WECC		PacifiCorp (IPC)	U.S.	98	98	-	-	33	33	-	-	65	65	-	-
2017	WECC		PacifiCorp (EasternBalAuth)	U.S.	2,343,630	2,343,630	-	-	791,096	791,096	-	-	1,552,534	1,552,534	-	-
2017	WECC		PacifiCorp (Portland)	U.S.	209	209	-	-	71	71	-	-	138	138	-	-
2017	WECC		PacifiCorp (WAPA-CO-MO)	U.S.	5,459	5,459	-	-	1,843	1,843	-	-	3,616	3,616	-	-
2017	WECC		Portland General Electric Company	U.S.	827,550	827,550	-	-	279,341	279,341	-	-	548,209	548,209	-	-
2017	WECC		Shell Energy North America	U.S.	3,519	3,519	-	-	1,188	1,188	-	-	2,331	2,331	-	-
2017	WECC		Arkansas River Power Authority (ARPA)	U.S.	12,585	12,585	-	-	4,248	4,248	-	-	8,337	8,337	-	-
2017	WECC		Black Hills Colorado Electric	U.S.	96,662	96,662	-	-	32,628	32,628	-	-	64,033	64,033	-	-
2017	WECC		Burlington	U.S.	1,467	1,467	-	-	495	495	-	-	972	972	-	-
2017	WECC		Colorado Springs Utilities	U.S.	2,843	2,843	-	-	960	960	-	-	1,883	1,883	-	-
2017	WECC		Grand Valley Power	U.S.	11,695	11,695	-	-	3,948	3,948	-	-	7,747	7,747	-	-
2017	WECC		Holy Cross Energy	U.S.	48,752	48,752	-	-	16,456	16,456	-	-	32,295	32,295	-	-
2017	WECC		Intermountain Rural Electric Association	U.S.	104,995	104,995	-	-	35,441	35,441	-	-	69,554	69,554	-	-
2017	WECC		Municipal Energy Agency of Nebraska	U.S.	8,014	8,014	-	-	2,705	2,705	-	-	5,309	5,309	-	-
2017	WECC		Platte River Power Authority	U.S.	151,839	151,839	-	-	51,253	51,253	-	-	100,585	100,585	-	-
2017	WECC		Public Service Company of Colorado (Xcel)	U.S.	1,429,600	1,429,600	-	-	482,564	482,564	-	-	947,036	947,036	-	-
2017	WECC		Public Service Company of Colorado (Xcel)-(WAPA-CO-MO)	U.S.	5,422	5,422	-	-	1,830	1,830	-	-	3,592	3,592	-	-
2017	WECC		Raton Public Service	U.S.	2,051	2,051	-	-	692	692	-	-	1,359	1,359	-	-
2017	WECC		Town of Center	U.S.	700	700	-	-	236	236	-	-	464	464	-	-
2017	WECC		Tri-State Generation & Transmission Assoc. Inc - Reliability	U.S.	124,224	124,224	-	-	41,932	41,932	-	-	82,292	82,292	-	-
2017	WECC		Western Area Power - Loveland, CO	U.S.	7,948	7,948	-	-	2,683	2,683	-	-	5,265	5,265	-	-
2017	WECC		Yampa Valley Electric Association	U.S.	26,383	26,383	-	-	8,906	8,906	-	-	17,477	17,477	-	-
2017	WECC		City of Aztec Electric Dept	U.S.	1,719	1,719	-	-	580	580	-	-	1,139	1,139	-	-
2017	WECC		City of Gallup	U.S.	10,415	10,415	-	-	3,516	3,516	-	-	6,900	6,900	-	-
2017	WECC		Jicarilla Apache Nation Power Authority	U.S.	1,084	1,084	-	-	366	366	-	-	718	718	-	-
2017	WECC		Kit Carson Electric Inc	U.S.	13,858	13,858	-	-	4,678	4,678	-	-	9,180	9,180	-	-
2017	WECC		Navajo Tribal Utility Authority-New Mexico	U.S.	9,329	9,329	-	-	3,149	3,149	-	-	6,180	6,180	-	-
2017	WECC		Public Service Company of New Mexico	U.S.	429,911	429,911	-	-	145,117	145,117	-	-	284,794	284,794	-	-
2017	WECC		The Incorporated County of Los Alamos	U.S.	28,790	28,790	-	-	9,718	9,718	-	-	19,072	19,072	-	-
2017	WECC		Tri-State Generation & Transmission Association, Inc.	U.S.	130,252	130,252	-	-	43,967	43,967	-	-	86,285	86,285	-	-
2017	WECC		US Dept of Energy - Kirtland AFB	U.S.	19,990	19,990	-	-	6,748	6,748	-	-	13,242	13,242	-	-
2017	WECC		Public Utility District No. 1 of Chelan County	U.S.	87,462	87,462	-	-	29,523	29,523	-	-	57,939	57,939	-	-
2017	WECC		Okanogan PUD	U.S.	31,226	31,226	-	-	10,540	10,540	-	-	20,685	20,685	-	-
2017	WECC		PUD No. 1 of Douglas County	U.S.	43,146	43,146	-	-	14,564	14,564	-	-	28,582	28,582	-	-
2017	WECC		Douglas Palisades / PUD No. 1 of DC	U.S.	963	963	-	-	325	325	-	-	638	638	-	-
2017	WECC		PUD No. 2 of Grant County	U.S.	224,374	224,374	-	-	75,738	75,738	-	-	148,636	148,636	-	-
2017	WECC		Puget Sound Energy, Inc.	U.S.	1,151,723	1,151,723	-	-	388,766	388,766	-	-	762,957	762,957	-	-
2017	WECC		Salt River Project	U.S.	1,406,254	1,406,254	-	-	474,683	474,683	-	-	931,571	931,571	-	-
2017	WECC		Seattle City Light	U.S.	468,582	468,582	-	-	158,171	158,171	-	-	310,411	310,411	-	-
2017	WECC		Barrick Goldstrike Mines Inc.	U.S.	65,264	65,264	-	-	22,030	22,030	-	-	43,234	43,234	-	-
2017	WECC		City of Fallon	U.S.	4,338	4,338	-	-	1,464	1,464	-	-	2,874	2,874	-	-
2017	WECC		Mt. Wheeler Power	U.S.	26,007	26,007	-	-	8,779	8,779	-	-	17,228	17,228	-	-
2017	WECC		Truckee Donner Public Utility District	U.S.	7,596	7,596	-	-	2,564	2,564	-	-	5,032	5,032	-	-
2017	WECC		Beartooth Electric Cooperative	U.S.	3,621	3,621	-	-	1,222	1,222	-	-	2,399	2,399	-	-
2017	WECC		City of Tacoma DBA Tacoma Power	U.S.	235,452	235,452	-	-	79,477	79,477	-	-	155,975	155,975	-	-
2017	WECC		Tucson Electric Power Company	U.S.	698,302	698,302	-	-	235,713	235,713	-	-	462,589	462,589	-	-
2017	WECC		Merced Irrigation District	U.S.	24,423	24,423	-	-	8,244	8,244	-	-	16,179	16,179	-	-
2017	WECC		Turlock Irrigation District	U.S.	102,476	102,476	-	-	34,591	34,591	-	-	67,885	67,885	-	-
2017	WECC		Basin Electric Power Cooperative	U.S.	109,079	109,079	-	-	36,820	36,820	-	-	72,259	72,259	-	-
2017	WECC		Black Hills Colorado Electric/Cheyenne Light Fuel & Power	U.S.	206,274	206,274	-	-	69,628	69,628	-	-	136,646	136,646	-	-
2017	WECC		Black Hills State University South Dakota	U.S.	985	985	-	-	333	333	-	-	653	653	-	-
2017	WECC		City of Page	U.S.	3,401	3,401	-	-	1,148	1,148	-	-	2,253	2,253	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

APPENDIX 2-B

Data Year	Regional Entity	ID	Entity	Country	Total ERO Assessments (NERC, RE & WIRAB Costs)				Total NERC Assessments				Total Regional Entity Assessments (Including WIRAB Assessments)			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	WECC		Colorado Springs Utilities	U.S.	216,708	216,708	-	-	73,150	73,150	-	-	143,558	143,558	-	-
2017	WECC		Deseret Generation & Transmission Cooperative	U.S.	5,465	5,465	-	-	1,845	1,845	-	-	3,620	3,620	-	-
2017	WECC		City of Farmington	U.S.	46,701	46,701	-	-	15,764	15,764	-	-	30,937	30,937	-	-
2017	WECC		Municipal Energy Agency of Nebraska	U.S.	29,644	29,644	-	-	10,007	10,007	-	-	19,638	19,638	-	-
2017	WECC		Navajo Tribal Utility Authority-Colorado	U.S.	10,174	10,174	-	-	3,434	3,434	-	-	6,740	6,740	-	-
2017	WECC		Navajo Agricultural Products Industry (NAPI)	U.S.	154	154	-	-	52	52	-	-	102	102	-	-
2017	WECC		Nebraska Public Power Marketing	U.S.	311	311	-	-	105	105	-	-	206	206	-	-
2017	WECC		Francis E. Warren Air Force Base	U.S.	569	569	-	-	192	192	-	-	377	377	-	-
2017	WECC		Town of Fredonia	U.S.	491	491	-	-	166	166	-	-	326	326	-	-
2017	WECC		Tri-State Generation & Transmission Assoc. Inc - Reliability	U.S.	369,938	369,938	-	-	124,873	124,873	-	-	245,065	245,065	-	-
2017	WECC		Western Area Power Administration - CRSP	U.S.	90,213	90,213	-	-	30,451	30,451	-	-	59,761	59,761	-	-
2017	WECC		Western Area Power - Loveland, CO	U.S.	86,251	86,251	-	-	29,114	29,114	-	-	57,137	57,137	-	-
2017	WECC		Wyoming Municipal Power Agency	U.S.	10,309	10,309	-	-	3,480	3,480	-	-	6,829	6,829	-	-
2017	WECC		Basin Electric Power Cooperative	U.S.	6,920	6,920	-	-	2,336	2,336	-	-	4,584	4,584	-	-
2017	WECC		Montana-Dakota Utilities Co.	U.S.	1,069	1,069	-	-	361	361	-	-	708	708	-	-
2017	WECC		NorthWestern Corp. dba NorthWestern Energy, LLC	U.S.	14,228	14,228	-	-	4,803	4,803	-	-	9,425	9,425	-	-
2017	WECC		Western Area Power Administration-Upper Great Plains Region	U.S.	16,732	16,732	-	-	5,648	5,648	-	-	11,084	11,084	-	-
2017	WECC		Aha Macav Power Service	U.S.	689	689	-	-	233	233	-	-	457	457	-	-
2017	WECC		Bureau of Reclamation (Desalter) - c/o DSW EMMO	U.S.	5	5	-	-	2	2	-	-	3	3	-	-
2017	WECC		Bureau of Reclamation (Wellfield)	U.S.	323	323	-	-	109	109	-	-	214	214	-	-
2017	WECC		Central Arizona Water Conservation District	U.S.	107,200	107,200	-	-	36,185	36,185	-	-	71,014	71,014	-	-
2017	WECC		City of Mesa	U.S.	12,571	12,571	-	-	4,243	4,243	-	-	8,327	8,327	-	-
2017	WECC		Needles Public Utilities Authority	U.S.	1,491	1,491	-	-	503	503	-	-	988	988	-	-
2017	WECC		Colorado River Agency-Bureau of Indian Affairs	U.S.	833	833	-	-	281	281	-	-	552	552	-	-
2017	WECC		Electrical District #2 - Coolidge Generating Station	U.S.	433	433	-	-	146	146	-	-	287	287	-	-
2017	WECC		Electrical District #2	U.S.	8,912	8,912	-	-	3,008	3,008	-	-	5,904	5,904	-	-
2017	WECC		Silver State Energy Association	U.S.	30,870	30,870	-	-	10,420	10,420	-	-	20,450	20,450	-	-
2017	WECC		Arizona Electric Power Cooperative, Inc	U.S.	163,865	163,865	-	-	55,313	55,313	-	-	108,552	108,552	-	-
2017	WECC		U.S. Army Yuma Proving Ground	U.S.	924	924	-	-	312	312	-	-	612	612	-	-
2017	WECC		Wellton-Mohawk Irrigation & Drainage District	U.S.	239	239	-	-	81	81	-	-	158	158	-	-
2017	WECC		Western Area Power Administration-Desert Southwest Region	U.S.	76,559	76,559	-	-	25,843	25,843	-	-	50,716	50,716	-	-
<b>TOTAL WECC</b>					<b>39,485,838</b>	<b>34,252,330</b>	<b>4,598,675</b>	<b>634,833</b>	<b>13,453,838</b>	<b>11,561,930</b>	<b>1,679,998</b>	<b>211,910</b>	<b>26,032,000</b>	<b>22,690,400</b>	<b>2,918,677</b>	<b>422,923</b>
<b>TOTAL ERO</b>					<b>183,095,046</b>	<b>165,944,381</b>	<b>16,515,832</b>	<b>634,833</b>	<b>68,883,995</b>	<b>62,466,508</b>	<b>6,205,577</b>	<b>211,910</b>	<b>114,211,051</b>	<b>103,477,873</b>	<b>10,310,255</b>	<b>422,923</b>
<b>Summary by Regional Entity</b>																
2017	FRCC				9,522,255	9,522,255	-	-	3,694,330	3,694,330	-	-	5,827,925	5,827,925	-	-
2017	MRO				23,183,705	20,846,820	2,336,885	-	7,712,036	6,932,574	779,462	-	15,471,669	13,914,246	1,557,423	-
2017	NPCC				23,156,162	13,575,889	9,580,272	-	8,152,751	4,406,633	3,746,117	-	15,003,411	9,169,256	5,834,155	-
2017	RF				35,095,152	35,095,152	-	-	13,839,321	13,839,321	-	-	21,255,831	21,255,831	-	-
2017	SERC				33,704,596	33,704,596	-	-	16,332,381	16,332,381	-	-	17,372,215	17,372,215	-	-
2017	SPP				-	-	-	-	-	-	-	-	-	-	-	-
2017	TRE				18,947,337	18,947,337	-	-	5,699,337	5,699,337	-	-	13,248,000	13,248,000	-	-
2017	WECC				39,485,838	34,252,330	4,598,675	634,833	13,453,838	11,561,930	1,679,998	211,910	26,032,000	22,690,400	2,918,677	422,923
<b>Total</b>					<b>183,095,046</b>	<b>165,944,381</b>	<b>16,515,832</b>	<b>634,833</b>	<b>68,883,995</b>	<b>62,466,508</b>	<b>6,205,577</b>	<b>211,910</b>	<b>114,211,051</b>	<b>103,477,873</b>	<b>10,310,255</b>	<b>422,923</b>

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NERC Assessments				NERC NEL Assessments				Penalty Sanctions		NERC Compliance Credits			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Mexico
2017	FRCC	1074	Alachua, City of	U.S.	2,151	2,151	-	-	2,114	2,114	-	-	(19)	(19)	56	56	-	-
2017	FRCC	1075	Bartow, City of	U.S.	4,683	4,683	-	-	4,602	4,602	-	-	(41)	(41)	122	122	-	-
2017	FRCC	1076	Chattahoochee, City of	U.S.	586	586	-	-	576	576	-	-	(5)	(5)	15	15	-	-
2017	FRCC	1077	Florida Keys Electric Cooperative Assn	U.S.	11,906	11,906	-	-	11,701	11,701	-	-	(105)	(105)	310	310	-	-
2017	FRCC	1078	Florida Power & Light Co.	U.S.	1,815,373	1,815,373	-	-	1,784,109	1,784,109	-	-	(15,984)	(15,984)	47,247	47,247	-	-
2017	FRCC	1079	Florida Public Utilities Company	U.S.	5,556	5,556	-	-	5,460	5,460	-	-	(49)	(49)	145	145	-	-
2017	FRCC	1080	Gainesville Regional Utilities	U.S.	28,754	28,754	-	-	28,259	28,259	-	-	(253)	(253)	748	748	-	-
2017	FRCC	1081	Homestead, City of	U.S.	9,461	9,461	-	-	9,298	9,298	-	-	(83)	(83)	246	246	-	-
2017	FRCC	1082	JEA	U.S.	198,750	198,750	-	-	195,327	195,327	-	-	(1,750)	(1,750)	5,173	5,173	-	-
2017	FRCC	1083	Lakeland Electric	U.S.	48,989	48,989	-	-	48,145	48,145	-	-	(431)	(431)	1,275	1,275	-	-
2017	FRCC	1626	Lee County Electric Cooperative, Inc	U.S.	64,578	64,578	-	-	63,466	63,466	-	-	(569)	(569)	1,681	1,681	-	-
2017	FRCC	1661	City of Lake Worth	U.S.	7,461	7,461	-	-	7,333	7,333	-	-	(66)	(66)	194	194	-	-
2017	FRCC	1084	Mount Dora, City of	U.S.	1,459	1,459	-	-	1,434	1,434	-	-	(13)	(13)	38	38	-	-
2017	FRCC	1085	New Smyrna Beach, Utilities Commission of	U.S.	6,890	6,890	-	-	6,771	6,771	-	-	(61)	(61)	179	179	-	-
2017	FRCC	1086	Orlando Utilities Commission	U.S.	96,856	96,856	-	-	95,188	95,188	-	-	(853)	(853)	2,521	2,521	-	-
2017	FRCC	1087	Duke Energy Florida	U.S.	646,860	646,860	-	-	635,720	635,720	-	-	(5,695)	(5,695)	16,835	16,835	-	-
2017	FRCC	1088	Quincy, City of	U.S.	2,075	2,075	-	-	2,039	2,039	-	-	(18)	(18)	54	54	-	-
2017	FRCC	1089	Reedy Creek Improvement District	U.S.	19,224	19,224	-	-	18,893	18,893	-	-	(169)	(169)	500	500	-	-
2017	FRCC	1090	St. Cloud, City of (OUC)	U.S.	12,208	12,208	-	-	11,997	11,997	-	-	(107)	(107)	318	318	-	-
2017	FRCC	1091	Tallahassee, City of	U.S.	43,782	43,782	-	-	43,028	43,028	-	-	(385)	(385)	1,139	1,139	-	-
2017	FRCC	1092	Tampa Electric Company	U.S.	322,191	322,191	-	-	316,642	316,642	-	-	(2,837)	(2,837)	8,385	8,385	-	-
2017	FRCC	1603	City of Vero Beach	U.S.	12,017	12,017	-	-	11,810	11,810	-	-	(106)	(106)	313	313	-	-
2017	FRCC	1093	Wauchula, City of	U.S.	1,032	1,032	-	-	1,014	1,014	-	-	(9)	(9)	27	27	-	-
2017	FRCC	1094	Williston, City of	U.S.	575	575	-	-	565	565	-	-	(5)	(5)	15	15	-	-
2017	FRCC	1095	Winter Park, City of	U.S.	7,018	7,018	-	-	6,897	6,897	-	-	(62)	(62)	183	183	-	-
2017	FRCC	1724	Moore Haven, City of	U.S.	238	238	-	-	234	234	-	-	(2)	(2)	6	6	-	-
2017	FRCC	1072	Florida Municipal Power Agency	U.S.	95,000	95,000	-	-	93,364	93,364	-	-	(836)	(836)	2,472	2,472	-	-
2017	FRCC	1073	Seminole Electric Cooperative	U.S.	228,658	228,658	-	-	224,720	224,720	-	-	(2,013)	(2,013)	5,951	5,951	-	-
TOTAL FRCC					3,694,330	3,694,330	-	-	3,630,708	3,630,708	-	-	(32,528)	(32,528)	96,150	96,150	-	-
-					-	-	-	-	-	-	-	-	-	-	-	-	-	-
2017	MRO	1199	Basin Electric Power Cooperative	U.S.	307,589	307,589	-	-	302,292	302,292	-	-	(2,708)	(2,708)	8,005	8,005	-	-
2017	MRO	1201	Central Iowa Power Cooperative (CIPCO)	U.S.	44,944	44,944	-	-	44,170	44,170	-	-	(396)	(396)	1,170	1,170	-	-
2017	MRO	1204	Corn Belt Power Cooperative	U.S.	31,270	31,270	-	-	30,731	30,731	-	-	(275)	(275)	814	814	-	-
2017	MRO	1207	Dairyland Power Cooperative	U.S.	87,454	87,454	-	-	85,948	85,948	-	-	(770)	(770)	2,276	2,276	-	-
2017	MRO	1210	Great River Energy	U.S.	208,663	208,663	-	-	205,069	205,069	-	-	(1,837)	(1,837)	5,431	5,431	-	-
2017	MRO	1222	Minnkota Power Cooperative, Inc.	U.S.	60,836	60,836	-	-	59,788	59,788	-	-	(536)	(536)	1,583	1,583	-	-
2017	MRO	1230	Nebraska Public Power District	U.S.	217,318	217,318	-	-	213,576	213,576	-	-	(1,913)	(1,913)	5,656	5,656	-	-
2017	MRO	1232	Omaha Public Power District	U.S.	177,359	177,359	-	-	174,305	174,305	-	-	(1,562)	(1,562)	4,616	4,616	-	-
2017	MRO	1240	Western Area Power Administration (UM)	U.S.	147,141	147,141	-	-	144,607	144,607	-	-	(1,296)	(1,296)	3,830	3,830	-	-
2017	MRO	1239	Western Area Power Administration (LM)	U.S.	728	728	-	-	716	716	-	-	(6)	(6)	19	19	-	-
2017	MRO	1217	Manitoba Hydro	CAN	382,641	-	382,641	-	372,769	-	372,769	-	-	-	9,872	-	9,872	-
2017	MRO	1235	SaskPower	CAN	396,820	-	396,820	-	386,583	-	386,583	-	-	-	10,238	-	10,238	-
2017	MRO	1195	Alliant Energy (Alliant East - WPL & Alliant West IPL)	U.S.	461,886	461,886	-	-	453,932	453,932	-	-	(4,067)	(4,067)	12,021	12,021	-	-
2017	MRO	1710	Dahlberg Electric Company	U.S.	1,778	1,778	-	-	1,747	1,747	-	-	(16)	(16)	46	46	-	-
2017	MRO	1216	Madison, Gas and Electric	U.S.	53,714	53,714	-	-	52,789	52,789	-	-	(473)	(473)	1,398	1,398	-	-
2017	MRO	1220	MidAmerican Energy Company	U.S.	407,414	407,414	-	-	400,398	400,398	-	-	(3,587)	(3,587)	10,603	10,603	-	-
2017	MRO	1221	Minnesota Power	U.S.	205,033	205,033	-	-	201,502	201,502	-	-	(1,805)	(1,805)	5,336	5,336	-	-
2017	MRO	1226	Montana-Dakota Utilities Co.	U.S.	51,617	51,617	-	-	50,728	50,728	-	-	(454)	(454)	1,343	1,343	-	-
2017	MRO	1711	North Central Power Company	U.S.	590	590	-	-	580	580	-	-	(5)	(5)	15	15	-	-
2017	MRO	1231	NorthWestern Energy	U.S.	24,722	24,722	-	-	24,296	24,296	-	-	(218)	(218)	643	643	-	-
2017	MRO	1712	NorthWestern Wisconsin	U.S.	2,949	2,949	-	-	2,899	2,899	-	-	(26)	(26)	77	77	-	-
2017	MRO	1233	Otter Tail Power Company	U.S.	78,981	78,981	-	-	77,621	77,621	-	-	(695)	(695)	2,056	2,056	-	-
2017	MRO	1664	Wisconsin Public Service (WPS)	U.S.	185,615	185,615	-	-	182,418	182,418	-	-	(1,634)	(1,634)	4,831	4,831	-	-
2017	MRO	1665	Upper Peninsula Power Company (UPPCO)	U.S.	10,853	10,853	-	-	10,666	10,666	-	-	(96)	(96)	282	282	-	-
2017	MRO	1244	Xcel Energy Company (NSP)	U.S.	689,848	689,848	-	-	677,968	677,968	-	-	(6,074)	(6,074)	17,954	17,954	-	-
2017	MRO	1196	Ames Municipal Electric System	U.S.	12,002	12,002	-	-	11,796	11,796	-	-	(106)	(106)	312	312	-	-
2017	MRO	1604	Atlantic Municipal Utilities	U.S.	1,289	1,289	-	-	1,267	1,267	-	-	(11)	(11)	34	34	-	-

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Data Year	Regional Entity	ID	Entity	Country	Total NERC Assessments				NERC NEL Assessments				Penalty Sanctions		NERC Compliance Credits			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Mexico
2017	MRO	1713	Bloomer Electric & Water Co.	U.S.	877	877	-	-	862	862	-	-	(8)	(8)	23	23	-	-
2017	MRO	1714	Village of Caddott	U.S.	218	218	-	-	214	214	-	-	(2)	(2)	6	6	-	-
2017	MRO	1200	Cedar Falls Municipal Utilities	U.S.	8,219	8,219	-	-	8,077	8,077	-	-	(72)	(72)	214	214	-	-
2017	MRO	1477	Central Minnesota Municipal Power Agency (CMMPA)	U.S.	6,194	6,194	-	-	6,087	6,087	-	-	(55)	(55)	161	161	-	-
2017	MRO	1716	Eldridge Electric and Water Utilities	U.S.	673	673	-	-	661	661	-	-	(6)	(6)	18	18	-	-
2017	MRO	1203	City of Escanaba	U.S.	2,188	2,188	-	-	2,150	2,150	-	-	(19)	(19)	57	57	-	-
2017	MRO	1205	Falls City Water & Light Department	U.S.	934	934	-	-	918	918	-	-	(8)	(8)	24	24	-	-
2017	MRO	1206	Fremont Department of Utilities	U.S.	6,868	6,868	-	-	6,750	6,750	-	-	(60)	(60)	179	179	-	-
2017	MRO	1208	Geneseo Municipal Utilities	U.S.	1,026	1,026	-	-	1,008	1,008	-	-	(9)	(9)	27	27	-	-
2017	MRO	1209	Grand Island Utilities Department	U.S.	12,056	12,056	-	-	11,849	11,849	-	-	(106)	(106)	314	314	-	-
2017	MRO	1717	Great Lakes Utilities	U.S.	23,437	23,437	-	-	23,034	23,034	-	-	(206)	(206)	610	610	-	-
2017	MRO	1718	City of Guttenberg	U.S.	299	299	-	-	294	294	-	-	(3)	(3)	8	8	-	-
2017	MRO	1606	Harlan Municipal Utilities	U.S.	267	267	-	-	262	262	-	-	(2)	(2)	7	7	-	-
2017	MRO	1211	Hastings Utilities	U.S.	6,811	6,811	-	-	6,694	6,694	-	-	(60)	(60)	177	177	-	-
2017	MRO	1212	Heartland Consumers Power District	U.S.	6,899	6,899	-	-	6,781	6,781	-	-	(61)	(61)	180	180	-	-
2017	MRO	1213	Hutchinson Utilities Commission	U.S.	4,613	4,613	-	-	4,534	4,534	-	-	(41)	(41)	120	120	-	-
2017	MRO	1719	City of Kasota	U.S.	52	52	-	-	51	51	-	-	(0)	(0)	1	1	-	-
2017	MRO	1215	Lincoln Electric System	U.S.	50,871	50,871	-	-	49,995	49,995	-	-	(448)	(448)	1,324	1,324	-	-
2017	MRO	1223	Missouri River Energy Services	U.S.	42,789	42,789	-	-	42,052	42,052	-	-	(377)	(377)	1,114	1,114	-	-
2017	MRO	1224	MN Municipal Power Agency (MMPA)	U.S.	24,674	24,674	-	-	24,249	24,249	-	-	(217)	(217)	642	642	-	-
2017	MRO	1607	Montezuma Municipal Light & Power	U.S.	401	401	-	-	394	394	-	-	(4)	(4)	10	10	-	-
2017	MRO	1227	Municipal Energy Agency of Nebraska	U.S.	14,970	14,970	-	-	14,712	14,712	-	-	(132)	(132)	390	390	-	-
2017	MRO	1228	Muscatine Power and Water	U.S.	13,941	13,941	-	-	13,701	13,701	-	-	(123)	(123)	363	363	-	-
2017	MRO	1229	Nebraska City Utilities	U.S.	2,050	2,050	-	-	2,014	2,014	-	-	(18)	(18)	53	53	-	-
2017	MRO	1720	Resale Power Group of Iowa	U.S.	8,945	8,945	-	-	8,791	8,791	-	-	(79)	(79)	233	233	-	-
2017	MRO	1721	Rice Lake Utilities	U.S.	2,626	2,626	-	-	2,581	2,581	-	-	(23)	(23)	68	68	-	-
2017	MRO	1234	Rochester Public Utilities	U.S.	37	37	-	-	36	36	-	-	(0)	(0)	1	1	-	-
2017	MRO	1236	Southern Minnesota Municipal Power Agency	U.S.	44,167	44,167	-	-	43,406	43,406	-	-	(389)	(389)	1,149	1,149	-	-
2017	MRO	1722	City of Spooner	U.S.	503	503	-	-	494	494	-	-	(4)	(4)	13	13	-	-
2017	MRO	1241	Willmar Municipal Utilities	U.S.	3,961	3,961	-	-	3,893	3,893	-	-	(35)	(35)	103	103	-	-
2017	MRO	1242	Wisconsin Public Power, Inc. (East and West regions)	U.S.	84,019	84,019	-	-	82,572	82,572	-	-	(740)	(740)	2,187	2,187	-	-
2017	MRO		Wolverine Power Marketing Cooperative	U.S.	569	569	-	-	559	559	-	-	(5)	(5)	15	15	-	-
2017	SPP-MRO-SERC		Arkansas Electric Cooperative Corporation	U.S.	60,201	60,201	-	-	59,165	59,165	-	-	(530)	(530)	1,567	1,567	-	-
2017	SPP-MRO	1246	American Electric Power	U.S.	587,768	587,768	-	-	577,646	577,646	-	-	(5,175)	(5,175)	15,297	15,297	-	-
2017	SPP-MRO	1707	AEP-VEMCO	U.S.	10,258	10,258	-	-	10,082	10,082	-	-	(90)	(90)	267	267	-	-
2017	SPP-MRO	1247	Board of Public Utilities (Kansas City KS)	U.S.	38,440	38,440	-	-	37,778	37,778	-	-	(338)	(338)	1,000	1,000	-	-
2017	SPP-MRO	1620	Board of Public Utilities, City of McPherson, Kansas	U.S.	16,817	16,817	-	-	16,527	16,527	-	-	(148)	(148)	438	438	-	-
2017	SPP-MRO	1647	Carthage City Water & Light	U.S.	4,780	4,780	-	-	4,698	4,698	-	-	(42)	(42)	124	124	-	-
2017	SPP-MRO	1469	Central Valley Electric Cooperative	U.S.	12,996	12,996	-	-	12,772	12,772	-	-	(114)	(114)	338	338	-	-
2017	SPP-MRO	1556	City of Bentonville	U.S.	11,027	11,027	-	-	10,837	10,837	-	-	(97)	(97)	287	287	-	-
2017	SPP-MRO	1709	City of Nixa	U.S.	2,560	2,560	-	-	2,516	2,516	-	-	(23)	(23)	67	67	-	-
2017	SPP-MRO	1703	City of Chanute	U.S.	7,995	7,995	-	-	7,857	7,857	-	-	(70)	(70)	208	208	-	-
2017	SPP-MRO	1248	Independence Power & Light (Independence, MO)	U.S.	16,528	16,528	-	-	16,243	16,243	-	-	(146)	(146)	430	430	-	-
2017	SPP-MRO	1436	City Utilities of Springfield, MO	U.S.	49,347	49,347	-	-	48,497	48,497	-	-	(434)	(434)	1,284	1,284	-	-
2017	SPP-MRO	1437	East Texas Electric Coop, Inc.	U.S.	6,836	6,836	-	-	6,719	6,719	-	-	(60)	(60)	178	178	-	-
2017	SPP-MRO	1250	The Empire District Electric Company	U.S.	81,859	81,859	-	-	80,449	80,449	-	-	(721)	(721)	2,130	2,130	-	-
2017	SPP-MRO	1470	Farmers' Electric Coop	U.S.	4,571	4,571	-	-	4,492	4,492	-	-	(40)	(40)	119	119	-	-
2017	SPP-MRO	1438	Golden Spread Electric Coop	U.S.	78,900	78,900	-	-	77,541	77,541	-	-	(695)	(695)	2,053	2,053	-	-
2017	SPP-MRO	1251	Grand River Dam Authority	U.S.	82,758	82,758	-	-	81,333	81,333	-	-	(729)	(729)	2,154	2,154	-	-
2017	SPP-MRO	1252	Kansas City Power & Light (KCPL)	U.S.	245,684	245,684	-	-	241,453	241,453	-	-	(2,163)	(2,163)	6,394	6,394	-	-
2017	SPP-MRO	1439	Kansas Electric Power Coop., Inc	U.S.	33,482	33,482	-	-	32,905	32,905	-	-	(295)	(295)	871	871	-	-
2017	SPP-MRO	1440	Kansas Municipal Energy Agency (KCPL)	U.S.	25,031	25,031	-	-	24,600	24,600	-	-	(220)	(220)	651	651	-	-
2017	SPP-MRO	1637	Kansas Power Pool	U.S.	13,875	13,875	-	-	13,636	13,636	-	-	(122)	(122)	361	361	-	-
2017	SPP-MRO	1598	KCP&L GMOOC (Greater Missouri Operations Company)	U.S.	135,023	135,023	-	-	132,698	132,698	-	-	(1,189)	(1,189)	3,514	3,514	-	-
2017	SPP-MRO	1472	Lea County Electric Coop	U.S.	19,255	19,255	-	-	18,924	18,924	-	-	(170)	(170)	501	501	-	-
2017	SPP-MRO	1441	Midwest Energy Inc.	U.S.	28,399	28,399	-	-	27,910	27,910	-	-	(250)	(250)	739	739	-	-
2017	SPP-MRO-SERC		Missouri Joint Municipal Electric Utility Commission	U.S.	7,074	7,074	-	-	6,953	6,953	-	-	(62)	(62)	184	184	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NERC Assessments				NERC NEL Assessments				Penalty Sanctions		NERC Compliance Credits			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Mexico
2017	SPP-MRO	1442	Northeast Texas Electric Cooperative, Inc.	U.S.	49,675	49,675	-	-	48,820	48,820	-	-	(437)	(437)	1,293	1,293	-	-
2017	SPP-MRO	1255	Oklahoma Gas and Electric Co.	U.S.	451,723	451,723	-	-	443,944	443,944	-	-	(3,977)	(3,977)	11,757	11,757	-	-
2017	SPP-MRO	1444	Oklahoma Municipal Power Auth	U.S.	45,190	45,190	-	-	44,412	44,412	-	-	(398)	(398)	1,176	1,176	-	-
2017	SPP-MRO	1651	Paragould Light, Water & Cable	U.S.	9,296	9,296	-	-	9,136	9,136	-	-	(82)	(82)	242	242	-	-
2017	SPP-MRO	1725	People's Electric Cooperative	U.S.	7,856	7,856	-	-	7,721	7,721	-	-	(69)	(69)	204	204	-	-
2017	SPP-MRO	1473	Roosevelt County Electric Coop	U.S.	2,400	2,400	-	-	2,359	2,359	-	-	(21)	(21)	62	62	-	-
2017	SPP-MRO	1257	Xcel Energy Company (Southwestern Public Service)	U.S.	341,136	341,136	-	-	335,261	335,261	-	-	(3,004)	(3,004)	8,878	8,878	-	-
2017	SPP-MRO	1256	Sunflower Electric Power Cooperative	U.S.	71,513	71,513	-	-	70,281	70,281	-	-	(630)	(630)	1,861	1,861	-	-
2017	SPP-MRO	1445	Tex - La Electric Cooperative of Texas	U.S.	7,756	7,756	-	-	7,622	7,622	-	-	(68)	(68)	202	202	-	-
2017	SPP-MRO	1475	Tri County Electric Coop	U.S.	5,565	5,565	-	-	5,469	5,469	-	-	(49)	(49)	145	145	-	-
2017	SPP-MRO	1260	Westar Energy, Inc.	U.S.	333,669	333,669	-	-	327,923	327,923	-	-	(2,938)	(2,938)	8,684	8,684	-	-
2017	SPP-MRO	1259	Western Farmers Electric Cooperative	U.S.	133,405	133,405	-	-	131,108	131,108	-	-	(1,175)	(1,175)	3,472	3,472	-	-
2017	SPP-MRO	1501	West Texas Municipal Power Agency	U.S.	44,177	44,177	-	-	43,417	43,417	-	-	(389)	(389)	1,150	1,150	-	-
TOTAL MRO					7,712,036	6,932,574	779,462	-	7,572,537	6,813,185	759,352	-	(61,039)	(61,039)	200,538	180,429	20,109	-
-					-	-	-	-	-	-	-	-	-	-	-	-	-	-
2017	NPCC	1336	New England	U.S.	1,924,320	1,924,320	-	-	1,891,181	1,891,181	-	-	(16,943)	(16,943)	50,083	50,083	-	-
2017	NPCC	1339	New York	U.S.	2,482,313	2,482,313	-	-	2,439,564	2,439,564	-	-	(21,856)	(21,856)	64,605	64,605	-	-
2017	NPCC	1337	Ontario	Canada	1,418,177	-	1,418,177	-	2,060,782	-	2,060,782	-	-	-	(642,605)	-	(642,605)	-
2017	NPCC		Quebec	Canada	2,004,960	-	2,004,960	-	2,663,176	-	2,663,176	-	-	-	(658,216)	-	(658,216)	-
2017	NPCC	1705	New Brunswick	Canada	148,152	-	148,152	-	215,235	-	215,235	-	-	-	(67,083)	-	(67,083)	-
2017	NPCC	1340	Nova Scotia	Canada	174,829	-	174,829	-	170,319	-	170,319	-	-	-	4,510	-	4,510	-
TOTAL NPCC					8,152,751	4,406,633	3,746,117	-	9,440,255	4,330,745	5,109,511	-	(38,799)	(38,799)	(1,248,705)	114,688	(1,363,394)	-
-					-	-	-	-	-	-	-	-	-	-	-	-	-	-
2017	RF	1102	Cannelton Utilities	U.S.	225	225	-	-	221	221	-	-	(2)	(2)	6	6	-	-
2017	RF	1106	City of Croswell	U.S.	623	623	-	-	613	613	-	-	(5)	(5)	16	16	-	-
2017	RF	1490	City of Lansing	U.S.	34,583	34,583	-	-	33,987	33,987	-	-	(304)	(304)	900	900	-	-
2017	RF	1120	Cloverland Electric Cooperative	U.S.	11,821	11,821	-	-	11,618	11,618	-	-	(104)	(104)	308	308	-	-
2017	RF	1122	CMS ERM Michigan LLC	U.S.	2,795	2,795	-	-	2,747	2,747	-	-	(25)	(25)	73	73	-	-
2017	RF	1124	Constellation New Energy (MECS-CONS)	U.S.	19,096	19,096	-	-	18,767	18,767	-	-	(168)	(168)	497	497	-	-
2017	RF	1123	Constellation New Energy (MECS-DET)	U.S.	21,426	21,426	-	-	21,057	21,057	-	-	(189)	(189)	558	558	-	-
2017	RF	1126	Consumers Energy Company	U.S.	527,807	527,807	-	-	518,717	518,717	-	-	(4,647)	(4,647)	13,737	13,737	-	-
2017	RF	1128	Detroit Edison Company	U.S.	707,805	707,805	-	-	695,616	695,616	-	-	(6,232)	(6,232)	18,422	18,422	-	-
2017	RF	1166	Duke Energy Indiana	U.S.	467,545	467,545	-	-	459,493	459,493	-	-	(4,117)	(4,117)	12,168	12,168	-	-
2017	RF	1135	Ferdinand Municipal Light & Water	U.S.	787	787	-	-	774	774	-	-	(7)	(7)	20	20	-	-
2017	RF	1646	FirstEnergy Solutions (MECS-CONS)	U.S.	13,606	13,606	-	-	13,372	13,372	-	-	(120)	(120)	354	354	-	-
2017	RF	1549	FirstEnergy Solutions (MECS-DET)	U.S.	16,407	16,407	-	-	16,124	16,124	-	-	(144)	(144)	427	427	-	-
2017	RF	1145	Hoosier Energy	U.S.	118,694	118,694	-	-	116,649	116,649	-	-	(1,045)	(1,045)	3,089	3,089	-	-
2017	RF	1148	Indiana Municipal Power Agency (DUKE CIN)	U.S.	48,327	48,327	-	-	47,494	47,494	-	-	(426)	(426)	1,258	1,258	-	-
2017	RF	1485	Indiana Municipal Power Agency (NIPSCO)	U.S.	6,718	6,718	-	-	6,602	6,602	-	-	(59)	(59)	175	175	-	-
2017	RF	1486	Indiana Municipal Power Agency (SIGE)	U.S.	9,353	9,353	-	-	9,192	9,192	-	-	(82)	(82)	243	243	-	-
2017	RF	1149	Indianapolis Power & Light Co.	U.S.	219,045	219,045	-	-	215,273	215,273	-	-	(1,929)	(1,929)	5,701	5,701	-	-
2017	RF	1553	Integrus Energy Services (MECS-CONS)	U.S.	6,946	6,946	-	-	6,827	6,827	-	-	(61)	(61)	181	181	-	-
2017	RF	1554	Integrus Energy Services (MECS-DET)	U.S.	9,941	9,941	-	-	9,770	9,770	-	-	(88)	(88)	259	259	-	-
2017	RF	1666	Integrus Energy Services	U.S.	4,693	4,693	-	-	4,612	4,612	-	-	(41)	(41)	122	122	-	-
2017	RF	1614	Just Energy (MECS-DET)	U.S.	135	135	-	-	133	133	-	-	(1)	(1)	4	4	-	-
2017	RF	1154	Michigan Public Power Agency	U.S.	60,025	60,025	-	-	58,992	58,992	-	-	(529)	(529)	1,562	1,562	-	-
2017	RF	1155	Michigan South Central Power Agency	U.S.	11,207	11,207	-	-	11,014	11,014	-	-	(99)	(99)	292	292	-	-
2017	RF	1158	MidAmerican Energy Company Retail	U.S.	269	269	-	-	265	265	-	-	(2)	(2)	7	7	-	-
2017	RF	1163	Northern Indiana Public Service Co.	U.S.	278,040	278,040	-	-	273,252	273,252	-	-	(2,448)	(2,448)	7,236	7,236	-	-
2017	RF	1164	Ontonagon County Rural Electrification Assoc.	U.S.	441	441	-	-	434	434	-	-	(4)	(4)	11	11	-	-
2017	RF	1265	PJM Interconnection, LLC	U.S.	10,544,842	10,544,842	-	-	10,363,243	10,363,243	-	-	(92,844)	(92,844)	274,443	274,443	-	-
2017	RF	1172	Calpine Energy Solutions (k.n.a.Noble Americas Energy Solutions (MECS-CONS))	U.S.	6,082	6,082	-	-	5,977	5,977	-	-	(54)	(54)	158	158	-	-
2017	RF	1171	Calpine Energy Solutions (k.n.a.Noble Americas Energy Solutions (MECS-DET))	U.S.	9,567	9,567	-	-	9,402	9,402	-	-	(84)	(84)	249	249	-	-
2017	RF	1176	Direct Energy (fka:Strategic Energy,LLC) (MECS-CONS)	U.S.	3,040	3,040	-	-	2,988	2,988	-	-	(27)	(27)	79	79	-	-
2017	RF	1174	Direct Energy (fka:Strategic Energy,LLC) (MECS-DET)	U.S.	14,420	14,420	-	-	14,171	14,171	-	-	(127)	(127)	375	375	-	-
2017	RF	1581	Spartan Renewable Energy	U.S.	1,450	1,450	-	-	1,425	1,425	-	-	(13)	(13)	38	38	-	-
2017	RF		Spartan Renewable Energy (MI UP)	U.S.	877	877	-	-	862	862	-	-	(8)	(8)	23	23	-	-

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Data Year	Regional Entity	ID	Entity	Country	Total NERC Assessments				NERC NEL Assessments				Penalty Sanctions		NERC Compliance Credits			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Mexico
2017	RF	1180	Thumb Electric Cooperative	U.S.	2,859	2,859	-	-	2,810	2,810	-	-	(25)	(25)	74	74	-	-
2017	RF	1662	Ohio Valley Electric Corporation	U.S.	6,432	6,432	-	-	6,321	6,321	-	-	(57)	(57)	167	167	-	-
2017	RF	1181	Vectren Energy Delivery of IN	U.S.	80,656	80,656	-	-	79,267	79,267	-	-	(710)	(710)	2,099	2,099	-	-
2017	RF	1184	Wabash Valley Power Association Inc. (DUKE CIN)	U.S.	44,695	44,695	-	-	43,925	43,925	-	-	(394)	(394)	1,163	1,163	-	-
2017	RF	1488	Wabash Valley Power Association Inc.(NIPSCO)	U.S.	26,925	26,925	-	-	26,461	26,461	-	-	(237)	(237)	701	701	-	-
2017	RF	1185	Wisconsin Electric Power Co.	U.S.	435,808	435,808	-	-	428,303	428,303	-	-	(3,837)	(3,837)	11,342	11,342	-	-
2017	RF	1189	Wolverine Power Marketing Cooperative	U.S.	12,030	12,030	-	-	11,823	11,823	-	-	(106)	(106)	313	313	-	-
2017	RF	1191	Wolverine Power Supply Cooperative	U.S.	42,412	42,412	-	-	41,682	41,682	-	-	(373)	(373)	1,104	1,104	-	-
2017	RF	1190	Wolverine Power Marketing Cooperative(MECS-DET)	U.S.	8,866	8,866	-	-	8,714	8,714	-	-	(78)	(78)	231	231	-	-
TOTAL RELIABILITYFIRST					13,839,321	13,839,321	-	-	13,600,987	13,600,987	-	-	(121,851)	(121,851)	360,186	360,186	-	-
2017	SERC	1267	Alabama Municipal Electric Authority	U.S.	53,313	53,313	-	-	52,395	52,395	-	-	(469)	(469)	1,388	1,388	-	-
2017	SERC	1268	Alabama Power Company	U.S.	891,037	891,037	-	-	875,692	875,692	-	-	(7,845)	(7,845)	23,190	23,190	-	-
2017	SERC	1269	Ameren - Illinois	U.S.	652,478	652,478	-	-	641,242	641,242	-	-	(5,745)	(5,745)	16,982	16,982	-	-
2017	SERC	1271	Ameren - Missouri	U.S.	574,343	574,343	-	-	564,452	564,452	-	-	(5,057)	(5,057)	14,948	14,948	-	-
2017	SERC	1273	Associated Electric Cooperative Inc.	U.S.	299,884	299,884	-	-	294,720	294,720	-	-	(2,640)	(2,640)	7,805	7,805	-	-
2017	SERC	1582	Beauregard Electric Cooperative, Inc.	U.S.	17,583	17,583	-	-	17,280	17,280	-	-	(155)	(155)	458	458	-	-
2017	SERC	1462	Benton Utility District	U.S.	3,970	3,970	-	-	3,902	3,902	-	-	(35)	(35)	103	103	-	-
2017	SERC	1274	Big Rivers Electric Corporation	U.S.	58,310	58,310	-	-	57,306	57,306	-	-	(513)	(513)	1,518	1,518	-	-
2017	SERC	1275	Black Warrior EMC	U.S.	6,342	6,342	-	-	6,233	6,233	-	-	(56)	(56)	165	165	-	-
2017	SERC	1276	Blue Ridge EMC	U.S.	21,476	21,476	-	-	21,106	21,106	-	-	(189)	(189)	559	559	-	-
2017	SERC	1628	Brazos Electric Power Cooperative, Inc.	U.S.	7,423	7,423	-	-	7,295	7,295	-	-	(65)	(65)	193	193	-	-
2017	SERC	1463	Canton, MS	U.S.	2,036	2,036	-	-	2,001	2,001	-	-	(18)	(18)	53	53	-	-
2017	SERC	1277	Central Electric Power Cooperative Inc.	U.S.	265,510	265,510	-	-	260,937	260,937	-	-	(2,338)	(2,338)	6,910	6,910	-	-
2017	SERC	1667	Century Aluminum - Hawesville	U.S.	26,834	26,834	-	-	26,372	26,372	-	-	(236)	(236)	698	698	-	-
2017	SERC	1668	Century Aluminum - Seabee	U.S.	53,374	53,374	-	-	52,455	52,455	-	-	(470)	(470)	1,389	1,389	-	-
2017	SERC	1278	City of Blountstown FL	U.S.	575	575	-	-	565	565	-	-	(5)	(5)	15	15	-	-
2017	SERC	1279	City of Camden SC	U.S.	2,974	2,974	-	-	2,923	2,923	-	-	(26)	(26)	77	77	-	-
2017	SERC	1280	City of Collins MS	U.S.	713	713	-	-	701	701	-	-	(6)	(6)	19	19	-	-
2017	SERC	1281	City of Columbia MO	U.S.	18,581	18,581	-	-	18,261	18,261	-	-	(164)	(164)	484	484	-	-
2017	SERC	1282	City of Conway AR (Conway Corporation)	U.S.	15,738	15,738	-	-	15,467	15,467	-	-	(139)	(139)	410	410	-	-
2017	SERC	1284	City of Evergreen AL	U.S.	865	865	-	-	850	850	-	-	(8)	(8)	23	23	-	-
2017	SERC	1285	City of Hampton GA	U.S.	488	488	-	-	479	479	-	-	(4)	(4)	13	13	-	-
2017	SERC	1286	City of Hartford AL	U.S.	493	493	-	-	485	485	-	-	(4)	(4)	13	13	-	-
2017	SERC	1287	City of Henderson (KY) Municipal Power & Light	U.S.	9,728	9,728	-	-	9,560	9,560	-	-	(86)	(86)	253	253	-	-
2017	SERC	1288	City of North Little Rock AR (DENL)	U.S.	14,642	14,642	-	-	14,390	14,390	-	-	(129)	(129)	381	381	-	-
2017	SERC	1289	City of Orangeburg SC Department of Public Utilities	U.S.	12,906	12,906	-	-	12,684	12,684	-	-	(114)	(114)	336	336	-	-
2017	SERC	1290	City of Robertsdale AL	U.S.	1,286	1,286	-	-	1,264	1,264	-	-	(11)	(11)	33	33	-	-
2017	SERC	1291	City of Ruston LA (DERS)	U.S.	4,332	4,332	-	-	4,258	4,258	-	-	(38)	(38)	113	113	-	-
2017	SERC	1292	Seneca Light & Power	U.S.	2,603	2,603	-	-	2,558	2,558	-	-	(23)	(23)	68	68	-	-
2017	SERC	1115	City of Springfield (CWLP)	U.S.	27,116	27,116	-	-	26,649	26,649	-	-	(239)	(239)	706	706	-	-
2017	SERC	1465	City of Thayer, MO	U.S.	316	316	-	-	311	311	-	-	(3)	(3)	8	8	-	-
2017	SERC	1293	City of Troy AL	U.S.	6,599	6,599	-	-	6,485	6,485	-	-	(58)	(58)	172	172	-	-
2017	SERC	1294	City of West Memphis AR (West Memphis Utilities)	U.S.	6,044	6,044	-	-	5,940	5,940	-	-	(53)	(53)	157	157	-	-
2017	SERC	1583	Claiborne Electric Cooperative, Inc.	U.S.	10,169	10,169	-	-	9,993	9,993	-	-	(90)	(90)	265	265	-	-
2017	SERC	1584	Concordia Electric Cooperative, Inc.	U.S.	3,332	3,332	-	-	3,275	3,275	-	-	(29)	(29)	87	87	-	-
2017	SERC	1726	Cube Hydro Carolinas	U.S.	230	230	-	-	226	226	-	-	(2)	(2)	6	6	-	-
2017	SERC	1283	Dalton Utilities	U.S.	28,676	28,676	-	-	28,182	28,182	-	-	(252)	(252)	746	746	-	-
2017	SERC	1585	Dixie Electric Membership Corporation	U.S.	34,121	34,121	-	-	33,533	33,533	-	-	(300)	(300)	888	888	-	-
2017	SERC	1295	Dominion Virginia Power	U.S.	1,349,522	1,349,522	-	-	1,326,282	1,326,282	-	-	(11,882)	(11,882)	35,123	35,123	-	-
2017	SERC	1296	Duke Energy Carolinas, LLC	U.S.	1,334,461	1,334,461	-	-	1,311,479	1,311,479	-	-	(11,750)	(11,750)	34,731	34,731	-	-
2017	SERC	1466	Durant, MS	U.S.	398	398	-	-	391	391	-	-	(4)	(4)	10	10	-	-
2017	SERC	1478	LG&E and KU Services Co as agent for LG&E Co and KU Co	U.S.	533,567	533,567	-	-	524,378	524,378	-	-	(4,698)	(4,698)	13,887	13,887	-	-
2017	SERC	1297	East Kentucky Power Cooperative	U.S.	208,852	208,852	-	-	205,255	205,255	-	-	(1,839)	(1,839)	5,436	5,436	-	-
2017	SERC	1298	East Mississippi Electric Power Association	U.S.	6,516	6,516	-	-	6,404	6,404	-	-	(57)	(57)	170	170	-	-
2017	SERC	1669	Electricities of North Carolina Inc	U.S.	184,032	184,032	-	-	180,863	180,863	-	-	(1,620)	(1,620)	4,790	4,790	-	-
2017	SERC	1300	EnergyUnited EMC	U.S.	39,958	39,958	-	-	39,270	39,270	-	-	(352)	(352)	1,040	1,040	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NERC Assessments				NERC NEL Assessments				Penalty Sanctions		NERC Compliance Credits			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Mexico
2017	SERC	1301	Entergy	U.S.	1,879,652	1,879,652	-	-	1,847,282	1,847,282	-	-	(16,550)	(16,550)	48,920	48,920	-	-
2017	SERC	1302	Fayetteville (NC) Public Works Commission	U.S.	33,081	33,081	-	-	32,511	32,511	-	-	(291)	(291)	861	861	-	-
2017	SERC	1303	Florida Public Utilities (FL Panhandle Load)	U.S.	4,859	4,859	-	-	4,775	4,775	-	-	(43)	(43)	126	126	-	-
2017	SERC	1304	French Broad EMC	U.S.	7,979	7,979	-	-	7,842	7,842	-	-	(70)	(70)	208	208	-	-
2017	SERC	1305	Georgia Power Company	U.S.	1,347,671	1,347,671	-	-	1,324,462	1,324,462	-	-	(11,866)	(11,866)	35,075	35,075	-	-
2017	SERC	1306	Georgia System Optns Corporation	U.S.	617,667	617,667	-	-	607,030	607,030	-	-	(5,438)	(5,438)	16,076	16,076	-	-
2017	SERC	1479	Greenwood (MS) Utilities Commission	U.S.	4,435	4,435	-	-	4,359	4,359	-	-	(39)	(39)	115	115	-	-
2017	SERC	1307	Greenwood (SC) Commissioners of Public Works	U.S.	5,023	5,023	-	-	4,937	4,937	-	-	(44)	(44)	131	131	-	-
2017	SERC	1308	Gulf Power Company	U.S.	180,901	180,901	-	-	177,785	177,785	-	-	(1,593)	(1,593)	4,708	4,708	-	-
2017	SERC	1586	Haywood EMC	U.S.	4,868	4,868	-	-	4,784	4,784	-	-	(43)	(43)	127	127	-	-
2017	SERC		Hoosier Energy REC, Inc	U.S.	6,368	6,368	-	-	6,259	6,259	-	-	(56)	(56)	166	166	-	-
2017	SERC	1309	Illinois Municipal Electric Agency	U.S.	30,086	30,086	-	-	29,567	29,567	-	-	(265)	(265)	783	783	-	-
2017	SERC	1480	Itta Bena, MS	U.S.	219	219	-	-	215	215	-	-	(2)	(2)	6	6	-	-
2017	SERC	1587	Jefferson Davis Electric Cooperative, Inc.	U.S.	4,162	4,162	-	-	4,090	4,090	-	-	(37)	(37)	108	108	-	-
2017	SERC	1617	Kentucky Municipal Power	U.S.	10,369	10,369	-	-	10,191	10,191	-	-	(91)	(91)	270	270	-	-
2017	SERC	1481	Kosciusko, MS	U.S.	1,161	1,161	-	-	1,141	1,141	-	-	(10)	(10)	30	30	-	-
2017	SERC	1482	Leland, MS	U.S.	474	474	-	-	466	466	-	-	(4)	(4)	12	12	-	-
2017	SERC	1313	McCormick Commission of Public Works	U.S.	259	259	-	-	255	255	-	-	(2)	(2)	7	7	-	-
2017	SERC	1314	Mississippi Power Company	U.S.	160,811	160,811	-	-	158,042	158,042	-	-	(1,416)	(1,416)	4,185	4,185	-	-
2017	SERC	1630	Mt. Carmel Public Utility	U.S.	1,639	1,639	-	-	1,611	1,611	-	-	(14)	(14)	43	43	-	-
2017	SERC	1315	Municipal Electric Authority of Georgia	U.S.	171,589	171,589	-	-	168,634	168,634	-	-	(1,511)	(1,511)	4,466	4,466	-	-
2017	SERC	1316	N.C. Electric Membership Corp.	U.S.	201,642	201,642	-	-	198,170	198,170	-	-	(1,775)	(1,775)	5,248	5,248	-	-
2017	SERC	1588	Northeast Louisiana Power Cooperative, Inc.	U.S.	4,167	4,167	-	-	4,095	4,095	-	-	(37)	(37)	108	108	-	-
2017	SERC	1574	Northern Virginia Electric Cooperative	U.S.	74,719	74,719	-	-	73,433	73,433	-	-	(658)	(658)	1,945	1,945	-	-
2017	SERC	1319	Old Dominion Electric Cooperative	U.S.	78,979	78,979	-	-	77,619	77,619	-	-	(695)	(695)	2,056	2,056	-	-
2017	SERC	1618	Osceola (Arkansas) Municipal Light and Power	U.S.	2,473	2,473	-	-	2,431	2,431	-	-	(22)	(22)	64	64	-	-
2017	SERC	1320	Owensboro (KY) Municipal Utilities	U.S.	12,900	12,900	-	-	12,678	12,678	-	-	(114)	(114)	336	336	-	-
2017	SERC	1321	Piedmont EMC in Duke and Progress Areas	U.S.	8,003	8,003	-	-	7,865	7,865	-	-	(70)	(70)	208	208	-	-
2017	SERC	1323	Piedmont Municipal Power Agency (PMPA)	U.S.	37,128	37,128	-	-	36,489	36,489	-	-	(327)	(327)	966	966	-	-
2017	SERC	1589	Pointe Coupee Electric Memb. Corp.	U.S.	4,125	4,125	-	-	4,054	4,054	-	-	(36)	(36)	107	107	-	-
2017	SERC	1266	PowerSouth Energy	U.S.	137,103	137,103	-	-	134,742	134,742	-	-	(1,207)	(1,207)	3,568	3,568	-	-
2017	SERC	1330	Prairie Power, Inc.	U.S.	24,368	24,368	-	-	23,948	23,948	-	-	(215)	(215)	634	634	-	-
2017	SERC	1706	Duke Energy Progress	U.S.	728,721	728,721	-	-	716,171	716,171	-	-	(6,416)	(6,416)	18,966	18,966	-	-
2017	SERC	1325	Rutherford EMC	U.S.	20,747	20,747	-	-	20,389	20,389	-	-	(183)	(183)	540	540	-	-
2017	SERC	1631	Sam Rayburn G&T Electric Cooperative Inc.	U.S.	28,313	28,313	-	-	27,825	27,825	-	-	(249)	(249)	737	737	-	-
2017	SERC	1326	South Carolina Electric & Gas Company	U.S.	366,939	366,939	-	-	360,619	360,619	-	-	(3,231)	(3,231)	9,550	9,550	-	-
2017	SERC	1327	South Carolina Public Service Authority	U.S.	136,340	136,340	-	-	133,992	133,992	-	-	(1,200)	(1,200)	3,548	3,548	-	-
2017	SERC	1590	South Louisiana Electric Cooperative Association	U.S.	9,161	9,161	-	-	9,003	9,003	-	-	(81)	(81)	238	238	-	-
2017	SERC	1328	Cooperative Energy (formerly SMEPA)	U.S.	152,651	152,651	-	-	150,022	150,022	-	-	(1,344)	(1,344)	3,973	3,973	-	-
2017	SERC	1329	Southern Illinois Power Cooperative	U.S.	24,930	24,930	-	-	24,501	24,501	-	-	(220)	(220)	649	649	-	-
2017	SERC	1591	Southwest Louisiana Electric Membership Corporation	U.S.	38,892	38,892	-	-	38,222	38,222	-	-	(342)	(342)	1,012	1,012	-	-
2017	SERC	1619	Southwestern Electric Cooperative, Inc.	U.S.	6,664	6,664	-	-	6,549	6,549	-	-	(59)	(59)	173	173	-	-
2017	SERC	1331	Tennessee Valley Authority	U.S.	2,463,921	2,463,921	-	-	2,421,488	2,421,488	-	-	(21,694)	(21,694)	64,127	64,127	-	-
2017	SERC	1632	Tex-La Electric Cooperative of Texas, Inc	U.S.	3,309	3,309	-	-	3,252	3,252	-	-	(29)	(29)	86	86	-	-
2017	SERC	1332	Tombigbee Electric Cooperative Inc.	U.S.	1,923	1,923	-	-	1,890	1,890	-	-	(17)	(17)	50	50	-	-
2017	SERC	1594	Town of Sharpsburg, N.C.	U.S.	309	309	-	-	304	304	-	-	(3)	(3)	8	8	-	-
2017	SERC	1595	Town of Stantonsburg, N.C. JRO	U.S.	882	882	-	-	867	867	-	-	(8)	(8)	23	23	-	-
2017	SERC	1333	Town of Waynesville NC	U.S.	1,466	1,466	-	-	1,441	1,441	-	-	(13)	(13)	38	38	-	-
2017	SERC	1334	Town of Winnsboro SC	U.S.	984	984	-	-	967	967	-	-	(9)	(9)	26	26	-	-
2017	SERC	1335	Town of Winterville NC	U.S.	857	857	-	-	843	843	-	-	(8)	(8)	22	22	-	-
2017	SERC	1597	Washington-St.Tammany Electric Cooperative, Inc.	U.S.	16,339	16,339	-	-	16,058	16,058	-	-	(144)	(144)	425	425	-	-
2017	SERC	1435	Arkansas Electric Cooperative Corporation	U.S.	162,728	162,728	-	-	159,926	159,926	-	-	(1,433)	(1,433)	4,235	4,235	-	-
2017	SERC	1557	City of Clarksdale, Mississippi	U.S.	2,483	2,483	-	-	2,440	2,440	-	-	(22)	(22)	65	65	-	-
2017	SERC	1708	City of Abbeville	U.S.	2,183	2,183	-	-	2,146	2,146	-	-	(19)	(19)	57	57	-	-
2017	SERC	1558	Hope Water & Light (HWL)	U.S.	4,674	4,674	-	-	4,593	4,593	-	-	(41)	(41)	122	122	-	-
2017	SERC	1559	City of Minden	U.S.	2,194	2,194	-	-	2,156	2,156	-	-	(19)	(19)	57	57	-	-
2017	SERC	1249	Cleco Power LLC	U.S.	177,883	177,883	-	-	174,819	174,819	-	-	(1,566)	(1,566)	4,630	4,630	-	-



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Data Year	Regional Entity	ID	Entity	Country	Total NERC Assessments				NERC NEL Assessments				Penalty Sanctions		NERC Compliance Credits			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Mexico
2017	SERC	1648	Jonesboro City Water & Light	U.S.	22,055	22,055	-	-	21,675	21,675	-	-	(194)	(194)	574	574	-	-
2017	SERC	1649	Kennett Board of Public Works	U.S.	2,169	2,169	-	-	2,131	2,131	-	-	(19)	(19)	56	56	-	-
2017	SERC	1471	Lafayette Utilities System	U.S.	32,621	32,621	-	-	32,059	32,059	-	-	(287)	(287)	849	849	-	-
2017	SERC	1253	Louisiana Energy & Power Authority (LEPA)	U.S.	15,193	15,193	-	-	14,932	14,932	-	-	(134)	(134)	395	395	-	-
2017	SERC	1650	Malden Board of Public Works	U.S.	790	790	-	-	776	776	-	-	(7)	(7)	21	21	-	-
2017	SERC	1443	Missouri Joint Municipal Electric Utility Commission	U.S.	32,894	32,894	-	-	32,328	32,328	-	-	(290)	(290)	856	856	-	-
2017	SERC	1639	OzMo Ozark Missouri, West Plains MO	U.S.	2,995	2,995	-	-	2,944	2,944	-	-	(26)	(26)	78	78	-	-
2017	SERC	1652	Piggott Municipal Light, Water & Sewer	U.S.	580	580	-	-	570	570	-	-	(5)	(5)	15	15	-	-
2017	SERC	1653	Poplar Bluff Municipal Utilities	U.S.	5,893	5,893	-	-	5,792	5,792	-	-	(52)	(52)	153	153	-	-
2017	SERC	1636	City of Prescott	U.S.	1,301	1,301	-	-	1,279	1,279	-	-	(11)	(11)	34	34	-	-
2017	SERC	1561	Public Service Commission of Yazoo City of Mississippi	U.S.	1,857	1,857	-	-	1,825	1,825	-	-	(16)	(16)	48	48	-	-
2017	SERC	1654	Sikeston Board of Municipal Utilities	U.S.	5,910	5,910	-	-	5,808	5,808	-	-	(52)	(52)	154	154	-	-
TOTAL SERC					16,332,381	16,332,381	-	-	16,051,113	16,051,113	-	-	(143,802)	(143,802)	425,071	425,071	-	-
TOTAL SPP					-	-	-	-	-	-	-	-	-	-	-	-	-	-
2017	TRE	1019	ERCOT	U.S.	5,699,337	5,699,337	-	-	5,601,186	5,601,186	-	-	(50,181)	(50,181)	148,332	148,332	-	-
TOTAL ERCOT					5,699,337	5,699,337	-	-	5,601,186	5,601,186	-	-	(50,181)	(50,181)	148,332	148,332	-	-
2017	WECC		Alberta Electric System Operator	Canada	656,732	-	656,732	-	971,083	-	971,083	-	-	-	(314,351)	-	(314,351)	-
2017	WECC		British Columbia Hydro & Power Authority	Canada	1,023,265	-	1,023,265	-	996,866	-	996,866	-	-	-	26,399	-	26,399	-
2017	WECC		Centro Nacional de Control de Energia	Mexico	211,910	-	-	211,910	206,443	-	206,443	-	-	-	5,467	-	-	5,467
2017	WECC		Ajo Improvement District	U.S.	173	173	-	-	170	170	-	-	(2)	(2)	5	5	-	-
2017	WECC		Arizona Public Service Company	U.S.	461,227	461,227	-	-	453,284	453,284	-	-	(4,061)	(4,061)	12,004	12,004	-	-
2017	WECC		City of Williams	U.S.	711	711	-	-	698	698	-	-	(6)	(6)	18	18	-	-
2017	WECC		Electrical Districts 3	U.S.	1,353	1,353	-	-	1,330	1,330	-	-	(12)	(12)	35	35	-	-
2017	WECC		Aguila Irrigation District - APS	U.S.	526	526	-	-	517	517	-	-	(5)	(5)	14	14	-	-
2017	WECC		Buckeye Water Conservation and Drainage District - APS	U.S.	356	356	-	-	350	350	-	-	(3)	(3)	9	9	-	-
2017	WECC		Electrical District No. 6 of Pinal County - APS	U.S.	34	34	-	-	34	34	-	-	(0)	(0)	1	1	-	-
2017	WECC		Electrical District No. 7 of Maricopa County - APS	U.S.	799	799	-	-	786	786	-	-	(7)	(7)	21	21	-	-
2017	WECC		Electrical District No. 8 of Maricopa County - APS	U.S.	5,739	5,739	-	-	5,640	5,640	-	-	(51)	(51)	149	149	-	-
2017	WECC		Harquahala Valley Power Districts - APS	U.S.	1,817	1,817	-	-	1,786	1,786	-	-	(16)	(16)	47	47	-	-
2017	WECC		Maricopa County Municipal Water Conservation Dist No. 1 - APS	U.S.	820	820	-	-	806	806	-	-	(7)	(7)	21	21	-	-
2017	WECC		McMullen Valley Water Conservation & Drainage District - APS	U.S.	1,975	1,975	-	-	1,941	1,941	-	-	(17)	(17)	51	51	-	-
2017	WECC		Roosevelt Irrigation District - APS	U.S.	649	649	-	-	638	638	-	-	(6)	(6)	17	17	-	-
2017	WECC		Tonopah Irrigation District - APS	U.S.	431	431	-	-	424	424	-	-	(4)	(4)	11	11	-	-
2017	WECC		Navajo Tribal Utility Authority-Arizona	U.S.	799	799	-	-	786	786	-	-	(7)	(7)	21	21	-	-
2017	WECC		Tohono O'Odham Utility Authority	U.S.	979	979	-	-	963	963	-	-	(9)	(9)	25	25	-	-
2017	WECC		Town of Wickenburg	U.S.	422	422	-	-	414	414	-	-	(4)	(4)	11	11	-	-
2017	WECC		Avista Corporation	U.S.	153,590	153,590	-	-	150,945	150,945	-	-	(1,352)	(1,352)	3,997	3,997	-	-
2017	WECC		Kaiser Aluminum Fabricated Products LLC	U.S.	4,920	4,920	-	-	4,836	4,836	-	-	(43)	(43)	128	128	-	-
2017	WECC		Pend Oreille County PUD No. 1	U.S.	16,155	16,155	-	-	15,876	15,876	-	-	(142)	(142)	420	420	-	-
2017	WECC		PUD No. 2 of Grant County	U.S.	1,464	1,464	-	-	1,439	1,439	-	-	(13)	(13)	38	38	-	-
2017	WECC		Bonneville Power Administration-Power Services	U.S.	101,010	101,010	-	-	99,270	99,270	-	-	(889)	(889)	2,629	2,629	-	-
2017	WECC		Bonneville Power Administration-Hydro	U.S.	3,218	3,218	-	-	3,162	3,162	-	-	(28)	(28)	84	84	-	-
2017	WECC		Bonneville Power Administration-Transmission	U.S.	820,822	820,822	-	-	806,686	806,686	-	-	(7,227)	(7,227)	21,363	21,363	-	-
2017	WECC		City of Redding	U.S.	12,681	12,681	-	-	12,463	12,463	-	-	(112)	(112)	330	330	-	-
2017	WECC		City of Roseville	U.S.	19,832	19,832	-	-	19,490	19,490	-	-	(175)	(175)	516	516	-	-
2017	WECC		Modesto Irrigation District	U.S.	41,648	41,648	-	-	40,931	40,931	-	-	(367)	(367)	1,084	1,084	-	-
2017	WECC		Sacramento Municipal Utility District	U.S.	184,124	184,124	-	-	180,953	180,953	-	-	(1,621)	(1,621)	4,792	4,792	-	-
2017	WECC		Western Area Power Administration-Sierra Nevada Region	U.S.	31,556	31,556	-	-	31,013	31,013	-	-	(278)	(278)	821	821	-	-
2017	WECC		California Independent System Operator	U.S.	3,637,209	3,637,209	-	-	3,574,571	3,574,571	-	-	(32,025)	(32,025)	94,663	94,663	-	-
2017	WECC		El Paso Electric Company	U.S.	133,774	133,774	-	-	131,471	131,471	-	-	(1,178)	(1,178)	3,482	3,482	-	-
2017	WECC		Idaho Power Company	U.S.	250,628	250,628	-	-	246,311	246,311	-	-	(2,207)	(2,207)	6,523	6,523	-	-
2017	WECC		Imperial Irrigation District	U.S.	59,427	59,427	-	-	58,403	58,403	-	-	(523)	(523)	1,547	1,547	-	-
2017	WECC		Los Angeles Department of Water and Power	U.S.	457,085	457,085	-	-	449,213	449,213	-	-	(4,025)	(4,025)	11,896	11,896	-	-
2017	WECC		City of Henderson	U.S.	653	653	-	-	642	642	-	-	(6)	(6)	17	17	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NERC Assessments				NERC NEL Assessments				Penalty Sanctions		NERC Compliance Credits			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Mexico
2017	WECC		City of Las Vegas	U.S.	662	662	-	-	650	650	-	-	(6)	(6)	17	17	-	-
2017	WECC		City of North Las Vegas	U.S.	373	373	-	-	366	366	-	-	(3)	(3)	10	10	-	-
2017	WECC		Clark County Water Reclamation District	U.S.	1,293	1,293	-	-	1,271	1,271	-	-	(11)	(11)	34	34	-	-
2017	WECC		Colorado River Commission of Nevada	U.S.	7,501	7,501	-	-	7,372	7,372	-	-	(66)	(66)	195	195	-	-
2017	WECC		Las Vegas Valley Water District	U.S.	1,719	1,719	-	-	1,689	1,689	-	-	(15)	(15)	45	45	-	-
2017	WECC		Nevada Power Company dba NV Energy	U.S.	496,976	496,976	-	-	488,417	488,417	-	-	(4,376)	(4,376)	12,934	12,934	-	-
2017	WECC		MGM Resorts International	U.S.	14,864	14,864	-	-	14,608	14,608	-	-	(131)	(131)	387	387	-	-
2017	WECC		Switch-North	U.S.	92	92	-	-	90	90	-	-	(1)	(1)	2	2	-	-
2017	WECC		Switch-South	U.S.	4,709	4,709	-	-	4,628	4,628	-	-	(41)	(41)	123	123	-	-
2017	WECC		Wynn Las Vegas	U.S.	2,915	2,915	-	-	2,864	2,864	-	-	(26)	(26)	76	76	-	-
2017	WECC		Overton Power District No. 5	U.S.	6,282	6,282	-	-	6,174	6,174	-	-	(55)	(55)	164	164	-	-
2017	WECC		Southern Nevada Water Authority	U.S.	1,919	1,919	-	-	1,886	1,886	-	-	(17)	(17)	50	50	-	-
2017	WECC		Basin Electric Power Cooperative	U.S.	12,689	12,689	-	-	12,471	12,471	-	-	(112)	(112)	330	330	-	-
2017	WECC		Big Horn County Electric Cooperative	U.S.	610	610	-	-	600	600	-	-	(5)	(5)	16	16	-	-
2017	WECC		NorthWestern Corp. dba NorthWestern Energy, LLC	U.S.	149,884	149,884	-	-	147,302	147,302	-	-	(1,320)	(1,320)	3,901	3,901	-	-
2017	WECC		Western Area Power Administration-Upper Great Plains Region	U.S.	127	127	-	-	125	125	-	-	(1)	(1)	3	3	-	-
2017	WECC		PacifiCorp West (PACW)	U.S.	342,368	342,368	-	-	336,472	336,472	-	-	(3,014)	(3,014)	8,911	8,911	-	-
2017	WECC		Constellation New Energy	U.S.	5,548	5,548	-	-	5,452	5,452	-	-	(49)	(49)	144	144	-	-
2017	WECC		3 Phases Renewables	U.S.	3	3	-	-	3	3	-	-	(0)	(0)	0	0	-	-
2017	WECC		Avangrid Renewables	U.S.	1,639	1,639	-	-	1,611	1,611	-	-	(14)	(14)	43	43	-	-
2017	WECC		Calpine Energy Solutions, LLC./Noble Americas Energy Solutions, LLC	U.S.	25,981	25,981	-	-	25,534	25,534	-	-	(229)	(229)	676	676	-	-
2017	WECC		PacifiCorp (IPC)	U.S.	33	33	-	-	33	33	-	-	(0)	(0)	1	1	-	-
2017	WECC		PacifiCorp (EasternBalAuth)	U.S.	791,096	791,096	-	-	777,472	777,472	-	-	(6,965)	(6,965)	20,589	20,589	-	-
2017	WECC		PacifiCorp (Portland)	U.S.	71	71	-	-	69	69	-	-	(1)	(1)	2	2	-	-
2017	WECC		PacifiCorp (WAPA-CO-MO)	U.S.	1,843	1,843	-	-	1,811	1,811	-	-	(16)	(16)	48	48	-	-
2017	WECC		Portland General Electric Company	U.S.	279,341	279,341	-	-	274,530	274,530	-	-	(2,460)	(2,460)	7,270	7,270	-	-
2017	WECC		Shell Energy North America	U.S.	1,188	1,188	-	-	1,167	1,167	-	-	(10)	(10)	31	31	-	-
2017	WECC		Arkansas River Power Authority (ARPA)	U.S.	4,248	4,248	-	-	4,175	4,175	-	-	(37)	(37)	111	111	-	-
2017	WECC		Black Hills Colorado Electric	U.S.	32,628	32,628	-	-	32,066	32,066	-	-	(287)	(287)	849	849	-	-
2017	WECC		Burlington	U.S.	495	495	-	-	487	487	-	-	(4)	(4)	13	13	-	-
2017	WECC		Colorado Springs Utilities	U.S.	960	960	-	-	943	943	-	-	(8)	(8)	25	25	-	-
2017	WECC		Grand Valley Power	U.S.	3,948	3,948	-	-	3,880	3,880	-	-	(35)	(35)	103	103	-	-
2017	WECC		Holy Cross Energy	U.S.	16,456	16,456	-	-	16,173	16,173	-	-	(145)	(145)	428	428	-	-
2017	WECC		Intermountain Rural Electric Association	U.S.	35,441	35,441	-	-	34,831	34,831	-	-	(312)	(312)	922	922	-	-
2017	WECC		Municipal Energy Agency of Nebraska	U.S.	2,705	2,705	-	-	2,658	2,658	-	-	(24)	(24)	70	70	-	-
2017	WECC		Platte River Power Authority	U.S.	51,253	51,253	-	-	50,371	50,371	-	-	(451)	(451)	1,334	1,334	-	-
2017	WECC		Public Service Company of Colorado (Xcel)	U.S.	482,564	482,564	-	-	474,253	474,253	-	-	(4,249)	(4,249)	12,559	12,559	-	-
2017	WECC		Public Service Company of Colorado (Xcel)-(WAPA-CO-MO)	U.S.	1,830	1,830	-	-	1,799	1,799	-	-	(16)	(16)	48	48	-	-
2017	WECC		Raton Public Service	U.S.	692	692	-	-	680	680	-	-	(6)	(6)	18	18	-	-
2017	WECC		Town of Center	U.S.	236	236	-	-	232	232	-	-	(2)	(2)	6	6	-	-
2017	WECC		Tri-State Generation & Transmission Assoc. Inc - Reliability	U.S.	41,932	41,932	-	-	41,210	41,210	-	-	(369)	(369)	1,091	1,091	-	-
2017	WECC		Western Area Power - Loveland, CO	U.S.	2,683	2,683	-	-	2,637	2,637	-	-	(24)	(24)	70	70	-	-
2017	WECC		Yampa Valley Electric Association	U.S.	8,906	8,906	-	-	8,752	8,752	-	-	(78)	(78)	232	232	-	-
2017	WECC		City of Aztec Electric Dept	U.S.	580	580	-	-	570	570	-	-	(5)	(5)	15	15	-	-
2017	WECC		City of Gallup	U.S.	3,516	3,516	-	-	3,455	3,455	-	-	(31)	(31)	92	92	-	-
2017	WECC		Jicarilla Apache Nation Power Authority	U.S.	366	366	-	-	360	360	-	-	(3)	(3)	10	10	-	-
2017	WECC		Kit Carson Electric Inc	U.S.	4,678	4,678	-	-	4,597	4,597	-	-	(41)	(41)	122	122	-	-
2017	WECC		Navajo Tribal Utility Authority-New Mexico	U.S.	3,149	3,149	-	-	3,095	3,095	-	-	(28)	(28)	82	82	-	-
2017	WECC		Public Service Company of New Mexico	U.S.	145,117	145,117	-	-	142,618	142,618	-	-	(1,278)	(1,278)	3,777	3,777	-	-
2017	WECC		The Incorporated County of Los Alamos	U.S.	9,718	9,718	-	-	9,551	9,551	-	-	(86)	(86)	253	253	-	-
2017	WECC		Tri-State Generation & Transmission Association, Inc.	U.S.	43,967	43,967	-	-	43,210	43,210	-	-	(387)	(387)	1,144	1,144	-	-
2017	WECC		US Dept of Energy - Kirtland AFB	U.S.	6,748	6,748	-	-	6,631	6,631	-	-	(59)	(59)	176	176	-	-
2017	WECC		Public Utility District No. 1 of Chelan County	U.S.	29,523	29,523	-	-	29,015	29,015	-	-	(260)	(260)	768	768	-	-
2017	WECC		Okanogan PUD	U.S.	10,540	10,540	-	-	10,359	10,359	-	-	(93)	(93)	274	274	-	-
2017	WECC		PUD No. 1 of Douglas County	U.S.	14,564	14,564	-	-	14,313	14,313	-	-	(128)	(128)	379	379	-	-
2017	WECC		Douglas Palisades / PUD No. 1 of DC	U.S.	325	325	-	-	319	319	-	-	(3)	(3)	8	8	-	-
2017	WECC		PUD No. 2 of Grant County	U.S.	75,738	75,738	-	-	74,434	74,434	-	-	(667)	(667)	1,971	1,971	-	-

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NERC Assessments				NERC NEL Assessments				Penalty Sanctions		NERC Compliance Credits			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Mexico
2017	WECC		Puget Sound Energy, Inc.	U.S.	388,766	388,766	-	-	382,071	382,071	-	-	(3,423)	(3,423)	10,118	10,118	-	-
2017	WECC		Salt River Project	U.S.	474,683	474,683	-	-	466,509	466,509	-	-	(4,179)	(4,179)	12,354	12,354	-	-
2017	WECC		Seattle City Light	U.S.	158,171	158,171	-	-	155,447	155,447	-	-	(1,393)	(1,393)	4,117	4,117	-	-
2017	WECC		Barrick Goldstrike Mines Inc.	U.S.	22,030	22,030	-	-	21,650	21,650	-	-	(194)	(194)	573	573	-	-
2017	WECC		City of Fallon	U.S.	1,464	1,464	-	-	1,439	1,439	-	-	(13)	(13)	38	38	-	-
2017	WECC		Mt. Wheeler Power	U.S.	8,779	8,779	-	-	8,627	8,627	-	-	(77)	(77)	228	228	-	-
2017	WECC		Truckee Donner Public Utility District	U.S.	2,564	2,564	-	-	2,520	2,520	-	-	(23)	(23)	67	67	-	-
2017	WECC		Beartooth Electric Cooperative	U.S.	1,222	1,222	-	-	1,201	1,201	-	-	(11)	(11)	32	32	-	-
2017	WECC		City of Tacoma DBA Tacoma Power	U.S.	79,477	79,477	-	-	78,109	78,109	-	-	(700)	(700)	2,068	2,068	-	-
2017	WECC		Tucson Electric Power Company	U.S.	235,713	235,713	-	-	231,654	231,654	-	-	(2,075)	(2,075)	6,135	6,135	-	-
2017	WECC		Merced Irrigation District	U.S.	8,244	8,244	-	-	8,102	8,102	-	-	(73)	(73)	215	215	-	-
2017	WECC		Turlock Irrigation District	U.S.	34,591	34,591	-	-	33,995	33,995	-	-	(305)	(305)	900	900	-	-
2017	WECC		Basin Electric Power Cooperative	U.S.	36,820	36,820	-	-	36,186	36,186	-	-	(324)	(324)	958	958	-	-
2017	WECC		Black Hills Colorado Electric/Cheyenne Light Fuel & Power	U.S.	69,628	69,628	-	-	68,429	68,429	-	-	(613)	(613)	1,812	1,812	-	-
2017	WECC		Black Hills State University South Dakota	U.S.	333	333	-	-	327	327	-	-	(3)	(3)	9	9	-	-
2017	WECC		City of Page	U.S.	1,148	1,148	-	-	1,128	1,128	-	-	(10)	(10)	30	30	-	-
2017	WECC		Colorado Springs Utilities	U.S.	73,150	73,150	-	-	71,890	71,890	-	-	(644)	(644)	1,904	1,904	-	-
2017	WECC		Deseret Generation & Transmission Cooperative	U.S.	1,845	1,845	-	-	1,813	1,813	-	-	(16)	(16)	48	48	-	-
2017	WECC		City of Farmington	U.S.	15,764	15,764	-	-	15,493	15,493	-	-	(139)	(139)	410	410	-	-
2017	WECC		Municipal Energy Agency of Nebraska	U.S.	10,007	10,007	-	-	9,834	9,834	-	-	(88)	(88)	260	260	-	-
2017	WECC		Navajo Tribal Utility Authority-Colorado	U.S.	3,434	3,434	-	-	3,375	3,375	-	-	(30)	(30)	89	89	-	-
2017	WECC		Navajo Agricultural Products Industry (NAPI)	U.S.	52	52	-	-	51	51	-	-	(0)	(0)	1	1	-	-
2017	WECC		Nebraska Public Power Marketing	U.S.	105	105	-	-	103	103	-	-	(1)	(1)	3	3	-	-
2017	WECC		Francis E. Warren Air Force Base	U.S.	192	192	-	-	189	189	-	-	(2)	(2)	5	5	-	-
2017	WECC		Town of Fredonia	U.S.	166	166	-	-	163	163	-	-	(1)	(1)	4	4	-	-
2017	WECC		Tri-State Generation & Transmission Assoc. Inc - Reliability	U.S.	124,873	124,873	-	-	122,723	122,723	-	-	(1,099)	(1,099)	3,250	3,250	-	-
2017	WECC		Western Area Power Administration - CRSP	U.S.	30,451	30,451	-	-	29,927	29,927	-	-	(268)	(268)	793	793	-	-
2017	WECC		Western Area Power - Loveland, CO	U.S.	29,114	29,114	-	-	28,613	28,613	-	-	(256)	(256)	758	758	-	-
2017	WECC		Wyoming Municipal Power Agency	U.S.	3,480	3,480	-	-	3,420	3,420	-	-	(31)	(31)	91	91	-	-
2017	WECC		Basin Electric Power Cooperative	U.S.	2,336	2,336	-	-	2,296	2,296	-	-	(21)	(21)	61	61	-	-
2017	WECC		Montana-Dakota Utilities Co.	U.S.	361	361	-	-	355	355	-	-	(3)	(3)	9	9	-	-
2017	WECC		NorthWestern Corp. dba NorthWestern Energy, LLC	U.S.	4,803	4,803	-	-	4,720	4,720	-	-	(42)	(42)	125	125	-	-
2017	WECC		Western Area Power Administration-Upper Great Plains Region	U.S.	5,648	5,648	-	-	5,551	5,551	-	-	(50)	(50)	147	147	-	-
2017	WECC		Aha Macav Power Service	U.S.	233	233	-	-	229	229	-	-	(2)	(2)	6	6	-	-
2017	WECC		Bureau of Reclamation (Desalter) - c/o DSW EMMO	U.S.	2	2	-	-	2	2	-	-	(0)	(0)	0	0	-	-
2017	WECC		Bureau of Reclamation (Wellfield)	U.S.	109	109	-	-	107	107	-	-	(1)	(1)	3	3	-	-
2017	WECC		Central Arizona Water Conservation District	U.S.	36,185	36,185	-	-	35,562	35,562	-	-	(319)	(319)	942	942	-	-
2017	WECC		City of Mesa	U.S.	4,243	4,243	-	-	4,170	4,170	-	-	(37)	(37)	110	110	-	-
2017	WECC		Needles Public Utilities Authority	U.S.	503	503	-	-	495	495	-	-	(4)	(4)	13	13	-	-
2017	WECC		Colorado River Agency-Bureau of Indian Affairs	U.S.	281	281	-	-	276	276	-	-	(2)	(2)	7	7	-	-
2017	WECC		Electrical District #2 - Coolidge Generating Station	U.S.	146	146	-	-	144	144	-	-	(1)	(1)	4	4	-	-
2017	WECC		Electrical District #2	U.S.	3,008	3,008	-	-	2,957	2,957	-	-	(26)	(26)	78	78	-	-
2017	WECC		Silver State Energy Association	U.S.	10,420	10,420	-	-	10,241	10,241	-	-	(92)	(92)	271	271	-	-
2017	WECC		Arizona Electric Power Cooperative, Inc	U.S.	55,313	55,313	-	-	54,360	54,360	-	-	(487)	(487)	1,440	1,440	-	-
2017	WECC		U.S. Army Yuma Proving Ground	U.S.	312	312	-	-	306	306	-	-	(3)	(3)	8	8	-	-
2017	WECC		Wellton-Mohawk Irrigation & Drainage District	U.S.	81	81	-	-	79	79	-	-	(1)	(1)	2	2	-	-
2017	WECC		Western Area Power Administration-Desert Southwest Region	U.S.	25,843	25,843	-	-	25,398	25,398	-	-	(228)	(228)	673	673	-	-
TOTAL WECC					13,453,838	11,561,930	1,679,998	211,910	13,537,209	11,362,816	1,967,949	206,443	(101,800)	(101,800)	18,429	300,914	(287,952)	5,467
TOTAL ERO					68,883,995	62,466,508	6,205,577	211,910	69,433,995	61,390,740	7,836,813	206,443	(550,000)	(550,000)	(0)	1,625,769	(1,631,236)	5,467

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total NERC Assessments				NERC NEL Assessments				Penalty Sanctions		NERC Compliance Credits			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Mexico
<b>Summary by Regional Entity</b>																		
2017	FRCC				3,694,330	3,694,330	-	-	3,630,708	3,630,708	-	-	(32,528)	(32,528)	96,150	96,150	-	-
2017	MRO				7,712,036	6,932,574	779,462	-	7,572,537	6,813,185	759,352	-	(61,039)	(61,039)	200,538	180,429	20,109	-
2017	NPCC				8,152,751	4,406,633	3,746,117	-	9,440,255	4,330,745	5,109,511	-	(38,799)	(38,799)	(1,248,705)	114,688	(1,363,394)	-
2017	RF				13,839,321	13,839,321	-	-	13,600,987	13,600,987	-	-	(121,851)	(121,851)	360,186	360,186	-	-
2017	SERC				16,332,381	16,332,381	-	-	16,051,113	16,051,113	-	-	(143,802)	(143,802)	425,071	425,071	-	-
2017	SPP				-	-	-	-	-	-	-	-	-	-	-	-	-	-
2017	TRE				5,699,337	5,699,337	-	-	5,601,186	5,601,186	-	-	(50,181)	(50,181)	148,332	148,332	-	-
2017	WECC				13,453,838	11,561,930	1,679,998	211,910	13,537,209	11,362,816	1,967,949	206,443	(101,800)	(101,800)	18,429	300,914	(287,952)	5,467
<b>Total</b>					<b>68,883,995</b>	<b>62,466,508</b>	<b>6,205,577</b>	<b>211,910</b>	<b>69,433,995</b>	<b>61,390,740</b>	<b>7,836,813</b>	<b>206,443</b>	<b>(550,000)</b>	<b>(550,000)</b>	<b>(0)</b>	<b>1,625,769</b>	<b>(1,631,236)</b>	<b>5,467</b>





2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total Regional Entity Assessments (Including WIRAB Assessments)				Regional Entity NEL Assessments				Penalty Sanctions - US Only		NPCC CORC Program			WECC Compliance Assessments (ex.AESO)				WIRAB Assessments			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	RF	1102	Cannelton Utilities	U.S.	346	346	-	-	351	351	-	-	(5)	(5)											
2017	RF	1106	City of Crosswell	U.S.	957	957	-	-	972	972	-	-	(15)	(15)											
2017	RF	1490	City of Lansing	U.S.	53,116	53,116	-	-	53,933	53,933	-	-	(818)	(818)											
2017	RF	1120	Cloverland Electric Cooperative	U.S.	18,156	18,156	-	-	18,436	18,436	-	-	(279)	(279)											
2017	RF	1122	CMS ERM Michigan LLC	U.S.	4,293	4,293	-	-	4,359	4,359	-	-	(66)	(66)											
2017	RF	1124	Constellation New Energy (MECS-CONS)	U.S.	29,329	29,329	-	-	29,781	29,781	-	-	(452)	(452)											
2017	RF	1123	Constellation New Energy (MECS-DET)	U.S.	32,908	32,908	-	-	33,415	33,415	-	-	(507)	(507)											
2017	RF	1126	Consumers Energy Company	U.S.	810,659	810,659	-	-	823,139	823,139	-	-	(12,479)	(12,479)											
2017	RF	1128	Detroit Edison Company	U.S.	1,087,119	1,087,119	-	-	1,103,854	1,103,854	-	-	(16,735)	(16,735)											
2017	RF	1166	Duke Energy Indiana	U.S.	718,103	718,103	-	-	729,157	729,157	-	-	(11,055)	(11,055)											
2017	RF	1135	Ferdinand Municipal Light & Water	U.S.	1,209	1,209	-	-	1,228	1,228	-	-	(19)	(19)											
2017	RF	1646	FirstEnergy Solutions (MECS-CONS)	U.S.	20,898	20,898	-	-	21,220	21,220	-	-	(322)	(322)											
2017	RF	1549	FirstEnergy Solutions (MECS-DET)	U.S.	25,199	25,199	-	-	25,587	25,587	-	-	(388)	(388)											
2017	RF	1145	Hoosier Energy	U.S.	182,302	182,302	-	-	185,108	185,108	-	-	(2,806)	(2,806)											
2017	RF	1148	Indiana Municipal Power Agency (DUKE CIN)	U.S.	74,225	74,225	-	-	75,368	75,368	-	-	(1,143)	(1,143)											
2017	RF	1485	Indiana Municipal Power Agency (NIPSCO)	U.S.	10,318	10,318	-	-	10,477	10,477	-	-	(159)	(159)											
2017	RF	1486	Indiana Municipal Power Agency (SIGE)	U.S.	14,365	14,365	-	-	14,586	14,586	-	-	(221)	(221)											
2017	RF	1149	Indianapolis Power & Light Co.	U.S.	336,432	336,432	-	-	341,611	341,611	-	-	(5,179)	(5,179)											
2017	RF	1553	Integrus Energy Services (MECS-CONS)	U.S.	10,669	10,669	-	-	10,833	10,833	-	-	(164)	(164)											
2017	RF	1554	Integrus Energy Services (MECS-DET)	U.S.	15,269	15,269	-	-	15,504	15,504	-	-	(235)	(235)											
2017	RF	1666	Integrus Energy Services	U.S.	7,208	7,208	-	-	7,319	7,319	-	-	(111)	(111)											
2017	RF	1614	Just Energy (MECS-DET)	U.S.	208	208	-	-	211	211	-	-	(3)	(3)											
2017	RF	1154	Michigan Public Power Agency	U.S.	92,193	92,193	-	-	93,612	93,612	-	-	(1,419)	(1,419)											
2017	RF	1155	Michigan South Central Power Agency	U.S.	17,213	17,213	-	-	17,478	17,478	-	-	(265)	(265)											
2017	RF	1158	MidAmerican Energy Company Retail	U.S.	414	414	-	-	420	420	-	-	(6)	(6)											
2017	RF	1163	Northern Indiana Public Service Co.	U.S.	427,042	427,042	-	-	433,616	433,616	-	-	(6,574)	(6,574)											
2017	RF	1164	Ontonagon County Rural Electrification Assoc.	U.S.	678	678	-	-	688	688	-	-	(10)	(10)											
2017	RF	1265	PJM Interconnection, LLC	U.S.	16,195,836	16,195,836	-	-	16,445,156	16,445,156	-	-	(249,321)	(249,321)											
2017	RF	1172	Calpine Energy Solutions (k.n.a.Noble Americas Energy Solutions (MECS-CONS))	U.S.	9,341	9,341	-	-	9,485	9,485	-	-	(144)	(144)											
2017	RF	1171	Calpine Energy Solutions (k.n.a.Noble Americas Energy Solutions (MECS-DET))	U.S.	14,693	14,693	-	-	14,920	14,920	-	-	(226)	(226)											
2017	RF	1176	Direct Energy (fka:Strategic Energy,LLC) (MECS-CONS)	U.S.	4,669	4,669	-	-	4,741	4,741	-	-	(72)	(72)											
2017	RF	1174	Direct Energy (fka:Strategic Energy,LLC) (MECS-DET)	U.S.	22,147	22,147	-	-	22,488	22,488	-	-	(341)	(341)											
2017	RF	1581	Spartan Renewable Energy	U.S.	2,227	2,227	-	-	2,261	2,261	-	-	(34)	(34)											
2017	RF		Spartan Renewable Energy (MI UP)	U.S.	1,347	1,347	-	-	1,367	1,367	-	-	(21)	(21)											
2017	RF	1180	Thumb Electric Cooperative	U.S.	4,391	4,391	-	-	4,459	4,459	-	-	(68)	(68)											
2017	RF	1662	Ohio Valley Electric Corporation	U.S.	9,878	9,878	-	-	10,030	10,030	-	-	(152)	(152)											
2017	RF	1181	Vectren Energy Delivery of IN	U.S.	123,879	123,879	-	-	125,786	125,786	-	-	(1,907)	(1,907)											
2017	RF	1184	Wabash Valley Power Association Inc. (DUKE CIN)	U.S.	68,647	68,647	-	-	69,704	69,704	-	-	(1,057)	(1,057)											
2017	RF	1488	Wabash Valley Power Association Inc.(NIPSCO)	U.S.	41,354	41,354	-	-	41,991	41,991	-	-	(637)	(637)											
2017	RF	1185	Wisconsin Electric Power Co.	U.S.	669,359	669,359	-	-	679,663	679,663	-	-	(10,304)	(10,304)											
2017	RF	1189	Wolverine Power Marketing Cooperative	U.S.	18,477	18,477	-	-	18,761	18,761	-	-	(284)	(284)											
2017	RF	1191	Wolverine Power Supply Cooperative	U.S.	65,141	65,141	-	-	66,143	66,143	-	-	(1,003)	(1,003)											
2017	RF	1190	Wolverine Power Marketing Cooperative(MECS-DET)	U.S.	13,618	13,618	-	-	13,827	13,827	-	-	(210)	(210)											
TOTAL RELIABILITYFIRST					21,255,831	21,255,831	-	-	21,583,046	21,583,046	-	-	(327,215)	(327,215)											
2017	SERC	1267	Alabama Municipal Electric Authority	U.S.	56,708	56,708	-	-	56,979	56,979	-	-	(271)	(271)											
2017	SERC	1268	Alabama Power Company	U.S.	947,767	947,767	-	-	952,295	952,295	-	-	(4,528)	(4,528)											
2017	SERC	1269	Ameren - Illinois	U.S.	694,020	694,020	-	-	697,335	697,335	-	-	(3,316)	(3,316)											
2017	SERC	1271	Ameren - Missouri	U.S.	610,910	610,910	-	-	613,829	613,829	-	-	(2,919)	(2,919)											
2017	SERC	1273	Associated Electric Cooperative Inc.	U.S.	318,977	318,977	-	-	320,501	320,501	-	-	(1,524)	(1,524)											
2017	SERC	1582	Beauregard Electric Cooperative, Inc.	U.S.	18,702	18,702	-	-	18,792	18,792	-	-	(89)	(89)											
2017	SERC	1462	Benton Utility District	U.S.	4,223	4,223	-	-	4,243	4,243	-	-	(20)	(20)											
2017	SERC	1274	Big Rivers Electric Corporation	U.S.	62,023	62,023	-	-	62,319	62,319	-	-	(296)	(296)											
2017	SERC	1275	Black Warrior EMC	U.S.	6,746	6,746	-	-	6,778	6,778	-	-	(32)	(32)											
2017	SERC	1276	Blue Ridge EMC	U.S.	22,843	22,843	-	-	22,952	22,952	-	-	(109)	(109)											
2017	SERC	1628	Brazos Electric Power Cooperative, Inc.	U.S.	7,896	7,896	-	-	7,934	7,934	-	-	(38)	(38)											
2017	SERC	1463	Canton, MS	U.S.	2,166	2,166	-	-	2,176	2,176	-	-	(10)	(10)											
2017	SERC	1277	Central Electric Power Cooperative Inc.	U.S.	282,414	282,414	-	-	283,763	283,763	-	-	(1,349)	(1,349)											
2017	SERC	1667	Century Aluminum - Hawesville	U.S.	28,543	28,543	-	-	28,679	28,679	-	-	(136)	(136)											
2017	SERC	1668	Century Aluminum - Sebree	U.S.	56,773	56,773	-	-	57,044	57,044	-	-	(271)	(271)											
2017	SERC	1278	City of Blountstown FL	U.S.	611	611	-	-	614	614	-	-	(3)	(3)											
2017	SERC	1279	City of Camden SC	U.S.	3,163	3,163	-	-	3,178	3,178	-	-	(15)	(15)											
2017	SERC	1280	City of Collins MS	U.S.	759	759	-	-	763	763	-	-	(4)	(4)											
2017	SERC	1281	City of Columbia MO	U.S.	19,764	19,764	-	-	19,858	19,858	-	-	(94)	(94)											
2017	SERC	1282	City of Conway AR (Conway Corporation)	U.S.	16,740	16,740	-	-	16,820	16,820	-	-	(80)	(80)											
2017	SERC	1284	City of Evergreen AL	U.S.	920	920	-	-	925	925	-	-	(4)	(4)											
2017	SERC	1285	City of Hampton GA	U.S.	519	519	-	-	521	521	-	-	(2)	(2)											
2017	SERC	1286	City of Hartford AL	U.S.	525	525	-	-	527	527	-	-	(3)	(3)											
2017	SERC	1287	City of Henderson (KY) Municipal Power & Light	U.S.	10,347	10,347	-	-	10,397	10,397	-	-	(49)	(49)											

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total Regional Entity Assessments (Including WIRAB Assessments)				Regional Entity NEL Assessments				Penalty Sanctions - US Only		NPCC CORC Program			WECC Compliance Assessments (ex.AESO)				WIRAB Assessments			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	SERC	1288	City of North Little Rock AR (DENL)	U.S.	15,574	15,574	-	-	15,649	15,649	-	-	(74)	(74)											
2017	SERC	1289	City of Orangeburg SC Department of Public Utilities	U.S.	13,728	13,728	-	-	13,793	13,793	-	-	(66)	(66)											
2017	SERC	1290	City of Robertsdale AL	U.S.	1,368	1,368	-	-	1,374	1,374	-	-	(7)	(7)											
2017	SERC	1291	City of Ruston LA (DERS)	U.S.	4,608	4,608	-	-	4,630	4,630	-	-	(22)	(22)											
2017	SERC	1292	Seneca Light & Power	U.S.	2,769	2,769	-	-	2,782	2,782	-	-	(13)	(13)											
2017	SERC	1115	City of Springfield (CWLP)	U.S.	28,843	28,843	-	-	28,980	28,980	-	-	(138)	(138)											
2017	SERC	1465	City of Thayer, MO	U.S.	336	336	-	-	338	338	-	-	(2)	(2)											
2017	SERC	1293	City of Troy AL	U.S.	7,019	7,019	-	-	7,053	7,053	-	-	(34)	(34)											
2017	SERC	1294	City of West Memphis AR (West Memphis Utilities)	U.S.	6,429	6,429	-	-	6,460	6,460	-	-	(31)	(31)											
2017	SERC	1583	Claiborne Electric Cooperative, Inc.	U.S.	10,816	10,816	-	-	10,868	10,868	-	-	(52)	(52)											
2017	SERC	1584	Concordia Electric Cooperative, Inc.	U.S.	3,544	3,544	-	-	3,561	3,561	-	-	(17)	(17)											
2017	SERC	1726	Cube Hydro Carolinas	U.S.	244	244	-	-	245	245	-	-	(1)	(1)											
2017	SERC	1283	Dalton Utilities	U.S.	30,501	30,501	-	-	30,647	30,647	-	-	(146)	(146)											
2017	SERC	1585	Dixie Electric Membership Corporation	U.S.	36,293	36,293	-	-	36,466	36,466	-	-	(173)	(173)											
2017	SERC	1295	Dominion Virginia Power	U.S.	1,435,442	1,435,442	-	-	1,442,301	1,442,301	-	-	(6,858)	(6,858)											
2017	SERC	1296	Duke Energy Carolinas, LLC	U.S.	1,419,422	1,419,422	-	-	1,426,204	1,426,204	-	-	(6,782)	(6,782)											
2017	SERC	1466	Durant, MS	U.S.	424	424	-	-	426	426	-	-	(2)	(2)											
2017	SERC	1478	LG&E and KU Services Co as agent for LG&E Co and KU Co	U.S.	567,538	567,538	-	-	570,249	570,249	-	-	(2,712)	(2,712)											
2017	SERC	1297	East Kentucky Power Cooperative	U.S.	222,149	222,149	-	-	223,210	223,210	-	-	(1,061)	(1,061)											
2017	SERC	1298	East Mississippi Electric Power Association	U.S.	6,931	6,931	-	-	6,964	6,964	-	-	(33)	(33)											
2017	SERC	1669	Electricities of North Carolina Inc	U.S.	195,749	195,749	-	-	196,684	196,684	-	-	(935)	(935)											
2017	SERC	1300	EnergyUnited EMC	U.S.	42,502	42,502	-	-	42,706	42,706	-	-	(203)	(203)											
2017	SERC	1301	Entergy	U.S.	1,999,324	1,999,324	-	-	2,008,876	2,008,876	-	-	(9,552)	(9,552)											
2017	SERC	1302	Fayetteville (NC) Public Works Commission	U.S.	35,187	35,187	-	-	35,355	35,355	-	-	(168)	(168)											
2017	SERC	1303	Florida Public Utilities (Fl Panhandle Load)	U.S.	5,169	5,169	-	-	5,193	5,193	-	-	(25)	(25)											
2017	SERC	1304	French Broad EMC	U.S.	8,487	8,487	-	-	8,528	8,528	-	-	(41)	(41)											
2017	SERC	1305	Georgia Power Company	U.S.	1,433,473	1,433,473	-	-	1,440,322	1,440,322	-	-	(6,849)	(6,849)											
2017	SERC	1306	Georgia System Optns Corporation	U.S.	656,992	656,992	-	-	660,131	660,131	-	-	(3,139)	(3,139)											
2017	SERC	1479	Greenwood (MS) Utilities Commission	U.S.	4,718	4,718	-	-	4,740	4,740	-	-	(23)	(23)											
2017	SERC	1307	Greenwood (SC) Commissioners of Public Works	U.S.	5,343	5,343	-	-	5,369	5,369	-	-	(26)	(26)											
2017	SERC	1308	Gulf Power Company	U.S.	192,418	192,418	-	-	193,337	193,337	-	-	(919)	(919)											
2017	SERC	1586	Haywood EMC	U.S.	5,178	5,178	-	-	5,203	5,203	-	-	(25)	(25)											
2017	SERC		Hoosier Energy REC, Inc	U.S.	6,774	6,774	-	-	6,806	6,806	-	-	(32)	(32)											
2017	SERC	1309	Illinois Municipal Electric Agency	U.S.	32,001	32,001	-	-	32,154	32,154	-	-	(153)	(153)											
2017	SERC	1480	Itta Bena, MS	U.S.	233	233	-	-	234	234	-	-	(1)	(1)											
2017	SERC	1587	Jefferson Davis Electric Cooperative, Inc.	U.S.	4,427	4,427	-	-	4,448	4,448	-	-	(21)	(21)											
2017	SERC	1617	Kentucky Municipal Power	U.S.	11,029	11,029	-	-	11,082	11,082	-	-	(53)	(53)											
2017	SERC	1481	Kosciusko, MS	U.S.	1,235	1,235	-	-	1,241	1,241	-	-	(6)	(6)											
2017	SERC	1482	Leland, MS	U.S.	505	505	-	-	507	507	-	-	(2)	(2)											
2017	SERC	1313	McCormick Commission of Public Works	U.S.	276	276	-	-	277	277	-	-	(1)	(1)											
2017	SERC	1314	Mississippi Power Company	U.S.	171,050	171,050	-	-	171,867	171,867	-	-	(817)	(817)											
2017	SERC	1630	Mt. Carmel Public Utility	U.S.	1,744	1,744	-	-	1,752	1,752	-	-	(8)	(8)											
2017	SERC	1315	Municipal Electric Authority of Georgia	U.S.	182,513	182,513	-	-	183,385	183,385	-	-	(872)	(872)											
2017	SERC	1316	N.C. Electric Membership Corp.	U.S.	214,480	214,480	-	-	215,505	215,505	-	-	(1,025)	(1,025)											
2017	SERC	1588	Northeast Louisiana Power Cooperative, Inc.	U.S.	4,432	4,432	-	-	4,453	4,453	-	-	(21)	(21)											
2017	SERC	1574	Northern Virginia Electric Cooperative	U.S.	79,477	79,477	-	-	79,856	79,856	-	-	(380)	(380)											
2017	SERC	1319	Old Dominion Electric Cooperative	U.S.	84,008	84,008	-	-	84,409	84,409	-	-	(401)	(401)											
2017	SERC	1618	Osceola (Arkansas) Municipal Light and Power	U.S.	2,631	2,631	-	-	2,643	2,643	-	-	(13)	(13)											
2017	SERC	1320	Owensboro (KY) Municipal Utilities	U.S.	13,722	13,722	-	-	13,787	13,787	-	-	(66)	(66)											
2017	SERC	1321	Piedmont EMC in Duke and Progress Areas	U.S.	8,512	8,512	-	-	8,553	8,553	-	-	(41)	(41)											
2017	SERC	1323	Piedmont Municipal Power Agency (PMPA)	U.S.	39,492	39,492	-	-	39,681	39,681	-	-	(189)	(189)											
2017	SERC	1589	Pointe Coupee Electric Memb. Corp.	U.S.	4,387	4,387	-	-	4,408	4,408	-	-	(21)	(21)											
2017	SERC	1266	PowerSouth Energy	U.S.	145,832	145,832	-	-	146,528	146,528	-	-	(697)	(697)											
2017	SERC	1330	Prairie Power, Inc.	U.S.	25,919	25,919	-	-	26,043	26,043	-	-	(124)	(124)											
2017	SERC	1706	Duke Energy Progress	U.S.	775,116	775,116	-	-	778,819	778,819	-	-	(3,703)	(3,703)											
2017	SERC	1325	Rutherford EMC	U.S.	22,067	22,067	-	-	22,173	22,173	-	-	(105)	(105)											
2017	SERC	1631	Sam Rayburn G&T Electric Cooperative Inc.	U.S.	30,115	30,115	-	-	30,259	30,259	-	-	(144)	(144)											
2017	SERC	1326	South Carolina Electric & Gas Company	U.S.	390,301	390,301	-	-	392,165	392,165	-	-	(1,865)	(1,865)											
2017	SERC	1327	South Carolina Public Service Authority	U.S.	145,021	145,021	-	-	145,713	145,713	-	-	(693)	(693)											
2017	SERC	1590	South Louisiana Electric Cooperative Association	U.S.	9,744	9,744	-	-	9,791	9,791	-	-	(47)	(47)											
2017	SERC	1328	Cooperative Energy (formerly SMEPA)	U.S.	162,370	162,370	-	-	163,146	163,146	-	-	(776)	(776)											
2017	SERC	1329	Southern Illinois Power Cooperative	U.S.	26,517	26,517	-	-	26,644	26,644	-	-	(127)	(127)											
2017	SERC	1591	Southwest Louisiana Electric Membership Corporation	U.S.	41,368	41,368	-	-	41,566	41,566	-	-	(198)	(198)											
2017	SERC	1619	Southwestern Electric Cooperative, Inc.	U.S.	7,088	7,088	-	-	7,122	7,122	-	-	(34)	(34)											
2017	SERC	1331	Tennessee Valley Authority	U.S.	2,620,791	2,620,791	-	-	2,633,313	2,633,313	-	-	(12,521)	(12,521)											
2017	SERC	1632	Tex-La Electric Cooperative of Texas, Inc	U.S.	3,520	3,520	-	-	3,537	3,537	-	-	(17)	(17)											
2017	SERC	1332	Tombigbee Electric Cooperative Inc.	U.S.	2,045	2,045	-	-	2,055	2,055	-	-	(10)	(10)											
2017	SERC	1594	Town of Sharpsburg, N.C.	U.S.	329	329	-	-	330	330	-	-	(2)	(2)											
2017	SERC	1595	Town of Stantonburg, N.C. JRO	U.S.	938	938	-	-	943	943	-	-	(4)	(4)											
2017	SERC	1333	Town of Waynesville NC	U.S.	1,560	1,560	-	-	1,567	1,567	-	-	(7)	(7)											



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Data Year	Regional Entity	ID	Entity	Country	Total Regional Entity Assessments (Including WIRAB Assessments)				Regional Entity NEL Assessments				Penalty Sanctions - US Only		NPCC CORC Program			WECC Compliance Assessments (ex.AESO)				WIRAB Assessments			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	SERC	1334	Town of Winnsboro SC	U.S.	1,047	1,047	-	-	1,052	1,052	-	-	(5)	(5)											
2017	SERC	1335	Town of Winterville NC	U.S.	912	912	-	-	916	916	-	-	(4)	(4)											
2017	SERC	1597	Washington-St.Tammany Electric Cooperative, Inc.	U.S.	17,379	17,379	-	-	17,462	17,462	-	-	(83)	(83)											
2017	SERC	1435	Arkansas Electric Cooperative Corporation	U.S.	173,088	173,088	-	-	173,915	173,915	-	-	(827)	(827)											
2017	SERC	1557	City of Clarksdale, Mississippi	U.S.	2,641	2,641	-	-	2,654	2,654	-	-	(13)	(13)											
2017	SERC	1708	City of Abbeville	U.S.	2,322	2,322	-	-	2,333	2,333	-	-	(11)	(11)											
2017	SERC	1558	Hope Water & Light (HWL)	U.S.	4,972	4,972	-	-	4,995	4,995	-	-	(24)	(24)											
2017	SERC	1559	City of Minden	U.S.	2,334	2,334	-	-	2,345	2,345	-	-	(11)	(11)											
2017	SERC	1249	Cleco Power LLC	U.S.	189,208	189,208	-	-	190,112	190,112	-	-	(904)	(904)											
2017	SERC	1648	Jonesboro City Water & Light	U.S.	23,459	23,459	-	-	23,571	23,571	-	-	(112)	(112)											
2017	SERC	1649	Kennett Board of Public Works	U.S.	2,307	2,307	-	-	2,318	2,318	-	-	(11)	(11)											
2017	SERC	1471	Lafayette Utilities System	U.S.	34,698	34,698	-	-	34,863	34,863	-	-	(166)	(166)											
2017	SERC	1253	Louisiana Energy & Power Authority (LEPA)	U.S.	16,161	16,161	-	-	16,238	16,238	-	-	(77)	(77)											
2017	SERC	1650	Malden Board of Public Works	U.S.	840	840	-	-	844	844	-	-	(4)	(4)											
2017	SERC	1443	Missouri Joint Municipal Electric Utility Commission	U.S.	34,988	34,988	-	-	35,155	35,155	-	-	(167)	(167)											
2017	SERC	1639	OzMo Ozark Missouri, West Plains MO	U.S.	3,186	3,186	-	-	3,201	3,201	-	-	(15)	(15)											
2017	SERC	1652	Piggott Municipal Light, Water & Sewer	U.S.	617	617	-	-	620	620	-	-	(3)	(3)											
2017	SERC	1653	Poplar Bluff Municipal Utilities	U.S.	6,268	6,268	-	-	6,298	6,298	-	-	(30)	(30)											
2017	SERC	1636	City of Prescott	U.S.	1,384	1,384	-	-	1,391	1,391	-	-	(7)	(7)											
2017	SERC	1561	Public Service Commission of Yazoo City of Mississippi	U.S.	1,975	1,975	-	-	1,984	1,984	-	-	(9)	(9)											
2017	SERC	1654	Sikeston Board of Municipal Utilities	U.S.	6,286	6,286	-	-	6,317	6,317	-	-	(30)	(30)											
TOTAL SERC					17,372,215	17,372,215	-	-	17,455,215	17,455,215	-	-	(83,000)	(83,000)											
TOTAL SPP																									
2017	TRE	1019	ERCOT	U.S.	13,248,000	13,248,000	-	-	13,362,449	13,362,449	-	-	(114,449)	(114,449)											
TOTAL ERCOT					13,248,000	13,248,000	-	-	13,362,449	13,362,449	-	-	(114,449)	(114,449)											
2017	WECC		Alberta Electric System Operator	Canada	876,478	-	876,478	-	1,855,746	-	1,855,746	-	-	-	-			(1,033,069)	(1,033,069)		53,801	53,801			
2017	WECC		British Columbia Hydro & Power Authority	Canada	2,042,199	-	2,042,199	-	1,905,017	-	1,905,017	-	-	-	-			81,953	81,953		55,229	55,229			
2017	WECC		Centro Nacional de Control de Energia	Mexico	422,923	-	-	422,923	394,514	-	-	394,514	-	-	-	-		16,972	-	16,972	11,438	-	-	11,438	
2017	WECC		Ajo Improvement District	U.S.	340	340	-	-	325	325	-	-	(9)	(9)			14	14		9	9				
2017	WECC		Arizona Public Service Company	U.S.	905,162	905,162	-	-	866,228	866,228	-	-	(23,444)	(23,444)			37,265	37,265		25,113	25,113				
2017	WECC		City of Williams	U.S.	1,394	1,394	-	-	1,334	1,334	-	-	(36)	(36)			57	57		39	39				
2017	WECC		Electrical Districts 3	U.S.	2,655	2,655	-	-	2,541	2,541	-	-	(69)	(69)			109	109		74	74				
2017	WECC		Aguila Irrigation District - APS	U.S.	1,032	1,032	-	-	988	988	-	-	(27)	(27)			42	42		29	29				
2017	WECC		Buckeye Water Conservation and Drainage District - APS	U.S.	699	699	-	-	669	669	-	-	(18)	(18)			29	29		19	19				
2017	WECC		Electrical District No. 6 of Pinal County - APS	U.S.	67	67	-	-	64	64	-	-	(2)	(2)			3	3		2	2				
2017	WECC		Electrical District No. 7 of Maricopa County - APS	U.S.	1,569	1,569	-	-	1,501	1,501	-	-	(41)	(41)			65	65		44	44				
2017	WECC		Electrical District No. 8 of Maricopa County - APS	U.S.	11,262	11,262	-	-	10,778	10,778	-	-	(292)	(292)			464	464		312	312				
2017	WECC		Harquahala Valley Power Districts - APS	U.S.	3,566	3,566	-	-	3,412	3,412	-	-	(92)	(92)			147	147		99	99				
2017	WECC		Maricopa County Municipal Water Conservation Dist No. 1 - APS	U.S.	1,610	1,610	-	-	1,541	1,541	-	-	(42)	(42)			66	66		45	45				
2017	WECC		McMullen Valley Water Conservation & Drainage District - APS	U.S.	3,875	3,875	-	-	3,709	3,709	-	-	(100)	(100)			160	160		108	108				
2017	WECC		Roosevelt Irrigation District - APS	U.S.	1,275	1,275	-	-	1,220	1,220	-	-	(33)	(33)			52	52		35	35				
2017	WECC		Tonopah Irrigation District - APS	U.S.	846	846	-	-	810	810	-	-	(22)	(22)			35	35		23	23				
2017	WECC		Navajo Tribal Utility Authority-Arizona	U.S.	1,569	1,569	-	-	1,501	1,501	-	-	(41)	(41)			65	65		44	44				
2017	WECC		Tohono O'Odham Utility Authority	U.S.	1,922	1,922	-	-	1,839	1,839	-	-	(50)	(50)			79	79		53	53				
2017	WECC		Town of Wickenburg	U.S.	827	827	-	-	792	792	-	-	(21)	(21)			34	34		23	23				
2017	WECC		Avista Corporation	U.S.	301,421	301,421	-	-	288,456	288,456	-	-	(7,807)	(7,807)			12,409	12,409		8,363	8,363				
2017	WECC		Kaiser Aluminum Fabricated Products LLC	U.S.	9,656	9,656	-	-	9,241	9,241	-	-	(250)	(250)			398	398		268	268				
2017	WECC		Pend Oreille County PUD No. 1	U.S.	31,704	31,704	-	-	30,340	30,340	-	-	(821)	(821)			1,305	1,305		880	880				
2017	WECC		PUD No. 2 of Grant County	U.S.	2,874	2,874	-	-	2,750	2,750	-	-	(74)	(74)			118	118		80	80				
2017	WECC		Bonneville Power Administration-Power Services	U.S.	198,232	198,232	-	-	189,705	189,705	-	-	(5,134)	(5,134)			8,161	8,161		5,500	5,500				
2017	WECC		Bonneville Power Administration-Hydro	U.S.	6,315	6,315	-	-	6,043	6,043	-	-	(164)	(164)			260	260		175	175				
2017	WECC		Bonneville Power Administration-Transmission	U.S.	1,610,871	1,610,871	-	-	1,541,582	1,541,582	-	-	(41,722)	(41,722)			66,318	66,318		44,693	44,693				
2017	WECC		City of Redding	U.S.	24,887	24,887	-	-	23,817	23,817	-	-	(645)	(645)			1,025	1,025		690	690				
2017	WECC		City of Roseville	U.S.	38,920	38,920	-	-	37,246	37,246	-	-	(1,008)	(1,008)			1,602	1,602		1,080	1,080				
2017	WECC		Modesto Irrigation District	U.S.	81,734	81,734	-	-	78,219	78,219	-	-	(2,117)	(2,117)			3,365	3,365		2,268	2,268				
2017	WECC		Sacramento Municipal Utility District	U.S.	361,345	361,345	-	-	345,802	345,802	-	-	(9,359)	(9,359)			14,876	14,876		10,025	10,025				
2017	WECC		Western Area Power Administration-Sierra Nevada Region	U.S.	61,929	61,929	-	-	59,265	59,265	-	-	(1,604)	(1,604)			2,550	2,550		1,718	1,718				
2017	WECC		California Independent System Operator	U.S.	7,138,058	7,138,058	-	-	6,831,026	6,831,026	-	-	(184,877)	(184,877)			293,868	293,868		198,041	198,041				
2017	WECC		El Paso Electric Company	U.S.	262,534	262,534	-	-	251,241	251,241	-	-	(6,800)	(6,800)			10,808	10,808		7,284	7,284				
2017	WECC		Idaho Power Company	U.S.	491,859	491,859	-	-	470,703	470,703	-	-	(12,739)	(12,739)			20,249	20,249		13,646	13,646				
2017	WECC		Imperial Irrigation District	U.S.	116,626	116,626	-	-	111,609	111,609	-	-	(3,021)	(3,021)			4,801	4,801		3,236	3,236				
2017	WECC		Los Angeles Department of Water and Power	U.S.	897,033	897,033	-	-	858,449	858,449	-	-	(23,233)	(23,233)			36,930	36,930		24,888	24,888				
2017	WECC		City of Henderson	U.S.	1,282	1,282	-	-	1,227	1,227	-	-	(33)	(33)			53	53		36	36				
2017	WECC		City of Las Vegas	U.S.	1,298	1,298	-	-	1,243	1,243	-	-	(34)	(34)			53	53		36	36				
2017	WECC		City of North Las Vegas	U.S.	731	731	-	-	700	700	-	-	(19)	(19)			30	30		20	20				
2017	WECC		Clark County Water Reclamation District	U.S.	2,538	2,538	-	-	2,429	2,429	-	-	(66)	(66)			104	104		70	70				
2017	WECC		Colorado River Commission of Nevada	U.S.	14,721	14,721	-	-	14,088	14,088	-	-	(381)	(381)			606	606		408	408				

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total Regional Entity Assessments (Including WIRAB Assessments)				Regional Entity NEL Assessments				Penalty Sanctions - US Only		NPCC CORC Program			WECC Compliance Assessments (ex.AESO)				WIRAB Assessments			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	WECC		Las Vegas Valley Water District	U.S.	3,373	3,373	-	-	3,228	3,228	-	-	(87)	(87)				139	139			94	94		
2017	WECC		Nevada Power Company dba NV Energy	U.S.	975,320	975,320	-	-	933,368	933,368	-	-	(25,261)	(25,261)				40,153	40,153			27,060	27,060		
2017	WECC		MGM Resorts International	U.S.	29,171	29,171	-	-	27,917	27,917	-	-	(756)	(756)				1,201	1,201			809	809		
2017	WECC		Switch-North	U.S.	180	180	-	-	172	172	-	-	(5)	(5)				7	7			5	5		
2017	WECC		Switch-South	U.S.	9,241	9,241	-	-	8,843	8,843	-	-	(239)	(239)				380	380			256	256		
2017	WECC		Wynn Las Vegas	U.S.	5,720	5,720	-	-	5,474	5,474	-	-	(148)	(148)				235	235			159	159		
2017	WECC		Overton Power District No. 5	U.S.	12,329	12,329	-	-	11,799	11,799	-	-	(319)	(319)				508	508			342	342		
2017	WECC		Southern Nevada Water Authority	U.S.	3,767	3,767	-	-	3,605	3,605	-	-	(98)	(98)				155	155			105	105		
2017	WECC		Basin Electric Power Cooperative	U.S.	24,902	24,902	-	-	23,831	23,831	-	-	(645)	(645)				1,025	1,025			691	691		
2017	WECC		Big Horn County Electric Cooperative	U.S.	1,197	1,197	-	-	1,146	1,146	-	-	(31)	(31)				49	49			33	33		
2017	WECC		NorthWestern Corp. dba NorthWestern Energy, LLC	U.S.	294,148	294,148	-	-	281,496	281,496	-	-	(7,618)	(7,618)				12,110	12,110			8,161	8,161		
2017	WECC		Western Area Power Administration-Upper Great Plains Region	U.S.	249	249	-	-	239	239	-	-	(6)	(6)				10	10			7	7		
2017	WECC		PacifiCorp West (PACW)	U.S.	671,901	671,901	-	-	643,000	643,000	-	-	(17,402)	(17,402)				27,662	27,662			18,642	18,642		
2017	WECC		Constellation New Energy	U.S.	10,887	10,887	-	-	10,419	10,419	-	-	(282)	(282)				448	448			302	302		
2017	WECC		3 Phases Renewables	U.S.	7	7	-	-	7	7	-	-	(0)	(0)				0	0			0	0		
2017	WECC		Avangrid Renewables	U.S.	3,217	3,217	-	-	3,078	3,078	-	-	(83)	(83)				132	132			89	89		
2017	WECC		Calpine Energy Solutions, LLC./Noble Americas Energy Solutions, LLC	U.S.	50,988	50,988	-	-	48,795	48,795	-	-	(1,321)	(1,321)				2,099	2,099			1,415	1,415		
2017	WECC		PacifiCorp (IPC)	U.S.	65	65	-	-	62	62	-	-	(2)	(2)				3	3			2	2		
2017	WECC		PacifiCorp (EasternBalAuth)	U.S.	1,552,534	1,552,534	-	-	1,485,754	1,485,754	-	-	(40,211)	(40,211)				63,916	63,916			43,074	43,074		
2017	WECC		PacifiCorp (Portland)	U.S.	138	138	-	-	133	133	-	-	(4)	(4)				6	6			4	4		
2017	WECC		PacifiCorp (WAPA-CO-MO)	U.S.	3,616	3,616	-	-	3,461	3,461	-	-	(94)	(94)				149	149			100	100		
2017	WECC		Portland General Electric Company	U.S.	548,209	548,209	-	-	524,629	524,629	-	-	(14,199)	(14,199)				22,569	22,569			15,210	15,210		
2017	WECC		Shell Energy North America	U.S.	2,331	2,331	-	-	2,231	2,231	-	-	(60)	(60)				96	96			65	65		
2017	WECC		Arkansas River Power Authority (ARPA)	U.S.	8,337	8,337	-	-	7,978	7,978	-	-	(216)	(216)				343	343			231	231		
2017	WECC		Black Hills Colorado Electric	U.S.	64,033	64,033	-	-	61,279	61,279	-	-	(1,658)	(1,658)				2,636	2,636			1,777	1,777		
2017	WECC		Burlington	U.S.	972	972	-	-	930	930	-	-	(25)	(25)				40	40			27	27		
2017	WECC		Colorado Springs Utilities	U.S.	1,883	1,883	-	-	1,802	1,802	-	-	(49)	(49)				78	78			52	52		
2017	WECC		Grand Valley Power	U.S.	7,747	7,747	-	-	7,414	7,414	-	-	(201)	(201)				319	319			215	215		
2017	WECC		Holy Cross Energy	U.S.	32,295	32,295	-	-	30,906	30,906	-	-	(836)	(836)				1,330	1,330			896	896		
2017	WECC		Intermountain Rural Electric Association	U.S.	69,554	69,554	-	-	66,562	66,562	-	-	(1,801)	(1,801)				2,863	2,863			1,930	1,930		
2017	WECC		Municipal Energy Agency of Nebraska	U.S.	5,309	5,309	-	-	5,080	5,080	-	-	(137)	(137)				219	219			147	147		
2017	WECC		Platte River Power Authority	U.S.	100,585	100,585	-	-	96,259	96,259	-	-	(2,605)	(2,605)				4,141	4,141			2,791	2,791		
2017	WECC		Public Service Company of Colorado (Xcel)	U.S.	947,036	947,036	-	-	906,301	906,301	-	-	(24,528)	(24,528)				38,989	38,989			26,275	26,275		
2017	WECC		Public Service Company of Colorado (Xcel)-(WAPA-CO-MO)	U.S.	3,592	3,592	-	-	3,437	3,437	-	-	(93)	(93)				148	148			100	100		
2017	WECC		Raton Public Service	U.S.	1,359	1,359	-	-	1,300	1,300	-	-	(35)	(35)				56	56			38	38		
2017	WECC		Town of Center	U.S.	464	464	-	-	444	444	-	-	(12)	(12)				19	19			13	13		
2017	WECC		Tri-State Generation & Transmission Assoc. Inc - Reliability	U.S.	82,292	82,292	-	-	78,752	78,752	-	-	(2,131)	(2,131)				3,388	3,388			2,283	2,283		
2017	WECC		Western Area Power - Loveland, CO	U.S.	5,265	5,265	-	-	5,039	5,039	-	-	(136)	(136)				217	217			146	146		
2017	WECC		Yampa Valley Electric Association	U.S.	17,477	17,477	-	-	16,726	16,726	-	-	(453)	(453)				720	720			485	485		
2017	WECC		City of Aztec Electric Dept	U.S.	1,139	1,139	-	-	1,090	1,090	-	-	(29)	(29)				47	47			32	32		
2017	WECC		City of Gallup	U.S.	6,900	6,900	-	-	6,603	6,603	-	-	(179)	(179)				284	284			191	191		
2017	WECC		Jicarilla Apache Nation Power Authority	U.S.	718	718	-	-	687	687	-	-	(19)	(19)				30	30			20	20		
2017	WECC		Kit Carson Electric Inc	U.S.	9,180	9,180	-	-	8,786	8,786	-	-	(238)	(238)				378	378			255	255		
2017	WECC		Navajo Tribal Utility Authority-New Mexico	U.S.	6,180	6,180	-	-	5,914	5,914	-	-	(160)	(160)				254	254			171	171		
2017	WECC		Public Service Company of New Mexico	U.S.	284,794	284,794	-	-	272,544	272,544	-	-	(7,376)	(7,376)				11,725	11,725			7,901	7,901		
2017	WECC		The Incorporated County of Los Alamos	U.S.	19,072	19,072	-	-	18,251	18,251	-	-	(494)	(494)				785	785			529	529		
2017	WECC		Tri-State Generation & Transmission Association, Inc.	U.S.	86,285	86,285	-	-	82,574	82,574	-	-	(2,235)	(2,235)				3,552	3,552			2,394	2,394		
2017	WECC		US Dept of Energy - Kirtland AFB	U.S.	13,242	13,242	-	-	12,673	12,673	-	-	(343)	(343)				545	545			367	367		
2017	WECC		Public Utility District No. 1 of Chelan County	U.S.	57,939	57,939	-	-	55,447	55,447	-	-	(1,501)	(1,501)				2,385	2,385			1,607	1,607		
2017	WECC		Okanogan PUD	U.S.	20,685	20,685	-	-	19,796	19,796	-	-	(536)	(536)				852	852			574	574		
2017	WECC		PUD No. 1 of Douglas County	U.S.	28,582	28,582	-	-	27,353	27,353	-	-	(740)	(740)				1,177	1,177			793	793		
2017	WECC		Douglas Palisades / PUD No. 1 of DC	U.S.	638	638	-	-	610	610	-	-	(17)	(17)				26	26			18	18		
2017	WECC		PUD No. 2 of Grant County	U.S.	148,636	148,636	-	-	142,243	142,243	-	-	(3,850)	(3,850)				6,119	6,119			4,124	4,124		
2017	WECC		Puget Sound Energy, Inc.	U.S.	762,957	762,957	-	-	730,140	730,140	-	-	(19,761)	(19,761)				31,410	31,410			21,168	21,168		
2017	WECC		Salt River Project	U.S.	931,571	931,571	-	-	891,501	891,501	-	-	(24,128)	(24,128)				38,352	38,352			25,846	25,846		
2017	WECC		Seattle City Light	U.S.	310,411	310,411	-	-	297,059	297,059	-	-	(8,040)	(8,040)				12,779	12,779			8,612	8,612		
2017	WECC		Barrick Goldstrike Mines Inc.	U.S.	43,234	43,234	-	-	41,374	41,374	-	-	(1,120)	(1,120)				1,780	1,780			1,199	1,199		
2017	WECC		City of Fallon	U.S.	2,874	2,874	-	-	2,750	2,750	-	-	(74)	(74)				118	118			80	80		
2017	WECC		Mt. Wheeler Power	U.S.	17,228	17,228	-	-	16,487	16,487	-	-	(446)	(446)				709	709			478	478		
2017	WECC		Truckee Donner Public Utility District	U.S.	5,032	5,032	-	-	4,816	4,816	-	-	(130)	(130)				207	207			140	140		
2017	WECC		Beartooth Electric Cooperative	U.S.	2,399	2,399	-	-	2,296	2,296	-	-	(62)	(62)				99	99			67	67		
2017	WECC		City of Tacoma DBA Tacoma Power	U.S.	155,975	155,975	-	-	149,266	149,266	-	-	(4,040)	(4,040)				6,421	6,421			4,327	4,327		
2017	WECC		Tucson Electric Power Company	U.S.	462,589	462,589	-	-	442,691	442,691	-	-	(11,981)	(11,981)				19,044	19,044			12,834	12,834		
2017	WECC		Merced Irrigation District	U.S.	16,179	16,179	-	-	15,483	15,483	-	-	(419)	(419)				666	666			449	449		
2017	WECC		Turlock Irrigation District	U.S.	67,885	67,885	-	-	64,965	64,965	-	-	(1,758)	(1,758)				2,795	2,795			1,883	1,883		
2017	WECC		Basin Electric Power Cooperative	U.S.	72,259	72,259	-	-	69,151	69,151	-	-	(1,872)	(1,872)				2,975	2,975			2,005	2,005		
2017	WECC		Black Hills Colorado Electric/Cheyenne Light Fuel & Power	U.S.	136,646	136,646	-	-	130,768	130,768	-	-	(3,539)	(3,539)				5,626	5,626			3,791	3,791		
2017	WECC		Black Hills State University South Dakota	U.S.	653	653	-	-	625	625	-	-	(17)	(17											

2017 NEL Calculations and Allocations to Load Serving Entities (or Designee) for the 2019 NERC and RE Assessments

Data Year	Regional Entity	ID	Entity	Country	Total Regional Entity Assessments (Including WIRAB Assessments)				Regional Entity NEL Assessments				Penalty Sanctions - US Only		NPCC CORC Program			WECC Compliance Assessments (ex.AESO)				WIRAB Assessments			
					Total	US	Canada	Mexico	Total	US	Canada	Mexico	Total	US	Total	US	Canada	Total	US	Canada	Mexico	Total	US	Canada	Mexico
2017	WECC		Deseret Generation & Transmission Cooperative	U.S.	3,620	3,620	-	-	3,464	3,464	-	-	(94)	(94)				149	149			100	100		
2017	WECC		City of Farmington	U.S.	30,937	30,937	-	-	29,606	29,606	-	-	(801)	(801)				1,274	1,274			858	858		
2017	WECC		Municipal Energy Agency of Nebraska	U.S.	19,638	19,638	-	-	18,793	18,793	-	-	(509)	(509)				808	808			545	545		
2017	WECC		Navajo Tribal Utility Authority-Colorado	U.S.	6,740	6,740	-	-	6,450	6,450	-	-	(175)	(175)				277	277			187	187		
2017	WECC		Navajo Agricultural Products Industry (NAPI)	U.S.	102	102	-	-	98	98	-	-	(3)	(3)				4	4			3	3		
2017	WECC		Nebraska Public Power Marketing	U.S.	206	206	-	-	197	197	-	-	(5)	(5)				8	8			6	6		
2017	WECC		Francis E. Warren Air Force Base	U.S.	377	377	-	-	361	361	-	-	(10)	(10)				16	16			10	10		
2017	WECC		Town of Fredonia	U.S.	326	326	-	-	312	312	-	-	(8)	(8)				13	13			9	9		
2017	WECC		Tri-State Generation & Transmission Assoc. Inc - Reliability	U.S.	245,065	245,065	-	-	234,524	234,524	-	-	(6,347)	(6,347)				10,089	10,089			6,799	6,799		
2017	WECC		Western Area Power Administration - CRSP	U.S.	59,761	59,761	-	-	57,191	57,191	-	-	(1,548)	(1,548)				2,460	2,460			1,658	1,658		
2017	WECC		Western Area Power - Loveland, CO	U.S.	57,137	57,137	-	-	54,679	54,679	-	-	(1,480)	(1,480)				2,352	2,352			1,585	1,585		
2017	WECC		Wyoming Municipal Power Agency	U.S.	6,829	6,829	-	-	6,536	6,536	-	-	(177)	(177)				281	281			189	189		
2017	WECC		Basin Electric Power Cooperative	U.S.	4,584	4,584	-	-	4,387	4,387	-	-	(119)	(119)				189	189			127	127		
2017	WECC		Montana-Dakota Utilities Co.	U.S.	708	708	-	-	678	678	-	-	(18)	(18)				29	29			20	20		
2017	WECC		NorthWestern Corp. dba NorthWestern Energy, LLC	U.S.	9,425	9,425	-	-	9,020	9,020	-	-	(244)	(244)				388	388			262	262		
2017	WECC		Western Area Power Administration-Upper Great Plains Region	U.S.	11,084	11,084	-	-	10,607	10,607	-	-	(287)	(287)				456	456			308	308		
2017	WECC		Aha Macav Power Service	U.S.	457	457	-	-	437	437	-	-	(12)	(12)				19	19			13	13		
2017	WECC		Bureau of Reclamation (Desalter) - c/o DSW EMMO	U.S.	3	3	-	-	3	3	-	-	(0)	(0)				0	0			0	0		
2017	WECC		Bureau of Reclamation (Wellfield)	U.S.	214	214	-	-	205	205	-	-	(6)	(6)				9	9			6	6		
2017	WECC		Central Arizona Water Conservation District	U.S.	71,014	71,014	-	-	67,960	67,960	-	-	(1,839)	(1,839)				2,924	2,924			1,970	1,970		
2017	WECC		City of Mesa	U.S.	8,327	8,327	-	-	7,969	7,969	-	-	(216)	(216)				343	343			231	231		
2017	WECC		Needles Public Utilities Authority	U.S.	988	988	-	-	945	945	-	-	(26)	(26)				41	41			27	27		
2017	WECC		Colorado River Agency-Bureau of Indian Affairs	U.S.	552	552	-	-	528	528	-	-	(14)	(14)				23	23			15	15		
2017	WECC		Electrical District #2 - Coolidge Generating Station	U.S.	287	287	-	-	275	275	-	-	(7)	(7)				12	12			8	8		
2017	WECC		Electrical District #2	U.S.	5,904	5,904	-	-	5,650	5,650	-	-	(153)	(153)				243	243			164	164		
2017	WECC		Silver State Energy Association	U.S.	20,450	20,450	-	-	19,570	19,570	-	-	(530)	(530)				842	842			567	567		
2017	WECC		Arizona Electric Power Cooperative, Inc	U.S.	108,552	108,552	-	-	103,883	103,883	-	-	(2,812)	(2,812)				4,469	4,469			3,012	3,012		
2017	WECC		U.S. Army Yuma Proving Ground	U.S.	612	612	-	-	586	586	-	-	(16)	(16)				25	25			17	17		
2017	WECC		Wellton-Mohawk Irrigation & Drainage District	U.S.	158	158	-	-	152	152	-	-	(4)	(4)				7	7			4	4		
2017	WECC		Western Area Power Administration-Desert Southwest Region	U.S.	50,716	50,716	-	-	48,535	48,535	-	-	(1,314)	(1,314)				2,088	2,088			1,407	1,407		
<b>TOTAL WECC</b>					<b>26,032,000</b>	<b>22,690,400</b>	<b>2,918,677</b>	<b>422,923</b>	<b>25,869,686</b>	<b>21,714,409</b>	<b>3,760,763</b>	<b>394,514</b>	<b>(587,686)</b>	<b>(587,686)</b>				<b>0</b>	<b>934,144</b>	<b>(951,116)</b>	<b>16,972</b>	<b>750,000</b>	<b>629,532</b>	<b>109,030</b>	<b>11,438</b>
<b>TOTAL ERO</b>					<b>114,211,051</b>	<b>103,477,873</b>	<b>10,310,255</b>	<b>422,923</b>	<b>106,449,109</b>	<b>97,045,322</b>	<b>9,009,273</b>	<b>394,514</b>	<b>(1,171,873)</b>	<b>(1,171,873)</b>	<b>8,183,815</b>	<b>6,040,747</b>	<b>2,143,068</b>	<b>0</b>	<b>934,144</b>	<b>(951,116)</b>	<b>16,972</b>	<b>750,000</b>	<b>629,532</b>	<b>109,030</b>	<b>11,438</b>
<b>Summary by Regional Entity</b>																									
2017	FRCC				5,827,925	5,827,925	-	-	5,827,925	5,827,925	-	-	-	-				-	-			-	-		
2017	MRO				15,471,669	13,914,246	1,557,423	-	15,531,192	13,973,769	1,557,423	-	(59,523)	(59,523)				-	-			-	-		
2017	NPCC				15,003,411	9,169,256	5,834,155	-	6,819,596	3,128,509	3,691,086	-	-	-				8,183,815	6,040,747	2,143,068					
2017	RF				21,255,831	21,255,831	-	-	21,583,046	21,583,046	-	-	(327,215)	(327,215)				-	-			-	-		
2017	SERC				17,372,215	17,372,215	-	-	17,455,215	17,455,215	-	-	(83,000)	(83,000)				-	-			-	-		
2017	SPP				-	-	-	-	-	-	-	-	-	-				-	-			-	-		
2017	TRE				13,248,000	13,248,000	-	-	13,362,449	13,362,449	-	-	(114,449)	(114,449)				-	-			-	-		
2017	WECC				26,032,000	22,690,400	2,918,677	422,923	25,869,686	21,714,409	3,760,763	394,514	(587,686)	(587,686)				0	934,144	(951,116)	16,972	750,000	629,532	109,030	11,438
<b>Total</b>					<b>114,211,051</b>	<b>103,477,873</b>	<b>10,310,255</b>	<b>422,923</b>	<b>106,449,109</b>	<b>97,045,322</b>	<b>9,009,273</b>	<b>394,514</b>	<b>(1,171,873)</b>	<b>(1,171,873)</b>	<b>8,183,815</b>	<b>6,040,747</b>	<b>2,143,068</b>	<b>0</b>	<b>934,144</b>	<b>(951,116)</b>	<b>16,972</b>	<b>750,000</b>	<b>629,532</b>	<b>109,030</b>	<b>11,438</b>

**NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION**

**2019 BUSINESS PLAN AND BUDGET FILING**

**ATTACHMENT 3**

**NORTHEAST POWER COORDINATING COUNCIL, INC.**

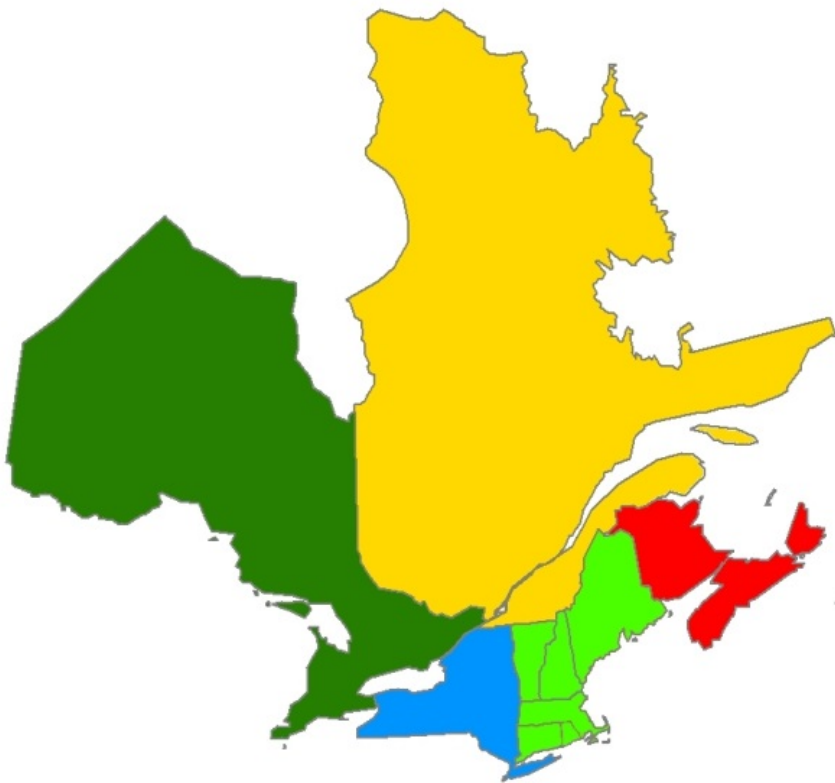
**PROPOSED 2019 BUSINESS PLAN AND BUDGET**



NORTHEAST POWER COORDINATING COUNCIL, INC.  
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## **Northeast Power Coordinating Council, Inc. (NPCC)**

### **2019 Business Plan and Budget**



**Approved by the  
NPCC Board of Directors  
at its June 27, 2018 Meeting and  
Resubmitted to NERC June 27, 2018**

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## Introduction

<b>Total NPCC Resources</b>				
(in whole dollars)				
	2019 Budget	U.S.	Canada	Mexico
Regional Entity Division FTEs	38.86			
Criteria Services Division FTEs	2.14			
<b>Total FTEs</b>	<b>41.00</b>			
Regional Entity Division Expenses	\$15,888,891			
Criteria Services Division Expenses	\$1,092,574			
<b>Total Expenses</b>	<b>\$16,981,465</b>			
Regional Entity Division Inc(Dec) in Fixed Assets	( <b>\$85,000</b> )			
Criteria Services Division Inc(Dec) in Fixed Assets	<b>\$16,000</b>			
<b>Total Inc(Dec) in Fixed Assets</b>	<b>(<b>\$69,000</b>)</b>			
Regional Entity Division Working Capital Requirement**	( <b>\$732,980</b> )			
Criteria Services Division Working Capital Requirement***	( <b>\$49,707</b> )			
<b>Total Working Capital Requirement</b>	<b>(<b>\$782,688</b>)</b>			
Total Regional Entity Division Funding Requirement	\$15,070,911			
Total Criteria Services Division Funding Requirement	\$1,058,866			
<b>Total Funding Requirement</b>	<b>\$16,129,777</b>			
<b>Regional Entity Division Assessments</b>	<b>\$15,003,411</b>	<b>\$9,169,256</b>	<b>\$5,834,155</b>	
<b>Regional Entity Division Assessments Percentage</b>	<b>100%</b>	<b>61%</b>	<b>39%</b>	
<b>Criteria Services Division Membership Fees</b>	<b>\$1,058,866</b>	<b>\$485,758</b>	<b>\$573,108</b>	
<b>Total NPCC Assessments &amp; Membership Fees</b>	<b>\$16,062,277</b>	<b>\$9,655,014</b>	<b>\$6,407,263</b>	
NEL	605,097,000	277,590,000	327,507,000	
NEL %	100%	46%	54%	

\*\* Refer to Table B-1 on page 56 in Section B.

\*\*\* Refer to the Reserve Analysis on page 73 in Section C.

## 2019 Overview of Total NPCC Resource Requirements

Due to the international nature of NPCC, the total resource requirements including both Regional Entity division and Criteria Services division are identified above. The individual divisional explanations are contained in subsequent sections.

NPCC proposes to increase its total budget and assessments by 4.6% comprising a Regional Entity increase of 4.6% and a Criteria Services division increase of 4.0%. The proposed 2019 funding requirements will be satisfied by a Regional Entity division assessment of \$15,003,411 and Criteria Services division fees of \$1,058,866, for a total of \$16,062,277. The total NPCC assessments and fees represent an increase of 4.6% compared to the 2018 total assessments and fees of \$15,360,927. NPCC believes that the Region remains an effective provider of Regional Entity and Criteria Services division functions. NPCC's corporate culture centers on consistent delivery of excellent results at a cost that is considerate of the longstanding tradition in the Northeast of affordable and reliable electricity.

## Organizational Overview

Northeast Power Coordinating Council, Inc. (NPCC) is a 501(c)(6) not-for-profit corporation in the state of New York responsible for promoting and improving the reliability of the international, interconnected bulk power systems in Northeastern North America through (i) the development of Regional Reliability Standards and compliance assessment and enforcement of continent-wide and Regional Reliability Standards, coordination of system planning, design and operations, and assessment of reliability (collectively, Regional Entity activities), and (ii) the establishment of Regionally-specific criteria, and monitoring and enforcement of compliance

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with such criteria (collectively, Criteria Services activities). NPCC provides the functions and services for Northeastern North America of a cross-border Regional Entity through a Regional Entity division, as well as Regionally-specific Criteria Services for Northeastern North America through a Criteria Services division. NPCC's website is [www.npcc.org](http://www.npcc.org).

The NPCC Region covers nearly 1.2 million square miles and is populated by more than 56 million people. NPCC U.S. includes the six New England states and the state of New York. NPCC Canada includes the provinces of Ontario, Québec and the Maritime provinces of New Brunswick and Nova Scotia. In total, from a net energy for load perspective, NPCC is approximately 46% U.S. and 54% Canadian. With regard to Canada, approximately 70% of Canadian net energy for load is within the NPCC Region.

Effective January 1, 2016, NPCC executed an Amended and Restated Regional Delegation Agreement with the North American Electric Reliability Corporation (NERC) that delegates to NPCC certain responsibilities and authorities of a cross-border Regional Entity as defined by *Section 215* of the Federal Power Act in the U.S. In addition, NPCC has executed Memoranda of Understanding or Agreements with Canadian provincial regulatory and/or governmental authorities in Ontario, Québec, New Brunswick and Nova Scotia.

It is imperative that NPCC maintain its ability to carry out delegated authorities and responsibilities. NPCC has a 2019 targeted staffing level of 41 power industry professionals and support personnel. Details of the 2019 business plans and budget for each program area are included in Section A for the Regional Entity division. The 2019 Regional Entity division schedules are shown in Section B. Section C details the 2019 Criteria Services division business plan and budget.

## Membership and Governance

NPCC monitors approximately 213 registered entities and some 448 functions in the Region for compliance with mandatory Reliability Standards. NPCC currently has approximately 80 members. There are two categories of membership, General and Full. The two categories distinguish between Regional Entity delegated services that are provided in support of the U.S. FERC and Canadian provincial MOUs or Agreements with regulatory and/or governmental authorities, and Criteria Services which FERC references as U.S. non-delegated activities.

General Membership is voluntary and is open to any person or entity, including any entity participating in the Registered Ballot Body of the Electric Reliability Organization (ERO) that has an interest in the reliable operation of the Northeastern North American bulk power system. General Members which are also registered entities within the NPCC Region are subject to compliance with Reliability Standards, consistent with their registration, and also receive additional services from the Regional Entity division of NPCC.

Full Membership is available to Members which are already General Members and participate in electricity markets in the Northeast. Independent system operators (ISOs), Regional transmission organizations (RTOs), Transcos and other organizations or entities that perform the Balancing Authority function operating in Northeastern North America are expected to be Full Members of NPCC. The New York State Reliability Council and any other sub-regional reliability councils which may be formed are also expected to be Full Members. Full Members are subject to compliance with Regionally-specific more stringent reliability criteria for their generation and transmission facilities on which faults or disturbances can have a significant adverse impact outside of the local area and which are identified utilizing a reliability impact-



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based methodology, in addition to Reliability Standards, and receive additional services from the Criteria Services division of NPCC, which is not funded through the ERO.

Under the Criteria Services division, NPCC will seek out and evaluate for membership, entities involved in emerging technologies to assure that those entities that have an impact on Bulk Electric System reliability are included in appropriate NPCC activities.

Since January 1, 2012 NPCC is governed by a Board of Directors consisting of seven stakeholder voting sectors consisting of a maximum of two directors per sector, an independent sector consisting of two independent directors, an independent Board Chair with voting rights to preclude board deadlocks, and the President and CEO. Within NPCC, no two sectors can control and no one sector can block action. The voting sectors on the NPCC Board of Directors include:

Sector 1) Transmission Owners

Sector 2) Reliability Coordinators

Sector 3) Transmission Dependent Utilities, Distribution Companies, Load Serving Entities

Sector 4) Generator Owners

Sector 5) Marketers, Brokers and Aggregators

Sector 6) Regulators

Sector 7) Sub-Regional Reliability Councils, Customers, other Regional Entities and Interested Entities

Sector 8) Independent

A Finance and Audit Committee (FAC), a Pension Committee (PC), a Corporate Governance and Nominating Committee (CGNC), and a Management Development and Compensation Committee (MDCC) advise the Board on finance, governance, compensation and human resource matters consistent with their approved charters. The Board endorses a non-employee, Certified Public Accountant for election by the NPCC Members as Treasurer of the corporation. The Treasurer chairs the FAC and works with the Chief Operating Officer who provides oversight of the finances of the corporation. The Treasurer reports to the Board on the corporation's financial position, on FAC activities, on tax code requirements, and on independent annual audit results and accounting practices.

The Regional Standards Committee (RSC), the Compliance Committee (CC), the Reliability Coordinating Committee (RCC), and the Public Information Committee, consistent with their approved scopes, are responsible for various reliability issues. The RSC, CC and RCC also provide technical policy recommendations to the Board. All General and Full Members are eligible for representation on the technical committees.

Industry technical experts from within the membership provide valuable input to the Board through various working groups and task forces as well as the committees. The *Amended and Restated Bylaws* establish NPCC's independence from users, owners and operators of the bulk power system through the enhanced governance structure while providing fair stakeholder representation in the election of the Board of Directors and officers. The members, from each of the seven stakeholder voting sectors, vote to elect directors in their respective sector. The *Amended and Restated Bylaws* establish criteria for board service for both stakeholder and independent directors. Independent Directors are drawn from diverse backgrounds and possess a broad range of industry expertise, perspectives, experiences, skill sets and knowledge to contribute to the effective functioning of a hybrid board structure.

Compliance and enforcement activities are carried out by the NPCC compliance staff and are independent of all users, owners and operators of the international bulk electric system. Compliance activities are governed in the United States by the *Amended and Restated Regional Delegation Agreement* between NERC and NPCC, delegating portions of NERC's authority as the ERO to NPCC. NPCC compliance activities in Canada are governed by individual provincial Memorandum of Understanding (MOU) or Agreements with each province providing the unique parameters for compliance and enforcement activities for each of the provinces. An MOU between the Independent Electricity System Operator in Ontario (IESO), NERC and NPCC establishes roles and responsibilities with regard to that province. NPCC, NERC and the New Brunswick Energy and Utilities Board are parties to a MOU that sets forth reliability activities for New Brunswick. The Régie de l'énergie, NERC and NPCC executed an Agreement regarding the implementation of the Québec reliability standards compliance monitoring and enforcement program. NPCC, NERC and Nova Scotia executed a MOU that sets forth the mutual understanding of the parties in relation to the approval and implementation of NERC Reliability Standards and NPCC Regional reliability criteria for the province of Nova Scotia.

## International Foundation

The Regional Entity functions and services differ according to particular regulatory backstop:

a) U.S. Foundation

The Federal Energy Regulatory Commission (FERC) certified NERC as the Electric Reliability Organization (ERO) on July 20, 2006. The ERO is responsible for developing and enforcing reliability standards within the United States. In executing part of its responsibilities, NERC delegates authority to the Regional Entities to perform certain functions through delegation agreements. Ensuring the reliability of the bulk power system in the State of New York and the six New England States was delegated from NERC to NPCC through the Amended and Restated Regional Delegation Agreement.

b) Ontario

On February 5, 2010, NERC, NPCC and the IESO amended and restated their earlier MOU, dated November 29, 2006, setting forth their mutual understanding as regards NERC's and NPCC's status in Ontario with respect to standard and criteria development, compliance enforcement, and other related matters. The IESO, whose statutory responsibilities include making and enforcing reliability standards, and making and enforcing Ontario market rules that govern the IESO-controlled grid and the wholesale electricity market, was established April 1, 1999 as the Independent Electricity Market Operator in Ontario under the *Electricity Act, 1998* (Ontario). The IESO is subject to the regulatory oversight of the Ontario Energy Board (OEB).

Among other things, the MOU recognizes that NERC and NPCC are standards authorities under the *Electricity Act, 1998* (Ontario). Additionally, under the authority of that same legislation, and as memorialized in the MOU, the NERC reliability standards and NPCC reliability criteria have effect in Ontario. However, a 2008 amendment to the *Electricity Act, 1998* (Ontario) allows the OEB to review these standards and criteria and issue orders preventing their implementation and remanding them back to NERC and NPCC.

The IESO is subject to compliance monitoring and enforcement by NPCC. The IESO is also subject to compliance monitoring and enforcement of the Ontario market rules by the IESO's Market Assessment and Compliance Division (MACD) that operates at arm's length from the IESO's business units. The MOU notes that where MACD, NERC, and NPCC engage in investigations pursuant to their respective mandates regarding compliance, MACD can request to

take the lead. Moreover, of the three, MACD is the only entity that can assess financial penalties for any Ontario market participant's or the IESO's non-compliance with Ontario market rules, which includes non-compliance with NERC standards and NPCC criteria.

The MOU provides for a peer review process to promote the common compliance and enforcement objectives of NERC/NPCC and MACD. From the perspective of NPCC and NERC, this process, in part, is meant to assure registered entities outside of Ontario that the MACD program is rigorous, thorough and reliable.

The IESO is subject to NPCC assessments of compliance, including audits, as well as NPCC remedial action directives to correct non-compliance. In the event that the IESO disagrees with NPCC's finding of a violation or associated assessment of sanctions in connection with standards and criteria, the IESO has a right to a compliance hearing with NPCC.

c) Québec

The Régie de l'énergie, NERC and NPCC are parties to the May 8, 2009 *Agreement on the Development of Electric Power Transmission Reliability Standards and of Procedures and a Program for the Monitoring of the Application of These Standards for Québec* (the 2009 Agreement). Under the terms of the 2009 Agreement, the Régie de l'énergie, which is charged with ensuring the reliability of the electric transmission in Québec, retained NPCC and NERC as experts to develop reliability standards and monitoring program procedures for the Province.

The Régie de l'énergie, NERC and NPCC are parties to the September 24, 2014 *Agreement on the Implementation of the Québec Reliability Standards Compliance Monitoring and Enforcement Program* (the 2014 Agreement). Through the 2014 Agreement, the Régie de l'énergie retains the services of NPCC to monitor and assess the compliance of registered entities in Québec with the reliability standards adopted by the Régie with respect to electric power transmission in Québec.

On April 1, 2015, the Québec Reliability Standards Compliance Monitoring and Enforcement Program ("QCMEP"), which was developed jointly by the Régie de l'énergie, NPCC and NERC, came into effect. Together, the 2014 Agreement and the QCMEP detail the procedures and program for monitoring and enforcing mandatory electric power transmission reliability standards in Québec.

The Régie de l'énergie is a public body established by the *Act respecting the Régie de l'énergie* (the Act). Pursuant to its authority under the Act, the Régie de l'énergie, through a series of decisions in 2007, designated Hydro-Québec Contrôle des mouvements d'énergie (HQCMÉ), a division of Hydro-Québec TransÉnergie, as the Reliability Coordinator for Québec. In accordance with its mandate and as recognized in the 2009 Agreement, it is this entity that is responsible for the filing with the Régie de l'énergie for approval of reliability standards in Québec. HQCMÉ has filed for the approval of certain reliability standards and the Régie de l'énergie has made certain reliability standards mandatory in Québec and is continuing proceedings to make additional reliability standards mandatory in Québec.

NPCC also conducts reliability assurance activities within Québec, including but not limited to events analysis, Reliability Assessment and Performance Analysis and compliance investigations, consistent with the *NPCC Amended and Restated Bylaws*.

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d) New Brunswick

On October 1, 2013, the Electricity Act (NB) and implementing regulations (together, “NB Electricity Act”) amended how Reliability Standards are approved, monitored, and enforced in the province of New Brunswick. The NB Electricity Act designates NPCC as a compliance body and NERC as a standards body within the meaning of the NB Electricity Act. The New Brunswick Energy and Utilities Board (NBEUB) is an independent, quasi-judicial board that is responsible for regulating New Brunswick’s electricity sector under the NB Electricity Act. The NBEUB has the responsibility to adopt and enforce reliability standards in New Brunswick.

As contemplated in the NB Electricity Act, NPCC and the NBEUB entered into a Service Contract dated August 10, 2016, whereby NPCC provides CMEP and other services for the NBEUB. Additionally, the NBEUB, NPCC, and NERC entered into a Memorandum of Understanding on August 10, 2016, which describes the roles and responsibilities of the three entities and facilitates data sharing. These two documents, along with the NB Electricity Act are the governing documents with respect to conducting CMEP and other reliability related activities in New Brunswick.

With respect to the approval of reliability standards, the NB Electricity Act provides that all of the NERC Reliability Standards that were effective in New Brunswick prior to October 1, 2013 continue to be effective in New Brunswick after October 1, 2013. Additionally, the NB Power is required to file for approval, modification, or retirement of NERC Reliability Standards 60 days after a NERC Reliability Standard is approved, modified, or retired by the FERC. The NBEUB rules on the filed Reliability Standard after considering (a) the potential impact on the reliability of the bulk power system, (b) the potential cost and benefits (c) the public interest, and (d) any other factors that the NBUEB considers relevant. The Electricity Act requires the NBEUB to notify NPCC and NERC of an application by NB Power with respect to reliability standards and provide for a 60 day comment period. The NBEUB is required to approve the reliability standards if there are not substantive modifications proposed from the FERC approved NERC Reliability Standard and there were no substantive comments filed. Amendments to the reliability standard to make them compatible with New Brunswick or Canadian law are considered non-substantive. The approval of reliability standards may be subject to a hearing for several reasons, including substantive comments from NPCC or NERC.

With respect to the monitoring and enforcement of the Reliability Standards in New Brunswick, the NB Electricity Act provides for NPCC to identify entities that must register with the NBEUB in the New Brunswick specific registry. Additionally, NPCC may carry out the compliance monitoring and assessment for the NBEUB and assist and advise the enforcement for the NBEUB, including financial penalties. NPCC is also permitted to carry out or exercise any power in the implementing regulations that is specific to the NBEUB, as provided for in the Service Contract. Additionally, NPCC has the powers of an inspector, which permits NPCC to audit and spot check entities within New Brunswick.

e) Nova Scotia

Nova Scotia Power Incorporated (NSPI), NPCC and NERC are parties to a May 11, 2010 Memorandum of Understanding regarding the approval and implementation of mandatory NERC reliability standards and NPCC Regional reliability criteria. Pursuant to the MOU’s terms, NERC and NPCC filed standards and criteria with the Nova Scotia Utility and Review Board (NSUARB) for approval on June 30, 2010 and June 29, 2010, respectively. A decision from the NSUARB on both NERC and NPCC filings was rendered on July 20, 2011. Hence, the

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standards and criteria are mandatory in Nova Scotia and NSPI will be subject to the NERC compliance monitoring and enforcement program, as implemented by NPCC.

NPCC will conduct compliance and enforcement activities with respect to the standards and forward any non-compliance information and recommendations to the NSUARB. The NSUARB maintains the final authority with respect to enforcement in Nova Scotia and based on the recommendations from NPCC, may determine whether a violation has occurred and, if so, what remedial measures or non-monetary penalties should be imposed.

## **2019 Key Goals and Key Deliverables**

NERC and the Regional Entities collaborated in the development of a common operating model with complementary roles and responsibilities, an ERO Enterprise Long-term Strategy and an ERO Enterprise Operating Plan. Links to these documents, which incorporated risks identified by the Reliability Issues Steering Committee, are included in the NERC 2019 Business Plan and Budget and may be referenced by the users of this document. NPCC activities that support ERO Enterprise Goals are detailed in each of the following program area sections.

## **Regional Entity Division Functional Scope**

NPCC's Regional Entity division functions in support of the ERO include:

- Active participation in the development of North American Reliability Standards for the bulk electric system, and as needed development of Reliability Standards applicable within the NPCC cross-border Regional Entity.
- Monitoring and enforcement of approved Reliability Standards, including the registration of responsible entities, and as needed certification of such entities.
- Assessment of the present and future reliability of the bulk power system.
- Operational coordination and situation awareness support.
- Event analysis and identifying lessons learned to improve reliability.
- Effective training and education of reliability personnel.
- Promoting the protection of critical electric infrastructure.

In recognition of the delegated compliance role of Regional Entities as an important means to enhancing reliability, NPCC has designated a significant percentage of its staff resources to compliance monitoring and enforcement. NPCC has also developed and deployed a robust set of online tools for gathering data, analysis, and tracking of compliance information to support its ability to carry out its responsibilities in a cost effective manner.

NPCC has organized the remaining staff into program areas consistent with EPOA 2005 to address the other functions listed above. These experts in operations, planning and reliability analysis assist registered entities in assessing and improving reliability. It is in support of these areas that NPCC engages the majority of industry experts on its technical committees.

## **2019 Overview of Regional Entity Division Cost Impacts**

The proposed Regional Entity division assessment of \$15,003,411, to support the Regional Entity division budget of \$15,803,891, is an increase of 4.6% compared to the 2018 assessment of \$14,341,787.

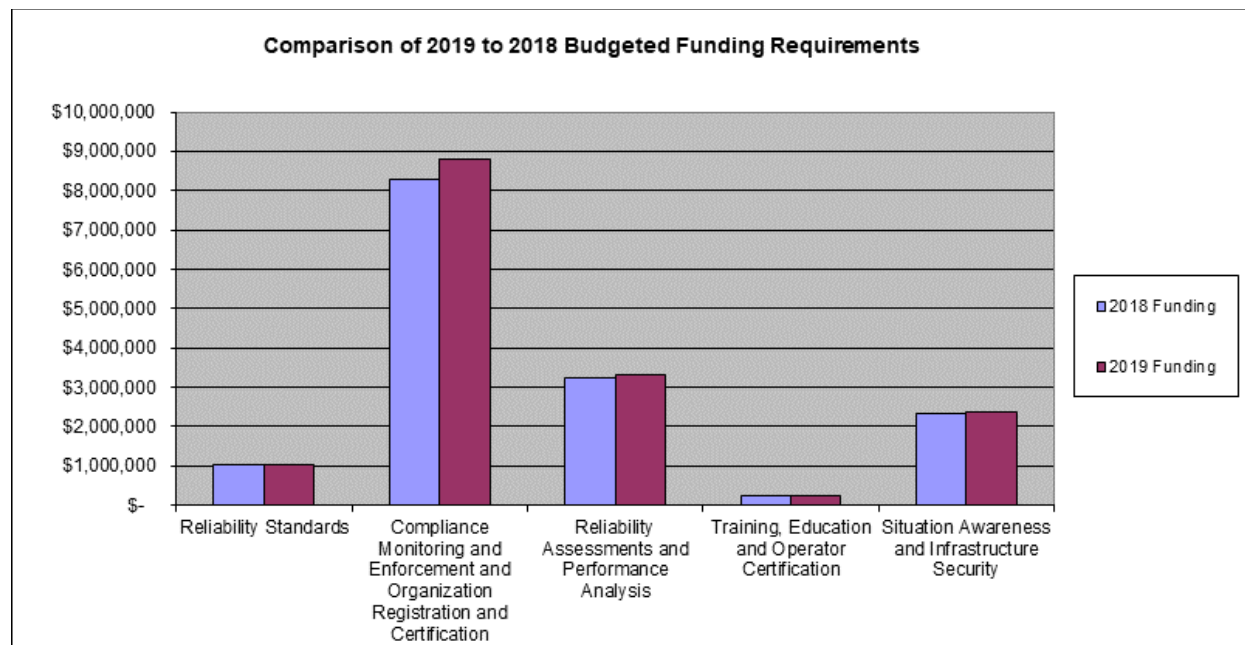
## **2018 Projections**

Current year projections are taken into consideration in development of the budget. Expenses are currently projected to be on budget in all areas or slightly under budget. 2018 Projections reflect expectations based on the first quarter variance report. It is anticipated that projections could change throughout 2018 and would be reflected in each subsequent quarter's variance report.

### Summary by Program

Program	Budget 2018	Projection 2018	Budget 2019	Variance	
				2019 Budget v 2018 Budget	Variance %
Reliability Standards	\$ 1,010,246	\$ 1,010,246	\$ 1,035,390	\$ 25,144	2.5%
Compliance Monitoring and Enforcement and Organization Registration and Certification	\$ 8,293,748	\$ 8,110,648	\$ 8,816,687	\$ 522,939	6.3%
Reliability Assessments and Performance Analysis	\$ 3,240,721	\$ 3,390,721	\$ 3,332,686	\$ 91,966	2.8%
Training, Education and Operator Certification	\$ 249,051	\$ 249,051	\$ 252,443	\$ 3,392	1.4%
Situation Awareness and Infrastructure Security	\$ 2,313,202	\$ 2,313,202	\$ 2,366,685	\$ 53,483	2.3%
<b>Total</b>	<b>\$ 15,106,967</b>	<b>\$ 15,073,867</b>	<b>\$ 15,803,891</b>	<b>\$ 696,924</b>	<b>4.6%</b>

This chart does not include allocation of working capital requirements among the Program Areas.



This chart does not include allocation of working capital requirements among the Program Areas.

## Personnel Analysis

Total FTEs by Program Area	Budget 2018	Projection 2018	Direct FTEs 2019 Budget	Shared FTEs <sup>1</sup> 2019 Budget	Total FTEs 2019 Budget	Change from 2018 Budget
<b>REGIONAL ENTITY DIVISION</b>						
<b>Operational Programs</b>						
Reliability Standards	1.93	1.93	1.00	0.93	1.93	0.00
Compliance Monitoring and Enforcement and Organization Registration and Certification	16.00	16.50	17.00	0.00	17.00	1.00
Training, Education, and Operator Certification	0.10	0.10	0.10	0.00	0.10	0.00
Reliability Assessment and Performance Analysis	5.83	5.33	4.90	0.93	5.83	0.00
Situation Awareness and Infrastructure Security	5.00	5.00	5.00	0.00	5.00	0.00
<b>Total FTEs Operational Programs</b>	<b>28.86</b>	<b>28.86</b>	<b>28.00</b>	<b>1.86</b>	<b>29.86</b>	<b>1.00</b>
<b>Administrative Programs</b>						
Technical Committees and Member Forums	0.50	0.50	0.50	0.00	0.50	0.00
General and Administrative	2.50	2.50	2.50	0.00	2.50	0.00
Information Technology	2.00	2.00	2.00	0.00	2.00	0.00
Legal and Regulatory	1.00	1.00	1.00	0.00	1.00	0.00
Human Resources	1.00	1.00	1.00	0.00	1.00	0.00
Accounting and Finance	1.00	1.00	2.00	0.00	2.00	1.00
<b>Total FTEs Administrative Programs</b>	<b>8.00</b>	<b>8.00</b>	<b>9.00</b>	<b>0.00</b>	<b>9.00</b>	<b>1.00</b>
<b>Total FTEs</b>	<b>36.86</b>	<b>36.86</b>	<b>37.00</b>	<b>1.86</b>	<b>38.86</b>	<b>2.00</b>

<sup>1</sup>A shared FTE is defined as an employee who performs both Regional Entity and Criteria Services division functions.



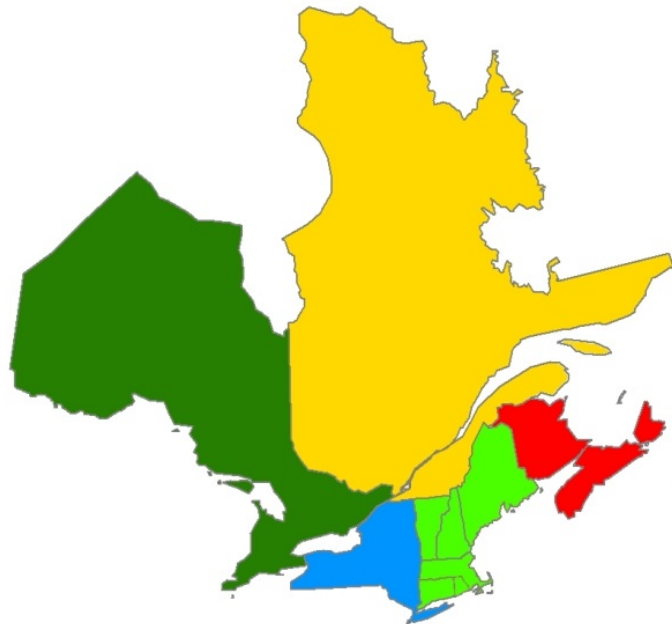
## 2018 Budget and Projection and 2019 Budget Comparisons

<b>Statement of Activities and Capital Expenditures 2018 Budget &amp; Projection, and 2019 Budget</b>						
<b>REGIONAL ENTITY DIVISION</b>						
				Variance <sup>(2)</sup> 2018 Projection v 2018 Budget Over(Under)		Variance 2019 Budget v 2018 Budget Over(Under)
	2018 Budget	2018 Projection			2019 Budget	
<b>Funding</b>						
<b>ERO Funding</b>						
ERO Assessments	\$ 14,341,787	\$ 14,341,787	\$ -		\$ 15,003,411	\$ 661,624
Penalty Sanctions <sup>(1)</sup>	75,000	75,000	-		-	(75,000)
<b>Total ERO Funding</b>	<b>\$ 14,416,787</b>	<b>\$ 14,416,787</b>	<b>\$ -</b>		<b>\$ 15,003,411</b>	<b>\$ 586,624</b>
Membership Dues	-	-	-		-	-
Testing Fees	-	-	-		-	-
Services & Software	-	-	-		-	-
Workshops	64,000	64,000	-		67,500	3,500
Interest	-	-	-		-	-
Miscellaneous	-	-	-		-	-
<b>Total Funding (A)</b>	<b>\$ 14,480,787</b>	<b>\$ 14,480,787</b>	<b>\$ -</b>		<b>\$ 15,070,911</b>	<b>\$ 590,124</b>
<b>Expenses</b>						
<b>Personnel Expenses</b>						
Salaries	\$ 7,107,599	\$ 6,937,599	\$ (170,000)		\$ 7,332,280	\$ 224,681
Payroll Taxes	411,440	406,440	(5,000)		449,994	38,553
Benefits	1,476,378	1,472,378	(4,000)		1,613,078	136,700
Retirement Costs	825,353	792,353	(33,000)		853,511	28,157
<b>Total Personnel Expenses</b>	<b>\$ 9,820,770</b>	<b>\$ 9,608,770</b>	<b>\$ (212,000)</b>		<b>\$ 10,248,862</b>	<b>\$ 428,092</b>
<b>Meeting Expenses</b>						
Meetings	\$ 353,050	\$ 353,050	\$ -		\$ 370,750	\$ 17,700
Travel	834,500	834,500	-		845,900	11,400
Conference Calls	37,000	37,000	-		36,000	(1,000)
<b>Total Meeting Expenses</b>	<b>\$ 1,224,550</b>	<b>\$ 1,224,550</b>	<b>\$ -</b>		<b>\$ 1,252,650</b>	<b>\$ 28,100</b>
<b>Operating Expenses</b>						
Consultants & Contracts	\$ 1,877,640	\$ 2,027,640	\$ 150,000		\$ 2,022,150	\$ 144,510
Office Rent	810,700	810,700	-		820,700	10,000
Office Costs	664,760	664,760	-		676,347	11,587
Professional Services	960,000	960,000	-		978,000	18,000
Computer & Equipment Leases	-	-	-		-	-
Miscellaneous	50,000	50,000	-		51,000	1,000
Depreciation	269,000	269,000	-		255,000	(14,000)
<b>Total Operating Expenses</b>	<b>\$ 4,632,100</b>	<b>\$ 4,782,100</b>	<b>\$ 150,000</b>		<b>\$ 4,803,197</b>	<b>\$ 171,097</b>
<b>Total Direct Expenses</b>	<b>\$ 15,677,420</b>	<b>\$ 15,615,420</b>	<b>\$ (62,000)</b>		<b>\$ 16,304,709</b>	<b>\$ 627,289</b>
<b>Indirect Expenses</b>	<b>\$ (416,453)</b>	<b>\$ (416,453)</b>	<b>\$ -</b>		<b>\$ (415,818)</b>	<b>\$ 635</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>		<b>\$ -</b>	<b>\$ -</b>
<b>Total Expenses (B)</b>	<b>\$ 15,260,967</b>	<b>\$ 15,198,967</b>	<b>\$ (62,000)</b>		<b>\$ 15,888,891</b>	<b>\$ 627,924</b>
<b>Change in Assets</b>	<b>\$ (780,180)</b>	<b>\$ (718,180)</b>	<b>\$ 62,000</b>		<b>\$ (817,980)</b>	<b>\$ (37,800)</b>
<b>Fixed Assets</b>						
Depreciation	\$ (269,000)	\$ (269,000)	\$ -		\$ (255,000)	\$ 14,000
Computer & Software CapEx	115,000	115,000	-		170,000	55,000
Furniture & Fixtures CapEx	-	-	-		-	-
Equipment CapEx	-	-	-		-	-
Leasehold Improvements	-	-	-		-	-
Allocation of Fixed Assets	0	0	-		-	-
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>(154,000)</b>	<b>(154,000)</b>	<b>-</b>		<b>(85,000)</b>	<b>69,000</b>
<b>TOTAL BUDGET (=B+C)</b>	<b>\$ 15,106,967</b>	<b>\$ 15,044,967</b>	<b>\$ (62,000)</b>		<b>\$ 15,803,891</b>	<b>\$ 696,924</b>
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ (626,180)</b>	<b>\$ (564,180)</b>	<b>\$ 62,000</b>		<b>\$ (732,980)</b>	<b>\$ (106,800)</b>
<sup>(1)</sup>	\$0 of penalty sanctions collected to date and prior to June 30, 2018.					
<sup>(2)</sup>	2018 Projections reflect expectations based on the 1st quarter statement of activities. It is anticipated that projections could change throughout 2018 and would be reflected in each subsequent quarter's statement of activities.					

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## Section A – Regional Entity Division 2019 Business Plan and Budget

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## Section A — 2019 Regional Entity Division Business Plan and Budget

### Reliability Standards Program

<b>Reliability Standards Program Resources</b>			
(in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	1.93	1.93	0.00
Direct Expenses	\$647,633	\$665,870	\$18,237
Indirect Expenses	\$375,586	\$375,014	(\$572)
Other Non-Operating Expenses	\$0	\$0	\$0
Inc(Dec) in Fixed Assets	(\$12,974)	(\$5,494)	\$7,480
Total Funding Requirement	\$1,010,246	\$1,035,390	\$25,144

#### Program Scope and Functional Description

The NPCC Reliability Standards Program Area operates in accordance with NPCC’s filed and approved Regional Delegation Agreement and NERC Rules of Procedure Section 300. The program supports the ERO Standards Program Area roles and responsibilities, the ERO Enterprise Operating Plan and the ERO Enterprise Long-Term Strategy. NPCC’s Reliability Standards Program Area provides an efficient and effective mechanism for stakeholders to provide input and facilitate the development of, and improvement to, NERC and Regional reliability standards which are clear, responsive to reliability and security risks, practical to implement, “results based”, and are cost effective. The primary objectives of NPCC’s Reliability Standards Program Area is to support the development of ERO standards and Regional variances which establish “results-based” requirements for addressing reliability risks with due consideration given to cost. NPCC supports the ERO efforts to develop reliability standards in a timely and efficient manner and which are responsive to FERC Directives and industry risk. NERC and Regional reliability standards must ensure the bulk electric system is planned, operated, and maintained in a manner that minimizes risks of cascading failures, system separation, and instability, and also avoids damage to major equipment, is responsive to risks, or limits interruptions of bulk power supply.

At the Regional level, the standards program area develops, and maintains NPCC Regional Reliability Standards, and ERO Standards Variances for the northeast as required. In addition, the NPCC Reliability Standards Program Area provides oversight to ensure that NPCC Regional Reliability Criteria contained in the form of Directories, are developed and maintained as necessary to implement, to augment, or to facilitate compliance with NERC Reliability Standards. NPCC’s reliability criteria are not reliability standards but are mandatory and subject to enforcement as outlined in NPCC Member agreements and various tariffs, and interconnection agreements, and other executed contractual agreements. Regional Reliability Criteria may also address issues not within NERC’s statutory jurisdiction for Reliability Standards, such as resource adequacy, and conform to requirements in Section 313 of the NERC Rules of Procedure.

#### 2019 Key Assumptions

- The number of continent-wide Reliability Standards development projects is expected to remain relatively stable, except as required to address any new FERC directives to create or modify Reliability Standards, or industry submittals of standard authorization requests.

- Continent-wide Reliability Standards projects will consist primarily of acting on recommendation of the Standards Efficiency Review project, conducting periodic reviews on existing Reliability Standards to improve their content and quality, responding to identified risks to reliability (including those that may be identified through the implementation of risk-based Compliance Monitoring and Enforcement), and addressing FERC directives that may arise. This activity will require the allocation of technical resources from several internal NERC departments (e.g., Reliability Assessment and Performance Analysis (RAPA), Reliability Risk Management, Compliance Analysis and Certification, and Compliance Assurance) and support from across the ERO Enterprise.
- During the periodic review of Reliability Standards, any associated Regional Reliability Standards will be reviewed for potential incorporation as variances or as improvements to the continent-wide requirements. Regional and NERC Reliability Standards development processes may require modification to efficiently accomplish this task. NPCC will work with NERC and other Regional Entities as necessary on projects where there is a Regional Reliability Standard/variance.
- NPCC’s Regional Reliability Standards development activity is expected to remain at a stable level, driven by requests that the Regional Entity may receive or reliability issues that are identified. Creation of variances to NERC standards to address reliability concerns or to recognize the unique topology and reliability considerations of the Northeast (i.e. Québec’s recognition of an asynchronous interconnection within NPCC’s footprint).
- The number of NERC and Regional standards interpretations is expected to remain low. However, implementation guidance requests may increase. The NPCC Reliability Standards program area will assist and facilitate support of these activities.
- Consistent with the NERC Rules of Procedure Sections 312 and 313, as continent wide standards continue to evolve, NPCC Regional Standards and Criteria will need to be continually reviewed to ensure they augment but do not add redundancy to the ERO standards.

### 2019 Goals and Key Deliverables

- Participate in the annual development and revision of the NERC’s three year Reliability Standards Development Plan (RSDP) through review, commenting, and other RSC activities.
- Participate in the NERC Standards Committee, as a representative of the NERC Regional Entities and NPCC Regional stakeholders to advance strategic initiatives, to measure the effectiveness and quality of standards, support ERO efforts to address outstanding FERC Directives, and provide input in the prioritization of standards development projects.
- Support further development of cost effectiveness principles using the “Cost of Risk Reduction Analysis” (CRRA) process and pilots. Continue to provide insights to NERC, based on NPCC experiences, regarding strategy for developing cost effectiveness analysis for standards and identify opportunities to identify cost of risk mitigation for the draft standards.
- Participate in the NERC Standards Efficiency Review Project phases and resulting activities.
- Participate in the development of ERO Reliability Standards specified in NERC’s three-year Reliability Standards Development Plan with the emphasis placed on reducing the amount of new FERC Directives issues by closer coordination with the Commission staff.

- Conduct thorough reviews of all NERC standards under development or revision by leveraging existing NPCC Task Forces and subject matter experts and coordinate NPCC comments for Northeastern North America.
- Participate in the Enhanced Periodic Review Standing Team’s grading efforts and coordinate and represent the Regional and interregional input.
- Assist NERC’s review of all industry “Requests for Interpretations” of standards.
- NPCC staff and Regional drafting team volunteers will participate in the drafting of ERO standards and provide support for development of improvements to standards.
- NPCC and its members will review and coordinate comments on FERC staff informal assessments of the ERO Enterprise as appropriate.
- Participate in pre-ballot reviews of ERO standards and coordinate the development of consensus recommendations of the NPCC Members to the NERC Standards Drafting Team (SDT) and provide a list of any unaddressed issues to allow the Members to cast a ballot based on regional concerns to enhance the efficiency of the ERO standards development projects.
- Review and identify issues and concerns raised in FERC NOPRs and NOIs for any and all standards related issues as appropriate.
- Educate and notify stakeholders and regulators about issues related to standards development through various means such as webinars and workshops.
- Provide outreach to industry trade groups such as the North American Generator Forum and North American Transmission Forum when requested.
- Monitor the NERC RISC activities and provide a Regional point of contact for all potential reliability related risks and gaps within the Northeast or as noted by NPCC’s stakeholders.
- Participate in and provide support to critical standards projects, such as CIP Supply Chain, Facility Ratings (IROL and SOL development), Geomagnetic Disturbances, etc.
- Identify opportunities and initiate Regional Variances to the NERC Reliability Standards as soon as possible, allowing incorporation into the continent wide standard during the development process.
- Conduct reviews of Regional Standards as necessitated by the revision and approval of any associated Continent-wide NERC reliability standards or further reliability related need.
- Conduct the development of any Québec Interconnection Wide variances to NERC continent-wide standards using the NPCC Reliability Standards Development Process.
- Identify impacts to the BES as a result of Distributed Energy Resources (DER) penetration.
- Identify opportunities to improve resilience of the BES.
- Identify and coordinate reliability issues with local governmental authorities where jurisdictional issues may exist.
- Ensure the topics addressed by the Reliability Standards align with changing industry and reliability objectives.
- Participate in reliability metrics developmental activities to identify potential measures for benchmarking of reliability and standards to determine if an adequate level of reliability is being achieved through the Enhanced Periodic Review Standing Review Team activities.
- Identify opportunities and processes for cost-effectiveness CRRA analysis activities to determine the need to revise a standard during the PR process.

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- Identify any emerging interconnection-wide reliability issues which may need standards solutions and forward to the NERC Reliability Issues Steering Committee for their consideration.
  - Identify opportunities to increase reliability or mitigate emerging risk through the revision of standards and their associated requirements.
  - Identify any North American Electric Standards Review Board (NAESB) activities which may impact ERO standards.
  - Identify potential market related issues for Regional Standards through NPCC RSC coordination and reviews.

Based on the portion of professional/technical staff time and other resources devoted to Reliability Standards development, NPCC estimates that it will expend approximately 7% of its resources on this activity.

### **Resource Requirements**

- No significant changes.

## Reliability Standards Program

Funding sources and related expenses for the Reliability Standards section of the 2019 business plan are shown in the table below. Explanations of variances by expense category are included with the Supplemental Tables found in Section B.

Statement of Activities and Capital Expenditures 2018 Budget & Projection, and 2019 Budget						
Reliability Standards						
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)	
<b>Funding</b>						
<b>ERO Funding</b>						
ERO Assessments	\$ 1,005,230	\$ 1,005,230	\$ -	\$ 1,035,390	\$ 30,160	
Penalty Sanctions	5,016	5,016	-	-	(5,016)	
<b>Total ERO Funding</b>	<b>\$ 1,010,246</b>	<b>\$ 1,010,246</b>	<b>\$ -</b>	<b>\$ 1,035,390</b>	<b>\$ 25,144</b>	
Membership Dues	-	-	-	-	-	
Testing Fees	-	-	-	-	-	
Services & Software	-	-	-	-	-	
Workshops	-	-	-	-	-	
Interest	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
<b>Total Funding (A)</b>	<b>\$ 1,010,246</b>	<b>\$ 1,010,246</b>	<b>\$ -</b>	<b>\$ 1,035,390</b>	<b>\$ 25,144</b>	
<b>Expenses</b>						
<b>Personnel Expenses</b>						
Salaries	\$ 377,093	\$ 377,093	\$ -	\$ 382,872	\$ 5,779	
Payroll Taxes	21,390	21,390	-	22,735	1,346	
Benefits	98,851	98,851	-	106,764	7,912	
Retirement Costs	40,299	40,299	-	41,599	1,300	
<b>Total Personnel Expenses</b>	<b>\$ 537,633</b>	<b>\$ 537,633</b>	<b>\$ -</b>	<b>\$ 553,970</b>	<b>\$ 16,337</b>	
<b>Meeting Expenses</b>						
Meetings	\$ 7,000	\$ 7,000	\$ -	\$ 7,000	\$ -	
Travel	93,000	93,000	-	94,900	1,900	
Conference Calls	-	-	-	-	-	
<b>Total Meeting Expenses</b>	<b>\$ 100,000</b>	<b>\$ 100,000</b>	<b>\$ -</b>	<b>\$ 101,900</b>	<b>\$ 1,900</b>	
<b>Operating Expenses</b>						
Consultants & Contracts	\$ 10,000	\$ 10,000	\$ -	\$ 10,000	\$ -	
Office Rent	-	-	-	-	-	
Office Costs	-	-	-	-	-	
Professional Services	-	-	-	-	-	
Computer & Equipment Leases	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
Depreciation	-	-	-	-	-	
<b>Total Operating Expenses</b>	<b>\$ 10,000</b>	<b>\$ 10,000</b>	<b>\$ -</b>	<b>\$ 10,000</b>	<b>\$ -</b>	
<b>Total Direct Expenses</b>	<b>\$ 647,633</b>	<b>\$ 647,633</b>	<b>\$ -</b>	<b>\$ 665,870</b>	<b>\$ 18,237</b>	
<b>Indirect Expenses</b>	<b>\$ 375,586</b>	<b>\$ 375,586</b>	<b>\$ -</b>	<b>\$ 375,014</b>	<b>\$ (572)</b>	
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Total Expenses (B)</b>	<b>\$ 1,023,220</b>	<b>\$ 1,023,220</b>	<b>\$ -</b>	<b>\$ 1,040,884</b>	<b>\$ 17,664</b>	
<b>Change in Assets</b>	<b>\$ (12,974)</b>	<b>\$ (12,974)</b>	<b>\$ -</b>	<b>\$ (5,494)</b>	<b>\$ 7,480</b>	
<b>Fixed Assets</b>						
Depreciation	\$ -	-	\$ -	-	\$ -	
Computer & Software CapEx	-	-	-	-	-	
Furniture & Fixtures CapEx	-	-	-	-	-	
Equipment CapEx	-	-	-	-	-	
Leasehold Improvements	-	-	-	-	-	
Allocation of Fixed Assets	(12,974)	(12,974)	-	(5,494)	7,480	
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>(12,974)</b>	<b>(12,974)</b>	<b>-</b>	<b>(5,494)</b>	<b>7,480</b>	
<b>TOTAL BUDGET (=B+C)</b>	<b>\$ 1,010,246</b>	<b>\$ 1,010,246</b>	<b>\$ -</b>	<b>\$ 1,035,390</b>	<b>\$ 25,144</b>	
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ (0)</b>	<b>\$ (0)</b>	<b>\$ -</b>	<b>\$ (0)</b>	<b>\$ 0</b>	

## Compliance Monitoring and Enforcement and Organization Registration and Certification Program

<b>Compliance Monitoring and Enforcement and Organization Registration and Certification Program Resources</b>			
(in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	16.00	17.00	1.00
Direct Expenses	\$5,247,634	\$5,561,849	\$314,216
Indirect Expenses	\$3,113,668	\$3,303,230	\$189,562
Other Non-Operating Expenses	\$0	\$0	\$0
Inc(Dec) in Fixed Assets	(\$67,554)	(\$48,392)	\$19,161
Total Funding Requirement	\$8,293,748	\$8,816,687	\$522,939

### Program Scope and Functional Description

The Compliance Monitoring and Enforcement and Organization Registration and Certification Program (CORC) Program scope covers:

- 1) the identification, registration and certification of those entities responsible for meeting the NERC Reliability Standards and any approved Regional Standards;
- 2) the implementation of the risk-based NERC Compliance Monitoring and Enforcement Program (CMEP) in the United States, including the compliance monitoring, assessment and enforcement of NERC Reliability Standards and Regional Reliability Standards;
- 3) in accordance with the relevant memorandums of understanding (MOU's), the implementation of the risk-based NERC CMEP in Ontario and Nova Scotia, including the assessment and enforcement of NERC Reliability Standards and Regional Reliability Standards effective in those jurisdictions,
- 4) the implementation of the Québec Reliability Standards Compliance Monitoring and Enforcement Program (QCMEP), including the compliance monitoring, assessment and enforcement of NERC Reliability Standards and Regional Reliability Standards effective in Quebec, and
- 5) the implementation of the New Brunswick Compliance Monitoring and Enforcement Program (NBCMEP) in New Brunswick, including the compliance monitoring, assessment and enforcement recommendations of the NERC Reliability Standards and Regional Reliability Standards effective in New Brunswick.

Through the CORC Program, NPCC strives to be a strong enforcement authority that is objective, fair, and promotes a culture of reliability excellence through risk-informed compliance monitoring, mitigation, enforcement, and registration. To accomplish this goal, NPCC's compliance staff is divided into four sub-program areas: Compliance Implementation, Registration, and Certification; Compliance Entity Risk Assessment; Compliance Monitoring; and Compliance Enforcement.

#### ***Compliance Implementation, Registration and Certification***

The Compliance Implementation and Registration sub-program area is responsible for registration and certification activities and for general compliance activities that span across the



other three sub-program areas. The Compliance Implementation and Registration sub-program area:

- Identifies and registers the BES owners, operators, and users that are required to comply with the NERC and Regional Reliability Standards,
- Conducts Certifications in accordance with the NERC ROP,
- Leads the development of the annual implementation plans (ERO Enterprise, NPCC, Quebec, New Brunswick),
- Responds to any Complaints submitted to NPCC,
- Maintains NPCC's compliance portal and compliance tracking system, and;
- Conducts outreach, training, and education as necessary to support the implementation of Reliability Standards.

### ***Compliance Entity Risk Assessment***

The Compliance Entity Risk Assessment sub-program area is responsible for assessing the inherent risk and internal controls of registered entities. The Compliance Entity Risk Assessment sub-program area:

- Conducts Inherent Risk Assessments (IRA) on registered entities,
- Conducts Internal Controls Evaluations (ICE) on volunteering registered entities,
- Assists with the development of the annual implementation plans, and;
- Provides the basis for each registered entity's Compliance Oversight Plan.

### ***Compliance Monitoring***

The Compliance Monitoring sub-program area is responsible for conducting all compliance monitoring activities. The Compliance Monitoring sub-program area is focused on the most significant risks to the BES. The Compliance Monitoring sub-program area:

- Conducts NPCC compliance monitoring activities, including audits, spot checks, and guided self-certifications,
- Incorporates the results of the IRA and ICE into its compliance monitoring process,
- Issues reports, including audit reports, spot check reports, guided self-certification reports, and;
- Implements and maintains the Critical Infrastructure Protection (CIP) Standards Technical Feasibility Exceptions process.

### ***Compliance Enforcement***

The Enforcement sub-program area is responsible for undertaking enforcement activities in accordance with risk-based approaches and conducting technical assessments of registered entities' plans and activities to mitigate noncompliance. Depending on the jurisdiction, enforcement either makes official recommendations to the appropriate regulatory authority or assists and coordinates with NERC to make such official recommendations. The Enforcement sub-program area:

- Determines the relevant facts and circumstances necessary to understand each non-compliance,
- Evaluates and assigns a risk level to each non-compliance,
- Evaluates and approves the mitigation activities or Mitigation Plan for each non-compliance,
- Assesses the relevant compliance history for each non-compliance,
- Determines the disposition method for each non-compliance, and
- Evaluates registered entities for the self-logging program.

## 2019 Key Assumptions and Cost Impacts

2018	Projected 2019
4 On-Site Audits	7 On-Site O&P Audits
10 On-Site CIP Audits	10 On-Site CIP Audits
30 Off-Site Audits	30 Off-Site O&P Audits
15 Off-Site CIP Audits	15 Off-Site CIP Audits
15 Spot Checks	10 Spot Checks
25 Guided self-certifications	25 Guided self-certifications
50 Inherent Risk Assessments	50 Inherent Risk Assessments
4 On-site O&P Internal Control Evaluations	7 On-site O&P Internal Control Evaluations
5 On-site CIP Internal Control Evaluations	10 On-Site CIP Internal Control Evaluations
120 Violations (Estimated)	225 Violations (Estimated)
Settlements Covering 50 Violations	Settlements Covering 80 Violations
2 Hearings (Unbudgeted)	2 Hearings (Unbudgeted)
1 CI (Estimated)	1 CI (Estimated)
2 Entity Certifications	2 Entity Certifications

- Audit costs will increase slightly in 2019 from 2018. NPCC predicts three additional on-site audits for 2019.
- Potential increases in 2019 due to the continuation of monitoring and enforcement activities related to implementing the QCMEP in Québec and the NB CMEP in New Brunswick.
- The 2019 Business Plan projects increases in Enforcement Processing activities over the 2018 Budget. It is expected that the increase in violation processing will continue in 2019. For the first time, in late 2018, low impact cyber systems will be in scope for compliance in most jurisdictions and the medium and high impact cyber systems will be in scope for compliance in Quebec.
- The 2019 Business Plan projects the need for one Compliance Investigation. These Compliance Investigations are manpower intensive for NPCC staff (requiring allocation of more resources and potentially higher than normal costs).

## 2019 Goals and Key Deliverables

- Conduct scheduled compliance monitoring and enforcement activities pursuant to the 2019 Implementation Plans.
- Continue applying risk-based approaches for CMEP, registration, and certification activities.
- Identify potential issues related to NERC Reliability Standards as a result of compliance monitoring, enforcement and event analysis activities.
- Implement compliance responsibilities in Canada based on the regulatory structure specific to each jurisdiction.
- Evaluate monitoring, violation processing, risk-assessment, registration and certification program for sufficiency and effectiveness. Modify as needed.
- Collaborate with the ERO Enterprise to develop common and consistent CMEP processes, information systems, and methods among Regions.

- Provide education and outreach to the registered entities on all CMEP, registration, and certification topics, including the development and implementation of the ERO Enterprise Registration and CMEP software reporting systems and tools.
- Conduct two in-person Compliance Workshops.
- Develop annual reports for QCMEP/CMEP activity in Québec and New Brunswick.
- Develop and/or provide input on 2020 CMEP Implementation Plans (ERO Enterprise, NPCC, Québec, New Brunswick).
- Attend training necessary and/or beneficial to performing Registration, Certification, Entity Risk Assessment, Monitoring, and Enforcement activities.
- Assure that NPCC staff is appropriately trained to conduct Certification and Auditing activities.
- Provide detailed responses to oversight activity performed by NERC, FERC, and other relevant authorities.
- Continue to perform and update IRAs for registered entities.
- Continue to perform an ICE for registered entities that volunteer for such an assessment.
- Conduct 2019 Compliance Engagement Schedule based on risk to the BES and number of registered entities and promote the ERO Risk-Based Approach initiatives by:
  - Utilizing the Audit Checklist and Auditor’s Handbook for all on-site and off-site audits.
  - Preparing an updated Inherent Risk Assessment as necessary for all scheduled engagements and performing an Internal Controls Evaluation for all entities that volunteer.
- Implement physical security outreach and cyber security outreach by visiting registered entity sites to perform an assessment of their physical security, evaluate their cyber security and supply recommendations for improvements.
- Continue to perform comprehensive enforcement investigations to determine the relevant facts and circumstances necessary to understand each non-compliance, assess the risk, and evaluate the mitigation activities or Mitigation Plan for each non-compliance. Determine the disposition method in accordance with established risk-based approaches (i.e. Compliance Exceptions, FFTs, Simplified Identification Correction Method (Québec), Settlements, etc.)
- Evaluate the mitigation activities or Mitigation Plan for each non-compliance, track the progress and verify the completion of each Mitigation Plan.
- As necessary, represent NPCC during any enforcement hearings before the NPCC Hearing Body, the NERC Hearing Body, the Régie, or the NBEUB.
- Evaluate registered entities for the self-logging program.
- Continue to promote practices to enhance the benefits of the self-reporting of violations by the registered entity. This could include the emphasis on the benefits of a registered entity improving its internal processes used for identifying and submitting self-reports, improvement in the way Regional Entities process self-reports, and the streamlining and standardizing of the amount and type of data needed to evaluate a self-report.

Based on the portion of professional/technical staff time and other resources devoted to Compliance monitoring and enforcement and organizational registration and certification, NPCC estimates that it will expend 53% of its resources on this activity.

**Resource Requirements****Personnel**

- One additional FTE to increase in-house expertise rather than utilizing an additional contractor. The increase in personnel expenses will be partially offset by a lesser increase in Consultants and Contracts than without this FTE addition.

**Consultants and Contracts**

- Increase in consultants and contracts associated with an ERO Enterprise-wide increase in audit activity.

**Fixed Assets**

- No new functionality is planned for the Compliance Issues Tracking System and CMEP Data Administration Application at this time.

## Compliance Monitoring and Enforcement and Organization Registration and Certification Program

Funding sources and related expenses for the compliance enforcement and organization registration and certification section of the 2019 business plan are shown in the table below. Explanations of variances by expense category are included with the Supplemental Tables found in Section B.

<b>Statement of Activities and Capital Expenditures</b>						
<b>2018 Budget &amp; Projection, and 2019 Budget</b>						
<b>Compliance Monitoring and Enforcement and Organization Registration and Certification</b>						
				Variance		Variance
	2018	2018	2018 Projection	2018 Projection	2019	2019 Budget
	Budget	Projection	Over(Under)	Over(Under)	Budget	v 2018 Budget
						Over(Under)
<b>Funding</b>						
<b>ERO Funding</b>						
ERO Assessments	\$ 7,692,569	\$ 7,692,569	\$ -	\$ 8,183,815	\$ 491,246	
Penalty Sanctions	41,580	41,580	-	-	(41,580)	
<b>Total ERO Funding</b>	<b>\$ 7,734,149</b>	<b>\$ 7,734,149</b>	<b>\$ -</b>	<b>\$ 8,183,815</b>	<b>\$ 449,666</b>	
Membership Dues	-	-	-	-	-	
Testing Fees	-	-	-	-	-	
Services & Software	-	-	-	-	-	
Workshops	-	-	-	-	-	
Interest	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
<b>Total Funding (A)</b>	<b>\$ 7,734,149</b>	<b>\$ 7,734,149</b>	<b>\$ -</b>	<b>\$ 8,183,815</b>	<b>\$ 449,666</b>	
<b>Expenses</b>						
<b>Personnel Expenses</b>						
Salaries	\$ 2,716,635	\$ 2,565,935	\$ (150,700)	\$ 2,815,882	\$ 99,247	
Payroll Taxes	171,841	168,841	(3,000)	191,849	20,008	
Benefits	524,801	521,801	(3,000)	585,543	60,742	
Retirement Costs	282,356	255,956	(26,400)	301,025	18,669	
<b>Total Personnel Expenses</b>	<b>\$ 3,695,634</b>	<b>\$ 3,512,534</b>	<b>\$ (183,100)</b>	<b>\$ 3,894,299</b>	<b>\$ 198,666</b>	
<b>Meeting Expenses</b>						
Meetings	\$ 9,000	\$ 9,000	\$ -	\$ 15,000	\$ 6,000	
Travel	289,000	289,000	-	295,400	6,400	
Conference Calls	-	-	-	-	-	
<b>Total Meeting Expenses</b>	<b>\$ 298,000</b>	<b>\$ 298,000</b>	<b>\$ -</b>	<b>\$ 310,400</b>	<b>\$ 12,400</b>	
<b>Operating Expenses</b>						
Consultants & Contracts	\$ 1,254,000	\$ 1,254,000	\$ -	\$ 1,357,150	\$ 103,150	
Office Rent	-	-	-	-	-	
Office Costs	-	-	-	-	-	
Professional Services	-	-	-	-	-	
Computer & Equipment Leases	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
Depreciation	-	-	-	-	-	
<b>Total Operating Expenses</b>	<b>\$ 1,254,000</b>	<b>\$ 1,254,000</b>	<b>\$ -</b>	<b>\$ 1,357,150</b>	<b>\$ 103,150</b>	
<b>Total Direct Expenses</b>	<b>\$ 5,247,634</b>	<b>\$ 5,064,534</b>	<b>\$ (183,100)</b>	<b>\$ 5,561,849</b>	<b>\$ 314,216</b>	
<b>Indirect Expenses</b>	<b>\$ 3,113,668</b>	<b>\$ 3,113,668</b>	<b>\$ -</b>	<b>\$ 3,303,230</b>	<b>\$ 189,562</b>	
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Total Expenses (B)</b>	<b>\$ 8,361,302</b>	<b>\$ 8,178,202</b>	<b>\$ (183,100)</b>	<b>\$ 8,865,080</b>	<b>\$ 503,778</b>	
<b>Change in Assets</b>	<b>\$ (627,153)</b>	<b>\$ (444,053)</b>	<b>\$ 183,100</b>	<b>\$ (681,264)</b>	<b>\$ (54,112)</b>	
<b>Fixed Assets</b>						
Depreciation	\$ -	\$ -	\$ -	\$ -	\$ -	
Computer & Software CapEx	40,000	40,000	-	-	(40,000)	
Furniture & Fixtures CapEx	-	-	-	-	-	
Equipment CapEx	-	-	-	-	-	
Leasehold Improvements	-	-	-	-	-	
Allocation of Fixed Assets	(107,554)	(107,554)	-	(48,392)	59,161	
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>(67,554)</b>	<b>(67,554)</b>	<b>-</b>	<b>(48,392)</b>	<b>19,161</b>	
<b>TOTAL BUDGET (=B+C)</b>	<b>\$ 8,293,748</b>	<b>\$ 8,110,648</b>	<b>\$ (183,100)</b>	<b>\$ 8,816,687</b>	<b>\$ 522,939</b>	
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ (559,599)</b>	<b>\$ (376,499)</b>	<b>\$ 183,100</b>	<b>\$ (632,872)</b>	<b>\$ (73,273)</b>	

## Reliability Assessment and Performance Analysis Program

<b>Reliability Assessment and Performance Analysis Program Resources</b>			
(in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	5.83	5.83	0.00
Direct Expenses	\$2,145,368	\$2,216,468	\$71,101
Indirect Expenses	\$1,134,543	\$1,132,814	(\$1,729)
Other Non-Operating Expenses	\$0	\$0	\$0
Inc(Dec) in Fixed Assets	(\$39,190)	(\$16,596)	\$22,594
Total Funding Requirement	\$3,240,721	\$3,332,686	\$91,966

### Program Scope and Functional Description

NPCC, through its top technical committee, the Reliability Coordinating Committee (RCC), integrates the deliverables of its Task Forces' and Working Groups' Reliability Assessment and Performance Analysis (RAPA) related activities.

Seasonal assessments of the overall NPCC resource adequacy are performed and possible actions to mitigate any potential problems are identified. NPCC reviews operations and disturbances both internal and external to the Region in order to identify any lessons to be learned and recommends any necessary follow-up actions.

If appropriate, enhancements to Regional Standards or NPCC's more stringent, Regionally-specific reliability requirements are also recommended. NPCC promotes and conducts both inter-Area and inter-Regional studies to enhance reliability and operational effectiveness and provides a forum for the discussion and coordination of operating issues within the NPCC Region and with other Regions.

### 2019 Key Focus Areas

In collaboration with NERC, Key Focus Area activities for 2019 include:

- Integration of RAPA information systems for assessments and associated data requirements, including expanded and enhanced enterprise-wide data collection and analysis systems and capabilities for performance analyses, with a focus on independent and technically sound reliability assessments supporting delivery of high quality reports.
- Development of assessment and performance analysis techniques as well as resource capabilities and tools, including probabilistic and scenario evaluations, which address the impacts of new technologies, changing resource or demand resource composition, and environmental related regulations or legislation.
- Support ERO activities to identify key reliability risks and appropriate projects designed to enhance reliability and/or mitigate risks.
- Providing technical resources to support NERC special reliability assessments which focus on specific reliability risk areas in geographic areas with specific identified reliability concerns.
- Advancing analytical capabilities for identifying and determining reliability risks and conducting associated related reliability assessments.

### **Eastern Interconnection Reliability Assessment Group**

The primary function of the Eastern Interconnection Reliability Assessment Group (ERAG) is to support reliability of the bulk-power system in the Eastern Interconnection through periodic reviews of generation and transmission expansion. These assessments are conducted by the ERAG Committee. These assessment-related activities support ERO Goal 3: “*Reduction of Known Risks to Reliability*” and 4 “*Identification and Assessment of Emerging Reliability Risks*.”

NPCC RAPA staff participates with the ERAG Committee as one of the five Eastern Interconnection Regional Entities, and acts as the liaison between the ERAG MMWG and the NPCC SS-37 Working Group.

### **ERAG Committee Activities 2019 Goals and Deliverables**

- Oversee the steady state and dynamic simulation base case data compilation and development.
- Oversee the ERAG assessment plan and coordinate assessment efforts with NERC Assessment Program staff.
- Make appropriate revisions, as necessary, to the ERAG Strategic Direction (i.e. anticipated new developments in MMWG process and system assessments).
- Develop and approve the ERAG activity budgets.
- Continue discussions with Eastern Interconnection Planning Collaborative (EIPC) regarding proposed transition of the Eastern Interconnection steady state and dynamics base case development role as the MOD-032, Requirement R4 Designee.

### **Multi-Regional Modeling Working Group 2019 Goals and Deliverables**

- Facilitate the completion of the steady state and dynamic simulation base case data compilation and development for the 2019 series of cases.
- Check and confirm that the dynamic model data passes all applicable checks and acceptance criteria.
- Incorporate dispatch information into the future and seasonal ERAG MMWG base cases so that the dispatches are more closely aligned with economic dispatch practices.
- Continue to improve the representations of the governor-turbine plant control models.
- Apply MMWG base case non-disclosure agreement process so that MMWG cases continue to have sufficient protections in place for use and transmittal of confidential data and information.

### **ERAG System Assessments 2019 Goals and Deliverables**

- Conduct the 2019 ERAG Assessment and associated documentation.
- Coordinate Assessment efforts with the NERC Reliability Assessment and System Analysis (RASA) Program staff to incorporate any risk-based or other approaches to supplement NERC Assessments.

### **Bulk Electric System Notification and Exception (BESnet) application and Exception Request (ERs)**

NPCC supports maintenance of the BESnet application and the processing of the Regional BES Exception Requests (ERs), including periodic certifications that the basis for an Element being included or excluded in the BES through the Exception remains valid. At least one NPCC Exception Request will require recertification in 2019; analysis of an Exception Request from a New Brunswick entity is expected to continue into 2019.

### 2019 NERC Activities

NPCC will provide the Regional perspective with appropriate NPCC RAPA staff participation on selective NERC Planning and Operating Committees and key related NERC Subcommittees, Task Forces and Working Groups, including:

- Load Modeling Task Force;
- System Protection and Control Subcommittee;
- Demand Response Availability Data System Working Group;
- Generating Availability Data System Working Group;
- Transmission Availability Data System Working Group;
- Power Plant Model Verification Task Force;
- Reliability Assessment Subcommittee;
- Probabilistic Assessment Working Group;
- System Analysis and Modeling Subcommittee;
- Synchronized Measurement Subcommittee;
- Event Analysis Subcommittee;
- Performance Analysis Subcommittee; and,
- Misoperation Information Data Analysis System.

### ERO – Executive Management Group (EMG) 2019 Activities

Provide analytic support for the ERO-EMG:

- Operations Leadership Team;
- Bulk Electric System Exception Process Working Group;
- ERO-RAPA Group; and,
- Other activities as directed by the ERO-Executive Management Group.

### 2019 Goals and Key Deliverables

NPCC Task Force activities support ERO Goal No. 3 “Identification and Assessment of Significant Risks to Reliability” and ERO Goal No. 4 “Identification and Assessment of Emerging Risks to Reliability.”

### Task Force on Coordination of Planning

The primary mission of the NPCC Task Force on Coordination of Planning (TFCP) is to promote reliability through the coordination of NPCC Area and NERC planning processes and activities.

### TFCP Reliability Assessment and Performance Analysis 2019 Goals and Deliverables

- Coordinate NPCC responses to the approved NERC Essential Reliability Services Working Group recommendations with the Task Force on Coordination of Operation and the Task Force on System Studies to ensure that the recommendations are addressed.
- Coordinate the development of additional NPCC Criteria as necessary and track any new and developing Regional NPCC Standards through the NPCC Regional Standards Committee.
- Monitor industry practices and make recommendations to the NPCC Regional Standards Committee regarding related NERC Standards.
- Oversee the NPCC Directory No. 1 Implementation Plan (Dated: September 30, 2015).
- Oversee the activities of the NPCC CP-8 Working Group.
- Evaluate and recommend RCC approval of NPCC Area Transmission Reviews.
- Evaluate and recommend RCC approval of NPCC Area Reviews of Resource Adequacy.



- Coordinate, monitor, review, and make recommendations on the retirement of existing in-service and/or implementation of proposed or modified Special Protection Systems Remedial Action Schemes.
- Lead the NPCC Task Forces in the completion of the review and revision the *A-10 Criteria– NPCC Classification of Bulk Power System Elements*.
- Support related reliability activities, including consideration of any requests for sub-regional assessments.
- Keep informed on studies and developments in neighboring systems which might impact NPCC reliability.
- Review Events Analysis Lessons Learned using the Events Analysis discussion/review template.

### **Task Force on System Studies**

The primary mission of the NPCC Task Force on System Studies (TFSS) is to provide active overall coordination of system studies of the reliability of the interconnected bulk power systems and for the review of related NPCC documents.

### **TFSS Reliability Assessment and Performance Analysis 2019 Goals and Deliverables**

- Review and recommend approval of Area Transmission Reviews.
- Review and classify new and modified Special Protection Systems and/or Remedial Action Schemes.
- Review and Implement the NPCC A-10 Criteria.
- Perform annual review and update of the Major Project List.
- Participate in the development and submission of NPCC comments/inputs into the development of regional and/or continent-wide reliability standards that address the NERC Reliability Standards.
- Provide support and technical input, for Task Force related Bulk Electric System risks as identified by the NERC Reliability Issues Steering Committee.
- Review existing NPCC Regional Criteria and procedures for validation of data used in power flow and dynamic simulations; propose changes to provide for adequate data validation.
- Perform investigation of Distributed Energy Resources modeling practices.
- Update the NPCC Electric System Map.
- Annually develop a library of power flow base cases and associated dynamic cases.
- Support the performance of event replication by benchmarking simulations against actual system performance.
- Work with software vendors and NERC to enhance the capability for dynamic simulations.
- Continue to investigate the use of dynamic load models for transient stability studies.
- Investigate the use of load monitoring equipment to aid in the benchmarking of dynamic load models used in transient stability studies.

### **Task Force on System Protection**

The primary purpose of the NPCC Task Force on System Protection (TFSP) is to promote the reliable and efficient operation of the interconnected bulk power systems in Northeastern North America through the establishment of directories, criteria, guidelines, and procedures and coordination of design, relative to NPCC protection systems.

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**TFSP Reliability Assessment and Performance Analysis 2019 Goals and Deliverables**

- Assess proposed protection systems and Special Protection Systems/Remedial Action Schemes.
- Participate and/or serve as lead Task Force in the implementation of applicable Regional NERC Reliability Standards.
- Review and respond to Questions, Requests for Interpretations and/or Clarifications related to bulk power system protection requirements in NPCC Directories and Criteria.
- Participate in the ongoing development and submission of NPCC inputs/comments into the development of related NERC Reliability Standards.
- Review and analyze misoperations of protection systems and Remedial Action Schemes/Special Protection Systems as they occur in the NPCC Region.
- Review mitigations and/or progress reports for Bulk Power System Risk Reduction Implementation.
- Provide support and technical input for related protection system risks as identified by the NERC Reliability Issues Steering Committee.
- Conduct review/development of related NPCC Directories.
- Consistent with the TFSP's scope, conduct joint meeting with other Regions to share best practices and experiences.
- Review ongoing changes to the North American Reliability Corporation Critical Infrastructure Protection Standards and evaluate impacts to Registered Entities Protection Systems, SCADA, and Monitoring Systems.

**Task Force on Coordination of Operation**

The NPCC Task Force on Coordination of Operation (TFCO) primarily facilitates the coordination of operations among the NPCC Reliability Coordinator areas and adjacent NERC Regions to enhance the reliability of the bulk power system.

**TFCO Reliability Assessment and Performance Analysis 2019 Goals and Deliverables**

- Prepare and conduct the spring and autumn NPCC System Operator Seminars.
- Develop and securely disseminate the annual compilation of “Facilities for Notification.”
- Support and take part in the biennial, continent-wide Grid Security Exercise, including a review of the associated reports and Lessons Learned.
- Support an annual enhanced, wide area restoration drill among the Reliability Coordinator areas of NPCC and their neighboring Reliability Coordinators, incorporating the annual review of the NPCC regional restoration plan.
- Conduct pre-seasonal NPCC Reliability Assessments.
- Conduct reviews of applicable NPCC Directories, Criteria, Guides and Procedures in accordance with their applicable review dates.
- Coordinate system awareness among NPCC Reliability Coordinators through periodic conference calls.
- Monitor the trends and impacts of the changing resource mix and the effects of the proliferation of the new resources on real-time operations, as well as behavior during and impacts on recovery and restoration plans.
- Provide assistance to the NERC Event Analysis Process and evaluate the operational applicability of the identified Lessons Learned.

- Perform a voluntary Critical Operating Tool Analysis Survey accompanied with the previous surveys recommendation to disseminate and assess the implementation of best practices and recommendations.

### **NPCC Regulatory/Governmental Affairs Advisory Group**

The NPCC Governmental/Regulatory Affairs Advisory Group provides a forum where industry and governmental and/or regulatory representatives can exchange views and strive to develop consensus policy recommendations on reliability issues specific to the NPCC Region (Northeastern United States and Eastern Canada) and share actionable information among NPCC, NERC and other related governmental and/or regulatory agencies related to Regional reliability matters.

The Regulatory/Governmental Affairs Advisory Group activities indicated below are done in support of ERO Goal No. 3 “*Reduction of Known Risks to Reliability*” and ERO Goal No. 4 “*Identification and Assessment of Emerging Risks to Reliability.*”

### **NPCC Regulatory/Governmental Affairs Advisory Group 2019 Goals and Deliverables**

- Continued outreach to NPCC’s state electricity and environmental regulators stressing the importance of understanding and considering reliability impacts during the development of State/Provincial initiatives (such as the identified Essential Reliability Services).
- Focus on initiatives concerning regional planning, distributed energy resource requirements, the timing of new generation resources and transmission infrastructure projects.

Based on the portion of professional/technical staff time and other resources devoted to Reliability Assessment and Performance Analysis, NPCC estimates that it will expend 22% of its resources on these activities.

## **Resource Requirements**

### **Personnel**

- NPCC anticipates no need to hire additional personnel in this program area in 2019.

### **Consultants and Contracts**

- Increase in consultants and contracts expense is associated with increase in inherent risk and emerging risk reliability assessments.

## Reliability Assessment and Performance Analysis Program

Funding sources and related expenses for the Reliability Assessment and Performance Analysis section of the 2019 business plan are shown in the table below. Explanations of variances by expense category are included with the Supplemental Tables found in Section B.

Statement of Activities and Capital Expenditures						
2018 Budget & Projection, and 2019 Budget						
Reliability Assessment and Performance Analysis						
	2018	2018	Variance	2019	Variance	
	Budget	Projection	2018 Projection	Budget	2019 Budget	
			v 2018 Budget		v 2018 Budget	
			Over(Under)		Over(Under)	
<b>Funding</b>						
<b>ERO Funding</b>						
ERO Assessments	\$ 3,225,570	\$ 3,225,570	\$ -	\$ 3,332,686	\$ 107,116	
Penalty Sanctions	15,151	15,151	-	-	(15,151)	
<b>Total ERO Funding</b>	<b>\$ 3,240,721</b>	<b>\$ 3,240,721</b>	<b>\$ -</b>	<b>\$ 3,332,686</b>	<b>\$ 91,966</b>	
Membership Dues	-	-	-	-	-	
Testing Fees	-	-	-	-	-	
Services & Software	-	-	-	-	-	
Workshops	-	-	-	-	-	
Interest	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
<b>Total Funding (A)</b>	<b>\$ 3,240,721</b>	<b>\$ 3,240,721</b>	<b>\$ -</b>	<b>\$ 3,332,686</b>	<b>\$ 91,966</b>	
<b>Expenses</b>						
<b>Personnel Expenses</b>						
Salaries	\$ 1,106,772	\$ 1,106,772	\$ -	\$ 1,135,264	\$ 28,491	
Payroll Taxes	65,805	65,805	-	69,027	3,222	
Benefits	220,007	220,007	-	219,655	(352)	
Retirement Costs	117,144	117,144	-	123,322	6,179	
<b>Total Personnel Expenses</b>	<b>\$ 1,509,728</b>	<b>\$ 1,509,728</b>	<b>\$ -</b>	<b>\$ 1,547,268</b>	<b>\$ 37,541</b>	
<b>Meeting Expenses</b>						
Meetings	\$ 22,000	\$ 22,000	\$ -	\$ 23,000	\$ 1,000	
Travel	212,000	212,000	-	216,200	4,200	
Conference Calls	-	-	-	-	-	
<b>Total Meeting Expenses</b>	<b>\$ 234,000</b>	<b>\$ 234,000</b>	<b>\$ -</b>	<b>\$ 239,200</b>	<b>\$ 5,200</b>	
<b>Operating Expenses</b>						
Consultants & Contracts	\$ 401,640	\$ 551,640	\$ 150,000	\$ 430,000	\$ 28,360	
Office Rent	-	-	-	-	-	
Office Costs	-	-	-	-	-	
Professional Services	-	-	-	-	-	
Computer & Equipment Leases	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
Depreciation	-	-	-	-	-	
<b>Total Operating Expenses</b>	<b>\$ 401,640</b>	<b>\$ 551,640</b>	<b>\$ 150,000</b>	<b>\$ 430,000</b>	<b>\$ 28,360</b>	
<b>Total Direct Expenses</b>	<b>\$ 2,145,368</b>	<b>\$ 2,295,368</b>	<b>\$ 150,000</b>	<b>\$ 2,216,468</b>	<b>\$ 71,101</b>	
<b>Indirect Expenses</b>	<b>\$ 1,134,543</b>	<b>\$ 1,134,543</b>	<b>\$ -</b>	<b>\$ 1,132,814</b>	<b>\$ (1,729)</b>	
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Total Expenses (B)</b>	<b>\$ 3,279,911</b>	<b>\$ 3,429,911</b>	<b>\$ 150,000</b>	<b>\$ 3,349,282</b>	<b>\$ 69,371</b>	
<b>Change in Assets</b>	<b>\$ (39,190)</b>	<b>\$ (189,190)</b>	<b>\$ (150,000)</b>	<b>\$ (16,596)</b>	<b>\$ 22,594</b>	
<b>Fixed Assets</b>						
Depreciation	\$ -	-	\$ -	\$ -	\$ -	
Computer & Software CapEx	-	-	-	-	-	
Furniture & Fixtures CapEx	-	-	-	-	-	
Equipment CapEx	-	-	-	-	-	
Leasehold Improvements	-	-	-	-	-	
Allocation of Fixed Assets	(39,190)	(39,190)	-	(16,596)	22,594	
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>(39,190)</b>	<b>(39,190)</b>	<b>-</b>	<b>(16,596)</b>	<b>22,594</b>	
<b>TOTAL BUDGET (=B+C)</b>	<b>3,240,721</b>	<b>3,390,721</b>	<b>150,000</b>	<b>3,332,686</b>	<b>91,966</b>	
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ 0</b>	<b>\$ (150,000)</b>	<b>\$ (150,000)</b>	<b>\$ (0)</b>	<b>\$ (0)</b>	

## Training, Education, and Operator Certification Program

<b>Training, Education, and Operator Certification Program Resources</b>			
(in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	0.10	0.10	0.00
Direct Expenses	\$230,263	\$233,297	\$3,034
Indirect Expenses	\$19,460	\$19,431	(\$30)
Other Non-Operating Expenses	\$0	\$0	\$0
Inc(Dec) in Fixed Assets	(\$672)	(\$285)	\$388
Total Funding Requirement	\$249,051	\$252,443	\$3,392

### Program Scope and Functional Description

The NPCC Training, Education, and Operator Certification program supports NERC Rules of Procedure Section 900. The program provides education and training necessary to understand and operate the bulk electric system. The target audience of the program is bulk power system operating personnel - including system operations personnel, operations support personnel (engineering and information technology), supervisors and managers, and training personnel. NPCC staff training and development is incorporated within each respective program area.

### Training Program Background and Description

This NPCC Program establishes and coordinates training for system operators relating to inter-Reliability Coordinator area matters, criteria, terminology, standards and operating procedures and instructions. It includes development and execution of training seminars, held twice yearly, at which:

- potential operational problems for the coming season are discussed,
- physical layouts and electrical characteristics of the NPCC and PJM Areas are discussed,
- application of NPCC Directory and NERC Standard requirements pertinent to operation are discussed,
- major industry issues that are important for system operators are discussed,
- significant disturbances are reviewed for lessons learned; and
- table-top drills and communication and coordination exercises are conducted.

The seminars promote camaraderie and better communication among system operators from the NPCC and PJM Reliability Coordinator (RC) Areas and the Nova Scotia Balancing Authority (BA) area. PJM RC has significant interaction with the NPCC RCs and system operators from PJM have been regular participants at past seminars. Examples of specific topics addressed at recent seminar include: 1) additions and impacts to operations of renewable resources, 2) the development of conditions and violations related to major system Blackouts, 3) human performance related to system operations, 4) cybersecurity threats and system operator concerns, 5) system restoration approaches and tie-ins to neighboring systems and 6) application of NPCC Simultaneous Activation of Reserve. Usually, control center visits are included as part of the seminar activities.

This Program also provides for:

- sharing of RC/BA existing training program and system simulator area content;
- training techniques and methods;
- evaluation of new techniques and training and simulator aids as they become available;
- opportunities to consolidate training among the NPCC RCs and BAs, which includes opportunities to share training material and training sessions; and
- exchange of information on internal methods of system operator training.

The training activities indicated below are done in support of ERO Goals No. 3 “*Reduction of Known Reliability Risks*” and No. 6 “*Effective and Efficient Operation*”. Related contributing activities to these goals include “Working with industry forums, expand communication and encourage sharing of good industry practices for increasing Human Performance (HP) effectiveness” and “Acquire, engage, develop, and retain highly qualified talent with requisite technical expertise to execute the ERO Enterprise’s statutory functions.”

### **Funding Drivers and Reliability Benefits**

- System operators participating in the Seminars: 1) share their approaches to addressing operational problems and learn about the characteristics of neighboring systems; 2) gain exposure to NPCC issues and current industry operational topics; 3) review recent NPCC and major external disturbances; 4) review key operational related content in NPCC Directories and NERC Standards; and 5) participate in hands-on “table top exercises” pertaining to system operational practices. PJM system operators and trainers are also invited to participate and normally attend these seminars;
- Seminar attendees also receive Continuing Education Hours (CEHs) (normally 3 CEHs) and operator trainers from each RC / BA area can utilize the seminar content by including it in their internal training programs to provide CEHs to all system operators; and,
- The seminars help to improve system operational coordination through better contact among system operators at other Reliability Coordinator areas.
- Continually review and revise the curriculum of the training seminars to better emphasize NERC Standard requirements related to system operation, NPCC wide-area operations and Regionally-specific criteria and procedures.
- Enhance the system operator’s awareness and knowledge of the standards, criteria and procedures they apply in real time operation.
- Provide more sharing of new training approaches, exchange of information on internal methods of system operator selection, training material and training sessions;
- Enhance efficiency and cost savings in the training programs in the NPCC RC / BA areas.
- Provide a forum among NPCC RC/BA areas for sharing of approaches to meet the requirements of the NERC PER and COM standards. The sharing of approaches used by some NPCC Areas to address any changes needed to existing system operator training programs due to PER-005-2 requirements is valuable to CO-2 Working Group members.
- NPCC will conduct two Standards and Compliance workshops in 2018, for NPCC Stakeholders, for the express purpose of providing the most current and applicable information related to the development of NERC and Regional Reliability Standards and the implementation of the Compliance Monitoring and Enforcement Program (CMEP).

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## 2019 Key Assumptions

NPCC regularly conducts seminars as well as Spring and Fall Standards and Compliance workshops specifically designed, primarily through the conduct of targeted breakout classroom sessions and presentations on current industry related activities, to provide for the most efficient exchange of information between the NPCC Compliance and Standards staff and the NPCC Stakeholders. Presentations in the past have been conducted by FERC, NERC and Stakeholder representatives in addition to NPCC staff members. To supplement these workshops, NPCC develops webinars that will focus on specific topics pertinent to developments related to compliance program implementation, standards development or technical issues.

NPCC regularly conducts Spring and Fall System Operator Seminars. These seminars involve system operators from the NPCC RC/BA Areas and PJM, and are held in early May and early November.

### Training, Education and Operator Certification 2019 Goals and Deliverables

- Prepare and conduct the 2019 Spring and Fall NPCC System Operator Seminars.
- Continue collaboration and sharing of the intended RC/BA approaches, experiences and materials to task identification and training development
- As needed, enhance the NPCC repository of training resources and learning verification activities addressing fundamental power system topics, training methods and operation procedure training exercises, which may be shared as elements of operator training in compliance with NERC Standard PER-005, “*System Personnel Training.*”
- Develop on-line operational training webinars that focus on specific topics pertinent to compliance program implementation, standards development or technical issues.

Based on the portion of professional/technical staff time and other resources devoted to training, education, and operator certification, NPCC estimates that it will expend 2% of its resources on this activity.

### Resource Requirements

#### Personnel

- NPCC anticipates no need to hire additional personnel in this program area in 2019.

## Training, Education, and Operator Certification Program

Funding sources and related expenses for the training, education, and operator certification section of the 2019 business plan are shown in the table below. Explanations of variances by expense category are included with the Supplemental Tables found in Section B.

Statement of Activities and Capital Expenditures						
2018 Budget & Projection, and 2019 Budget						
Training, Education, and Operator Certification						
	2018	2018	Variance	2019	Variance	
	Budget	Projection	2018 Projection	Budget	2019 Budget	
			v 2018 Budget		v 2018 Budget	
			Over(Under)		Over(Under)	
<b>Funding</b>						
<b>ERO Funding</b>						
ERO Assessments	\$ 184,791	\$ 184,791	\$ -	\$ 184,943	\$ 152	
Penalty Sanctions	260	260	-	-	(260)	
<b>Total ERO Funding</b>	<b>\$ 185,051</b>	<b>\$ 185,051</b>	<b>\$ -</b>	<b>\$ 184,943</b>	<b>\$ (108)</b>	
Membership Dues	-	-	-	-	-	
Testing Fees	-	-	-	-	-	
Services & Software	-	-	-	-	-	
Workshops	64,000	64,000	-	67,500	3,500	
Interest	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
<b>Total Funding (A)</b>	<b>\$ 249,051</b>	<b>\$ 249,051</b>	<b>\$ -</b>	<b>\$ 252,443</b>	<b>\$ 3,392</b>	
<b>Expenses</b>						
<b>Personnel Expenses</b>						
Salaries	\$ 18,399	\$ 18,399	\$ -	\$ 18,600	\$ 201	
Payroll Taxes	1,350	1,350	-	1,513	163	
Benefits	4,893	4,893	-	6,805	1,912	
Retirement Costs	2,320	2,320	-	2,379	58	
<b>Total Personnel Expenses</b>	<b>\$ 26,963</b>	<b>\$ 26,963</b>	<b>\$ -</b>	<b>\$ 29,297</b>	<b>\$ 2,334</b>	
<b>Meeting Expenses</b>						
Meetings	\$ 188,300	\$ 188,300	\$ -	\$ 189,000	\$ 700	
Travel	15,000	15,000	-	15,000	-	
Conference Calls	-	-	-	-	-	
<b>Total Meeting Expenses</b>	<b>\$ 203,300</b>	<b>\$ 203,300</b>	<b>\$ -</b>	<b>\$ 204,000</b>	<b>\$ 700</b>	
<b>Operating Expenses</b>						
Consultants & Contracts	\$ -	\$ -	\$ -	\$ -	\$ -	
Office Rent	-	-	-	-	-	
Office Costs	-	-	-	-	-	
Professional Services	-	-	-	-	-	
Computer & Equipment Leases	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
Depreciation	-	-	-	-	-	
<b>Total Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Total Direct Expenses</b>	<b>\$ 230,263</b>	<b>\$ 230,263</b>	<b>\$ -</b>	<b>\$ 233,297</b>	<b>\$ 3,034</b>	
<b>Indirect Expenses</b>	<b>\$ 19,460</b>	<b>\$ 19,460</b>	<b>\$ -</b>	<b>\$ 19,431</b>	<b>\$ (30)</b>	
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Total Expenses (B)</b>	<b>\$ 249,723</b>	<b>\$ 249,723</b>	<b>\$ -</b>	<b>\$ 252,728</b>	<b>\$ 3,005</b>	
<b>Change in Assets</b>	<b>\$ (672)</b>	<b>\$ (672)</b>	<b>\$ -</b>	<b>\$ (285)</b>	<b>\$ 388</b>	
<b>Fixed Assets</b>						
Depreciation	\$ -	-	\$ -	\$ -	\$ -	
Computer & Software CapEx	-	-	-	-	-	
Furniture & Fixtures CapEx	-	-	-	-	-	
Equipment CapEx	-	-	-	-	-	
Leasehold Improvements	-	-	-	-	-	
Allocation of Fixed Assets	(672)	(672)	-	(285)	388	
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>(672)</b>	<b>(672)</b>	<b>-</b>	<b>(285)</b>	<b>388</b>	
<b>TOTAL BUDGET (=B+C)</b>	<b>249,051</b>	<b>249,051</b>	<b>-</b>	<b>252,443</b>	<b>3,392</b>	
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ -</b>	<b>\$ (0)</b>	<b>\$ (0)</b>	



## Situation Awareness and Infrastructure Security Program

<b>Situation Awareness and Infrastructure Security Program Resources</b>			
(in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	5.00	5.00	0.00
Direct Expenses	\$1,373,791	\$1,409,379	\$35,589
Indirect Expenses	\$973,021	\$971,538	(\$1,483)
Other Non-Operating Expenses	\$0	\$0	\$0
Inc(Dec) in Fixed Assets	(\$33,611)	(\$14,233)	\$19,377
Total Funding Requirement	\$2,313,202	\$2,366,685	\$53,483

### Program Scope and Functional Description

The Situation Awareness and Infrastructure Security Program is the combination of near real - time awareness of conditions on the bulk power system with the programs necessary to increase the physical and cyber security of the electricity infrastructure, including the operation and maintenance of tools and other support services for the benefit of Reliability Coordinators and the system operators within the registered entities. Maintaining the real-time awareness of conditions on the interconnected bulk power systems by the NPCC Reliability Coordinator is critical to maintaining reliable operation within NPCC, including the communication of information concerning system conditions and abnormal events among the neighboring system operators responsible for the reliable operation of the bulk power systems. When an event does occur, it is critical to provide a forum for active coordination of reliability and operation among the NPCC Reliability Coordinator areas and neighboring NERC Regions and to use an event as a learning opportunity to enhance the reliability of the interconnected bulk power system through the lessons learned, which can be gleaned from such an event.

These Situation Awareness and Infrastructure Security activities indicated below are done in support of ERO Goal No. 3 “*Reduction of Known Risks to Reliability.*” Related contributing activities to this Goal include “Analyzing system performance, events, and relationships among data sources to identify risks and mitigation strategies and provide recommendations and lessons learned, including those that are lower impact, to discover potential reliability trends early in their lifecycles” and “Promoting the use of NERC cause codes to establish a common understanding of HP triggers, collect and evaluate trends in data, and develop metrics as needed.”

### Event Analysis Program Description

NERC and the industry analyzes events, identifies the lessons to be learned, and conducts a formal cause code analysis.

The Event Analysis Program recognizes that many events which occur on the bulk power system beyond those identified through NERC Reliability Standard EOP-004-3, “Event Reporting,” (EOP-004-4, Effective April 1, 2019) can have varying levels of significance to the electric system, providing otherwise unrealized lessons to be learned from these events and the trending of such events to identify possible reliability concerns. By implementing a “bottom-up” approach to an event review within the framework of the NERC Event Analysis Program,

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consistency, comparability, flexibility and timeliness in the event analysis process will be promoted by NPCC, the registered entities and NERC in a collaborative initiative.

Upon the identification of an event, the goal of the Event Analysis Program is to:

- identify what transpired;
- categorize the event within the NERC Event Analysis Program;
- establish the sequence of events;
- understand the essential root causes of the event;
- identify recommendations or corrective actions; and,
- develop and disseminate to the industry lessons to be learned so that the operational reliability of the bulk power system can be further enhanced.

In assessing any system event, it is recognized that, if the timely dissemination of lessons learned from an event is to be realized, any potential compliance implications associated with an event must be addressed and dismissed. Throughout an event analysis effort, to make this process successful and complete, and to solidify the “bottom-up” approach, registered entities are encouraged to establish a liaison between the event analysis and compliance functions internal to the registered entity during the event analysis process. This serves to facilitate the development of a registered entity compliance self-assessment report, which is accomplished by performing a sufficiency review of the reliability standards deemed applicable to the event, assisting in the self-reporting of possible violations should any be discovered.

To complete this voluntary effort, the entity, the Region and NERC staff will collaborate to assess the NERC Brief Report or Event Analysis Report and perform a formal cause code analysis, identifying a root cause and publish any pertinent lessons learned gathered from the event.

The adoption by NERC of the Event Analysis Program brings clarity and certainty about what system events are relevant to analyze and to what level of detail, targeting potential risks to the reliability of the bulk power system for detailed and in-depth analysis; only concise and succinct reviews are desired for more minor events. It also delineates the expectations roles and responsibilities of the registered entities, NPCC and NERC in a uniform review of system events by the industry and promotes a timely development and dissemination of valuable lessons learned to the industry. The identification and tracking of emerging common risks through the assessment of events will further distinguish trends which may be of concern to reliability. By rigorously pursuing the lesser events on the system and learning from these events, larger events can be avoided or mitigated.

NPCC staff works step-by-step with the registered entity throughout the total event analysis process, permitting the entity to assume the primary role in the development of the initial analysis, lessons learned which may benefit the industry and the Standards sufficiency review and cause coding for trending and reporting. NPCC staff, throughout the process, guides, supports and stands as an advocate of the registered entity as they continue to develop an improved culture of reliability and compliance.

### **2019 Key Assumptions**

- The monitoring of Lessons Learned will continue to be a major focus of NERC in 2019, including an added aspect of reporting in the voluntary Event Analysis Program to collect detailed information on station equipment failure, and response to a recommendation of

the AC Substation Equipment Task Force, to solicit and collect this data, for applicable qualifying events to aid in future analysis of station equipment failures and to identify trends that may be a threat to the reliability of the Bulk Electric System, and utilization and added aspects of a revised Category 1h - EMS/Loss of monitoring or control at a Control Center events Brief Report Template and Addendum, developed with the input of the EMS Working Group to improved information collection related to such events and associated analysis.

- Critical infrastructure protection will fully integrate the requirements of version 5 of the Cyber Standards in 2019.
- NERC will post updates to the Critical Infrastructure Protection Standards to address the three FERC Directives and the four industry concerns that were not satisfactorily responded to by the version 5 Transition Advisory Group.
- Resource allocation to this program area will support: expanded Events Analysis activities; coordination with NERC's evolving E-ISAC capabilities; and cybersecurity outreach efforts.

### **Situation Awareness 2019 Goals and Deliverables**

- NPCC will provide the Regional perspective and support through NPCC Event Analysis staff participation on selective NERC Planning and Operating Committees and key related NERC Subcommittees, Task Forces and Working Groups, including the Event Analysis Subcommittee, the ERO – Event Analysis/Situational Awareness Group; and the Event Analysis Management System.
- Work directly with applicable NPCC Task Forces and Working Groups to provide an in-depth assessment of Lessons Learned unique to the NPCC Members and NPCC Criteria.
- Promote NPCC's Event Analysis group's established process for sharing and dissemination of the detailed Event Analysis Report information among industry participants (Registered Entities).
- Incorporate the Lessons Learned from participation in the GridEx IV wide-area exercise.
- Utilize the NPCC's "what if" methodology to examine select events, with potential for greater impact under a different set of system conditions, to evaluate whether the event's proximity to becoming a more significant event would suggest that an appropriate level of analysis, with due weight to risk and impact, be conducted.
- Monitor the operational status of the bulk power system and coordinate normal and pre-emergency communication, awareness and assistance in addition to the same during an emergency among the Reliability Coordinators within NPCC. Notify the Reliability Coordinators of significant bulk power system events that have occurred in one Reliability Coordinator Area, and which have the potential to impact reliability in other NPCC Reliability Coordinator Areas or Regions external to NPCC. These events include contingencies on the bulk power system, potential shortfalls of operating reserve, operating problems, potential security threats and potential threats or disruptions to the cyber systems.
- Conduct a daily conference call to serve as a complement to the NPCC Emergency Preparedness Conference Call. The participants of the call are the Reliability Coordinators within NPCC and its neighboring RCs, the Midcontinent ISO and PJM. The conference call is implemented through a bridge, the initiation of the call quickly ringing all pre-selected telephones simultaneously. The goal of the call is to alert all Reliability Coordinators of emerging problems. If no system difficulties are anticipated for the day, no unnecessary information is to be discussed. Subjects for discussion are limited to credible events which could impact the ability of an entity to serve its load and

meet its operating reserve obligations or would impose a burden to the interconnection, including the following: Projected Load; Adverse Weather; Operating Reserve; Generation; Transmission; and Sabotage. If conditions worsen in the course of the day, the NPCC Emergency Preparedness Conference Call will be implemented.

- Monthly test of the satellite telephone network, to ensure the capability for continued voice communications among NPCC and its Reliability Coordinators. This back-up communications system will function in the event of a collapse of the Public Switched Telephone Network, permitting continued cross-border voice communications among the Canadian Reliability Coordinators of NPCC, the Reliability Coordinators in the United States as well as NPCC Situation Awareness staff.
- Coordination and communication with the NERC Bulk Power System Awareness group in preparation for and during ongoing significant events in the NPCC's footprint and participation in the ERO Enterprise-wide Situation Awareness activities. Monitor the status of the bulk power system through the NERC Situational Awareness-FERC, NERC, Regions initiative, a near real-time operating display for the United States portion of the Reliability Coordinators footprints of North America. Transmission voltage levels of 230 kV and above are displayed, and the tool provides the ability to "drill down" to detailed bus information, including generation outputs and bus voltages.

### **Critical Infrastructure Objectives**

NPCC's critical infrastructure objectives are defined within the scope of the NPCC Task Force on Infrastructure Security & Technology, and include, but are not limited to:

- Providing a forum for NPCC review of proposed and posted documents from the NERC Critical Infrastructure Protection Committee; and,
- Representing and advocating NPCC's position in the activities of NERC groups involved in the development and/or implementation of physical and cyber security.

NPCC's 2019 critical infrastructure goals and objectives, supporting ERO Goal No. 5 – "*Identification and Reduction of Cyber and Physical Risks.*" Related contributing activities to this Goal include "Expand the use, availability, and value of physical security and cybersecurity threat and vulnerability information sharing, including cross sector communications, and analytics" and "In collaboration with the Critical Infrastructure Protection Committee and industry stakeholders, develop a risk process to address the potential impact of cyber and physical security threats and vulnerabilities."

### **Critical Infrastructure 2019 Goals and Deliverables**

- Monitor the reliable implementation of the Cyber Security Standards.
- Monitor the Homeland Security Information Network, E- ISAC, NERC Alerts and Canadian Information Sharing and share information with the NPCC CO-8 Working Group.
- Review and submit comments on NERC proposed Reliability Standards, modified Reliability Standards, proposed Guidelines and modified Guidelines related to Infrastructure Security and Technology.
- Keep current on all governmental agencies regarding applicable security recommendations and requirements, and other applicable security and reliability recommendations and keep the RCC and its committees appropriately informed, e.g. Sector Specific Plan.
- Conduct an annual review of cross border emergency telecommunications to verify each Area can communicate with each other.

- Provide support and technical input for Task Force related Bulk Electric System risks as identified by the NERC Reliability Issues Steering Committee. The Task Force will conduct a thorough review, provide comments as necessary and act on posted materials as directed.
- Support the NERC CIPC Grid Exercise Working Group in GridEx V planning and simulation. Participate in the development of lessons learned from GridEx IV.
- Review infrastructure security & technologies and provide recommendations to enhance physical and cyber security in compliance with NERC guidelines/standards.
- Provide recommendations to enhance physical and cyber security, in compliance with NERC standards, based on assessments of available and emerging infrastructure security technologies, methodologies, and best practices.
- Sponsor periodic workshop presentations to address timely issues and update NPCC Members associated with infrastructure security and technology.
- Provide education, awareness, and support for Cross Sector coordination in Entity agreements and response plans with focus upon Telecommunications, Water and Natural Gas, including monitoring and sharing with the E-ISAC.

### **Related System Operations Security 2019 Goals and Deliverables**

NPCC's system operations security objectives are defined within the scope of the NPCC Task Force on Coordination of Operation and include, but are not limited to:

- Coordinating inter-Regional pre-emergency actions in the event of a threat to the security of the Northeastern North American bulk power supply system; and,
- Assisting in the development of real time operating tools ensuring cyber security concerns are addressed.

Based on the portion of professional/technical staff time and other resources devoted to situation awareness and infrastructure security, NPCC estimates that it will expend 16% of its resources on this activity.

### **Resource Requirements**

#### **Personnel**

- NPCC anticipates no need to hire additional personnel in the Situation Awareness and Infrastructure Security program area in 2019.

## Situation Awareness and Infrastructure Security Program

Funding sources and related expenses for the situation awareness and infrastructure security section of the 2019 business plan are shown in the table below. Explanations of variances by expense category are included with the Supplemental Tables found in Section B.

Statement of Activities and Capital Expenditures						
2018 Budget & Projection, and 2019 Budget						
Situation Awareness and Infrastructure Security						
	2018	2018	Variance	2019	Variance	
	Budget	Projection	2018 Projection	Budget	2019 Budget	
			v 2018 Budget		v 2018 Budget	
			Over(Under)		Over(Under)	
<b>Funding</b>						
<b>ERO Funding</b>						
ERO Assessments	\$ 2,300,208	\$ 2,300,208	\$ -	\$ 2,366,685	\$ 66,477	
Penalty Sanctions	12,994	12,994	-	-	(12,994)	
<b>Total ERO Funding</b>	<b>\$ 2,313,202</b>	<b>\$ 2,313,202</b>	<b>\$ -</b>	<b>\$ 2,366,685</b>	<b>\$ 53,483</b>	
Membership Dues	-	-	-	-	-	
Testing Fees	-	-	-	-	-	
Services & Software	-	-	-	-	-	
Workshops	-	-	-	-	-	
Interest	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
<b>Total Funding (A)</b>	<b>\$ 2,313,202</b>	<b>\$ 2,313,202</b>	<b>\$ -</b>	<b>\$ 2,366,685</b>	<b>\$ 53,483</b>	
<b>Expenses</b>						
<b>Personnel Expenses</b>						
Salaries	\$ 825,560	\$ 825,560	\$ -	\$ 832,408	\$ 6,848	
Payroll Taxes	53,677	53,677	-	57,432	3,755	
Benefits	189,417	189,417	-	201,196	11,780	
Retirement Costs	87,637	87,637	-	89,043	1,406	
<b>Total Personnel Expenses</b>	<b>\$ 1,156,291</b>	<b>\$ 1,156,291</b>	<b>\$ -</b>	<b>\$ 1,180,079</b>	<b>\$ 23,789</b>	
<b>Meeting Expenses</b>						
Meetings	\$ 10,000	\$ 10,000	\$ -	\$ 10,000	\$ -	
Travel	87,500	87,500	-	89,300	1,800	
Conference Calls	-	-	-	-	-	
<b>Total Meeting Expenses</b>	<b>\$ 97,500</b>	<b>\$ 97,500</b>	<b>\$ -</b>	<b>\$ 99,300</b>	<b>\$ 1,800</b>	
<b>Operating Expenses</b>						
Consultants & Contracts	\$ 120,000	\$ 120,000	\$ -	\$ 130,000	\$ 10,000	
Office Rent	-	-	-	-	-	
Office Costs	-	-	-	-	-	
Professional Services	-	-	-	-	-	
Computer & Equipment Leases	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
Depreciation	-	-	-	-	-	
<b>Total Operating Expenses</b>	<b>\$ 120,000</b>	<b>\$ 120,000</b>	<b>\$ -</b>	<b>\$ 130,000</b>	<b>\$ 10,000</b>	
<b>Total Direct Expenses</b>	<b>\$ 1,373,791</b>	<b>\$ 1,373,791</b>	<b>\$ -</b>	<b>\$ 1,409,379</b>	<b>\$ 35,589</b>	
<b>Indirect Expenses</b>	<b>\$ 973,021</b>	<b>\$ 973,021</b>	<b>\$ -</b>	<b>\$ 971,538</b>	<b>\$ (1,483)</b>	
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Total Expenses (B)</b>	<b>\$ 2,346,812</b>	<b>\$ 2,346,812</b>	<b>\$ -</b>	<b>\$ 2,380,918</b>	<b>\$ 34,106</b>	
<b>Change in Assets</b>	<b>\$ (33,611)</b>	<b>\$ (33,611)</b>	<b>\$ -</b>	<b>\$ (14,233)</b>	<b>\$ 19,377</b>	
<b>Fixed Assets</b>						
Depreciation	\$ -	-	\$ -	\$ -	\$ -	
Computer & Software CapEx	-	-	-	-	-	
Furniture & Fixtures CapEx	-	-	-	-	-	
Equipment CapEx	-	-	-	-	-	
Leasehold Improvements	-	-	-	-	-	
Allocation of Fixed Assets	(33,611)	(33,611)	-	(14,233)	19,377	
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>(33,611)</b>	<b>(33,611)</b>	<b>-</b>	<b>(14,233)</b>	<b>19,377</b>	
<b>TOTAL BUDGET (=B+C)</b>	<b>2,313,202</b>	<b>2,313,202</b>	<b>-</b>	<b>2,366,685</b>	<b>53,483</b>	
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ -</b>	<b>\$ (0)</b>	<b>\$ (0)</b>	

## Administrative Services

Administrative Services Program Resources						
(in whole dollars)						
	Direct Expenses			FTEs		
	2018 Budget	2019 Budget	Increase (Decrease)	2018 Budget	2019 Budget	Increase (Decrease)
Technical Committees and Members Forum	\$70,680	\$74,483	\$3,803	0.50	0.50	0.00
General and Administrative	\$3,607,132	\$3,646,903	\$39,771	2.50	2.50	0.00
Legal and Regulatory	\$592,049	\$612,934	\$20,886	1.00	1.00	0.00
Information Technology	\$1,044,490	\$1,083,781	\$39,291	2.00	2.00	0.00
Human Resources	\$181,145	\$156,946	(\$24,199)	1.00	1.00	0.00
Finance and Accounting	\$537,236	\$642,798	\$105,562	1.00	2.00	1.00
<b>Total Administrative Services<sup>1</sup></b>	<b>\$6,032,732</b>	<b>\$6,217,845</b>	<b>\$185,113</b>	<b>8.00</b>	<b>9.00</b>	<b>1.00</b>

<sup>1</sup> NPCC's 2019 Administrative Services Direct Expenses total \$6,217,845, of which \$415,818 is allocated to NPCC's Criteria Services division, which is a non-statutory function. As a result of the allocation to the Criteria Services division, the Administrative Expenditures included in the 2019 statutory budget are \$5,802,027 which is an increase of \$185,748 from the 2018 budget of \$5,616,279.

### Program Scope and Functional Description

Administrative services support the previously identified five program areas of: reliability standards; compliance monitoring and enforcement and organization registration and certification; training, education, and operator certification; reliability assessment and performance analysis; and situation awareness and infrastructure security. Administrative services consist of: technical committees and members' forums; general and administrative; legal and regulatory; information technology; human resources; and finance and accounting.

### Methodology for Allocation of Administrative Services Expenses to Programs

NPCC total overhead expenses, such as office rent and office costs, will be charged to the Administrative Services Programs and then reallocated proportionately based on FTE to the programs through Indirect Expenses.

## Administrative Services

Funding sources and related expenses for the Administrative Services section of the 2019 business plan are shown in the table below. Explanations of variances by expense category are included with the Supplemental Tables found in Section B.

Statement of Activities and Capital Expenditures						
2018 Budget & Projection, and 2019 Budget						
ADMINISTRATIVE SERVICES						
	2018	2018	Variance	2019	Variance	
	Budget	Projection	2018 Projection	Budget	2019 Budget	
			v 2018 Budget		v 2018 Budget	
			Over(Under)		Over(Under)	
<b>Funding</b>						
<b>ERO Funding</b>						
ERO Assessments	\$ (66,581)	\$ (66,581)	\$ -	\$ (100,108)	\$ (33,527)	
Penalty Sanctions	-	-	-	-	-	
<b>Total ERO Funding</b>	<b>\$ (66,581)</b>	<b>\$ (66,581)</b>	<b>\$ -</b>	<b>\$ (100,108)</b>	<b>\$ (33,527)</b>	
Membership Dues	-	-	-	-	-	
Testing Fees	-	-	-	-	-	
Services & Software	-	-	-	-	-	
Workshops	-	-	-	-	-	
Interest	-	-	-	-	-	
Miscellaneous	-	-	-	-	-	
<b>Total Funding (A)</b>	<b>\$ (66,581)</b>	<b>\$ (66,581)</b>	<b>\$ -</b>	<b>\$ (100,108)</b>	<b>\$ (33,527)</b>	
<b>Expenses</b>						
<b>Personnel Expenses</b>						
Salaries	\$ 2,063,139	\$ 2,043,839	\$ (19,300)	\$ 2,147,254	\$ 84,115	
Payroll Taxes	97,378	95,378	(2,000)	107,437	10,059	
Benefits	438,408	437,408	(1,000)	493,115	54,707	
Retirement Costs	295,596	288,996	(6,600)	296,142	546	
<b>Total Personnel Expenses</b>	<b>\$ 2,894,522</b>	<b>\$ 2,865,622</b>	<b>\$ (28,900)</b>	<b>\$ 3,043,948</b>	<b>\$ 149,426</b>	
<b>Meeting Expenses</b>						
Meetings	\$ 116,750	\$ 116,750	\$ -	\$ 126,750	\$ 10,000	
Travel	138,000	138,000	-	135,100	(2,900)	
Conference Calls	37,000	37,000	-	36,000	(1,000)	
<b>Total Meeting Expenses</b>	<b>\$ 291,750</b>	<b>\$ 291,750</b>	<b>\$ -</b>	<b>\$ 297,850</b>	<b>\$ 6,100</b>	
<b>Operating Expenses</b>						
Consultants & Contracts	\$ 92,000	\$ 92,000	\$ -	\$ 95,000	\$ 3,000	
Office Rent	810,700	810,700	-	820,700	10,000	
Office Costs	664,760	664,760	-	676,347	11,587	
Professional Services	960,000	960,000	-	978,000	18,000	
Computer & Equipment Leases	-	-	-	-	-	
Miscellaneous	50,000	50,000	-	51,000	1,000	
Depreciation	269,000	269,000	-	255,000	(14,000)	
<b>Total Operating Expenses</b>	<b>\$ 2,846,460</b>	<b>\$ 2,846,460</b>	<b>\$ -</b>	<b>\$ 2,876,047</b>	<b>\$ 29,587</b>	
<b>Total Direct Expenses</b>	<b>\$ 6,032,732</b>	<b>\$ 6,003,832</b>	<b>\$ (28,900)</b>	<b>\$ 6,217,845</b>	<b>\$ 185,113</b>	
<b>Indirect Expenses</b>	<b>\$ (6,032,732)</b>	<b>\$ (6,032,732)</b>	<b>\$ -</b>	<b>\$ (6,217,845)</b>	<b>\$ (185,113)</b>	
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Total Expenses (B)</b>	<b>\$ 0</b>	<b>\$ (28,900)</b>	<b>\$ (28,900)</b>	<b>\$ -</b>	<b>\$ (0)</b>	
<b>Change in Assets</b>	<b>\$ (66,581)</b>	<b>\$ (37,681)</b>	<b>\$ 28,900</b>	<b>\$ (100,108)</b>	<b>\$ (33,527)</b>	
<b>Fixed Assets</b>						
Depreciation	(269,000)	(269,000)	\$ -	(255,000)	\$ 14,000	
Computer & Software CapEx	75,000	75,000	-	170,000	95,000	
Furniture & Fixtures CapEx	-	-	-	-	-	
Equipment CapEx	-	-	-	-	-	
Leasehold Improvements	-	-	-	-	-	
Allocation of Fixed Assets	194,000	194,000	-	85,000	(109,000)	
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	
<b>TOTAL BUDGET (=B+C)</b>	<b>0</b>	<b>(28,900)</b>	<b>(28,900)</b>	<b>-</b>	<b>(0)</b>	
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ (66,581)</b>	<b>\$ (37,681)</b>	<b>\$ 28,900</b>	<b>\$ (100,108)</b>	<b>\$ (33,527)</b>	



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## Technical Committees and Member Forums

### Program Scope and Functional Description

The success of the NPCC programs depends on the active and direct volunteerism and participation of its members. The stakeholders are the source of subject matter expertise in the industry. To promote the reliable and efficient operation of the interconnected bulk power systems in Northeastern North America, NPCC invites high level policy makers from Federal, Provincial and State regulatory and/or governmental authorities and senior executives within NPCC and NERC to identify and discuss emerging issues related to the reliability of the NPCC Region.

### 2019 Key Assumptions

- NPCC’s standing committee and subgroup structure for effective stakeholder involvement will continue in 2019.
- NPCC will continue to utilize methods to encourage active involvement in its Regional programs that require less stakeholder travel and face-to-face meetings, as the economy improves in 2019.
- NPCC will continue to invest in technology and innovation to allow efficient collaboration on technical issues related to reliability.

The Technical Committees and Member Forums activities indicated below are done in support of ERO Goal No. 4 “*Identification and Assessment of Emerging Risks to Reliability.*” A related contributing activity to this Goal is to “Educate policy makers, regulators, and the industry of reliability effects and interconnection requirements for the changing resource mix.”

### Technical Committees and Member Forums 2019 Goals and Deliverables

- The 2019 NPCC General Meeting provides an opportunity for NPCC Members to meet high level policy makers from Federal, Provincial and State regulatory and/or governmental authorities and senior NERC and NPCC executives to discuss topics related to the reliable planning and operation of the power system, including consideration of emerging reliability, critical infrastructure and environmental issues; and,
- The objective of the NPCC Public Information Committee is to highlight and summarize NPCC activities and accomplishments in the past year, disseminate and coordinate the appropriate release of information to the media, respond to related requests for information, and coordinate with related NPCC Area, NERC media and public information activities. Activities anticipated include, but are not limited to:
  - Conducting the Media Event – release of the Summer 2019 NPCC Reliability Assessment; and,
  - Participation in NERC Regional communication initiatives:
    - Regional communications teleconferences as required
    - Coordination of Emergency or Blackout communications plans
    - Coordination with other NERC activities as required (i.e., situation awareness, event analysis, reliability assessments, etc.)

### Resource Requirements

#### Personnel

- NPCC anticipates no need to hire additional personnel in this program area in 2019.

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## General and Administrative

### Program Scope and Functional Description

The NPCC general and administrative function provides executive management of the corporation, management of NPCC office, and other administrative support programs.

NPCC total overhead expenses, such as office rent and office costs, will be charged to the Administrative Services Programs and then reallocated proportionately based on FTE to the programs through Indirect Expenses.

### Resource Requirements

#### Personnel

- NPCC anticipates no need to hire additional personnel in this program area in 2019.

#### Office Rent

- Projected increase in real estate taxes.

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## Legal and Regulatory

### Program Scope and Functional Description

NPCC's professional legal services provide counsel to the President and CEO, Board of Directors, Senior Vice President and COO, Treasurer, General Counsel and staff on a wide range of legal and regulatory matters including legislation, corporate law, code of conduct, confidentiality, governance, employment law, tax matters, contract law and other areas affecting NPCC, consistent with ERO Goal 6. In support of ERO Goal 4., NPCC's in-house counsel evaluates internal controls and corporate, operational, strategic and reputational risk, and participates in risk identification, evaluation and mitigation activities. In-house counsel provides legal advice to advance significant corporate policy and strategic planning initiatives and also provide legal support to other program areas on matters arising in connection with the performance of NPCC's delegated functions. In-house counsel draft agreements and pleadings and provide interpretations of relevant statutes, regulations, court opinions, and regulatory decisions of FERC, state agencies and provincial authorities. Outside counsel, as necessary, reviews items filed with the governmental agencies for legal sufficiency, maintains relationships with U.S. and Canadian jurisdictions and provides contract review.

### Resource Requirements

#### Personnel

- NPCC anticipates no need to hire additional personnel in this program area in 2019.

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## Information Technology

### Program Scope and Functional Description

NPCC's Information Technology services ensure information assets and the environment in which they operate are secure and in conformance to NPCC IT Policies and Procedures and all applicable Critical Electric Infrastructure Information protection and Confidentiality requirements. NPCC maintains an offsite backup server for continuity of essential operations in the event that its primary location is unavailable.

NPCC supports the ERO efforts to implement, operate and maintain software tools supporting common enterprise wide operations and leveraging ERO solutions which have been approved by the ERO Executive Management Group (ERO EMG), which is comprised of the senior leadership of NERC and each of the Regional Entities. NPCC's budget assumes the availability of enterprise software tools as described in NERC's business plan and budget. If implementation of these software applications is delayed or otherwise not available as planned, NPCC could incur additional costs to implement ERO Enterprise-wide programs pending the availability of these applications.

NERC and the Regional Entities are committed to working collaboratively to minimize duplication of effort and investments, and improve operational efficiency. This collaboration continues to refine existing strategies, governance and procurement practices applicable to the development, operation and maintenance of enterprise architecture, software and data systems supporting complementary and combined NERC and Regional Entity operations.

The NERC information technology budget does not supplant NPCC's need for IT expenditures for specific regional projects and internal region specific IT support needs. NPCC's 2019 Business Plan and Budget assumes agreed-upon ERO Enterprise applications will be available and includes only NPCC costs for Region specific support needs.

### 2019 Key Assumptions

- Continue to maintain the compliance portal through collaboration with other Regional Entities and NERC (CUG).
- Support the Event Analysis program through continued participation in the tools used for the tracking and analysis of system events and identification of better practice elements.
- Support the Bulk Electric System Exception Process (BEP) to enable and facilitate tracking and processing of exceptions submitted. Maintenance of the BESNET support services such as updates, patching, coordinating issues with NERC.
- Support Cyber Security Reviews done by Compliance to provide advisory role during those reviews.

### 2019 Goals and Key Deliverables

Responsibilities encompass a variety of complex technical, administrative, and supervisory work in the development, installation, and maintenance of information technology systems. IT goals include, but are not limited to:

- Expand the utilization of the document management system throughout the company.
- Create an information security program and environment aimed at reducing breach of security risks.
- Determine longer-term software and systems needs and hardware acquisitions.
- Develop and implement information security standards and procedures.

- Ensure all information systems are functional and secure, and that all applications running on those systems meet business requirements for performance, availability, and security.
- Plan and implement organization-wide information systems, services, and network facilities, including local area networks, wide-area networks, and peripheral systems.
- Provide outreach and education to NPCC members in IT best practices.
- Continually improve Disaster Recovery and Business Continuity policies and practices to ensure continuity and reliability of IT and business related services.

## **Resource Requirements**

### **Personnel**

- NPCC anticipates no need to hire additional personnel in this program area in 2019.

### **Fixed Assets**

- Capital expenditures planned for 2019 include the continuing implementation and enhancement of the document management system.

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## Human Resources

### Program Scope and Functional Description

NPCC has assembled an exceptional team of highly qualified employees to carry out its activities. The human resources function, in adherence with applicable federal and state laws, designs, plans, and implements human resources policies and procedures, including: staffing; compensation; benefits; employee relations; training and development; and employee time tracking.

### Resource Requirements

#### Personnel

- NPCC anticipates no need to hire additional personnel in this program area in 2019.

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## Accounting and Finance

### Program Scope and Functional Description

The accounting and finance function directs the overall financial plans and accounting practices of the organization; oversees treasury, accounting, budget, tax, and audit activities; and oversees financial and accounting system controls and standards. NPCC uses a CPA firm to prepare its unaudited statements of activities and financial statements for quarterly reviews. Independent audits have identified this system as a best practice.

### 2019 Goals and Key Deliverables

The objectives are to provide or obtain the financial and accounting services for NPCC and coordinate with NERC requirements:

- Utilize the NERC System of Accounts for consistency
- Utilize an accrual method of accounting for consistency with NERC in methodology
- Alignment of changes in budget and changes in aggregate assessment
- Cash Management
- Budget Development using the NERC budget template formats
- Forecasts and Projections
- Alignment of NPCC Committees, Task Forces and Working Groups with the programs
- Payroll and expense administration
- Preparation of unaudited Quarterly Financial Variance Reports
- IRS Reporting
- Annual Independent Audit initiated by the Regional Entity

### Resource Requirements

#### Personnel

- One additional FTE will replace a continuous series of interns retained over several years in order to meet the ongoing resource needs in this program area and enable long-term sustained knowledge transfer.

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## Regional Entity Assessment Analysis

In the area of assessments there are distinct funding mechanisms as outlined in the following table. For the Regional Entity division, the North American Electric Reliability Corporation (NERC) will assess load serving entities (LSEs) or their designees (within NPCC the designees are the Balancing Authority Areas (BAAs) for New York, New England, New Brunswick, Nova Scotia, Ontario and Québec) based upon 2017 proportional Net Energy for Load (NEL) and other specific program area funding arrangements and make quarterly remittances to the Regional Entity on or about the 15th day of January, April, July and October. For funding associated with the Criteria Services division, the Independent System Operators/Balancing Authority Areas (ISO/BAAs) will be assessed by NPCC for their proportional share of the divisional budget based upon 2017 NEL within the Region. Non ISO/BAA Full Members will be assessed no membership fee.

### NPCC Cost Allocation Methodology

The accompanying table provides information regarding cost allocation for both the Regional Entity division and the Criteria Services division of NPCC, including the details associated with the funding of the Compliance Program within the RE division. For purposes of determining assessments to support NPCC's resource requirements, costs are allocated among the BAAs within NPCC as the designees for the load-serving-entities in New York, New England, Ontario, Québec, New Brunswick and Nova Scotia.

In order to reflect and respect the international membership and nature of NPCC, any sub-regional reliability assessment costs in response to U.S. only regulatory initiatives will be considered for allocation to U.S. only BAAs consistent with NERC Rules of Procedure section 1102. Additionally, the compliance responsibilities and authorities within the U.S., and the specific compliance responsibilities within each of the Canadian provinces within NPCC, and the attendant costs of portions of the compliance program differ among the areas within the Regional Entity. Within the U.S. portion of NPCC all costs attributable to delegated (statutory) functions performed by NPCC, including all compliance functions, are assessed based on a NEL allocation. Within the Canadian portion of NPCC those costs attributable to compliance functions performed by NPCC on behalf of provincial governmental and/or regulatory authorities are allocated consistent with the unique Memoranda of Understanding or Agreements that have been entered into for those provinces. To address these different compliance regimes, NPCC developed a composite cost allocation methodology that allocates U.S. only reliability assessment and compliance costs on a fair and equitable basis within the Regional Entity.

As an initial step of that methodology, the NEL for each of the BAAs and their relative percentage to the NPCC total NEL is calculated for the most recent year for which data is available, the second previous year. In order to establish the RE division funding requirements for each Balancing Authority Area on a NEL basis for all programs except for Compliance, the proposed expenses and fixed assets of all other programs are calculated and the adjustment for the RE division cash reserve requirement is identified. Any penalty monies received from NPCC registered entities within the U.S. prior to June 30<sup>th</sup> of the year preceding the business plan and budget year are then allocated among the NPCC program areas based on their FTE ratio and between the U.S. BAAs based on their relative NELs. Consistent with each of the Canadian provincial MOUs and agreements, all penalty monies resulting from compliance actions within Canada, if any, would remain within the applicable province. The total budgeted fees for NPCC workshop participation are indicated as a credit, with the resultant addition being the RE division assessment, without the compliance program costs, calculated on a NEL basis.



In accordance with the *NPCC Amended and Restated Bylaws* the CS division proposed expenses and fixed assets of all programs are calculated and the adjustment for the CS division cash reserve requirement is identified, with the resultant addition being the CS division funding requirement and assessment, calculated on a NEL basis.

For costs associated with the RE division compliance program, NPCC's allocation methodology apportions 21.31% of the costs for the program, attributed to CORC Fundamentals (CF), between the BAAs in the United States and Canada on a NEL basis.

Audits and Investigations (AI) related costs, representing 59.85% of the costs of the compliance program, are allocated between U.S. and Canadian BAAs in NPCC, and among the Canadian provinces, using an audit-based methodology. The audit-based methodology incorporates relative costs based on categories of compliance audits which are reflective of their size and complexity, as well as the differing compliance program implementation models that are utilized in NPCC due to the international nature of the Regional Entity. The portion allocated to the U.S. BAAs in NPCC is calculated using the audit-based methodology, and this amount is then re-allocated between the New York and New England BAAs based on their relative NEL.

The remaining 18.84% of the costs of the compliance program represent Mitigation and Enforcement (ME) related costs and are allocated between U.S. and Canadian BAAs in NPCC, and among the Canadian provinces, using an enforcement activity based methodology. Based on historical data, NPCC reviewed each BAA's percentage of violations, mitigation plans and settlement agreements to determine each BAA's total average percentage of enforcement activities. The portion allocated to the U.S. BAA's in NPCC is calculated using the enforcement activity based methodology, and this amount is then re-allocated between the New York and New England BAAs based on their relative NEL.

Any penalty monies received from NPCC registered entities within the U.S. by June 30th of the year preceding the business plan and budget year are then allocated among the NPCC program areas based on their FTE ratio and between the U.S. BAAs based on their relative NELs, and then added to the total compliance program expenses and fixed assets to yield a total compliance program assessment.

The CORC actual vs budget variance from the most recent year for which audited financials are available is broken out from the rest of the Adjustment to Cash Reserve and assigned to the CORC program allocation of costs. Within Québec these costs are funded directly by the regulator, therefore, the assignment of program area variances needs to respect those specific circumstances.

Finally, the total RE division funding requirements and assessments by BAA are tabulated and the total funding requirements and assessments for NPCC, both the RE and CS divisions, are combined.

NPCC 2019 Regional Entity (RE) and Criteria Services (C-S) Divisional Funding Information

A-1	B-1	B-1a.	C-1	C-1a.	D-1	E-1	F-1	G-1	H-1	I-1	J-1	K-1	L-1	M-1
NPCC Balancing Authorities (LSE Designees)	2017 Net Energy for Load (MWh)	2017 NPCC US NEL (MWh)	2017 NEL % of NPCC	2017 U.S. NEL % of NPCC	Costs Associated with U.S. Only Reliability	2019 NPCC RE Division Expenses & Fixed Assets Minus CORC and U.S. Only	Adjustment to Cash Reserve Requirement Less CORC	2019 NPCC RE Division Funding Requirement Minus	Penalty Monies Applied to RE Division	Budgeted Workshop Fees	2019 NPCC RE Division Assessment Minus CORC (G-1 plus H-1)	2019 NPCC CS Division Expenses & Fixed Assets	2019 CS Division Adjustment to Cash Reserve Requirement	2019 NPCC CS Division Funding Requirement & Member Fees (K-1 plus L-1)
New England	121,220,000	121,220,000	20.033%	43.669%	TBD	1,399,757	-20,055	1,379,702	0	-13,522	1,366,180	222,082	-9,958	212,124
New York	156,370,000	156,370,000	25.842%	56.331%	TBD	1,805,643	-25,870	1,779,773	0	-17,443	1,762,329	286,479	-12,845	273,634
Ontario	132,091,000	132,091,000	21.830%			1,525,287	-21,853	1,503,434	0	-14,735	1,488,699	241,999	-10,851	231,148
Quebec	170,703,000	170,703,000	28.211%			1,971,150	-28,241	1,942,908	0	-19,042	1,923,866	312,738	-14,023	298,715
New Brunswick	13,796,000	13,796,000	2.280%			159,306	-2,282	157,023	0	-1,539	155,484	25,275	-1,133	24,142
Nova Scotia	10,917,000	10,917,000	1.804%			126,061	-1,806	124,255	0	-1,218	123,037	20,001	-897	19,104
<b>Total</b>	<b>605,097,000</b>	<b>277,590,000</b>	<b>100.000%</b>	<b>100.000%</b>	<b>\$0</b>	<b>\$6,987,204</b>	<b>-\$100,108</b>	<b>\$6,887,096</b>	<b>\$0</b>	<b>-\$67,500</b>	<b>\$6,819,596</b>	<b>\$1,108,574</b>	<b>-\$49,707</b>	<b>\$1,058,866</b>

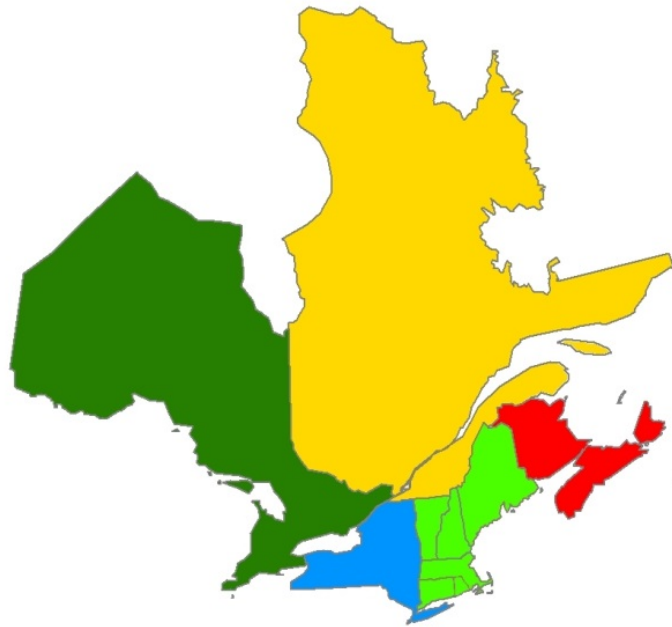
A-2	B-2	C-2	D-2	E-2	F-2	G-2	H-2	I-2	J-2	K-2	L-2	M-2	N
NPCC Balancing Authorities (LSE Designees)	2017 NEL Based Allocation of CORC Program Fundamentals <sup>3</sup>	2019 Audit and Investigation Allocation Methodology	2019 59.85% of CORC Allocation	2019 Mitigation and Enforcement Allocation Methodology	2019 18.84% of CORC Allocation	2019 Total CORC Program Expenses & Fixed Assets	2019 Penalty Monies Applied to CORC Program	Assigned CORC Program 2017 Actual vs Budget Variance	2019 Total CORC Program Assessment (G-2 plus H-2 plus I-2)	2019 RE Division Total Funding Requirement (G-1 plus G-2 plus I-2)	2019 RE Division Total Assessment Requirement (J-1 plus J-2)	2019 NPCC Total Funding Requirement (M-1 plus K-2)	2019 NPCC Total Assessment & Member Fees (N-1 plus N-2)
New England	376,351	44,497%	1,908,051	41.856%	559,686	2,844,087	0	-210,278	2,633,809	4,013,512	3,999,989	4,225,636	4,212,114
New York	485,481	38.395%	2,466,027	35.303%	721,977	3,673,485	0	-266,547	3,406,938	5,186,710	5,169,267	5,460,344	5,442,901
Ontario	410,102	4.231%	223,291	5.753%	95,270	728,962	0	-53,312	675,651	2,179,085	2,164,350	2,410,232	2,395,497
Quebec	529,980	8.921%	470,751	12.888%	214,086	1,214,817	0	-80,406	1,134,411	3,077,319	3,058,277	3,376,034	3,356,992
New Brunswick	42,832	2.045%	107,910	3.625%	60,206	210,949	0	-12,041	198,908	355,931	354,392	380,073	378,534
Nova Scotia	33,894	1.913%	100,941	0.575%	9,552	144,387	0	-10,289	134,098	258,353	257,136	277,457	276,239
<b>Total</b>	<b>\$1,878,640</b>	<b>100.000%</b>	<b>\$4,374,078</b>	<b>100.000%</b>	<b>\$1,281,662</b>	<b>\$8,816,687</b>	<b>\$0</b>	<b>-\$632,872</b>	<b>\$8,183,815</b>	<b>\$15,070,911</b>	<b>\$15,003,411</b>	<b>\$16,129,777</b>	<b>\$16,062,277</b>

1 Any sub-regional reliability assessment costs in response to U.S. only regulatory initiatives will be considered for allocation to U.S. only BAs consistent with NERC Rules of Procedure section 1102.  
 2 Consistent with NERC's Policy on Allocation of Certain Compliance and Enforcement Costs, the NPCC Board approved Allocation Methodologies for Certain NPCC Compliance Program Area Costs Assessed to Non-U.S. Entities.  
 3 CORC Program Fundamentals expenses of \$1,878,640 represent 21.31% of the Total CORC Program Costs and are allocated using the Regional NEL based methodology.  
 4 Audit and Investigation expenses of \$5,276,971 represent 59.85% of the Total CORC Program Costs. The Canadian costs are allocated utilizing an audit based methodology. The portion of \$2,89% attributable to U.S. NPCC is allocated between the New York and New England balancing authority areas based on their respective net energy for load (NEL) as shown in Columns B-1a. and C-1a. The ratios in C-1a. are applied to the 82.89% of U.S. audit costs to obtain the percentages (Column C-2 b) which are then applied to the 59.85% of CORC costs. Audit based allocation uses Compliance Registry Data registrants as of May 1, 2017.  
 5 Mitigation and Enforcement expenses of \$1,661,076 represent 18.84% of the Total CORC Program Costs. The Canadian costs are allocated utilizing an enforcement activity based methodology. The portion of 77.15% attributable to U.S. NPCC is allocated between the New York and New England balancing authority areas based on their respective net energy for load (NEL) as shown in Columns B-1a. and C-1a. The ratios in C-1a. are applied to the 82.89% of U.S. enforcement costs to obtain the percentages (Column C-2 b) which are then applied to the 18.84% of CORC costs.

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## Section B — Supplemental Financial Information 2019 Business Plan and Budget

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## Section B – Supplemental Financial Information

## Reserve Balance

Table B-1 Reserve Balance

Working Capital and Operating Reserve Analysis 2018-2019				
REGIONAL ENTITY DIVISION				
	Total Reserve	Operating Reserve	Working Capital	Business Continuity
Beginning Total Reserve, December 31, 2017	5,017,751	2,818,887	1,258,864	940,000
Plus: 2018 ERO Funding (from LSEs or designees)	14,341,787	14,341,787		
Plus: 2018 Other funding sources	139,000	139,000		
Less: 2018 Projected expenses & capital expenditures	(15,044,967)	(15,044,967)		
<b>Projected Total Reserve, December 31, 2018</b>	<b>4,453,571</b>	<b>2,254,707</b>	<b>1,258,864</b>	<b>940,000</b>
<b>Desired Total Reserve, December 31, 2019</b>	<b>3,720,590</b>	<b>1,463,652</b> <sup>1</sup>	<b>1,316,938</b> <sup>2</sup>	<b>940,000</b> <sup>3</sup>
Less: Projected Total Reserve, December 31, 2018	(4,453,571)	(2,254,707)	(1,258,864)	(940,000)
<b>Increase(decrease) in assessments to achieve desired Total Reserve</b>	<b>(732,980)</b>	<b>(791,055)</b>	<b>58,075</b>	<b>0</b>
2019 Expenses and Capital Expenditures	15,803,891			
Less: Penalty Sanctions <sup>4</sup>	0			
Less: Other Funding Sources	(67,500)			
Less: Release of Business Continuity Reserve Funds <sup>3</sup>	0			
Adjustment to Working Capital to achieve desired Total Reserve balance <sup>2</sup>	58,075			
Adjustment to Operating Reserve to achieve desired Total Reserve balance <sup>1</sup>	(791,055)			
<b>2019 Assessment</b>	<b>15,003,411</b>			

<sup>1</sup> Operating Reserve within a range from 8.33% to 25.00% of Budget. \$1,463,652 represents 9.26% of the 2019 budget of \$15,803,891

<sup>2</sup> Working Capital equal to 8.33% of Budget. \$1,316,938 represents 8.33% of the 2019 budget of \$15,803,891

<sup>3</sup> Business Continuity Reserve (BCR) established in 2017 as approved by the NPCC Board of Directors to fund Succession Planning related expenses.

<sup>4</sup> Represents collections July 1, 2017 to June 30, 2018.

## Explanation of Changes in Reserve Policy from Prior Year

There was no change to the existing Working Capital and Operating Reserve Policy. A separate Business Continuity Reserve (BCR) in the amount of \$1,000,000 (allocated between the Regional Entity and Criteria Services divisions) was established in 2017 as approved by the NPCC Board of Directors, upon recommendation by the Management Development and Compensation Committee and endorsement by the Finance and Audit Committee, to be identified as restricted cash and drawn upon as subsequently brought before the Board of Directors in association with President & CEO succession related activities associated with a planned or sudden retirement, as well as other sudden changing workforce staffing requirements which could be brought about by coincident multiple staff retirements.

## Breakdown by Statement of Activity Sections

The following detailed schedules are in support of the Regional Entity division Statement of Activities on page 13 of the 2019 Business Plan and Budget. All significant variances have been disclosed by program area in the preceding pages.

### Penalty Sanctions

U.S. penalty monies received prior to June 30, 2018 are to be used to offset assessments in the 2019 Budget, as documented in the NERC Policy – Accounting, Financial Statement, and Budgetary Treatment of Penalties Imposed and Received for Violations of Reliability Standard. No penalty monies were received from July 1, 2017 through June 30, 2018. Penalty monies received from July 1, 2018 through June 30, 2019 will be used to offset U.S. load serving entity designee assessments in the 2020 Budget.

Allocation Method: U.S. penalty sanctions received have been allocated to the following Regional Entity division programs to reduce assessments: Reliability Standards; Compliance Monitoring & Enforcement and Organization Registration & Certification; Reliability Assessments and Performance Analysis; Training, Education and Operator Certification; and Situation Awareness and Infrastructure Security. U.S. penalty sanctions are allocated based upon the number of FTEs in the Program divided by the aggregate total FTEs in the Programs receiving the allocation.

**Table B-2 Penalty Sanctions**

Penalty Sanctions Received Prior to June 30, 2018	Date Received	Amount Received
		\$ -
<b>Total Penalties Received</b>		<b>\$ -</b>

Table B-3 Supplemental Funding

Outside Funding Breakdown By Program (excluding ERO Assessments & Penalty Sanctions)	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget
<b>Reliability Standards</b>				
<b>Total</b>	\$ -	\$ -	\$ -	\$ -
<b>Compliance Monitoring, Enforcement &amp; Org. Registration</b>				
	\$ -	\$ -	\$ -	\$ -
	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ -
<b>Reliability Assessment and Performance Analysis</b>				
	\$ -	\$ -	\$ -	\$ -
	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ -
<b>Training and Education</b>				
Workshops	\$ 64,000	\$ 64,000	\$ 67,500	\$ 3,500
<b>Total</b>	\$ 64,000	\$ 64,000	\$ 67,500	\$ 3,500
<b>Situation Awareness and Infrastructure Security</b>				
	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	\$ -	\$ -	\$ -	\$ -
<b>Technical Committees and Member Forums</b>				
	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	\$ -	\$ -	\$ -	\$ -
<b>Administrative Services Programs</b>				
	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	\$ -	\$ -	\$ -	\$ -
<b>Total Outside Funding</b>	\$ 64,000	\$ 64,000	\$ 67,500	\$ 3,500

### Explanation of Significant Variances –2019 Budget versus 2018 Budget

- NPCC assumed no interest income because of continuing low market interest rates.

Table B-4 Personnel Expenses

Personnel Expenses	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
<b>Salaries</b>					
Salary	\$ 7,057,483	\$ 7,057,483	\$ 7,298,280	\$ 240,797	3.4%
Employment Agency Fees	\$ 10,000	\$ 10,000	\$ 10,000	\$ -	0.0%
Temporary Office Services	\$ 40,116	\$ 40,116	\$ 24,000	\$ (16,116)	-40.2%
<b>Total Salaries</b>	<b>\$ 7,107,599</b>	<b>\$ 7,107,599</b>	<b>\$ 7,332,280</b>	<b>\$ 224,681</b>	<b>3.2%</b>
<b>Total Payroll Taxes</b>	<b>\$ 411,440</b>	<b>\$ 411,440</b>	<b>\$ 449,994</b>	<b>\$ 38,553</b>	<b>9.4%</b>
<b>Benefits</b>					
Education Reimbursement	\$ 30,000	\$ 30,000	\$ 32,000	\$ 2,000	6.7%
Training and Seminars	\$ 44,232	\$ 44,232	\$ 58,290	\$ 14,058	31.8%
Medical Insurance	\$ 811,369	\$ 811,369	\$ 901,783	\$ 90,414	11.1%
Life-LTD-STD Insurance	\$ 90,465	\$ 90,465	\$ 94,804	\$ 4,339	4.8%
Worker's Compensation	\$ 15,000	\$ 15,000	\$ 20,000	\$ 5,000	33.3%
Vacation	\$ 485,312	\$ 485,312	\$ 506,201	\$ 20,889	4.3%
Relocation	\$ -	\$ -	\$ -	\$ -	-
<b>Total Benefits</b>	<b>\$ 1,476,378</b>	<b>\$ 1,476,378</b>	<b>\$ 1,613,078</b>	<b>\$ 136,700</b>	<b>9.3%</b>
<b>Retirement</b>					
Pension Contribution	\$ 38,000	\$ 38,000	\$ -	\$ (38,000)	-100.0%
Employee Savings Plan	\$ 714,353	\$ 714,353	\$ 741,511	\$ 27,157	3.8%
Savings Admin	\$ 35,000	\$ 35,000	\$ 36,000	\$ 1,000	2.9%
Deferred Compensation	\$ 38,000	\$ 38,000	\$ 76,000	\$ 38,000	100.0%
<b>Total Retirement</b>	<b>\$ 825,353</b>	<b>\$ 825,353</b>	<b>\$ 853,511</b>	<b>\$ 28,157</b>	<b>3.4%</b>
<b>Total Personnel Costs</b>	<b>\$ 9,820,770</b>	<b>\$ 9,820,770</b>	<b>\$ 10,248,862</b>	<b>\$ 428,092</b>	<b>4.4%</b>
<b>FTEs</b>	<b>36.86</b>	<b>36.86</b>	<b>38.86</b>	<b>2.00</b>	<b>5.4%</b>
<b>Cost per FTE</b>					
Salaries	\$ 192,827	\$ 192,827	\$ 188,685	\$ (4,142)	-2.1%
Payroll Taxes	\$ 11,162	\$ 11,162	\$ 11,580	\$ 418	3.7%
Benefits	\$ 40,054	\$ 40,054	\$ 41,510	\$ 1,456	3.6%
Retirement	\$ 22,392	\$ 22,392	\$ 21,964	\$ (428)	-1.9%
<b>Total Cost per FTE</b>	<b>\$ 266,434</b>	<b>\$ 266,434</b>	<b>\$ 263,738</b>	<b>\$ (2,696)</b>	<b>-1.0%</b>

### Explanation of Significant Variances –2019 Budget versus 2018 Budget

- Pension Contribution decrease is offset by Deferred Compensation increase of the same amount due to the reclassification of 457(b) expenses.
- Decrease in cost per FTE is related to the retirement of a number of seasoned professionals resulting in vacancies which were filled through a combination of in-house promotions, resource re-allocations and the retention of less seasoned successors.
- Increase in Training and Seminars is due to increased per employee training budget.
- Medical Insurance increase reflects a premium increase of 10%.

Table B-5 Meeting Expense

Meeting Expenses	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
Meetings	\$ 353,050	\$ 353,050	\$ 370,750	\$ 17,700	5.0%
Travel	\$ 834,500	\$ 834,500	\$ 845,900	\$ 11,400	1.4%
Conference Calls	\$ 37,000	\$ 37,000	\$ 36,000	\$ (1,000)	-2.7%
<b>Total Meeting Expenses</b>	<b>\$ 1,224,550</b>	<b>\$ 1,224,550</b>	<b>\$ 1,252,650</b>	<b>\$ 28,100</b>	<b>2.3%</b>

## Explanation of Significant Variances –2019 Budget versus 2018 Budget

- Continued efforts to limit the number of attendees to offsite meetings and hold more meetings on-site and via webinar.
- Spring and Fall Standards and Compliance Workshops compressed from three days to two days.

Table B-6 Consultants and Contracts

Consultants	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
<b>Consultants</b>					
Reliability Standards	\$ -	\$ -	\$ -	\$ -	-
Compliance Enforcement and Organization Registration and Certification	\$ -	\$ -	\$ -	\$ -	-
Reliability Assessment and Performance Analysis	\$ -	\$ -	\$ -	\$ -	-
Training and Education	\$ -	\$ -	\$ -	\$ -	-
Situation Awareness and Infrastructure Security	\$ -	\$ -	\$ -	\$ -	-
Member Forums	\$ -	\$ -	\$ -	\$ -	-
General and Administrative	\$ -	\$ -	\$ -	\$ -	-
Legal and Regulatory	\$ -	\$ -	\$ -	\$ -	-
Information Technology	\$ -	\$ -	\$ -	\$ -	-
Human Resources	\$ -	\$ -	\$ -	\$ -	-
Accounting and Finance	\$ -	\$ -	\$ -	\$ -	-
<b>Consultants Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>-</b>
Contracts	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
Reliability Standards	\$ 10,000	\$ 10,000	\$ 10,000	\$ -	0.0%
Compliance Enforcement and Organization Registration and Certification	\$ 1,254,000	\$ 1,254,000	\$ 1,357,150	\$ 103,150	8.2%
Reliability Assessment and Performance Analysis	\$ 401,640	\$ 401,640	\$ 430,000	\$ 28,360	7.1%
Training and Education	\$ -	\$ -	\$ -	\$ -	-
Situation Awareness and Infrastructure Security	\$ 120,000	\$ 120,000	\$ 130,000	\$ 10,000	8.3%
Member Forums	\$ -	\$ -	\$ -	\$ -	-
General and Administrative	\$ 85,000	\$ 85,000	\$ 88,000	\$ 3,000	3.5%
Legal and Regulatory	\$ -	\$ -	\$ -	\$ -	-
Information Technology	\$ -	\$ -	\$ -	\$ -	-
Human Resources	\$ -	\$ -	\$ -	\$ -	-
Accounting and Finance	\$ 7,000	\$ 7,000	\$ 7,000	\$ -	0.0%
<b>Contracts Total</b>	<b>\$ 1,877,640</b>	<b>\$ 1,877,640</b>	<b>\$ 2,022,150</b>	<b>\$ 144,510</b>	<b>7.7%</b>
<b>Total Consultants and Contracts</b>	<b>\$ 1,877,640</b>	<b>\$ 1,877,640</b>	<b>\$ 2,022,150</b>	<b>\$ 144,510</b>	<b>7.7%</b>

## Explanation of Significant Variances –2019 Budget versus 2018 Budget

- Ongoing effort to decrease the use of consultants and contractors when possible. (See program area sections for detail regarding a specific program area.)



Table B-7 Office Rent

Office Rent	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
Office Rent	\$ 650,000	\$ 650,000	\$ 650,000	\$ -	0.0%
Utilities	\$ 43,000	\$ 43,000	\$ 45,000	\$ 2,000	4.7%
Maintenance	\$ 35,000	\$ 35,000	\$ 37,000	\$ 2,000	5.7%
Security	\$ 2,700	\$ 2,700	\$ 2,700	\$ -	0.0%
Real Estate Taxes	\$ 80,000	\$ 80,000	\$ 86,000	\$ 6,000	7.5%
<b>Total Office Rent</b>	<b>\$ 810,700</b>	<b>\$ 810,700</b>	<b>\$ 820,700</b>	<b>\$ 10,000</b>	<b>1.2%</b>

## Explanation of Significant Variances –2019 Budget versus 2018 Budget

- Projected increase in real estate taxes.

Table B-8 Office Costs

Office Costs	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
Telephone	\$ 111,660	\$ 111,660	\$ 88,720	\$ (22,940)	-20.5%
Internet Expense	\$ 95,000	\$ 95,000	\$ 82,740	\$ (12,260)	-12.9%
Office Supplies	\$ 33,000	\$ 33,000	\$ 33,000	\$ -	0.0%
Computer Supplies and Maintenance	\$ 350,600	\$ 350,600	\$ 397,387	\$ 46,787	13.3%
Subscriptions & Publications	\$ 13,500	\$ 13,500	\$ 13,500	\$ -	0.0%
Dues	\$ 3,400	\$ 3,400	\$ 3,400	\$ -	0.0%
Postage	\$ 1,200	\$ 1,200	\$ 1,200	\$ -	0.0%
Express Shipping	\$ 10,000	\$ 10,000	\$ 10,000	\$ -	0.0%
Copying	\$ 26,400	\$ 26,400	\$ 26,400	\$ -	0.0%
Reports	\$ 8,000	\$ 8,000	\$ 8,000	\$ -	0.0%
Stationary and Office Forms	\$ 2,000	\$ 2,000	\$ 2,000	\$ -	0.0%
Equipment Repair/Service Contracts	\$ -	\$ -	\$ -	\$ -	-
Bank Charges	\$ 10,000	\$ 10,000	\$ 10,000	\$ -	0.0%
Sales and Use Tax	\$ -	\$ -	\$ -	\$ -	-
Merchant Credit Card Fees	\$ -	\$ -	\$ -	\$ -	-
Presentation and Publicity	\$ -	\$ -	\$ -	\$ -	-
<b>Total Office Costs</b>	<b>\$ 664,760</b>	<b>\$ 664,760</b>	<b>\$ 676,347</b>	<b>\$ 11,587</b>	<b>1.7%</b>

## Explanation of Significant Variances –2019 Budget versus 2018 Budget

- Total Office costs are expected to remain relatively flat.

Table B-9 Professional Services

Professional Services	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
BOT Fee	\$ 340,000	\$ 340,000	\$ 346,000	\$ 6,000	1.8%
BOT Search Fee	\$ -	\$ -	\$ -	\$ -	-
Legal - Reorganization	\$ -	\$ -	\$ -	\$ -	-
Accounting & Auditing Fees	\$ 300,000	\$ 300,000	\$ 300,000	\$ -	0.0%
Legal Fees - Other	\$ 250,000	\$ 250,000	\$ 262,000	\$ 12,000	4.8%
Insurance - Commercial	\$ 70,000	\$ 70,000	\$ 70,000	\$ -	0.0%
<b>Total Services</b>	<b>\$ 960,000</b>	<b>\$ 960,000</b>	<b>\$ 978,000</b>	<b>\$ 18,000</b>	<b>1.9%</b>

Table B-10 Miscellaneous

Miscellaneous Expense	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
Miscellaneous Expense	\$ 50,000	\$ 50,000	\$ 51,000	\$ 1,000	2.0%
<b>Total Miscellaneous Expense</b>	<b>\$ 50,000</b>	<b>\$ 50,000</b>	<b>\$ 51,000</b>	<b>\$ 1,000</b>	<b>2.0%</b>

Table B-11 Other Non-Operating Expenses

Other Non-Operating Expenses	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
Interest Expense	\$ -	\$ -	\$ -	\$ -	-
Office Relocation	\$ -	\$ -	\$ -	\$ -	-
<b>Total Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>-</b>

Table B-12 Fixed Assets

Fixed Assets	Budget 2018	Projection 2018	Budget 2019	Variance 2019 Budget v 2018 Budget	Variance %
Depreciation	\$ (269,000)	\$ (269,000)	\$ (255,000)	\$ 14,000	-5.2%
Equipment CapEx	\$ -	\$ -	\$ -	\$ -	-
Computer & Software CapEx	\$ 115,000	\$ 115,000	\$ 170,000	\$ 55,000	47.8%
Furniture & Fixtures CapEx	\$ -	\$ -	\$ -	\$ -	-
Leasehold Improvements	\$ -	\$ -	\$ -	\$ -	-
Allocation of Fixed Assets	\$ -	\$ -	\$ -	\$ -	-
<b>Total Increase (Decrease) in Fixed Assets</b>	<b>\$ (154,000)</b>	<b>\$ (154,000)</b>	<b>\$ (85,000)</b>	<b>\$ 69,000</b>	<b>-44.8%</b>

### Explanation of Significant Variances –2019 Budget versus 2018 Budget

- Capital expenditures planned for 2019 include the continuing implementation of the document management system.

Table B-13 2020 and 2021 Projections

Statement of Activities and Capital Expenditures 2019 Budget & Projected 2020 and 2021 Budgets							
	2019 Budget	2020 Projection	\$ Change 19 v 20	% Change 19 v 20	2021 Projection	\$ Change 20 v 21	% Change 20 v 21
<b>Funding</b>							
<b>ERO Funding</b>							
ERO Assessments	\$ 15,003,411	\$ 15,299,904	\$ 296,493	2.0%	\$ 15,628,577	\$ 328,672	2.1%
Penalty Sanctions	-	-	-	-	-	-	-
<b>Total ERO Funding</b>	<b>\$ 15,003,411</b>	<b>\$ 15,299,904</b>	<b>\$ 296,493</b>	<b>2.0%</b>	<b>\$ 15,628,577</b>	<b>\$ 328,672</b>	<b>2.1%</b>
Membership Dues	-	-	-	-	-	-	-
Testing Fees	-	-	-	-	-	-	-
Services & Software	-	-	-	-	-	-	-
Workshops	67,500	64,000	(3,500)	-5.2%	64,000	-	0.0%
Interest	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-
<b>Total Funding (A)</b>	<b>\$ 15,070,911</b>	<b>\$ 15,363,904</b>	<b>\$ 292,993</b>	<b>1.9%</b>	<b>\$ 15,692,577</b>	<b>\$ 328,672</b>	<b>2.1%</b>
<b>Expenses</b>							
<b>Personnel Expenses</b>							
Salaries	\$ 7,332,280	\$ 7,552,249	\$ 219,968	3.0%	\$ 7,778,816	\$ 226,567	3.0%
Payroll Taxes	449,994	463,493	13,500	3.0%	477,398	13,905	3.0%
Benefits	1,613,078	1,709,863	96,785	6.0%	1,812,455	102,592	6.0%
Retirement Costs	853,511	879,116	25,605	3.0%	905,489	26,373	3.0%
<b>Total Personnel Expenses</b>	<b>\$ 10,248,862</b>	<b>\$ 10,604,721</b>	<b>\$ 355,858</b>	<b>3.5%</b>	<b>\$ 10,974,158</b>	<b>\$ 369,438</b>	<b>3.5%</b>
<b>Meeting Expenses</b>							
Meetings	\$ 370,750	\$ 374,458	\$ 3,708	1.0%	\$ 378,202	\$ 3,745	1.0%
Travel	845,900	854,359	8,459	1.0%	862,903	8,544	1.0%
Conference Calls	36,000	36,360	360	1.0%	36,724	364	1.0%
<b>Total Meeting Expenses</b>	<b>\$ 1,252,650</b>	<b>\$ 1,265,177</b>	<b>\$ 12,527</b>	<b>1.0%</b>	<b>\$ 1,277,828</b>	<b>\$ 12,652</b>	<b>1.0%</b>
<b>Operating Expenses</b>							
Consultants & Contracts	\$ 2,022,150	\$ 2,022,150	-	0.0%	\$ 2,022,150	\$ -	0.0%
Office Rent	820,700	828,907	8,207	1.0%	837,196	8,289	1.0%
Office Costs	676,347	689,874	13,527	2.0%	703,671	13,797	2.0%
Professional Services	978,000	978,000	-	0.0%	978,000	-	0.0%
Miscellaneous	51,000	51,510	510	1.0%	52,025	515	1.0%
Depreciation	255,000	257,550	2,550	1.0%	260,126	2,576	1.0%
<b>Total Operating Expenses</b>	<b>\$ 4,803,197</b>	<b>\$ 4,827,991</b>	<b>\$ 24,794</b>	<b>0.5%</b>	<b>\$ 4,853,168</b>	<b>\$ 25,177</b>	<b>0.5%</b>
<b>Total Direct Expenses</b>	<b>\$ 16,304,709</b>	<b>\$ 16,697,888</b>	<b>\$ 393,179</b>	<b>2.4%</b>	<b>\$ 17,105,154</b>	<b>\$ 407,266</b>	<b>2.4%</b>
<b>Indirect Expenses</b>	<b>\$ (415,818)</b>	<b>\$ (424,135)</b>	<b>\$ (8,316)</b>	<b>2.0%</b>	<b>\$ (432,617)</b>	<b>\$ (8,483)</b>	<b>2.0%</b>
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>		<b>\$ -</b>	<b>\$ -</b>	
<b>Total Expenses (B)</b>	<b>\$ 15,888,891</b>	<b>\$ 16,273,753</b>	<b>\$ 384,862</b>	<b>2.4%</b>	<b>\$ 16,672,537</b>	<b>\$ 398,784</b>	<b>2.5%</b>
<b>Change in Assets</b>	<b>\$ (817,980)</b>	<b>\$ (909,849)</b>	<b>\$ (91,869)</b>	<b>11.2%</b>	<b>\$ (979,960)</b>	<b>\$ (70,111)</b>	<b>7.7%</b>
<b>Fixed Assets</b>							
Depreciation	\$ (255,000)	\$ (257,550)	\$ (2,550)	1.0%	\$ (260,126)	\$ (2,576)	1.0%
Computer & Software CapEx	170,000	100,000	(70,000)	-41.2%	50,000	(50,000)	-50.0%
Furniture & Fixtures CapEx	-	-	-	-	-	-	-
Equipment CapEx	-	-	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-	-	-
<b>(Incr)Dec in Fixed Assets (C)</b>	<b>\$ (85,000)</b>	<b>\$ (157,550)</b>	<b>\$ (72,550)</b>	<b>85.4%</b>	<b>\$ (210,126)</b>	<b>\$ (52,576)</b>	<b>33.4%</b>
<b>TOTAL BUDGET (=B+C)</b>	<b>\$ 15,803,891</b>	<b>\$ 16,116,203</b>	<b>\$ 312,312</b>	<b>2.0%</b>	<b>\$ 16,462,411</b>	<b>\$ 346,208</b>	<b>2.1%</b>
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ (732,980)</b>	<b>\$ (752,299)</b>	<b>\$ (19,319)</b>	<b>2.6%</b>	<b>\$ (769,835)</b>	<b>\$ (17,536)</b>	<b>0.0%</b>
<b>FTEs</b>	38.86	38.86	0	0.0%	38.86	0	0.0%

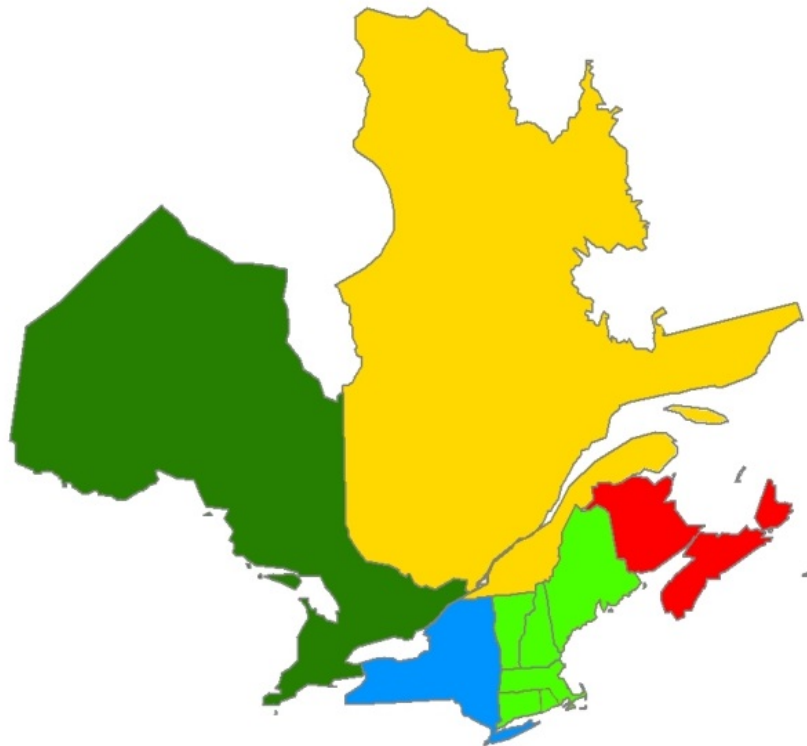
## Assumptions

- No changes in assumptions
- Staffing remains flat
- Change in assessments is equal to change in total budget

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## Section C — Criteria Services Division Activities 2019 Business Plan and Budget

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## Section C – Criteria Services Division Activities

<b>Criteria Services Division</b>			
(in whole dollars)			
	2018 Budget	2019 Budget	Increase (Decrease)
Total FTEs	2.14	2.14	0.00
Total Direct Expenses	\$666,530	\$676,756	\$10,226
Total Indirect Expenses	\$416,453	\$415,818	(\$635)
Other Non-Operating Expenses	\$0	\$0	\$0
Working Capital and Operating Reserves Requirement	(\$47,843)	(\$49,707)	(\$1,865)
Inc(Dec) in Fixed Assets	(\$16,000)	\$16,000	\$32,000
Funding Requirement	\$1,019,141	\$1,058,866	\$39,726

### NPCC Regionally-Specific Criteria Services Background

NPCC Criteria Services division activities are based on the development, maintenance (including retirement when no longer needed), and promulgation of new or revised Regionally-specific, more stringent reliability criteria and supporting guideline or procedural documents. The requirements in NPCC Reliability Criteria apply only to those facilities defined as NPCC Bulk Power System elements through the performance based methodology identified in the NPCC Document A-10, “Classification of Bulk Power System Elements.”

In accordance with the NERC Rules of Procedure (RoP) Section 313, Regional Entities may develop Regional Criteria necessary to implement, augment, or facilitate compliance with NERC Reliability Standards. These Regional Criteria may also be utilized to address issues not within the scope or jurisdiction of FERC as outlined in Section 215 of the Federal Power Act, such as resource adequacy. Regional Criteria may also address Canadian Provincial reliability issues, and may include specific operating or planning parameters, guides, agreements, protocols or other documents used to enhance the reliability of the Bulk Power System in the Region. These documents typically provide benefits by promoting more consistent implementation of the NERC Reliability Standards within the Region. These documents are not NERC Reliability Standards, Regional Reliability Standards, or Regional Variances, and therefore are not enforceable under the authority delegated by NERC pursuant to delegation agreements.

As NERC Reliability Standards are revised or new standards are developed, NPCC performs reviews of any associated Regional Criteria for possible impact.

For 2019 and beyond, the potential reliability impacts of increased penetration of Distributed Energy Resources (DER, e.g. solar and wind), and changing fuel mixes warrant further consideration. The Criteria Services Division has a unique opportunity to review these issues and develop criteria, guideline, and procedural documents for DER which may be outside of the jurisdiction of FERC and NERC Reliability Standards. Participation of the entities responsible for development of DER renewable resources to develop reliability documents will become increasingly important over time. Outreach, collaboration, and coordination of topics related to DER will enable NPCC to develop guidelines allowing more effective integration of these resources.

Increasing resilience of the BPS through alternative approaches to standards development using potential NPCC criteria, guidelines, and whitepapers will also be continually reviewed by NPCC's body of subject matter experts.

### **Membership and Governance**

Full members, in accordance with NPCC's Amended and Restated Bylaws, are subject to compliance with Regionally-specific criteria and receive criteria-related services from the Criteria Services division.

Full Members, aside from those who perform the Balancing Authority function, are not assessed an annual membership fee. Those that perform Balancing Authority functions are assessed and remit a proportional net energy for load share of expenses for Criteria Services. NPCC would also directly assign Criteria Service division costs to a Balancing Authority Area or entity, where significant costs are incurred for that Balancing Authority Area. The funding for NPCC's Criteria Services division is approved by the NPCC Board of Directors.

Under Criteria Services NPCC will identify for membership, those entities involved in emerging technologies to assure that those entities that have an impact on Bulk Electric System reliability are included in appropriate NPCC activities.

### **Criteria Services Division Functional Scope**

Through its Criteria Services division, NPCC promotes the reliable and efficient operation of the international, interconnected bulk power systems in Northeastern North America through the establishment of Regionally-specific criteria, and monitoring and enforcement of compliance with such criteria.

NPCC provides Full Members with Regional reliability assurance services, and acts as the vehicle through which States and Provinces can fulfill their political mandates, with respect to resource adequacy, as well as overseeing the Northeastern North American electric infrastructure.

### **Major 2019 Assumptions and Cost Impacts**

The Criteria Services division activities are expected to remain stable or slightly increase throughout 2019 depending on reliability need.

- The Criteria Compliance Enforcement Program (CCEP) review and evaluation process is the mechanism for monitoring key criteria attributes as determined by the respective NPCC Task Forces and the Compliance Committee.
- Past non-compliances, if any, followed the due process stated in the CCEP-1 process document and proper resolution/enforcement action taken.

### **2019 Primary Goals and Objectives**

- Continue with the development and maintenance of a set of NPCC Directories which augment or add specificity to the NERC Reliability Standards and which clearly delineate the more stringent NPCC criteria requirements. The combination of North American and more stringent NPCC Regional criteria provide for consistency and operational clarity while providing more robust defense in-depth, results based, criteria requirements to ensure NPCC BPS reliability.
- Continually review the criteria found in the NPCC Directories and the ERO standards to ensure no redundancies or inconsistencies exist.

- Retire Directories and/or Criteria which have been overtaken by improved NERC standards.
- Identify opportunities to develop criteria, procedures or guideline documents to address reliability related matters with DER.
- Identify opportunities to address improvements in BES resilience with NPCC processes and documentation.
- Continually review the need to file revised and updated more stringent requirements with the New York State Department of Public Service and Canadian Provinces as applicable.
- Review, maintain, and revise the NPCC Regional Reliability Directories to facilitate compliance assessments and ensure the Criteria portions of the Directories augment and are not duplicative with, the approved and effective NERC Standards.
- The Criteria Services division and CCEP Working Group (reporting to the Compliance Committee) will work with the various Task Forces to develop Criteria Compliance Reporting Forms for any additional NPCC Directories to ensure that the more stringent or Regionally-specific criteria is being met.
- The Criteria Services division and CCEP working group will work with TFCCO, TFCCP, TFSSS, and TFSSP to review criteria and measures within each specific NPCC Directory to identify and develop them into specific reporting forms for approval.
- Continually review impact of Bulk Electric System definition on Directory and Criteria content and compliance reporting.
- Continually review potential impacts of Sector or NPCC organizational changes on the Directories and Criteria by performing a review of enforcement and arbitration processes as needed.
- Assist Legal with preparation of revised Directories for Regulatory filings with the individual Provinces in accordance with their respective Memorandum of Understandings (MOUs) as well as the State of New York Public Service Commission.
- Facilitate any requested clarifications for NPCC Criteria with the necessary subject matter experts and also identify any other potential opportunities for clarifications of the Criteria.
- Conduct review of the following Documents:
  - Directory No. 7 – *Special Protection Systems* – the TFSSP will serve as lead Task Force working in conjunction with TFCCP and TFSSS on revisions required to ensure consistency with the development of the NERC standard on Remedial Action Schemes.
  - *A-10 - Classification of Bulk Power System Elements* - the TFCCP will conclude its review of the A-10 methodology in 2019.
  - Review and respond to Requests for Clarifications to existing NPCC Standards, Directories, and Criteria.

### **NPCC Reliability Directory Maintenance and Development**

The NPCC Regional Reliability Directories were developed to demonstrate that the NPCC more stringent criteria augment, add specificity, or address issues not covered in the NERC Reliability Standards as mandated by the NERC Rules of Procedure. The conversion of NPCC’s reliability criteria into Directories was undertaken to remove any redundancies with the NERC or NPCC Regional Reliability Standards and to clearly delineate the more stringent NPCC criteria requirements, assign Functional Model designations to those responsible for compliance and create measurable compliance criteria. Subsequent to the initial establishment of the Directories, which also organized functionally related B Guidelines and C Procedures into a single Directory, the Directories were further reviewed to translate existing criteria language into a requirements and “standards type” format. The development of the criteria into NERC style requirements facilitates the NPCC Region’s CCEP and also ensures the delineation of the more stringent and

more specific Regional criteria from the latest approved and effective set of NERC ERO standards.

In 2019, work will continue with the maintenance, revision, or potential retirement of individual Directories to address any actual or anticipated redundancies with new or modified NERC or NPCC Reliability Standards. The ongoing review and maintenance of the Directories will require Task Force and Criteria Services staff to support this effort and to serve as subject matter experts. In addition to the ongoing review of the criteria within the Directories for potential duplicity with the NERC standards, any Directories that have not had the criteria translated into NERC style requirements will also be reviewed in order to achieve criteria ‘requirements’ which are clear, concise and measurable. Also, a standards style template will continue to be applied to the existing Directories to make them more consistent with the format of NERC standards. As NERC standards improve, the need for NPCC Directories and the amount of criteria contained therein may decrease over time, however in the interim, significant review is necessary to ensure the criteria remain consistent with the NERC standards as outlined in the NERC Rules of Procedure. NPCC will conduct internal reviews of all draft standards against Regional criteria and utilize subject matter experts to identify reliability and compliance related concerns. NPCC will file the revised NPCC Directories and notifications of retirements of Directories with the Canadian governmental and/or provincial Regulatory authorities within the NPCC “footprint”, on an as needed basis, in accordance with established provincial procedures and agreements executed with NPCC.

### **NPCC Operations and Planning Directories**

The following Directories are envisioned to remain active for 2019.

#### *Directory #1, Design and Operation of the Bulk Power System.*

This Directory documents NPCC’s Regionally-specific, more stringent criteria, and demonstrates coordination and consistency with all the existing NERC TPL, BAL, IRO, INT, MOD, TOP, PRC and VAR standards. The NPCC TFCP and TFCO completed a review of the Directory#1 criteria in 2015, during which the criteria was translated into NERC style requirements and revisions were enacted to ensure consistency with recent changes to the TPL and TOP standards.

#### *Directory #2, Emergency Operations*

This Directory documents NPCC’s Regionally-specific, more stringent criteria, and demonstrates coordination and consistency with all the existing NERC EOP and TOP standards. The NPCC Task Force on Coordination of Operation is reviewing this Directory in 2018.

#### *Directory #4, System Protection Criteria*

This Directory documents NPCC’s Regionally-specific, more stringent criteria, and demonstrates coordination and consistency with certain applicable NERC PRC standards. The NPCC Task Force on System Protection will lead this review and revision.

#### *Directory #5, Reserve*

This Directory documents NPCC’s Regionally-specific, more stringent criteria, and demonstrates coordination and consistency with all the existing applicable NERC BAL, INT, and IRO standards. The NPCC Task Force on Coordination of Operation will lead this review and revision and ensure consistency with the BAL standards.



Directory #7, *Special Protection Systems*

This Directory documents NPCC's Regionally-specific, more stringent criteria for application and approval of SPS. The NPCC Task Force on System Protection will lead this review and revision and ensure consistency with the Remedial Action Scheme PRC-012 standard.

Directory #8, *System Restoration*

This Directory documents NPCC's Regionally-specific, more stringent criteria with which each applicable entity must plan for and perform power system restoration following a major or a total blackout, and demonstrates coordination and consistency with applicable NERC EOP standards. The NPCC Task Force on Coordination of Operation lead the review and revision of this Directory in 2018. The Directory was re-formatted to be consistent with the style of NERC standards.

Directory #11, *Disturbance Monitoring Equipment*,

This directory documents NPCC's Regionally-specific, more stringent criteria, and demonstrates coordination and consistency with certain existing NERC PRC standards. The NPCC Task Force on System Protection anticipates the development and approval of Directory#11 in order to facilitate the retirement of PRC -002-NPCC-1 and will lead this review and revision.

## **NPCC Criteria Compliance and Enforcement Program (CCEP)**

The NPCC Criteria Services division supports the reliable operation of the NPCC Bulk Power System (BPS) through implementation of the NPCC Criteria Compliance Program (CCEP). This program monitors, assesses and enforces compliance with regionally specific, more stringent NPCC Criteria. The criteria are unique to the NPCC BPS and are not duplicative of the NERC Reliability Standards. The criteria evolved over many years and were determined to be technically necessary, to maintain the reliability of the NPCC BPS and prevent cascading outages. In addition, the physical characteristics and topology of the transmission system within the Region require that these specific, more stringent criteria be developed and that compliance be monitored for these criteria.

NPCC Membership, in conjunction with the Criteria Services Division of the NPCC Staff, developed the CCEP. The NPCC Compliance Committee administers the CCEP. The NPCC Compliance Committee is a stakeholder body consisting of NPCC Members, structured with seven sectors. They are Transmission Owners; Reliability Coordinators; Transmission Dependent Utilities, Distribution Providers and Load-Serving Entities; Generator Owners; Marketers, Brokers and Aggregators; Regulators; Sub-Regional Reliability Councils, Customers, Other Regional Entities and Interested Entities.

Non-compliance to NPCC Criteria are not subject to monetary sanctions, whereas violations of NERC Reliability Standards are subject to monetary sanctions. Currently non-compliance of NPCC Criteria result in escalating notification to appropriate entities based on the severity of the non-compliance.

The following two guiding documents describe the implementation of the CCEP:

- The CCEP program is described in document CCEP-1, *NPCC Criteria Compliance and Enforcement Program (CCEP) Process Document*
- The implementation plan is described in document CCEP-2, *Implementation Plan for 2011 NPCC Criteria Compliance and Enforcement Program*

The NPCC Compliance Committee reviews these documents on a regular basis. Should the NPCC Compliance Committee revise the CCEP-1 document, it will prepare an approved final version that is distributed to the NPCC Membership for vote. As the CCEP is only applicable to the NPCC Criteria, which is the responsibility of the Full Members of NPCC, the Full Members of NPCC must vote on revisions to the document

The CCEP-1 document also:

- 1) Provides a comprehensive CCEP Process Diagram showing the process of evaluating and approving Criteria Certification submittals, and additional processes and responsibilities in the event that non-compliances, disputes and sanctions arise;
- 2) Describes the roles and responsibilities of Reporting Members, the NPCC Compliance Committee, the NPCC Reliability Coordinating Committee and the Enforcement Panel in the compliance review and enforcement process;
- 3) Describes Levels of Non-Compliance, associated non-monetary Sanctions, Lateness Policy and the Arbitration/Dispute Resolution process;
- 4) Addresses Mitigation Plans for any violations under the enforcement process; and
- 5) Lists the Certification Forms to be submitted for review.

Annually, the CCEP Working Group, under the NPCC Compliance Committee, develops the CCEP implementation plan and also reviews the compliance submittals and prepares a report for the entire NPCC Compliance Committee. The NPCC Compliance Committee has final approval of compliance assessments related to CCEP. Once the Compliance Committee approves the final report, it is presented to the NPCC Reliability Coordinating Committee for its approval.

Compliance to the NPCC Criteria is a responsibility of the NPCC Members and is codified in the *AMENDED AND RESTATED BYLAWS OF NORTHEAST POWER COORDINATING COUNCIL, INC.* Implementation of the CCEP is also consist with the current Memorandum of Understanding that NPCC has with its Canadian Members.

### **Explanation of Significant Variances – 2019 Budget versus 2018 Budget**

- None.

## 2018 Budget and Projection and 2019 Budget Comparisons

Statement of Activities and Capital Expenditures 2018 Budget & Projection, and 2019 Budget						
CRITERIA SERVICES DIVISION						
	2018 Budget	2018 Projection	Variance 2018 Projection v 2018 Budget Over(Under)	2019 Budget	Variance 2019 Budget v 2018 Budget Over(Under)	
<b>Funding</b>						
<b>ERO Funding</b>						
ERO Assessments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Penalty Sanctions	-	-	-	-	-	-
<b>Total ERO Funding</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
Membership Dues	1,019,141	1,019,141	-	1,058,866	39,726	
Testing Fees	-	-	-	-	-	-
Services & Software	-	-	-	-	-	-
Workshops	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-
<b>Total Funding (A)</b>	<b>\$ 1,019,141</b>	<b>\$ 1,019,141</b>	<b>\$ -</b>	<b>\$ 1,058,866</b>	<b>\$ 39,726</b>	
<b>Expenses</b>						
<b>Personnel Expenses</b>						
Salaries	\$ 404,848	\$ 404,848	\$ -	\$ 371,938	\$ (32,909)	
Payroll Taxes	23,413	23,413	-	23,696	283	
Benefits	74,991	74,991	-	102,779	27,788	
Retirement Costs	43,272	43,272	-	43,182	(90)	
<b>Total Personnel Expenses</b>	<b>\$ 546,523</b>	<b>\$ 546,523</b>	<b>\$ -</b>	<b>\$ 541,596</b>	<b>\$ (4,927)</b>	
<b>Meeting Expenses</b>						
Meetings	\$ 5,000	\$ 5,000	\$ -	\$ 5,000	\$ -	
Travel	55,647	55,647	-	56,800	1,153	
Conference Calls	-	-	-	-	-	-
<b>Total Meeting Expenses</b>	<b>\$ 60,647</b>	<b>\$ 60,647</b>	<b>\$ -</b>	<b>\$ 61,800</b>	<b>\$ 1,153</b>	
<b>Operating Expenses</b>						
Consultants & Contracts	\$ 40,360	\$ 40,360	\$ -	\$ 55,360	\$ 15,000	
Office Rent	-	-	-	-	-	-
Office Costs	-	-	-	-	-	-
Professional Services	-	-	-	-	-	-
Computer & Equipment Leases	-	-	-	-	-	-
Miscellaneous	3,000	3,000	-	4,000	1,000	
Depreciation	16,000	16,000	-	14,000	(2,000)	
<b>Total Operating Expenses</b>	<b>\$ 59,360</b>	<b>\$ 59,360</b>	<b>\$ -</b>	<b>\$ 73,360</b>	<b>\$ 14,000</b>	
<b>Total Direct Expenses</b>	<b>\$ 666,530</b>	<b>\$ 666,530</b>	<b>\$ -</b>	<b>\$ 676,756</b>	<b>\$ 10,226</b>	
<b>Indirect Expenses</b>	<b>\$ 416,453</b>	<b>\$ 416,453</b>	<b>\$ -</b>	<b>\$ 415,818</b>	<b>\$ (635)</b>	
<b>Other Non-Operating Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Total Expenses (B)</b>	<b>\$ 1,082,983</b>	<b>\$ 1,082,983</b>	<b>\$ -</b>	<b>\$ 1,092,574</b>	<b>\$ 9,591</b>	
<b>Change in Assets</b>	<b>\$ (63,843)</b>	<b>\$ (63,843)</b>	<b>\$ -</b>	<b>\$ (33,707)</b>	<b>\$ 30,135</b>	
<b>Fixed Assets</b>						
Depreciation	\$ (16,000)	(16,000)	\$ -	\$ (14,000)	\$ 2,000	
Computer & Software CapEx	-	-	-	30,000	30,000	
Furniture & Fixtures CapEx	-	-	-	-	-	-
Equipment CapEx	-	-	-	-	-	-
Leasehold Improvements	-	-	-	-	-	-
Allocation of Fixed Assets	-	-	-	-	-	-
<b>Inc(Dec) in Fixed Assets (C)</b>	<b>(16,000)</b>	<b>(16,000)</b>	<b>-</b>	<b>16,000</b>	<b>32,000</b>	
<b>TOTAL BUDGET (=B+C)</b>	<b>1,066,983</b>	<b>1,066,983</b>	<b>-</b>	<b>1,108,574</b>	<b>41,591</b>	
<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>\$ (47,843)</b>	<b>\$ (47,843)</b>	<b>\$ -</b>	<b>\$ (49,707)</b>	<b>\$ (1,865)</b>	

## Personnel Analysis

Total FTEs by Program Area	Budget 2018	Projection 2018	Direct FTEs 2019 Budget	Shared FTEs <sup>1</sup> 2019 Budget	Total FTEs 2019 Budget	Change from 2018 Budget
<b>CRITERIA SERVICES DIVISION</b>						
<b>Operational Programs</b>						
Reliability Standards	1.07	1.07	1.00	0.07	1.07	0.00
Compliance Enforcement and Organization Registration and Certification	0.00	0.00	0.00	0.00	0.00	0.00
Training and Education	0.00	0.00	0.00	0.00	0.00	0.00
Reliability Assessment and Performance Analysis	1.07	1.07	1.00	0.07	1.07	0.00
Situation Awareness and Infrastructure Security	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total FTEs Operational Programs</b>	<b>2.14</b>	<b>2.14</b>	<b>2.00</b>	<b>0.14</b>	<b>2.14</b>	<b>0.00</b>
<b>Administrative Programs</b>						
Member Forums	0.00	0.00	0.00	0.00	0.00	0.00
General and Administrative	0.00	0.00	0.00	0.00	0.00	0.00
Information Technology	0.00	0.00	0.00	0.00	0.00	0.00
Legal and Regulatory	0.00	0.00	0.00	0.00	0.00	0.00
Human Resources	0.00	0.00	0.00	0.00	0.00	0.00
Accounting and Finance	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total FTEs Administrative Programs</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total FTEs</b>	<b>2.14</b>	<b>2.14</b>	<b>2.00</b>	<b>0.14</b>	<b>2.14</b>	<b>0.00</b>

<sup>1</sup>A shared FTE is defined as an employee who performs both Regional Entity and Criteria Services division functions.

## Reserve Analysis 2018 - 2019

Working Capital and Operating Reserve Analysis 2018-2019				
CRITERIA SERVICES DIVISION				
	Total Reserve	Operating Reserve	Working Capital	Business Continuity
<b>Beginning Total Reserve, December 31, 2017</b>	534,786	386,031	88,755	60,000
2018 Non-Statutory Funding (from members)	1,019,141	1,019,141	0	0
2018 Other funding sources	0	0	0	0
Less: 2018 Projected expenses & fixed asset additions	(1,106,983)	(1,106,983)	0	0
<b>Projected Total Reserve, December 31, 2018</b>	<b>446,943</b>	<b>298,188</b>	<b>88,755</b>	<b>60,000</b>
<b>Desired Total Reserve, December 31, 2019</b>	<b>397,236</b>	<b>244,859</b> <sup>1</sup>	<b>92,377</b> <sup>2</sup>	<b>60,000</b> <sup>3</sup>
Less: Projected Total Reserve, December 31, 2018	(446,943)	(298,188)	(88,755)	(60,000)
<b>Increase(decrease) in assessments to achieve desired Total Reserve</b>	<b>(49,707)</b>	<b>(53,330)</b>	<b>3,622</b>	<b>0</b>
2019 Funding requirement for expenses and fixed asset additions	1,108,574			
Less: Release of Business Continuity Reserve Funds <sup>3</sup>	0			
Adjustment to Working Capital to achieve desired Total Reserve balance <sup>2</sup>	3,622			
Adjustment to Operating Reserve to achieve desired Total Reserve balance <sup>1</sup>	(53,330)			
<b>2019 Funding and reserve requirement</b>	<b>1,058,866</b>			

<sup>1</sup> Total NPCC Operating Reserve must be within a range from 8.33% to 25.00% of Budget. \$244,859 represents 22.09% of the 2019 CS budget of \$1,108,574.

<sup>2</sup> Total NPCC Working Capital must equal 8.33% of Budget. \$92,377 represents 8.33% of the 2019 CS budget of \$1,108,574.

<sup>3</sup> Business Continuity Reserve (BCR) established in 2017 as approved by the NPCC Board of Directors to fund Succession Planning related expenses.

## Explanation of Changes in Reserve Policy from Prior Year

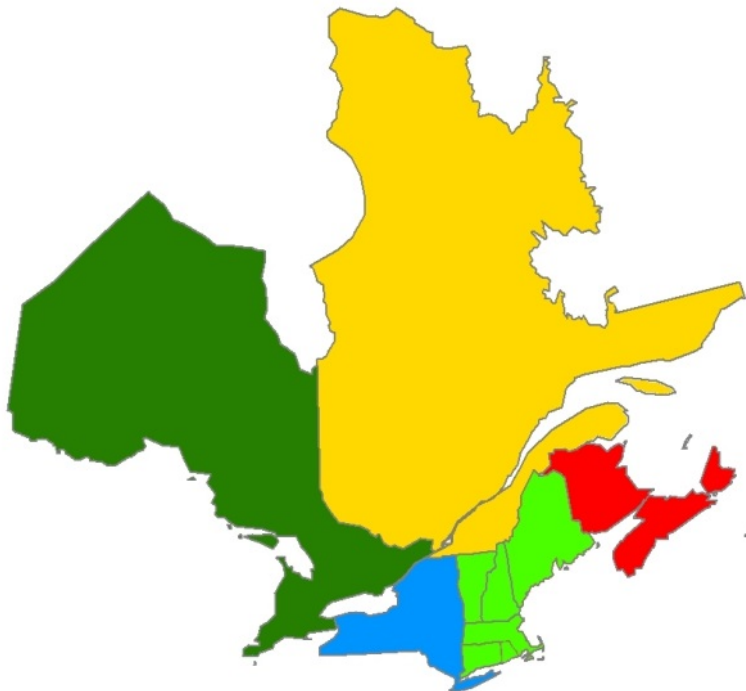
There was no change to the existing Working Capital and Operating Reserve Policy. A separate Business Continuity Reserve (BCR) in the amount of \$1,000,000 (allocated between the Regional Entity and Criteria Services divisions) was established in 2017 as approved by the NPCC Board of Directors, upon recommendation by the Management Development and Compensation Committee and endorsement by the Finance and Audit Committee, to be identified as restricted cash and drawn upon as subsequently brought before the Board of Directors in association with President & CEO succession related activities associated with a planned or sudden retirement, as well as other sudden changing workforce staffing requirements which could be brought about by coincident multiple staff retirements.

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## Section D – Additional Consolidated Financial Statements

### 2019 Business Plan and Budget

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## Section D — Additional Financial Statements

### Statement of Financial Position

<b>Statement of Financial Position</b>				
<b>2017 Audited, 2018 Projection, and 2019 Budget</b>				
<b>Regional Entity and Criteria Services Division</b>				
		(Per Audit)	Projected	Budget
		31-Dec-17	31-Dec-18	31-Dec-19
<b>ASSETS</b>				
Cash		\$ 6,977,629	\$ 5,547,000	\$ 4,664,000
Restricted cash		225,143	150,000	150,000
Temporary cash investments		1,816,878	1,833,000	1,849,000
Prepaid expenses		298,254	300,000	300,000
Other assets		215,412	236,000	257,000
Equipment and leasehold improvements, net		805,594	643,000	574,000
<b>Total Assets</b>		<b>\$ 10,338,910</b>	<b>\$ 8,709,000</b>	<b>\$ 7,794,000</b>
<b>LIABILITIES AND NET ASSETS</b>				
<b>Liabilities</b>				
Accrued expenses and other liabilities		\$ 2,641,848	\$ 2,665,000	\$ 2,688,000
Deferred revenue		684,226	-	-
Deferred rent		579,705	526,000	440,000
<b>Total Liabilities</b>		<b>3,905,779</b>	<b>3,191,000</b>	<b>3,128,000</b>
Net Assets - unrestricted		6,433,131	5,518,000	4,666,000
<b>Total Liabilities and Net Assets</b>		<b>\$ 10,338,910</b>	<b>\$ 8,709,000</b>	<b>\$ 7,794,000</b>

Section D — Additional Financial Statements

NPCC Statement of Activities 2019 Budget		RE Division Total	Reliability Standards (Section 300)	Compliance Monitoring and Enforcement and Organization Registration and Certification (Section 400 & 500)	Reliability Assessment and Performance Analysis (Section 800)	Training, Education, and Operator Certification (Section 900)	Situation Awareness and Infrastructure Security (Section 1000)	Administrative Services
<b>Funding</b>								
<b>ERO Funding</b>								
	ERO Assessments	15,003,411	1,035,390	8,183,815	3,332,686	184,943	2,366,685	(100,108)
	Penalty/Sanctions	-	-	-	-	-	-	-
	<b>Total ERO Funding</b>	<b>15,003,411</b>	<b>1,035,390</b>	<b>8,183,815</b>	<b>3,332,686</b>	<b>184,943</b>	<b>2,366,685</b>	<b>(100,108)</b>
	Members hip Dues	-	-	-	-	-	-	-
	Testing Fees	-	-	-	-	-	-	-
	Services & Software	-	-	-	-	-	-	-
	Workshops	67,500	-	-	-	67,500	-	-
	Interest	-	-	-	-	-	-	-
	Miscellaneous	-	-	-	-	-	-	-
	<b>Total Funding (A)</b>	<b>15,070,911</b>	<b>1,035,390</b>	<b>8,183,815</b>	<b>3,332,686</b>	<b>252,443</b>	<b>2,366,685</b>	<b>(100,108)</b>
<b>Expenses</b>								
<b>Personnel Expenses</b>								
	Salaries	7,332,280	382,872	2,815,882	1,135,264	18,600	832,408	2,147,254
	Payroll Taxes	449,994	22,735	191,849	69,027	1,513	57,432	107,437
	Benefits	1,613,078	106,764	585,543	219,655	6,805	201,196	493,115
	Retirement Costs	853,511	41,599	301,025	123,322	2,379	89,043	296,142
	<b>Total Personnel Expenses</b>	<b>10,248,862</b>	<b>553,970</b>	<b>3,894,299</b>	<b>1,547,268</b>	<b>29,297</b>	<b>1,180,079</b>	<b>3,043,948</b>
<b>Meeting Expenses</b>								
	Meetings	370,750	7,000	15,000	23,000	189,000	10,000	126,750
	Travel	845,900	94,900	295,400	216,200	15,000	89,300	135,100
	Conference Calls	36,000	-	-	-	-	-	36,000
	<b>Total Meeting Expenses</b>	<b>1,252,650</b>	<b>101,900</b>	<b>310,400</b>	<b>239,200</b>	<b>204,000</b>	<b>99,300</b>	<b>297,850</b>
<b>Operating Expenses</b>								
	Consultants & Contracts	2,022,150	10,000	1,357,150	430,000	-	130,000	95,000
	Office Rent	820,700	-	-	-	-	-	820,700
	Office Costs	676,347	-	-	-	-	-	676,347
	Professional Services	978,000	-	-	-	-	-	978,000
	Miscellaneous	51,000	-	-	-	-	-	51,000
	Depreciation	255,000	-	-	-	-	-	255,000
	<b>Total Operating Expenses</b>	<b>4,803,197</b>	<b>10,000</b>	<b>1,357,150</b>	<b>430,000</b>	<b>-</b>	<b>130,000</b>	<b>2,876,047</b>
	<b>Total Direct Expenses</b>	<b>16,304,709</b>	<b>665,870</b>	<b>5,561,849</b>	<b>2,216,468</b>	<b>233,297</b>	<b>1,409,379</b>	<b>6,217,845</b>
	<b>Indirect Expenses</b>	<b>(415,818)</b>	<b>375,014</b>	<b>3,303,230</b>	<b>1,132,814</b>	<b>19,431</b>	<b>971,538</b>	<b>(6,217,845)</b>
	<b>Other Non-Operating Expenses</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
	<b>Total Expenses (B)</b>	<b>15,888,891</b>	<b>1,040,884</b>	<b>8,865,080</b>	<b>3,349,282</b>	<b>252,728</b>	<b>2,380,918</b>	<b>-</b>
	<b>Change in Assets</b>	<b>(817,980)</b>	<b>(5,494)</b>	<b>(681,264)</b>	<b>(16,596)</b>	<b>(285)</b>	<b>(14,233)</b>	<b>(100,108)</b>
<b>Fixed Assets</b>								
	Depreciation	(255,000)	-	-	-	-	-	(255,000)
	Computer & Software CapEx	170,000	-	-	-	-	-	170,000
	Furniture & Fixtures CapEx	-	-	-	-	-	-	-
	Equipment CapEx	-	-	-	-	-	-	-
	Leasehold Improvements	-	-	-	-	-	-	-
	<b>Allocation of Fixed Assets</b>	<b>-</b>	<b>(5,494)</b>	<b>(48,392)</b>	<b>(16,596)</b>	<b>(285)</b>	<b>(14,233)</b>	<b>85,000</b>
	<b>Inc (Dec) in Fixed Assets (C)</b>	<b>(85,000)</b>	<b>(5,494)</b>	<b>(48,392)</b>	<b>(16,596)</b>	<b>(285)</b>	<b>(14,233)</b>	<b>-</b>
	<b>TOTAL BUDGET (=B + C)</b>	<b>15,803,891</b>	<b>1,035,390</b>	<b>8,816,687</b>	<b>3,332,686</b>	<b>252,443</b>	<b>2,366,685</b>	<b>-</b>
	<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>(732,980)</b>	<b>(0)</b>	<b>(632,872)</b>	<b>(0)</b>	<b>(0)</b>	<b>(0)</b>	<b>(100,108)</b>
	<b>FTEs</b>	<b>38.86</b>	<b>1.93</b>	<b>17.00</b>	<b>5.83</b>	<b>0.10</b>	<b>5.00</b>	<b>9.00</b>

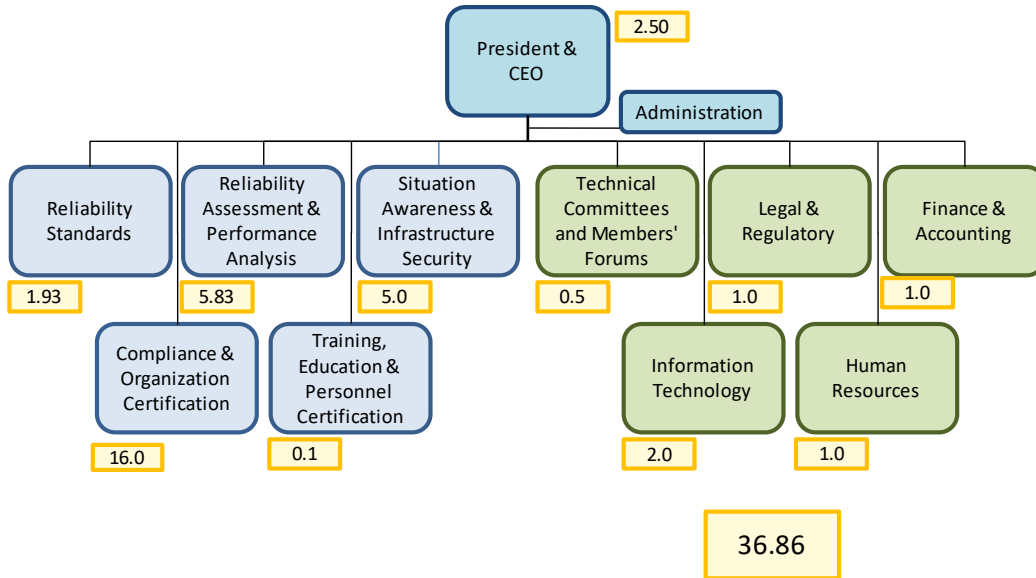


Section D — Additional Financial Statements

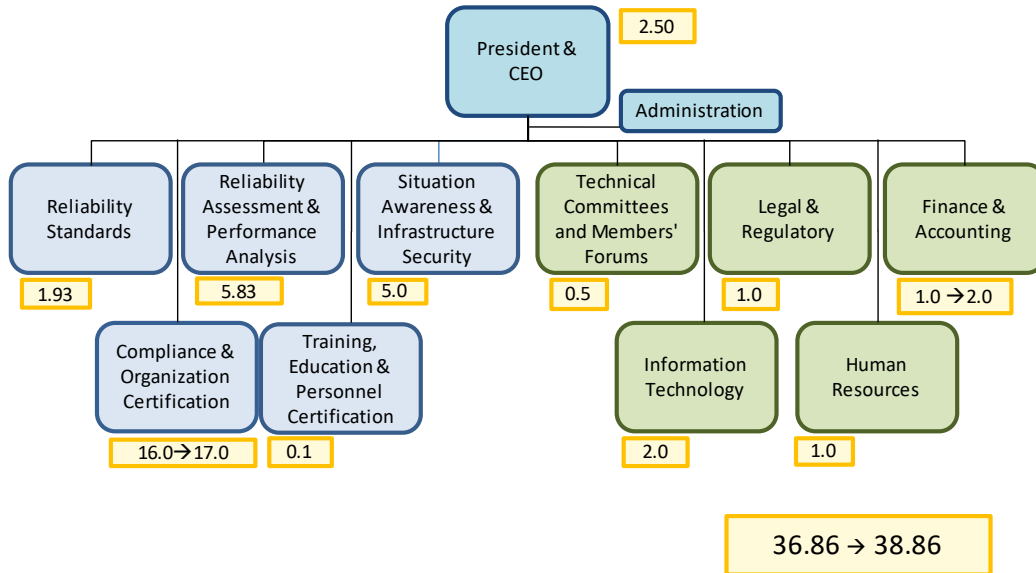
<b>NPCC Statement of Activities 2019 Budget</b>		Criteria Services Total	Criteria Development	Criteria Assessment	General and Administrative
<b>Funding</b>					
<b>ERO Funding</b>					
	ERO Assessments	-			
	Penalty Sanctions	-			
	<b>Total ERO Funding</b>	-	-	-	-
	Membership Dues	1,058,866	551,354	557,220	(49,707)
	Testing Fees	-	-	-	-
	Services & Software	-	-	-	-
	Workshops	-	-	-	-
	Interest	-	-	-	-
	Miscellaneous	-	-	-	-
	<b>Total Funding (A)</b>	<b>1,058,866</b>	<b>551,354</b>	<b>557,220</b>	<b>(49,707)</b>
<b>Expenses</b>					
<b>Personnel Expenses</b>					
	Salaries	371,938	186,285	185,654	-
	Payroll Taxes	23,696	11,805	11,891	-
	Benefits	102,779	47,476	55,303	-
	Retirement Costs	43,182	21,179	22,003	-
	<b>Total Personnel Expenses</b>	<b>541,596</b>	<b>266,745</b>	<b>274,851</b>	<b>-</b>
<b>Meeting Expenses</b>					
	Meetings	5,000	2,500	2,500	-
	Travel	56,800	28,200	28,600	-
	Conference Calls	-	-	-	-
	<b>Total Meeting Expenses</b>	<b>61,800</b>	<b>30,700</b>	<b>31,100</b>	<b>-</b>
<b>Operating Expenses</b>					
	Consultants & Contracts	55,360	29,000	26,360	-
	Office Rent	-	-	-	-
	Office Costs	-	-	-	-
	Professional Services	-	-	-	-
	Miscellaneous	4,000	2,000	2,000	-
	Depreciation	14,000	7,000	7,000	-
	<b>Total Operating Expenses</b>	<b>73,360</b>	<b>38,000</b>	<b>35,360</b>	<b>-</b>
	<b>Total Direct Expenses</b>	<b>676,756</b>	<b>335,445</b>	<b>341,311</b>	<b>-</b>
	Indirect Expenses	415,818	207,909	207,909	-
	Other Non-Operating Expenses	-	-	-	-
	<b>Total Expenses (B)</b>	<b>1,092,574</b>	<b>543,354</b>	<b>549,220</b>	<b>-</b>
	<b>Change in Assets</b>	<b>(33,707)</b>	<b>8,000</b>	<b>8,000</b>	<b>(49,707)</b>
<b>Fixed Assets</b>					
	Depreciation	(14,000)	(7,000)	(7,000)	-
	Computer & Software CapEx	30,000	15,000	15,000	-
	Furniture & Fixtures CapEx	-	-	-	-
	Equipment CapEx	-	-	-	-
	Leasehold Improvements	-	-	-	-
	Allocation of Fixed Assets	-	-	-	-
	<b>Inc (Dec) in Fixed Assets ( C )</b>	<b>16,000</b>	<b>8,000</b>	<b>8,000</b>	<b>-</b>
	<b>TOTAL BUDGET (=B + C)</b>	<b>1,108,574</b>	<b>551,354</b>	<b>557,220</b>	<b>-</b>
	<b>TOTAL CHANGE IN WORKING CAPITAL (=A-B-C)</b>	<b>(49,707)</b>	<b>-</b>	<b>-</b>	<b>(49,707)</b>
	<b>FTEs</b>	<b>2.14</b>	<b>1.07</b>	<b>1.07</b>	<b>0</b>

# Appendix A Staff Allocations

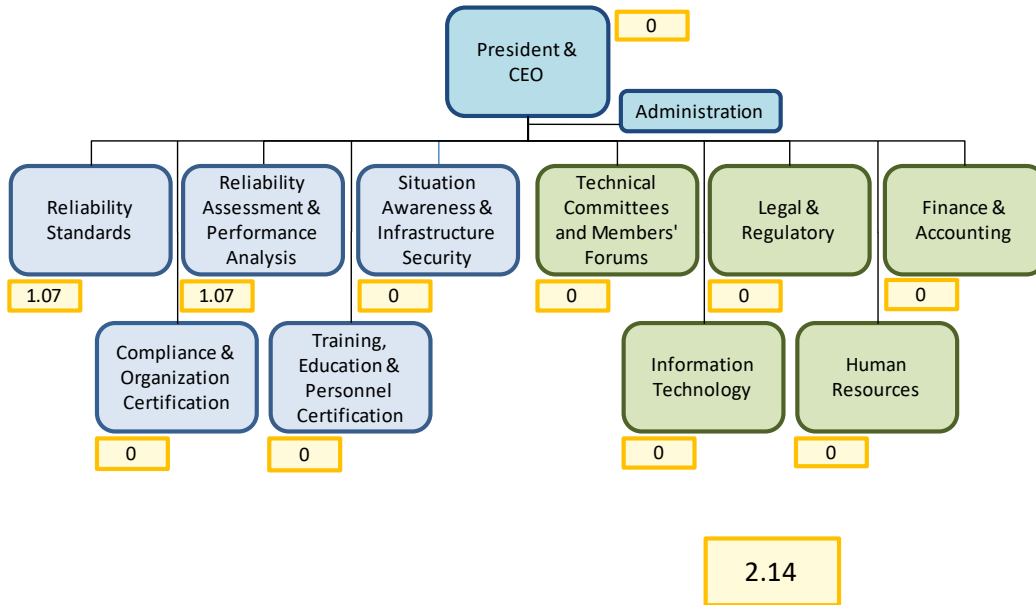
2018 Budget Staff Allocations - RE Division



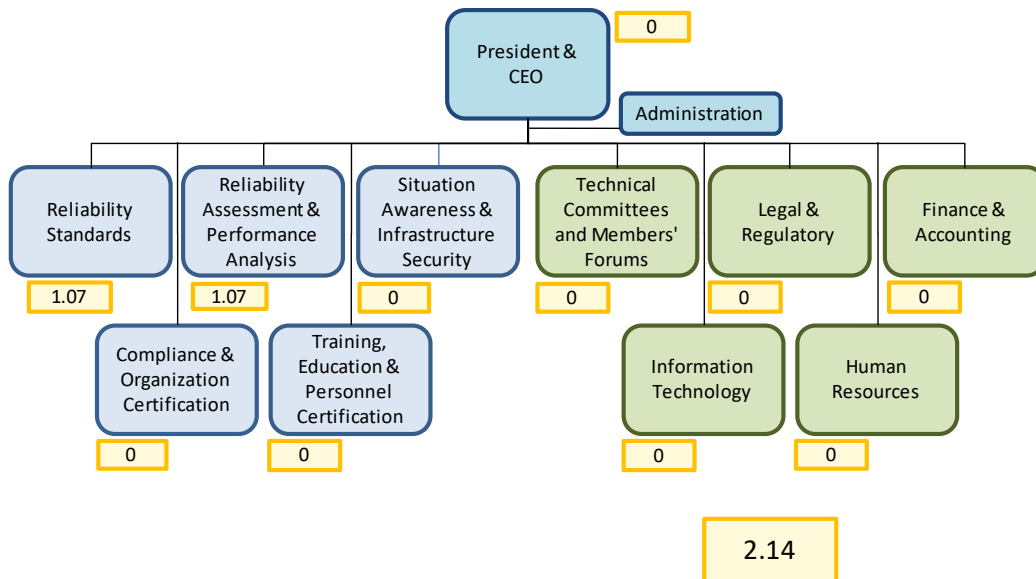
2019 Budget Staff Allocations - RE Division



2018 Budget Staff Allocations - CS Division



2019 Budget Staff Allocations - CS Division



## Appendix B Acronyms

This section lists acronyms used in this document.

Acronym	Definition
AI	Audits and Investigations
BAA	Balancing Authority Area
BEPWG	BES Exception Process Working Group
BES	Bulk Electric System
BOT	Board of Trustees
BPS	Bulk Power System
CC	Compliance Committee
CCEP	Criteria Compliance Enforcement Program
CDAA	CMEP Data Administration Application
CEAP	Cost Effective Analysis Process
CEH	Continuing Education Hour
CGNC	Corporate Governance and Nominating Committee
CIPC	Critical Infrastructure Protection Committee
CIPIS	Critical Information Protection Information Sharing
CMEP	Compliance Monitoring and Enforcement Program
CORC	Compliance Monitoring and Enforcement and Organization Registration and Certification Program
CPP	Clean Power Plan
CRRA	Cost of Risk Reduction Analysis
CUG	Consortium Users Group
DADS	Demand Availability Data System
DADSWG	Demand Response Availability Data System Working Group
ERA	Entity Reliability Assessment
ERAG	Eastern Interconnection Reliability Assessment Group
ERO	Electric Reliability Organization
EUB	Electric Utility Board
EUB	Energy and Utilities Board
FAC	Finance and Audit Committee
FERC	Federal Energy Regulatory Commission
FFT	Find, Fix, Track
GADS	Generator Availability Data System
GADSWG	Generating Availability Data System Working Group
GMD	Geomagnetic Disturbance
HQCMÉ	Hydro-Québec Contrôle des mouvements d'énergie
HSIN	Homeland Security Information Network
ICE	Internal Controls Evaluation
IED	Intelligent Electronic Device
IERP	Independent Experts Review Panel Report
IESO	Independent Electricity System Operator
IRA	Inherent Risk Assessment
ISO	Independent System Operator
ITSG	IT Steering Group
LCEFT	Load, Capacity, Energy, Fuels, and Transmission
LMS	Learning Management System
LMWG	Load Modeling Working Group
LSE	Load Serving Entity
MACD	Market Assessment and Compliance Division of the IESO
MDCC	Management Development and Compensation Committee
ME	Mitigation and Enforcement
MMWG	Multi-Regional Modeling Working Group
MOU	Memorandum of Understanding
MPLS	Multiprotocol Label Switching
MVWG	Model Validation Working Group
NAESB	North American Electric Standards Review Board

## Appendix B

Acronym	Definition
NEL	Net Energy for Load
NERC	North American Electric Reliability Corporation
NOAV	Notice of Alleged Violation
NOCV	Notice of Confirmed Violation
NOPR	Notice of Proposed Rulemaking
NOPV	Notice of Possible Violation
NPCC	Northeast Power Coordinating Council, Inc.
NRAP	NPCC Reliability Assessment program
NSPI	Nova Scotia Power Incorporated
NSUARB	Nova Scotia Utility and Review Board
OEB	Ontario Energy Board
PAS	Performance Analysis Subcommittee
PC	Pension Committee
PMOS	Project Management Oversight Subcommittee
PSMTF	Protection System Mis-operations Task Force
PSTN	Public Switched Telephone Network
QCMEP	Québec Reliability Standards Compliance Monitoring and Enforcement Program
RADS	Reliability Assessment Data System
RADWG	Reliability Assessment Data Working Group
RAS	Reliability Assessment Subcommittee
RC	Reliability Coordinator
RCC	Reliability Coordinating Committee
RISC	Reliability Issues Steering Committee
RSAW	Reliability Standards Audit Worksheet
RSC	Regional Standards Committee
RTO	Regional Transmission Organization
SAFNR	Situational Awareness-FERC, NERC, Regions
SAMS	System Analysis and Modeling Subcommittee
SAR	Standards Authorization Request
SAT	Systematic Approach to Training
SBS	Standards Balloting System
SCPS	Standards Committee Process Subcommittee
SDT	Standards Drafting Team
SEDS	Spare Equipment Database System
SEDTF	Spare Equipment Database Task Force
SPS	Special Protection Systems
TADS	Transmission Availability Data System
TADSWG	Transmission Availability Data System Working Group
TFCO	Task Force on Coordination of Operation
TFCP	Task Force on Coordination of Planning
TFE	Technical Feasibility Exception
TFIST	Task Force on Infrastructure Security and Technology
TFSP	Task Force on System Protection
TFSS	Task Force on System Studies
TLR	Transmission Loading Relief
TOP	Transmission Operator
UFLS	Underfrequency Load Shedding
UVLS	Under-Voltage Load Shedding
VRF	Violation Risk Factor
VSL	Violation Security Level

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**NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION**

**2019 BUSINESS PLAN AND BUDGET FILING**

**ATTACHMENT 4**

**NERC MANAGEMENT'S RESPONSES  
TO STAKEHOLDER COMMENTS SUBMITTED  
ON DRAFT #1 AND DRAFT #2 OF NERC'S  
2019 BUSINESS PLAN AND BUDGET**

**RE:** Management Response to Comments

**Draft #1**

The stakeholder comment period on the first draft of NERC's 2019 Business Plan and Budget (BP&B) was May 18–June 29, 2018. Comments were submitted by six entities and covered a range of topics. Below is a summary of those comments and NERC management's responses as applicable.

*E-ISAC Member Executive Committee (MEC)*<sup>1</sup>

The MEC, comprised of the leadership of several large electric utilities across the country, provided a resolution in support of the proposed 2019 budget for the E-ISAC, agreeing to the aggressive approach to strategy and funding. The MEC also expressed appreciation for the focus of the overall NERC budget on making investments in tools and technology to increase efficiency.

*American Public Power Association (APPA)*

APPA expressed support for the 2019 E-ISAC budget and offered comments on the non-E-ISAC proposed 2019 budget increase. APPA requested additional clarity and explanation on the following: (1) the need for the upgrade to the situational awareness tool, SAFNR; (2) the associated savings from the SPP RE dissolution; (3) the additional costs for the CMEP Technology Project; and (4) the expected cost savings resulting from the office rent expense increase for facility expansion. APPA also encouraged NERC to consider benchmarking medical and other benefit expenses, and to use stakeholder engagement as much as possible for the CMEP Technology Project.

*1. SAFNR Upgrade*

SAFNR, a situation awareness system that was initiated in February 2010, is a critical tool for NERC situation awareness staff, as it provides valuable, near real-time information about the current operating conditions of the BPS from a wide-area view. The tool is also used during the E-ISAC's grid security exercises (GridEx) to provide E-ISAC and NERC situation awareness staff the ability to collaborate on a common relative operating picture. Though NERC funds SAFNR as the primary user, the tool is also used by and benefits Regional Entity and FERC staff. NERC continually coordinates and collaborates with these additional users to ensure the system is providing the necessary capabilities and not duplicative of other resources.

While the tool has been maintained and used successfully for more than eight years, the aging technology does not allow NERC staff to efficiently update the underlying power system information or real-time data feeds on risks to reliability. Re-platforming the tool will allow for a

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<sup>1</sup> The MEC is a sub-group of the Electricity Subsector Coordinating Council (ESCC). For more information, please see the ESCC [website](#).



more a precise wide-area view of system conditions, and will also meet the GridEx IV recommendation to enhance the ability to provide reliable, timely, and accurate information regarding the state of grid reliability and security threats and events. Because the tool benefits both the situation awareness and E-ISAC teams, approximately one-third of the costs for the SAFNR upgrade are budgeted to the E-ISAC with the rest under the Situation Awareness program, which is subject to change as the benefits of the upgrade are realized. The upgrade to SAFNR will go through the same business case and approval process as other enterprise IT investments.

2. *Associated Savings from SPP RE Dissolution*

NERC does not expect any direct cost savings as a result of the dissolution, but anticipates that any savings realized by the ERO Enterprise will be felt primarily at the Regional Entity level by the registered entities in those Regions. During the budget approval process in 2019 and 2020, those Regions taking additional registered entities (MRO and SERC) will provide information on the impacts of the dissolution and related transition of entities and associated responsibilities.

3. *CMEP Technology Project*

There have been no additions to the existing scope and estimated costs for the CMEP Technology Project, and the current estimated annual operating costs are actually below the business case estimate based on recent contract negotiations. The additional costs in question are related to the Standards Database and Entity Registration IT projects. While these are separate projects that will go through their own business case and approval process, they complement the CMEP project and have been accelerated to more smoothly integrate them during development. These IT solutions have been part of the ERO Enterprise IT roadmap for several years.

NERC is currently engaging with stakeholders during the development of the new CMEP system, particularly through the Compliance and Certification Committee's (CCC's) Alignment Working Group, and NERC and the Regional Entities continue to look for new opportunities to engage stakeholders. NERC recognizes that the tool needs to provide greater transparency to registered entities on compliance monitoring and enforcement processes and enhance the consistency of the registered entity experience among the Regional Entities. Additionally, NERC is acutely aware of the importance of protecting registered entity data; in addition to the protection measures already in place, the CMEP solution will provide the opportunity for enhanced data security mechanisms, including multi-factor user authentication and additional data encryption, adopting federal standards to the greatest extent possible even though not required.

4. *Office Rent Increase*

The cost increase for office rent is due to the NERC Atlanta office expansion from two-and-half floors to three. The intent is to reconfigure one of the floors to be used almost entirely for meeting space, providing a larger footprint to accommodate additional meetings now being held off-site. The expected cost savings complement current ERO Enterprise initiatives to improve efficiency and effectiveness of the standing committees and overall stakeholder engagement. As both the meeting space is developed (likely later in 2018) and discussions continue on the strategy for standing committee engagement, NERC will work toward a more precise estimate of cost savings.

5. *Medical and Other Benefits*

NERC does benchmark benefit costs with industry and similar organizations and works actively with a broker to keep costs reasonable to stay competitive for talent acquisition and retention, and increases to medical benefits have been below market for several years. However, the past two years have shown increases closer to market, including the 2018 premiums that were slightly higher than originally budgeted. The increase in medical benefit costs in 2019 (compared to the 2018 budget) is partly because that budgeted number for 2018 was lower than the final negotiated amount, combined with an additional increase between the actual 2018 premiums and anticipated 2019 premiums. NERC continues to negotiate these premiums and will have final amounts for 2019 at the end of 2018.

*Canadian Electricity Association (CEA) and Independent Electricity System Operator (IESO)*

The CEA and IESO, both Canadian entities, provided similar comments with respect to concern with the trend of NERC budget increases. Both organizations urged NERC to focus on maximizing efficiency and work to achieve budget increases that more closely align with economic realities and stakeholder expectations. Additionally, both organizations expressed concern with the E-ISAC budget increase in light of the Canadian entity engagement with the E-ISAC.

Overall NERC budget projections for 2020 and 2021 will be included in the second draft the NERC budget, with the expectation that those years will show a budget increase much lower than 2019. NERC believes the investments being made in ERO Enterprise technology and tools, such as the CMEP technology solution, along with initiatives in support of the *ERO Enterprise Long-Term Strategy* to improve efficiency and effectiveness of stakeholder engagement, the standing committees, and overall ERO operations, will result in efficiency gains that will be reflected in future budget cycles. NERC recognizes the Canadian entities' concern with the E-ISAC budget increases and is currently engaged with these entities to discuss and address their concerns.

*Edison Electric Institute (EEI)*

EEI expressed support for NERC's investment in the E-ISAC. EEI also requested consideration of the following with regard to the rest of the NERC budget: (1) develop a business case for the SAFNR upgrade and coordinate with DOE, FERC, and others to leverage existing capabilities; (2) engage stakeholders in the CMEP Technology project and prioritize CMEP information security; (3) continue benchmarking medical benefit expenses with industry and similar organizations; and (4) provide additional clarity on the expected meeting cost savings that will occur with the planned facility expansion.

See responses to APPA above.

*National Rural Electric Cooperative Association (NRECA)*

NRECA indicated support for the increased investment in E-ISAC and appreciation for NERC's effort to control non-E-ISAC costs. NRECA encouraged NERC to focus on long-term leveling of the budget, and requested NERC to (1) provide E-ISAC projected costs for additional years and (2) consider using additional funds from the Assessment Stabilization Reserve to reduce 2019 assessments.

As mentioned above in the response to CEA and IESO comments above, overall NERC budget projections for 2020 and 2021 will be included in the second draft the NERC budget, and the expectation is that those years will show a budget increase much lower than 2019. The second draft of the budget will also include projections for the E-ISAC strategy.

While the amount of funds released from the Assessment Stabilization Reserve (ASR) to reduce assessments is a Board of Trustees (Board) decision, the current NERC strategy and recommendation for the 2019 budget is to align assessments and budgets increases; therefore, at a minimum, ASR funds will buy down the proposed 10.3% assessment increase to match the proposed budget increase of 9.5%.

### **Draft #2 and Additional Comments Received**

The stakeholder comment period on the second draft of NERC's 2019 BP&B was July 13–July 31, 2018. Comments were submitted by two entities. Comments were also received on the 2019 BP&B as part of the Member Representative's Committee (MRC) policy input requested by the NERC Board for its August 2018 quarterly meetings. Below is a summary of those comments and NERC management's responses.

#### APPA

APPA requested further clarity on the discussions occurring regarding Canadian entity engagement with the E-ISAC. APPA also requested NERC to consider delaying the SAFNR upgrade or work on other tools in light of other budget increases.

NERC has engaged with leadership of Canadian entities to discuss concerns regarding the value of the information being received from the E-ISAC in the context of the E-ISAC budget increase and availability of cyber threat information from other sources in Canada. NERC has expressed its commitment to demonstrate the value of E-ISAC through the ongoing implementation of its long-term strategy, particularly with respect to its position to integrate industry and government sources of information across North America.

The significant investments in tools for 2019 include the CMEP Technology Project and the upgrade to SAFNR. The CMEP Technology Project is approved and underway, and the SAFNR upgrade is necessary to meet the GridEx IV recommendation to enhance the ability to provide reliable, timely, and accurate information regarding the state of grid reliability and security threats and events. The current cost for the upgrade is a placeholder in the budget and is still subject to business case review and normal approvals.

#### Bonneville Power Administration (BPA)

BPA requested future information on the coordination of information sharing among the E-ISAC and the other various cyber and physical security organizations, as well as the costs savings resulting from the facility expansion at the NERC Atlanta office.

NERC will work to provide further information on coordination efforts of cyber and physical security information. NERC will also be tracking cost savings from the office expansion with respect to reducing meetings held offsite as the benefits are realized.

*EEI and State Municipal Transmission Dependent Utility Sectors (SM-TDUs)*

Both EEI and SM-TDUs (supported by APPA, TAPS, and LPPC) provided policy input expressing the desire to further enhance the ERO's BP&B development process to provide more transparency and engagement and therefore enable more timely and informed input by stakeholders. EEI also reiterated its support for the NERC's investment in the E-ISAC.

NERC's BP&B development process provides for multiple touchpoints with and input from stakeholders, including opportunities for input through MRC policy input, public comment periods, webinars, and informal stakeholder groups and meetings. NERC remains committed to this open and transparent process and will work to provide opportunities for input earlier in the development of the BP&B and to further engage stakeholder groups.

**NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION**

**2019 BUSINESS PLAN AND BUDGET FILING**

**ATTACHMENT 5**

**CALCULATION OF ADJUSTMENTS  
THE AESO 2019 NERC ASSESSMENT,  
THE IESO 2019 NERC ASSESSMENT,  
THE NEW BRUNSWICK 2019 NERC ASSESSMENT,  
AND THE QUEBEC 2019 NERC ASSESSMENT**

## 2019 AESO Assessment Adjustment

### Credit for NERC Compliance Costs

Includes adjustment for 2017 Actual v Budgeted Costs

	2019 NERC Budget		AESO NEL Share (2017) <u>1.399%</u>	2019 Compliance FTEs			AESO Credit	Costs Paid by AESO
				Total	Credit	% Credit		
<b>NERC Compliance Program Budget</b>								
Compliance Assurance	\$	8,922,937	\$ 124,794	16.45	15.17	92.2%	\$ 115,060	\$ 9,734
Analysis and Certification		5,021,479	70,229	5.64	5.03	89.1%	62,574	7,655
Enforcement		6,857,235	95,903	13.16	13.16	100.0%	95,903	-
<b>Total Compliance Costs, including Fixed Assets</b>	<b>\$</b>	<b>20,801,651</b>	<b>\$ 290,926</b>	<b>35.25</b>	<b>33.35</b>		<b>\$ 273,537</b>	<b>\$ 17,389</b>
<b>True-up 2017 Actual</b>							18,984	
<b>Additional Non-Compliance Costs</b>								
Event Analysis	\$	5,339,268	\$ 74,673	11.28	2.26	20.0%	\$ 14,935	\$ 59,739
SAFNR		493,000	6,895			100.0%	6,895	
<b>2019 Total Compliance, Event Analysis and SAFNR</b>	<b>\$</b>	<b>26,633,919</b>	<b>\$ 372,494</b>	<b>46.53</b>	<b>35.61</b>		<b>\$ 314,351</b>	<b>\$ 77,128</b>
<b>2018</b>	<b>\$</b>	<b>26,235,467</b>	<b>\$ 343,948</b>	<b>52.17</b>	<b>41.75</b>		<b>\$ 255,627</b>	<b>\$ 62,963</b>
<b>Change from 2018</b>	<b>\$</b>	<b>398,452</b>	<b>\$ 28,546</b>	<b>(5.64)</b>	<b>(6.14)</b>		<b>\$ 58,724</b>	<b>\$ 14,165</b>
<b>2019 Assessment</b>								
2019 NERC Assessment	\$	656,732						
2019 RE Assessment (WECC & WIRAB)		876,478						
<b>Total 2019 Assessment</b>	<b>\$</b>	<b>1,533,210</b>						
<b>2018 Assessment</b>								
2018 NERC Assessment	\$	577,974						
2018 RE Assessment (WECC & WIRAB)		979,700						
<b>Total 2018 Assessment</b>	<b>\$</b>	<b>1,557,674</b>						
<b>Change in Total Assessment</b>	<b>\$</b>	<b>(24,464)</b>						<b>-1.6%</b>

**2019 IESO Assessment Adjustment**

**Credit for NERC Compliance Costs**

Includes adjustment for 2017 Actual v Budgeted Costs

	2019 NERC Budget		IESO NEL Share (2017) 2.968%	2019 Compliance FTEs			Costs Paid by	
				Total	Credit	% Credit	IESO Credit	IESO
<b>NERC Compliance Program Budget</b>								
Compliance Assurance	\$	8,922,937	\$ 264,830	16.45	13.69	83.2%	\$ 220,339	\$ 44,491
Analysis and Certification		5,021,479	149,036	5.64	5.03	89.1%	132,791	16,245
Enforcement		6,857,235	203,521	13.16	13.16	100.0%	203,521	-
<b>Total Compliance Costs, including Fixed Assets</b>	<b>\$</b>	<b>20,801,651</b>	<b>\$ 617,387</b>	<b>35.25</b>	<b>31.87</b>		<b>\$ 556,651</b>	<b>\$ 60,736</b>
<b>True-up 2017 Actual</b>							39,628	
<b>Additional Non-Compliance Costs</b>								
Event Analysis	\$	5,339,268	\$ 158,468	11.28	2.26	20.0%	\$ 31,694	\$ 126,774
SAFNR v1 support and maintenance		493,000	14,632			100.0%	14,632	-
<b>Total Compliance, Event Analysis and SAFNR</b>	<b>\$</b>	<b>26,633,919</b>	<b>\$ 790,487</b>	<b>46.53</b>	<b>34.13</b>		<b>\$ 642,605</b>	<b>\$ 187,511</b>
<b>2018</b>	<b>\$</b>	<b>26,235,467</b>	<b>\$ 797,444</b>	<b>52.17</b>	<b>40.01</b>		<b>\$ 572,896</b>	<b>\$ 170,357</b>
<b>Change from 2018</b>	<b>\$</b>	<b>398,452</b>	<b>\$ (6,956)</b>	<b>(5.64)</b>	<b>(5.89)</b>		<b>\$ 69,709</b>	<b>\$ 17,154</b>
<b>2019 Assessment</b>								
2019 NERC Assessment	\$	1,418,177						
2019 RE Assessment		2,164,350						
<b>Total 2019 Assessment</b>	<b>\$</b>	<b>3,582,527</b>						
<b>2018 Assessment</b>								
2018 NERC Assessment	\$	1,359,810						
2018 RE Assessment		2,074,231						
<b>Total 2018 Assessment</b>	<b>\$</b>	<b>3,434,041</b>						
<b>Change in Total ERO Assessment</b>	<b>\$</b>	<b>148,486</b>						<b>4.3%</b>





2019 Quebec Assessment Adjustment

Credit for NERC Compliance Costs

Includes adjustment for 2017 Actual v Budget

	2019 NERC Budget	Quebec NEL	2019 Compliance FTEs			Quebec	Costs Paid by	Payment Allocation	
		Share (2017)	Total	Credit	% Credit	Credit	Quebec	Regie	Hydro Quebec
<b>NERC Compliance Program Budget</b>		<b>3.836%</b>							
Compliance Assurance	\$ 8,922,937	\$ 342,244	16.45	5.92	36.0%	\$ 123,208	\$ 219,036		\$ 219,036
Analysis and Certification	5,021,479	192,601	5.64	5.03	89.1%	171,608	20,994	\$ 18,485	2,508
Enforcement	6,857,235	263,013	13.16	13.16	100.0%	263,013	-		
<b>Total Compliance Costs, including Fixed Assets</b>	<b>\$ 20,801,651</b>	<b>\$ 797,858</b>	<b>35.25</b>	<b>24.11</b>		<b>\$ 557,828</b>	<b>\$ 240,030</b>	<b>\$ 18,485</b>	<b>\$ 221,544</b>
<b>True-up 2017 Actual</b>						40,521			
<b>Additional Non-Compliance Costs</b>									
Event Analysis	\$ 5,339,268	\$ 204,790	11.28	2.26	20.0%	\$ 40,958	\$ 163,832		\$ 163,832
SAFNR v1 support and maintenance	493,000	18,909			100.0%	18,909			
<b>2019 Total Compliance, Event Analysis and SAFNR</b>	<b>\$ 26,633,919</b>	<b>\$ 1,021,558</b>	<b>46.53</b>	<b>26.36</b>		<b>\$ 658,216</b>	<b>\$ 403,862</b>	<b>\$ 18,485</b>	<b>\$ 385,377</b>
<b>2018 Budget</b>	<b>\$ 26,235,467</b>	<b>\$ 1,059,694</b>	<b>52.17</b>	<b>30.92</b>		<b>\$ 612,191</b>	<b>\$ 395,883</b>	<b>\$ 18,750</b>	<b>\$ 377,133</b>
<b>Change from 2018</b>	<b>\$ 398,452</b>	<b>\$ (38,136)</b>	<b>(5.64)</b>	<b>(4.55)</b>		<b>\$ 46,025</b>	<b>\$ 7,979</b>	<b>\$ (265)</b>	<b>\$ 8,244</b>
<b>2019 Assessment (including Compliance credit)</b>									
2019 NERC Assessment	\$ 2,004,960							\$ 18,485	\$ 1,986,475
2019 RE Assessment	3,058,277							1,050,695	2,007,582
<b>Total 2018 Assessment</b>	<b>\$ 5,063,237</b>							<b>\$ 1,069,180</b>	<b>\$ 3,994,057</b>
<b>2018 Assessment (including Compliance credit)</b>									
2018 NERC Assessment	\$ 1,956,112							\$ 18,750	\$ 1,937,362
2018 RE Assessment	2,985,158							1,050,695	1,934,463
<b>Total 2018 Assessment</b>	<b>\$ 4,941,270</b>							<b>\$ 1,069,445</b>	<b>\$ 3,871,825</b>
<b>Change in Total Assessment</b>	<b>\$ 121,967</b>							<b>\$ (265)</b>	<b>\$ 122,232</b>
	<b>2.5%</b>							<b>0.0%</b>	<b>3.2%</b>

**NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION**

**2019 BUSINESS PLAN AND BUDGET FILING**

**ATTACHMENT 6**

**METRICS COMPARING  
REGIONAL ENTITY OPERATIONS  
BASED ON  
THE 2019 BUDGETS**

**2019 Metrics for Budget Submissions**

	Budget Metrics	FRCC	MRO	NPCC <sup>6</sup>	ReliabilityFirst	SERC	Texas RE	WECC
1	Number of registered entities <sup>1</sup>	39	211	213	233	201	212	274
2	Number of registered functions	157	596	448	484	513	391	918
3	Total NEL (GWh)	232,720	485,381	605,097	871,790	1,028,837	359,022	867,702
4	NEL (GWh) per registered entity	5,967	2,300	2,841	3,742	5,119	1,694	3,167
5	Total ERO Funding <sup>2</sup>	\$ 5,827,925	\$ 15,530,922	\$ 15,003,411	\$ 21,583,046	\$ 17,455,215	\$ 13,362,449	\$ 25,869,686
6	ERO Funding per registered entity	\$ 149,434	\$ 73,606	\$ 70,439	\$ 92,631	\$ 86,842	\$ 63,030	\$ 94,415
7	ERO Funding per registered function	\$ 37,121	\$ 26,059	\$ 33,490	\$ 44,593	\$ 34,026	\$ 34,175	\$ 28,180
8	Total Budget <sup>3</sup>	\$ 6,695,787	\$ 15,980,354	\$ 15,803,891	\$ 22,648,458	\$ 18,144,949	\$ 13,069,599	\$ 26,950,566
9	Total Budget per registered entity	\$ 171,687	\$ 75,736	\$ 74,197	\$ 97,204	\$ 90,273	\$ 61,649	\$ 98,360
10	Total Budget per registered function	\$ 42,648	\$ 26,813	\$ 35,277	\$ 46,794	\$ 35,370	\$ 33,426	29357.91503
11	Total Statutory FTE <sup>4</sup>	20.75	59.00	38.86	78.20	78.00	60.00	143.00
12	Registered entity per Statutory FTE	1.880	3.576	5.481	2.980	2.577	3.533	1.916
13	Registered function per Statutory FTE	7.566	10.102	11.529	6.189	6.577	6.517	6.420
14	Total Compliance Budget <sup>5</sup>	\$ 4,984,329	\$ 10,763,709	\$ 8,816,687	\$ 16,163,392	\$ 13,373,347	\$ 10,068,946	\$ 14,966,474
15	Compliance budget per registered entity	\$ 127,803	\$ 51,013	\$ 41,393	\$ 69,371	\$ 66,534	\$ 47,495	\$ 54,622
16	Compliance budget per registered function	\$ 31,747	\$ 18,060	\$ 19,680	\$ 33,395	\$ 26,069	\$ 25,752	\$ 16,303
17	Total Compliance FTE	12.18	32.35	17.00	44.00	34.00	35.75	60.00
18	Registered entity per Compliance FTE	3.2	6.5	12.5	5.3	5.9	5.9	4.6
19	Registered function per Compliance FTE	12.9	18.4	26.4	11.0	15.1	10.9	15.3

<sup>1</sup> As of June 2018.

<sup>2</sup> ERO Funding is the sum of Assessments and Penalty Sanctions only. (Excludes funding such as Membership Dues, Testing Fees, Services & Software, Workshops, Interest, and Miscellaneous.)

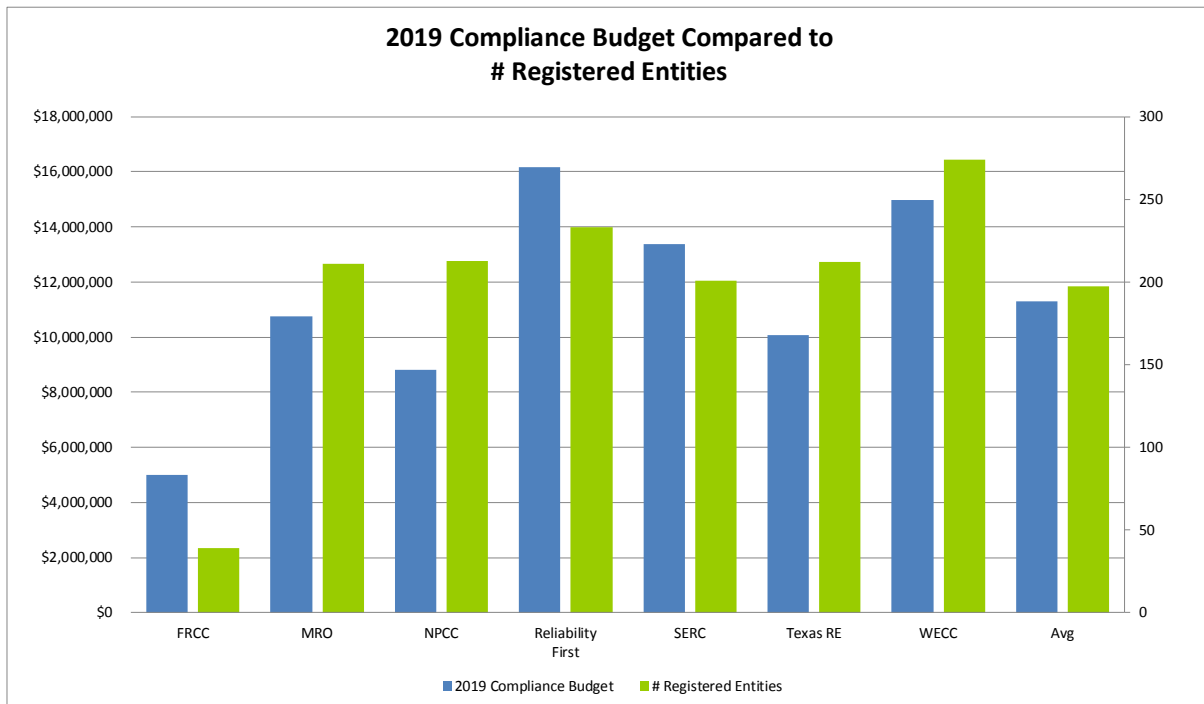
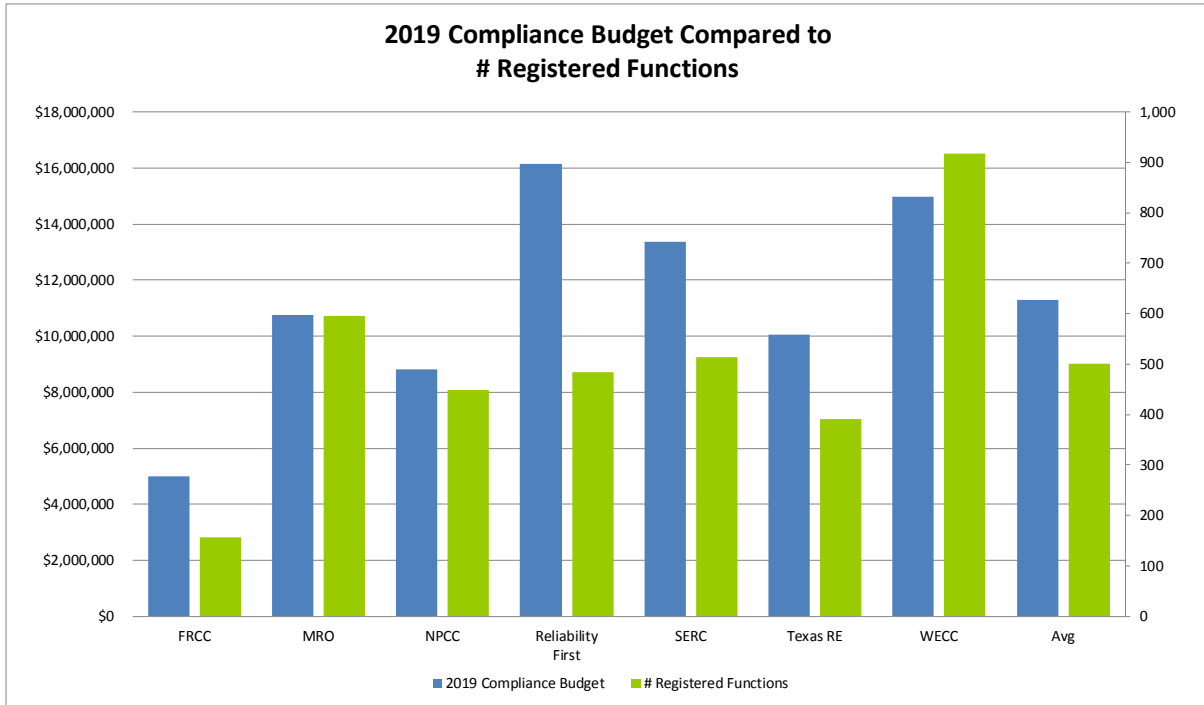
<sup>3</sup> Total Budget is the sum of Total Expenses and the Increase/(Decrease) in Fixed Assets.

<sup>4</sup> Each FTE that works 2,080 hours per year is counted as one FTE. An FTE working less than the 2,080 hours per year is counted as a fractional FTE.

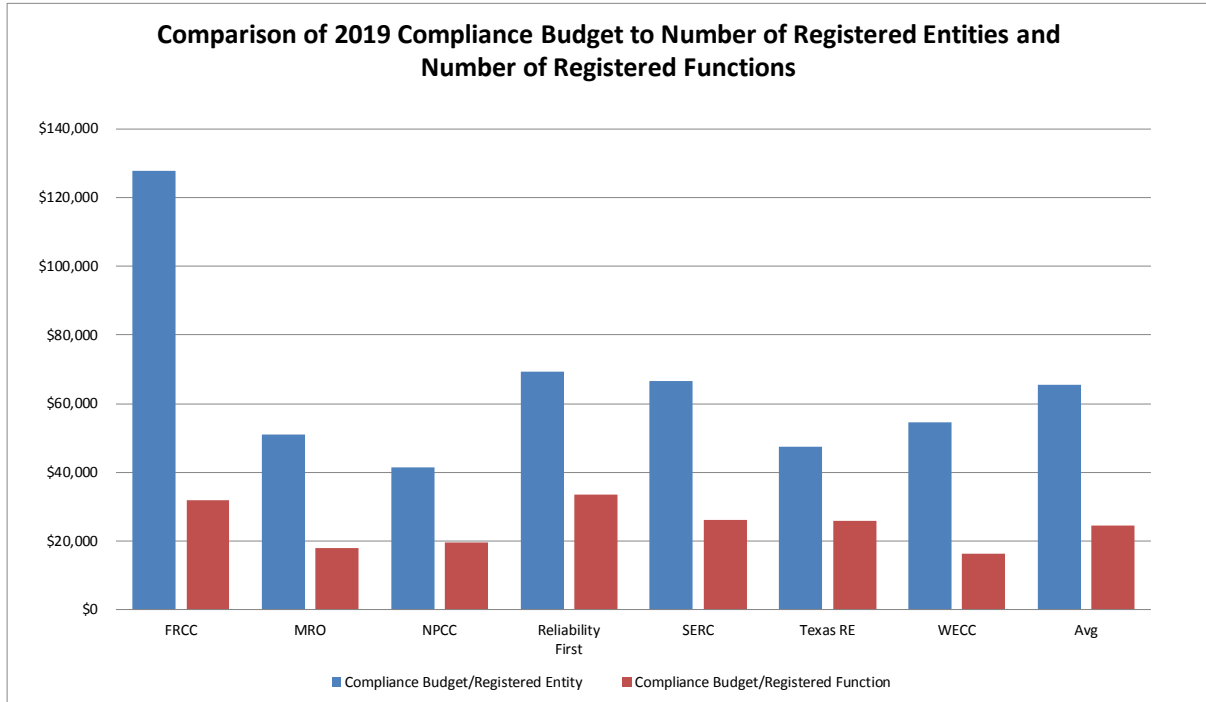
<sup>5</sup> Total Compliance Budget is a sum of Direct Expenses, Indirect Expenses, and Capital Expenditures.

<sup>6</sup> Due to the specifics of the compliance program included in the individual provincial MOUs for cross-border regional entities, some of these metrics are not directly comparable.

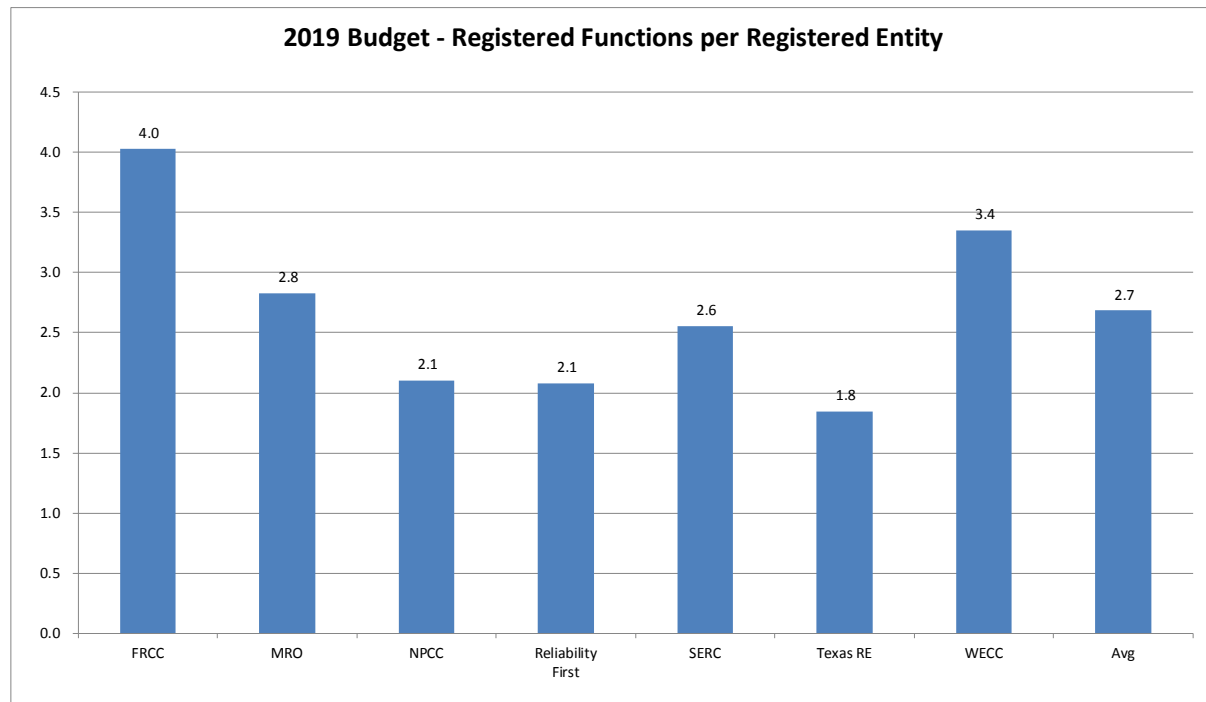
	FRCC	MRO	NPCC	Reliability First	SERC	Texas RE	WECC	Avg
2019 Compliance Budget	\$4,984,329	\$10,763,709	\$8,816,687	\$16,163,392	\$13,373,347	\$10,068,946	\$14,966,474	\$11,305,269
# Registered Entities	39	211	213	233	201	212	274	198
# Registered Functions	157	596	448	484	513	391	918	501



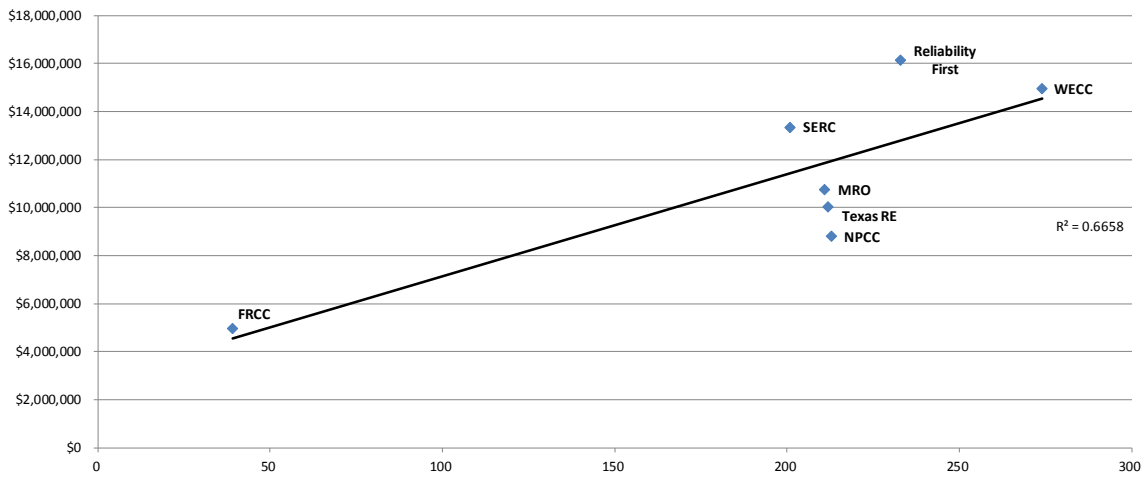
	FRCC	MRO	NPCC	Reliability First	SERC	Texas RE	WECC	Avg
Compliance Budget/Registered Entity	\$127,803	\$51,013	\$41,393	\$69,371	\$66,534	\$47,495	\$54,622	\$65,462
Compliance Budget/Registered Function	\$31,747	\$18,060	\$19,680	\$33,395	\$26,069	\$25,752	\$16,303	\$24,430



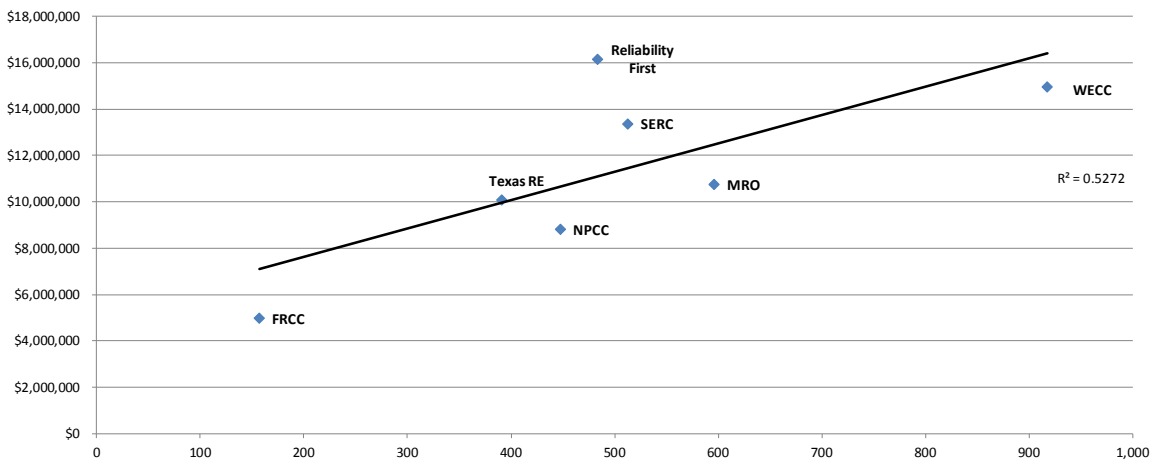
	FRCC	MRO	NPCC	Reliability First	SERC	Texas RE	WECC	Avg
Registered Functions per Registered Entity 2019 Budget	4.0	2.8	2.1	2.1	2.6	1.8	3.4	2.7



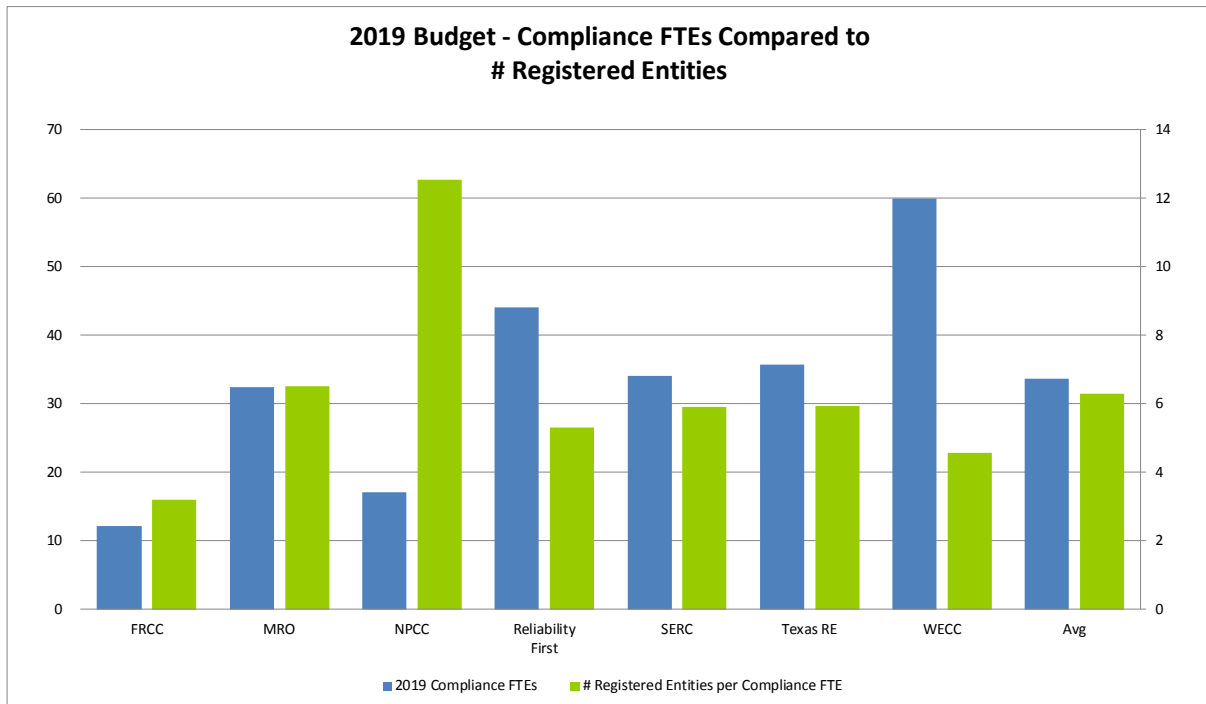
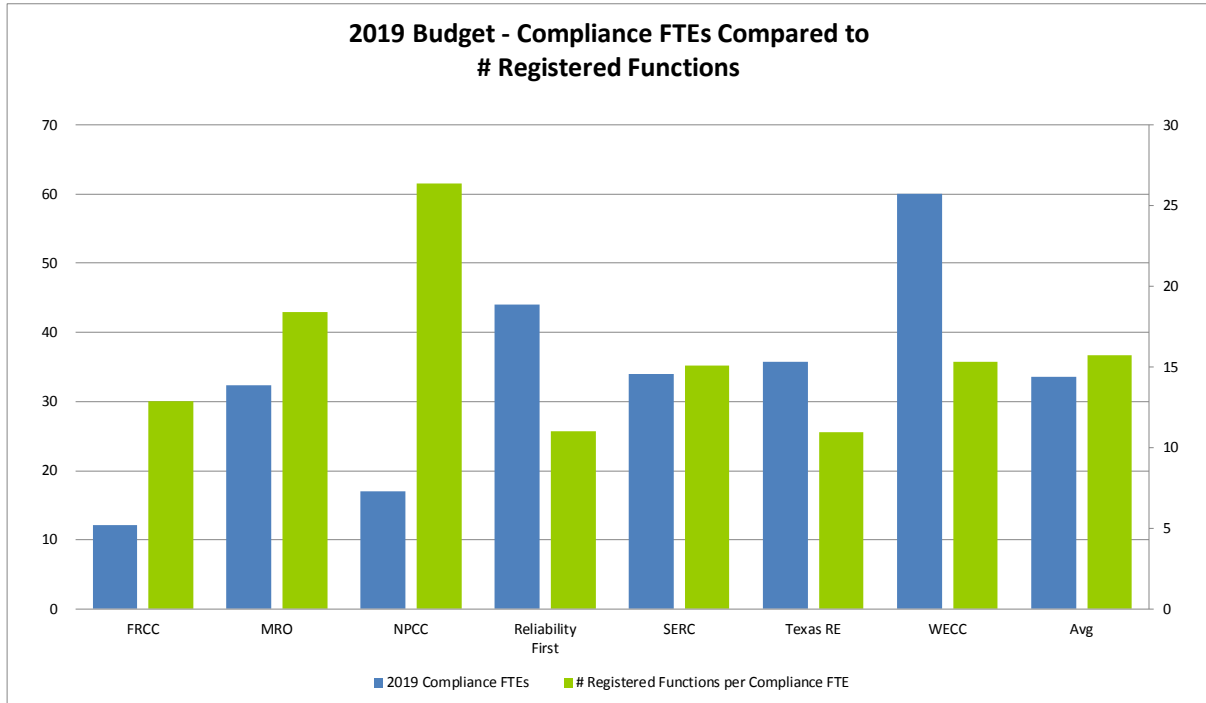
**Regional Entity 2019 Compliance Program Budget as Function of Number of Registered Entities**



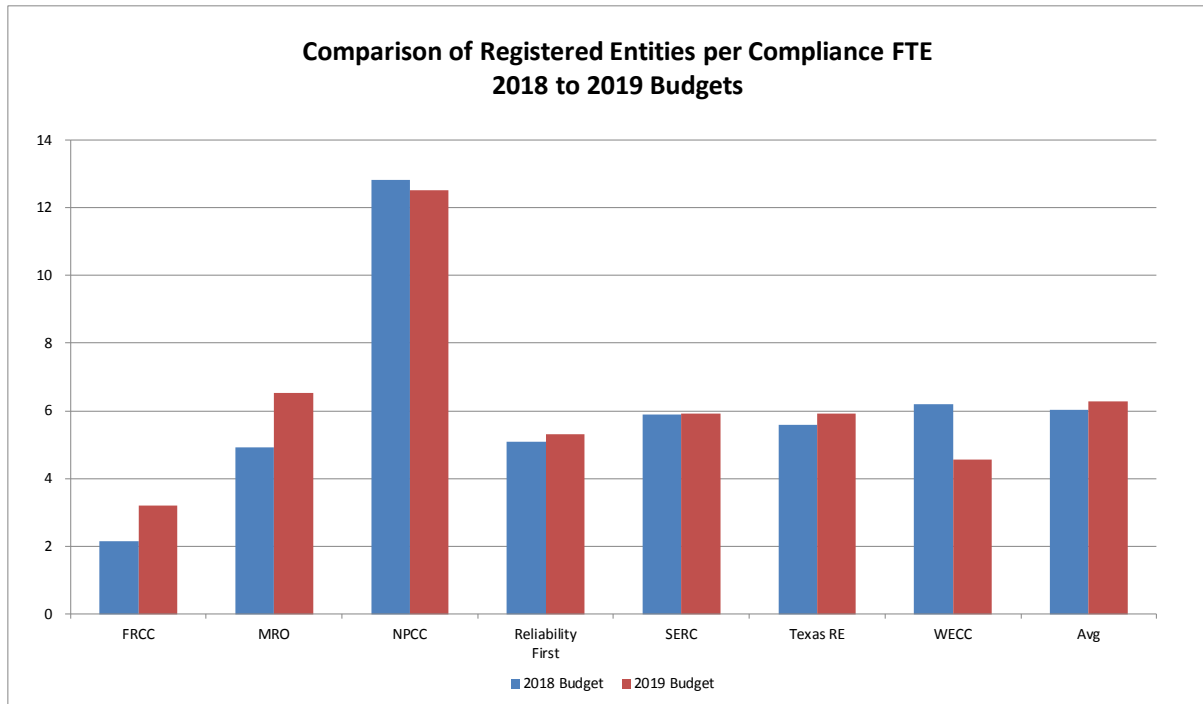
**Regional Entity 2019 Compliance Program Budget as Function of Number of Registered Functions**



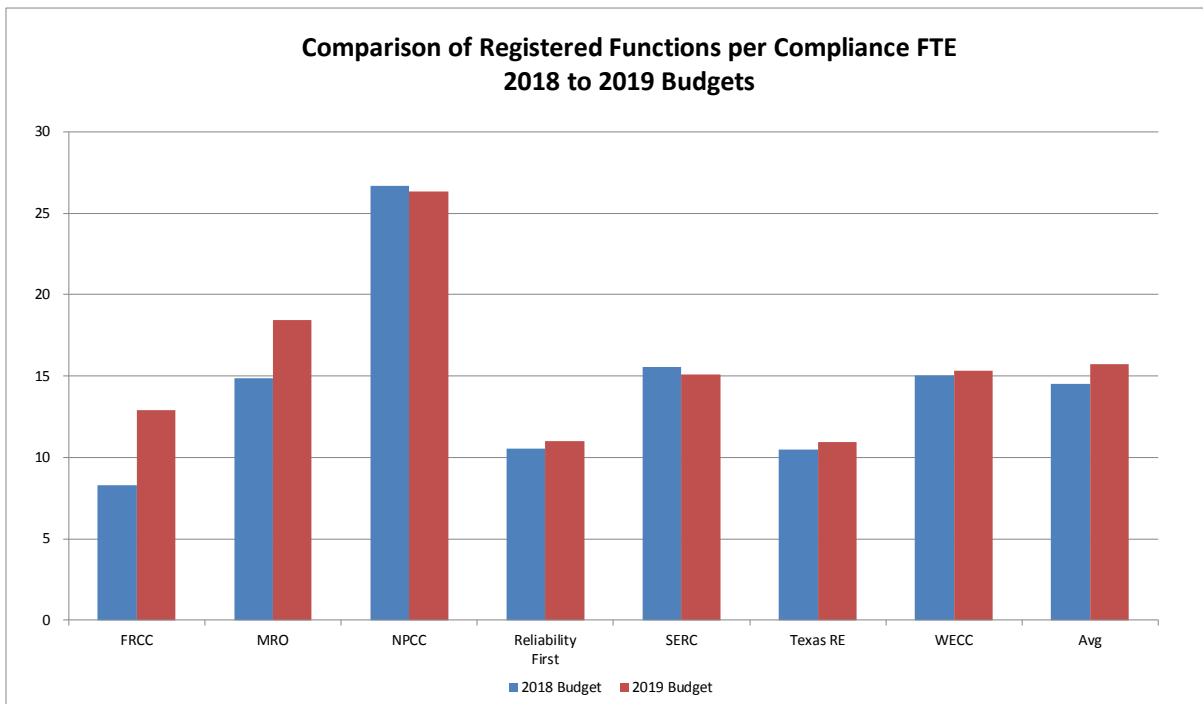
	FRCC	MRO	NPCC	Reliability First	SERC	Texas RE	WECC	Avg
2019 Compliance FTEs	12.18	32.35	17.00	44.00	34.00	35.75	60.00	33.61
# Registered Entities per Compliance FTE	3.2	6.5	12.5	5.3	5.9	5.9	4.6	6.3
# Registered Functions per Compliance FTE	12.9	18.4	26.4	11.0	15.1	10.9	15.3	15.7



	FRCC	MRO	NPCC	Reliability First	SERC	Texas RE	WECC	Avg
2018 Budget	2.1	4.9	12.8	5.1	5.9	5.6	6.2	6.0
2019 Budget	3.2	6.5	12.5	5.3	5.9	5.9	4.6	6.3



	FRCC	MRO	NPCC	Reliability First	SERC	Texas RE	WECC	Avg
2018 Budget	8.3	14.9	26.7	10.5	15.6	10.5	15.1	14.5
2019 Budget	12.9	18.4	26.4	11.0	15.1	10.9	15.3	15.7





**NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION**

**2019 BUSINESS PLAN AND BUDGET FILING**

**ATTACHMENT 7**

**METRICS ON NERC AND REGIONAL ENTITY**

**ADMINISTRATIVE (INDIRECT) COSTS**

**BASED ON**

**THE 2018 AND 2019 BUDGETS**

**Analysis of Indirect (Administrative Services) Costs  
2019 Budget versus 2018 Budget**

2018 BUDGET					2019 BUDGET					
Total Statutory Budget	Total Statutory Direct Budget	Total Statutory Indirect Budget	% Statutory Indirect Budget to Total Statutory Budget	Ratio of Statutory Direct Budget to Indirect Budget		Total Statutory Budget	Total Statutory Direct Budget	Total Statutory Indirect Budget	% Statutory Indirect Budget to Total Statutory Budget	Ratio of Statutory Direct Budget to Indirect Budget
\$ 73,135,156	\$ 43,145,222	\$ 29,989,934	41.0%	1.44	<b>NERC</b>	\$ 80,049,653	\$ 48,703,291	\$ 31,346,362	39.2%	1.55
7,514,112	6,506,605	1,007,507	13.4%	6.46	<b>FRCC</b>	6,695,787	5,634,096	1,061,691	15.9%	5.31
11,726,736	7,272,018	4,454,718	38.0%	1.63	<b>MRO</b>	15,980,354	10,967,562	5,012,792	31.4%	2.19
15,106,967	9,684,689	5,422,278	35.9%	1.79	<b>NPCC</b>	15,803,890	10,086,863	5,717,027	36.2%	1.76
21,393,899	15,185,134	6,208,764	29.0%	2.45	<b>RF</b>	22,648,458	15,832,553	6,815,905	30.1%	2.32
17,182,868	8,884,242	8,298,626	48.3%	1.07	<b>SERC</b>	18,144,949	8,637,442	9,507,507	52.4%	0.91
10,793,195	5,786,488	5,006,707	46.4%	1.16	<b>SPP RE</b>	-	-	-	-	-
12,656,953	8,007,811	4,649,142	36.7%	1.72	<b>Texas RE</b>	13,069,599	7,974,836	5,094,762	39.0%	1.57
\$ 27,097,344	\$ 17,924,467	\$ 9,172,877	33.9%	1.95	<b>WECC</b>	\$ 26,950,566	\$ 17,730,811	\$ 9,219,755	34.2%	1.92
			35.8%	2.18	<b>AVERAGE</b>				30.9%	1.95

2018 BUDGETED FTEs					2019 BUDGETED FTEs					
Total Statutory FTEs	Total Statutory Direct FTEs	Total Statutory Indirect FTEs	Indirect FTE as % of Total FTE	# Direct to Indirect Statutory FTEs		Total Statutory FTEs	Total Statutory Direct FTEs	Total Statutory Indirect FTEs	Indirect FTE as % of Total FTE	# Direct to Indirect Statutory FTEs
199.28	131.84	67.44	33.8%	1.95	<b>NERC</b>	204.92	137.24	67.68	33.0%	2.03
30.63	26.01	4.62	15.1%	5.63	<b>FRCC</b>	20.75	16.37	4.38	21.1%	3.74
45.00	33.59	11.41	25.4%	2.94	<b>MRO</b>	59.00	47.78	11.22	19.0%	4.26
36.86	28.86	8.00	21.7%	3.61	<b>NPCC</b>	38.86	29.86	9.00	23.2%	3.32
76.20	60.60	15.60	20.5%	3.88	<b>RF</b>	78.20	61.60	16.60	21.2%	3.71
75.00	44.70	30.30	40.4%	1.48	<b>SERC</b>	78.00	44.85	33.15	42.5%	1.35
32.30	27.80	4.50	13.9%	6.18	<b>SPP RE</b>	-	-	-	-	-
60.00	46.25	13.75	22.9%	3.36	<b>Texas RE</b>	60.00	45.25	14.75	24.6%	3.07
143.00	102.30	40.70	28.5%	2.51	<b>WECC</b>	143.00	105.00	38.00	26.6%	2.76
			24.7%	3.51	<b>AVERAGE</b>				23.5%	2.69

**NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION**

**2019 BUSINESS PLAN AND BUDGET FILING**

**ATTACHMENT 8**

**REPORT ON**

**BOARD OF TRUSTEE REMUNERATION REVIEW**

**JULY 2018**

**PREPARED BY WILLIS TOWERS WATSON**

# North American Electric Reliability Corporation

## Board of Trustee Remuneration Review

July 2018



# Introduction

## North American Electric Reliability Corporation (NERC) engaged Willis Towers Watson to conduct a Board of Trustees' (or Directors') compensation and structure assessment examining four market perspectives

- Willis Towers Watson last performed this assessment for NERC in July 2015 and utilized the same methodology
- The four market perspectives examined are as follows (see the Appendix for peer companies):
  1. **Regional Entities (RE):** 6 of 8 organizations<sup>1</sup> are included in the analysis
  2. **Regional Transmission Organization / Independent System Operator (RTO/ISO):** 7 of 9 organizations<sup>2</sup> are included in the analysis
  3. **Investor Owned Utilities (IOU):** 12 organizations with median revenues of \$1.4 billion
  4. **General Industry (GI):** 13 organizations with median revenues of \$474 million and median asset size of \$711 million

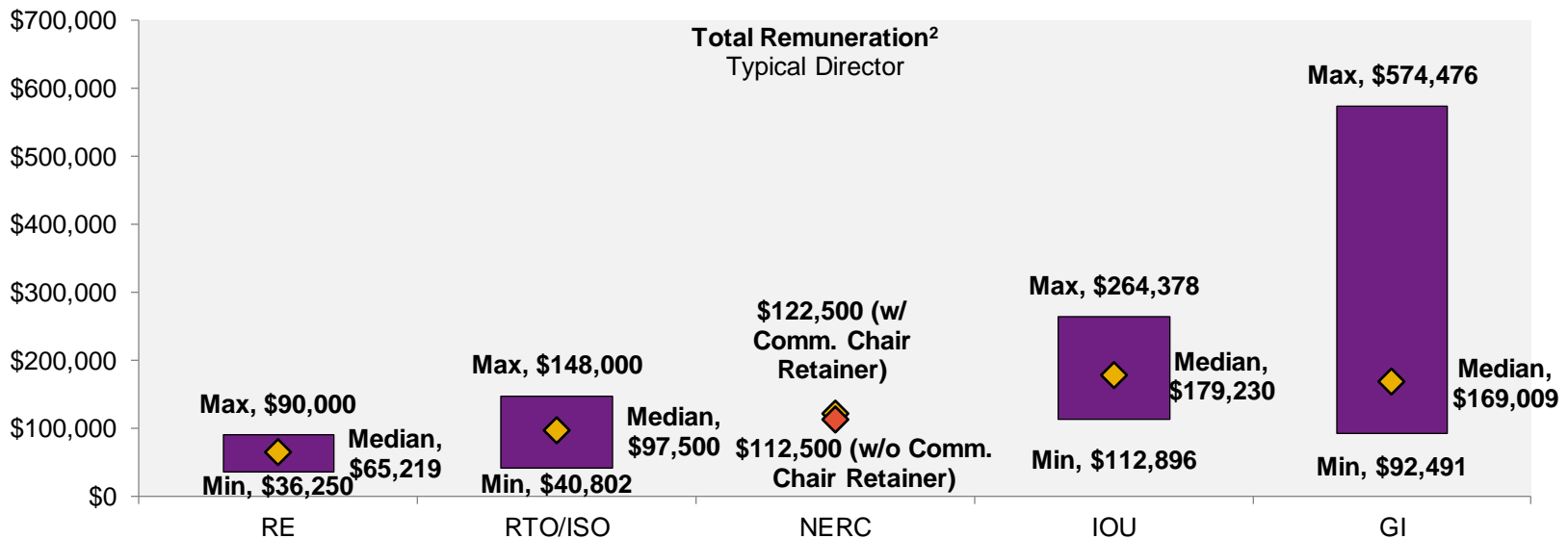
### Notes:

(1) 2 of 8 organizations have all stakeholder boards and thus do not compensate their board members.

(2) PJM Interconnection and Ontario Independent Electric System Operator do not publicly disclose their Director compensation program. We received data from them in 2015, but were not able to secure data for this year's study.

# Typical Trustee Total Remuneration

- NERC’s “typical Trustee<sup>1</sup>” total remuneration of \$112,500 falls above the median value provided by RE and RTO/ISO peers, but below the median value at IOU and GI peers
  - The chart below presents the range (minimum to maximum) and median of total remuneration provided to a “typical Director<sup>1</sup>” for each market perspective

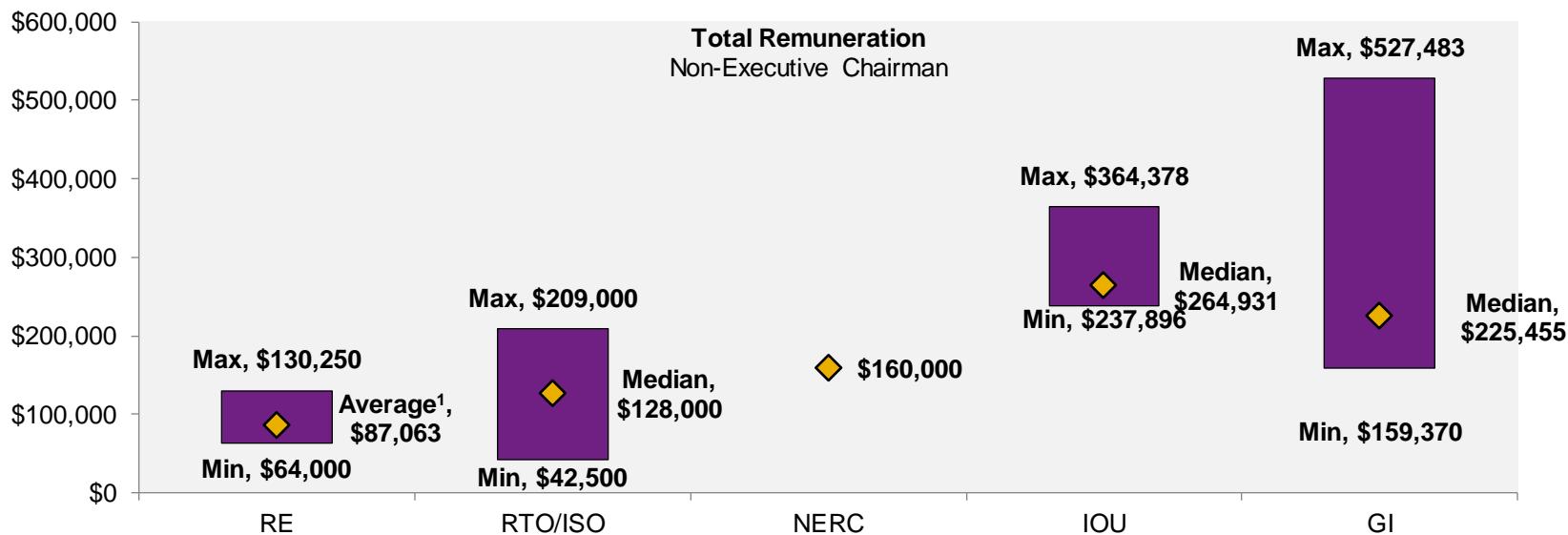


NERC Total Remuneration as a % of Peer Median					
Retainer	188%	126%	100%	68%	72%
No Retainer	172%	115%	100%	63%	67%

**Notes:**  
 (1) A “typical Trustee” or “Director” cannot be in a Board leadership position, an employee of the company or serve as a Director for less than a full year.  
 (2) Compensation for Regional Entities, RTOs / ISOs, and NERC includes Committee Chair compensation while it has been excluded from IOUs and the General Industry market perspectives, given applicable disclosure.

# Non-Executive Chair Total Remuneration

- NERC's total remuneration to the Non-Executive Chair of the Board of \$160,000 falls above the median value provided by RE and RTO/ISO peers, but below the median value at IOU and GI peers
  - The chart below presents the range (minimum to maximum) and median of total remuneration provided to a Non-Executive Chairman for each market perspective



NERC Total Remuneration as a % of Peer Median				
184%	125%	100%	60%	71%

**Notes:**

(1) Average data was provided due to insufficient sample size to calculate the median.

# Committee Chair Additional Retainers

- The additional compensation provided to NERC Committee Chairs is comparable to or above the median (50th percentile) of Committee Chairs of the three most common types of committees for both the IOU and General Industry peers
  - NERC provides an annual cash amount of \$10,000 to Committee Chairs and the independent Trustee serving on the Electricity Sub-Sector Coordinating Council

Committee Chair Additional Pay Element	NERC	Investor Owned Utilities				General Industry			
		Prevalence	25th Percentile	50th Percentile	75th Percentile	Prevalence	25th Percentile	50th Percentile	75th Percentile
<i>Finance &amp; Audit Committee</i>									
<b>Additional Total Compensation</b>	<b>\$10,000</b>	<b>100%</b>	\$10,000	\$11,250	\$13,125	<b>92%</b>	\$9,750	\$10,500	\$18,125
<i>Corporate Governance / Compensation Committee<sup>1</sup></i>									
<b>Additional Total Compensation</b>	<b>\$10,000</b>	<b>100%</b>	\$9,625	\$10,000	\$11,563	<b>92%</b>	\$6,750	\$7,750	\$13,125
<i>Nominating Committee<sup>2</sup></i>									
<b>Additional Total Compensation</b>	<b>\$10,000</b>	<b>92%</b>	\$7,500	\$7,500	\$10,000	<b>92%</b>	\$3,938	\$5,000	\$7,750
<i>Compliance Committee</i>									
<b>Additional Total Compensation</b>	<b>\$10,000</b>		N/A	N/A	N/A		N/A	N/A	N/A
<i>Standards Oversight and Technology Committee</i>									
<b>Additional Total Compensation</b>	<b>\$10,000</b>		N/A	N/A	N/A		N/A	N/A	N/A
<i>Enterprise-Wide Risk Committee</i>									
<b>Additional Total Compensation</b>	<b>\$10,000</b>		N/A	N/A	N/A		N/A	N/A	N/A

**Notes:**

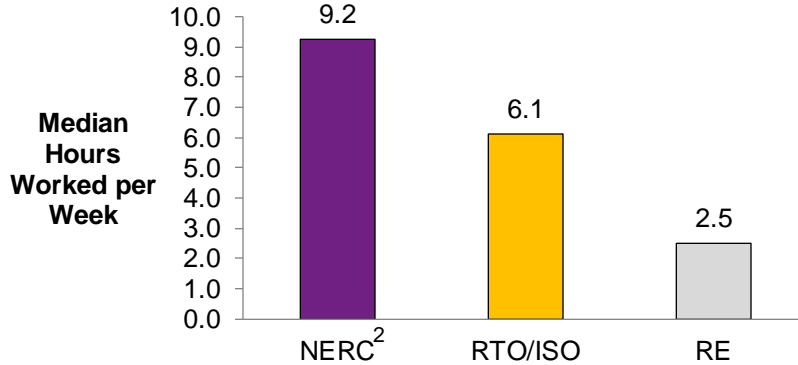
- (1) Market data for Investor Owned Utilities and General Industry are reflective of Compensation Committees.
- (2) Market data for Investor Owned Utilities and General Industry are reflective of Corporate Governance and Nominating Committees.



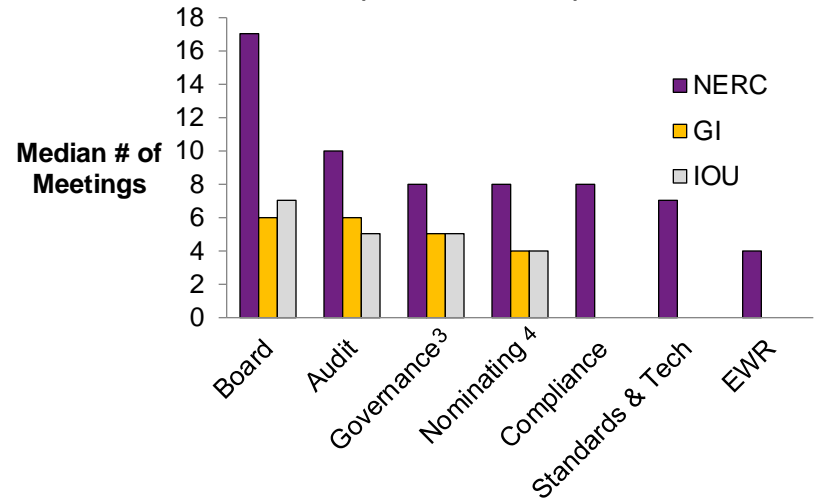
# Workload

- Compared to all four market perspectives, NERC ranks among the highest in regards to average hours worked and number of meetings held (both Board and Committees)
  - Findings do not include the regional board meetings NERC's Trustees attend throughout the year

NERC vs. RTO/ISO & RE Peers  
(Fiscal 2016 Data)<sup>1</sup>



NERC vs. General Industry & IOUs  
(Fiscal 2017 Data)

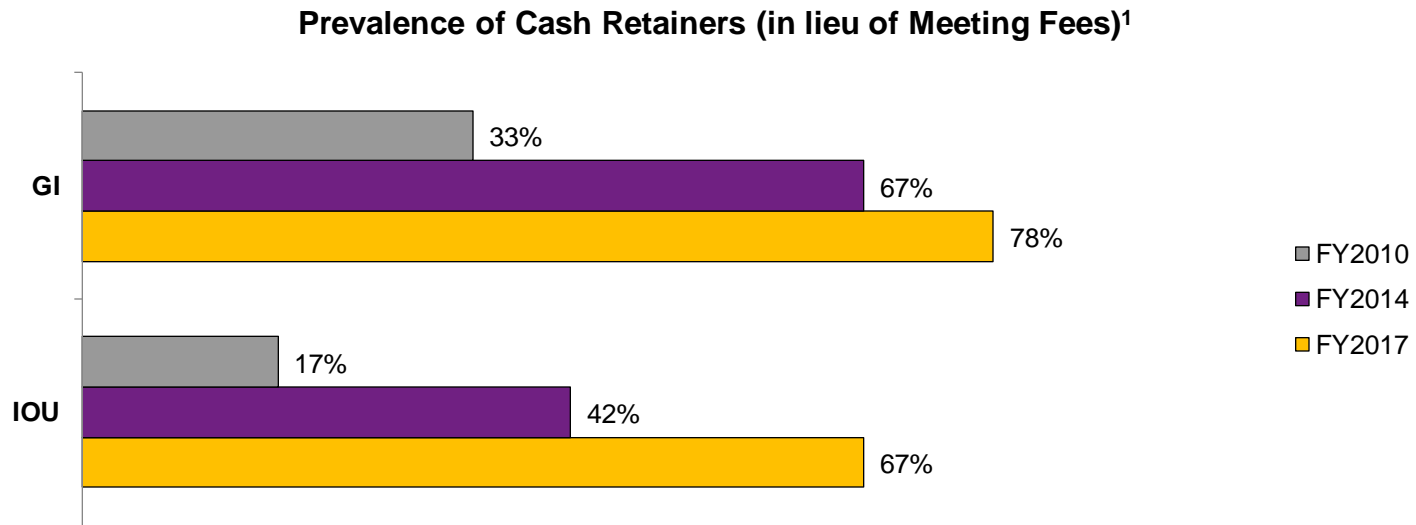


**Notes:**

- Hours disclosed excludes the Chairman of the Board.
- NERC's 2017 average hours increased to 9.9 hours, but 2017 market data are currently unavailable.
- Market data for Investor Owned Utilities and General Industry is reflective of Compensation Committees.
- Market data for Investor Owned Utilities and General Industry is reflective of Corporate Governance and Nominating Committees.

# Pay Structure

- NERC's practice of paying retainers (in lieu of board of committee meeting fees) is consistent with IOU and GI peer practices and continues to align with broader market best practice



**Notes:**

(1) Data reflect constant sample of peer companies year-over-year.

## Director Compensation Trends

- The table below shows median total remuneration increases for NERC peers:

	RE <sup>1</sup>	RTO / ISO <sup>1</sup>	IOU <sup>1</sup>	GI <sup>1</sup>
<b>Annual % Increase</b>	1%	2%	5%	9%

- Consistent with prior years, companies continue to deliver cash compensation via retainers instead of per-meeting fees

Market Perspective	Prevalence			
	Board		Committee	
	Retainer	Meeting Fee	Retainer	Meeting Fee
<b>IOU</b>	100%	33%	33%	33%
<b>GI</b>	85%	15%	69%	8%

- Majority of companies continue to provide additional retainers for leadership positions within the board, such as Non-Executive Chairman of the Board and Committee Chairs, especially Audit, Compensation and Governance Committees

### Notes:

(1) Annual increase in total remuneration is based on companies included in both the 2015 and 2018 analyses.

# Design Considerations

## Pay Levels

- Maintain the practice of targeting pay between the market 50th percentile of RTO/ISO peers and market 25th percentile of IOU peers (lower market positioning reflects NERC's not-for-profit status)
- Given the greater workload carried by NERC Trustees versus peers, current positioning of NERC pay in the bottom half of the competitive pay range and the increase in market pay levels since the last study conducted by Willis Towers Watson, the following adjustments should be considered to maintain competitive market position of NERC Trustee compensation:
  1. Increase Trustee annual cash retainer by \$5,000 a year, effective in 2019 - 2021
  2. Increase Non-Executive Chairman annual cash retainer by \$5,000 a year, effective in 2019 - 2021

Annual Cash Retainer	2015 Analysis		2018 Analysis		Proposed \$ and Annual % Increase
	NERC	Competitive Pay Range	NERC	Competitive Pay Range	
Trustee	\$97,500	\$80,000 – \$145,000	\$112,500	\$97,500 – \$165,000	\$117,500 4% increase
Committee Chair <sup>1</sup>	\$10,000	\$7,500 – \$10,000	\$10,000	\$7,500 – \$10,000	\$10,000 No change
Non-Executive Chairman	\$132,500	\$95,000 – \$225,000	\$160,000	\$130,000 – \$250,000	\$165,000 3% Increase

## Pay Structure

- Maintain alignment with market best practices by continuing with current all retainer approach – Trustee, Committee Chair and Non-Executive Chairman retainers

(1) Reflects IOU market data reference points only, as RTO/ISO data are not available.

# Appendix

# Appendix

## Peer Group Financial Data: Regional Entities

Organization	Operating Budget (millions)	Data Effective Date
Florida Reliability Coordinating Council (FRCC)	\$16	2016
Midwest Reliability Organization (MRO)	\$11	2016
Northeast Power Coordinating Council (NPCC)	\$16	2016
ReliabilityFirst Corporation (RFC)	\$22	2016
SERC Reliability Corporation (SERC)	\$15	2016
Southwest Power Pool RE (SPP RE)	N/A	2016
Texas Reliability Entity (Texas RE)	\$11	2016
Western Electricity Coordinating Council (WECC)	\$30	2016

n = 8

25th %ile	\$13
50th %ile	\$16
Average	\$17
75th %ile	\$19

North American Electric Reliability Corporation <sup>1</sup>	\$200
Percentile Rank	Highest

**Notes:**

Data based on 2016 Form 990s unless footnoted otherwise.

N/A = Data are not available.

(1) Data provided by NERC and reflects their operating budget.

# Appendix

## Peer Group Financial Data: RTOs/ISOs

Organization	Operating Budget (millions)	Data Effective Date
Alberta Electric System Operator	N/A	2017
California ISO (CAISO)	\$214	2016
Electric Reliability Council of Texas (ERCOT)	\$216	2016
ISO New England (ISO - NE)	\$182	2016
Midwest ISO (MISO)	\$340	2016
New York ISO (NYISO)	\$175	2016
Ontario Independent Electricity System Operator	\$151	2017
PJM Interconnection (PJM) <sup>1</sup>	\$366	2017
Southwest Power Pool (SPP)	\$182	2016

n = 9

25th %ile	\$180
50th %ile	\$198
Average	\$228
75th %ile	\$247

North American Electric Reliability Corporation <sup>2</sup>	\$200
Percentile Rank	51%

### Notes:

Data based on 2016 Form 990s unless footnoted otherwise.

N/A = Data are not available.

(1) Data based on its 2017 Financial Statement as the organization is not required to file a Form 990.

(2) Data provided by NERC and reflects their operating budget.

# Appendix

## Peer Group Financial Data: Investor Owned Utilities

Company	Revenues (millions) <sup>1</sup>
Great Plains Energy Incorporated	\$2,708
Westar Energy, Inc.	\$2,571
OGE Energy Corp.	\$2,261
Portland General Electric Company	\$2,009
Avista Corporation	\$1,446
PNM Resources, Inc.	\$1,445
ALLETE, Inc.	\$1,419
IDACORP, Inc.	\$1,349
NorthWestern Corporation	\$1,306
El Paso Electric Company	\$917
Otter Tail Corporation	\$849
MGE Energy, Inc.	\$563
<b>n = 12</b>	
<b>25th %ile</b>	<b>\$1,014</b>
<b>50th %ile</b>	<b>\$1,432</b>
<b>75th %ile</b>	<b>\$2,198</b>
<b>North American Electric Reliability Corporation<sup>2</sup></b>	<b>\$200</b>
<b>Percentile Rank</b>	<b>Lowest</b>

**Notes:**

- (1) Financial figures are as reported by S&P Capital IQ. All financials are as of 2017 fiscal year end.
- (2) The data was provided by NERC and reflects their operating budget.



# Appendix

## Peer Group Financial Data: General Industry

Company	Revenues (millions) <sup>1</sup>	Assets (millions) <sup>1</sup>
Nasdaq, Inc.	\$3,965	\$15,786
Old National Bancorp	\$606	\$17,518
Trustmark Corporation	\$585	\$13,798
Emergent BioSolutions Inc.	\$561	\$1,070
FormFactor, Inc.	\$548	\$647
Seattle Genetics, Inc.	\$482	\$878
Cogent Communications Holdings, Inc.	\$474	\$711
Iridium Communications Inc.	\$448	\$3,782
Badger Meter, Inc.	\$402	\$392
Sun Hydraulics Corporation	\$343	\$460
NIC Inc.	\$337	\$296
Imperva, Inc.	\$322	\$528
AeroVironment, Inc.	\$265	\$433
<b>n = 13</b>		
<b>25th %ile</b>	<b>\$340</b>	<b>\$446</b>
<b>50th %ile</b>	<b>\$474</b>	<b>\$711</b>
<b>75th %ile</b>	<b>\$573</b>	<b>\$8,790</b>
<b>North American Electric Reliability Corporation<sup>2</sup></b>	<b>\$200</b>	<b>--</b>
<b>Percentile Rank</b>	<b>Lowest</b>	<b>--</b>

### Notes:

- (1) Financial figures are as reported by S&P Capital IQ. All financials are as of 2017 fiscal year end.
- (2) The data was provided by NERC and reflects their operating budget.