

Agenda

Technology and Security Committee Meeting

November 7, 2022 | 2:30-3:30 p.m. Eastern

Virtual Meeting

Attendee WebEx Link: [Join Meeting](#)

Introduction and Chair's Remarks

NERC Antitrust Compliance Guidelines*

Agenda Items

Topics

1. **Minutes* – Approve**
 - a. August 17, 2022 Open Meeting
2. **E-ISAC Operations* – Update**
3. **2023 ERO Applications Update* – Review**
4. **Other Matters and Adjournment**

*Background materials included.

Antitrust Compliance Guidelines

I. General

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

II. Prohibited Activities

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.

- Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.

III. Activities That Are Permitted

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.

DRAFT Minutes **Technology and Security Committee Meeting**

August 17, 2022 | 9:15-10:15 a.m. Pacific

Hyatt Regency Vancouver
655 Burrard St.
Vancouver, BC V6C 2R7, Canada

Call to Order

Ms. Jane Allen, Chair, called to order a duly noticed open meeting of the Technology and Security Committee (the Committee) of the Board of Trustees (Board) of the North American Electric Reliability Corporation (NERC) on August 17, 2022 at approximately 9:15 a.m. Pacific, and a quorum was declared present.

Present at the meeting were:

Committee Members

Jane Allen, Chair
Colleen Sidford
Jim Piro
Robin E. Manning
Suzanne Keenan
Kenneth W. DeFontes, *ex officio*

Board Members

George S. Hawkins
Robert G. Clarke
Roy Thilly
Susan Kelly
Roy Thilly

NERC Staff

Andy Sharp, Vice President and Chief Financial Officer
Bluma Sussman, Director of Membership, E-ISAC
Bryan Preston, Vice President, People and Culture
Janet Sena, Senior Vice President, External Affairs
Howard Gugel, Vice President, Engineering and Standards
Kelly Hanson, Senior Vice President and Chief Administrative Officer
Kimberly Mielcarek, Vice President, Communications
Manny Cancel, Senior Vice President and Chief Executive Officer of the E-ISAC
Mark Lauby, Senior Vice President and Chief Engineer
Sônia Mendonça, Senior Vice President, General Counsel, and Corporate Secretary
Stan Hoptroff, Vice President, Business Technology
Tina Buzzard, Assistant Corporate Secretary

NERC Antitrust Compliance Guidelines

Ms. Buzzard directed the participants' attention to the NERC Antitrust Compliance Guidelines included in the agenda, and indicated that all questions regarding antitrust compliance or related matters should be directed to Ms. Mendonça.

Introduction and Chair's Remarks

Ms. Allen welcomed everyone to the meeting and reviewed the agenda. She commented on the E-ISAC's efforts to work with stakeholders, including government partners, in both the U.S. and Canada, noting that Canadian membership at the E-ISAC continues to grow. She also noted that Mr. Hoptroff will present on NERC's 3-year business technology strategy, emphasizing that the strategy reflects stakeholder feedback.

Minutes

Upon motion duly made and seconded, the May 11, 2022 meeting minutes were approved as presented at the meeting.

E-ISAC Operations

Mr. Cancel provided an update on E-ISAC operations, focusing on Canadian engagement, the threat landscape, and OT visibility activities. Ms. Sussman presented on the E-ISAC's Vendor affiliate program and enhanced collaboration with the natural gas sector. The Committee discussed ensuring these initiatives do not distract from the E-ISAC's core focus, the incremental cost of these initiatives, and any assistance the Committee can provide.

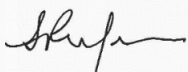
ERO Enterprise Align Project

Mr. Hoptroff provided an overview of the scope and focus of NERC's three-year business technology strategy. He discussed the critical skills that NERC will have to acquire and retain, and the critical focus areas for upcoming projects. He also provided a project roadmap, outlining the solutions that NERC aims to implement in each of the next three years. Mr. Hoptroff also highlighted the work of the Business Technology Success team and provided an update on the status of the Align project.

Adjournment

There being no further business, the meeting was adjourned.

Submitted by,



Sônia Mendonça
Corporate Secretary

Electricity Information Sharing and Analysis Center (E-ISAC) Operations

Action

Update

Background

Management will provide the Technology and Security Committee an update regarding E-ISAC operations. The update will include a discussion of the security threat landscape, cyber threat mitigation, 2022 accomplishments, and 2023 priorities and work plan.

- **Threat Landscape** – Management will discuss E-ISAC’s tracking of potential threats to the electric sector, including from nation state actors.
- **Cyber Threat Mitigation** – Management will discuss actions electricity sector participants should take to address the increasingly complex threat landscape.
- **2022 Accomplishments** – Management will discuss E-ISAC’s accomplishments in 2022 including, conducting threat hunts and intelligence gathering in Operation Technology environments; CRISP expansion; increased government and cross sector engagement; membership growth, vendor affiliate program, GridSecCon 2022, and the new E-ISAC Portal.
- **2023 Priorities and Work Plan** – Management will discuss the E-ISAC’s priorities and work plan for 2023. The 2023 areas of focus include: monitoring and responding to evolving threat landscape; enhancing OT threat analysis and response capabilities; continued support of ETAC and JCDC; strategically expanding CRISP participation, including natural gas pipeline companies; informing legislation to improve information sharing and incident reporting for critical infrastructure; formally integrating the natural gas and water sectors into GridEx VII planning; and expanding Vendor Affiliate Program.



E-ISAC Update

NERC Board of Trustees

Agenda Item 2

Matt Duncan, E-ISAC
Technology and Security Committee
Open meeting
November 7, 2022

TLP:WHITE

RELIABILITY | RESILIENCE | SECURITY





- 2022 Key Accomplishments
- 2023 Priorities and Work Plan
- Threat Landscape
- Cyber Threat Mitigation



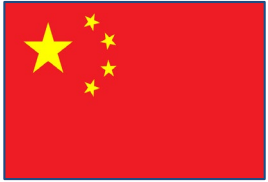
- Threat hunting and intelligence gathering in OT environments
- CRISP expansion and 5 year strategy
- Increased engagement with critical infrastructure sectors
- Increased collaboration with U.S. and Canadian govt agencies
- Energy Threat and Analysis Center (ETAC) pilot and Joint Cyber Defense Collaborative (JCDC)
- Membership growth and outreach to natural gas and renewable sectors
- Vendor Affiliate Program
- GridSecCon 2022
- New E-ISAC Portal



- Monitor and respond to evolving threat landscape
- Enhancing OT threat analysis and response capabilities
- Continue support of ETAC and JCDC
- Strategically expand CRISP participation, including natural gas pipeline companies
- Inform legislation to improve information sharing and incident reporting for critical infrastructure
- Formally integrate the natural gas and water sectors into GridEx VII planning
- Expanding Vendor Affiliate Program

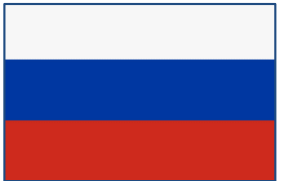


- Increasingly Complex Threat Landscape
 - Nation-State Adversaries
 - OT, Legacy, and Supply Chain Vulnerabilities
 - Ransomware
 - Managed service providers
 - Physical Security Threats
 - Phishing remains primary vector for compromise
 - Renewable sector being actively targeted
- E-ISAC continues to distribute timely and actionable information regarding threats
 - APB's and reports
 - Risk mitigation techniques



China

- VMware “Bad VIB(E)S” (low confidence)
- Log4j/Log4Shell scanning/exploitation
- KOSTOVITE/UNC2630 targeting of Renewables



Russia

- Industroyer2 & Pipedream/Incontroller
- APT29 (SVR) and Microsoft
- APT28 (GRU) Destructive Attacks



Iran and North Korea (DPRK)

- Iran: Scanning for Fortinet, VMware Horizon Log4Shell
- DPRK: Lazarus Group intellectual property theft



SHIELDS UP



CIS Critical Security Controls

Follow our prioritized set of actions to protect your organization and data from cyber-attack vectors.

[DOWNLOAD CIS CONTROLS V8 →](#)

- **Community must also adapt to a threat landscape where:**
 - Adversaries adopt new tactics
 - New and legacy vulnerabilities are exploited
 - The magnitude of potential impacts change as the grid evolves and cross-sector interdependencies increase
- **Mitigations**
 - Follow CISA 'SHIELDS UP' Guidance
 - Leverage CIS Critical Security Controls v8
 - Coordinate with your local utility, FBI Field Office, DHS Fusion Center
 - Share with the E-ISAC

A stylized map of North America, including the United States, southern Canada, and northern Mexico. The map is rendered in shades of blue and grey. A solid blue horizontal band crosses the middle of the map, serving as a background for the title text.

Questions and Answers

2023 ERO Applications Update

Action

Update

Background

Management will provide an update on the NERC applications roadmap for 2023. The update will discuss NERC's plans regarding the following applications include:

- NERC Alerts Upgrade
- Generating Availability Data System (GADS) Wind Submission Site v2
- GADS Solar
- Reliability Coordinator Information System (RCIS) Replacement
- Enterprise Data Analytics Center

Management will also highlight the work of the NERC Applications Development and Support Team.

Finally, management will provide an update on the status of the Align project, including Release 4.5 and Align governance model.

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Agenda Item 3

2023 ERO Applications Update

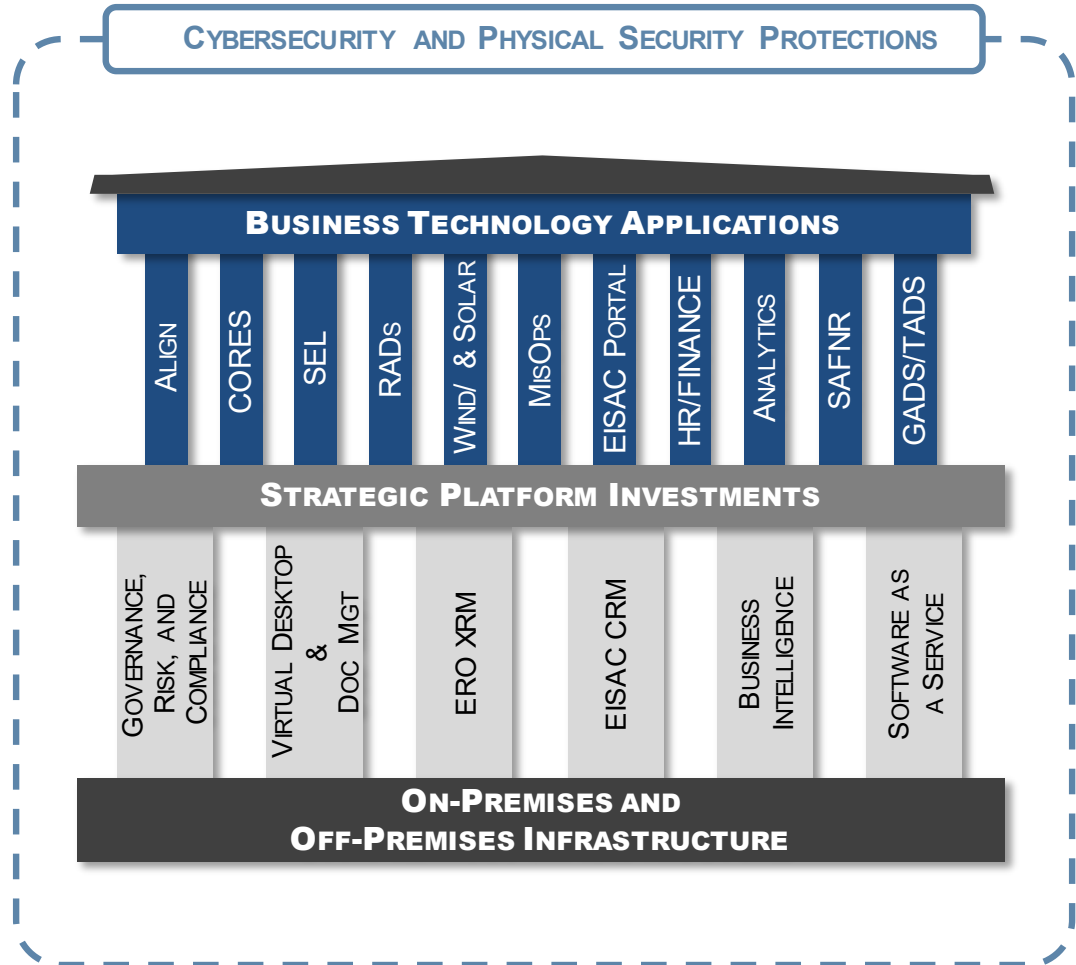
Stan Hoptroff, Vice President, Business Technology
Justin Lofquist, Director, Enterprise Applications Architecture
Technology and Security Committee
Open Meeting
November 7, 2022

RELIABILITY | RESILIENCE | SECURITY



- NERC and ERO Application 2023 Roadmap
- NERC Applications Development and Support Team – Spotlight
- Align Release 4.5
- Align Governance
- Security Advisory Group (SAG)

- Ensure the protection of our platforms and applications
- Provide foundational infrastructure to support the ERO Enterprise
- Build and provide applications that enable our core mission



- Cyber Security
- Quality Assurance
- Cloud Computing
- Analytics
- Application Development
- Technology Success Support
- Project and Vendor Management

- NERC Alerts Upgrade
- Generating Availability Data System (GADS) Wind Submission Site v2
- GADS Solar
- Reliability Coordinator Information System (RCIS) Replacement
- Enterprise Data Analytics Center

Current App Services Team Structure

Align

FTE

Cas Nowicki
SAI Developer



FTE

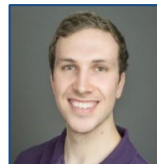
Justin Lofquist
Director



Analytics

FTE

Daniel Frank
Database Engineer



Software

FTE

Jerry Bland
Sr. Software Engineer



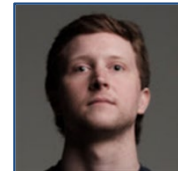
C

Dan Nagar
Sr. Software Engineer



C

Brennan Coheleach
Software Engineer



C

Anthony Aguilar
Sr. Software Engineer

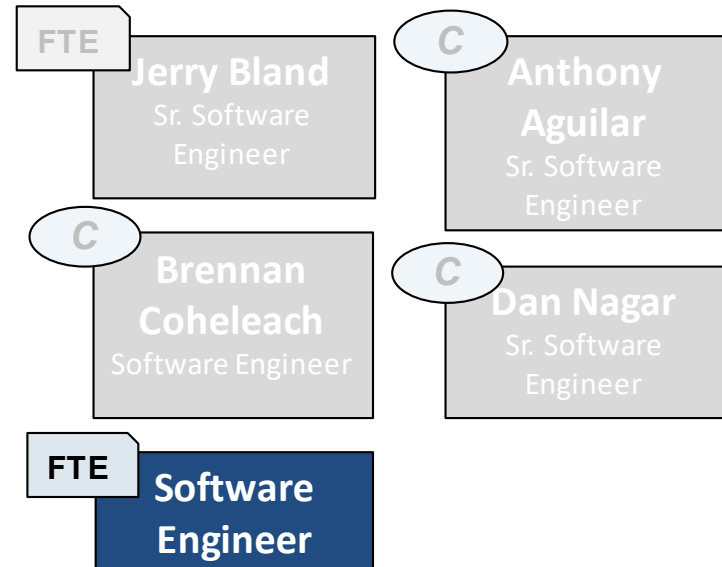


Future App Services Team Structure

Align



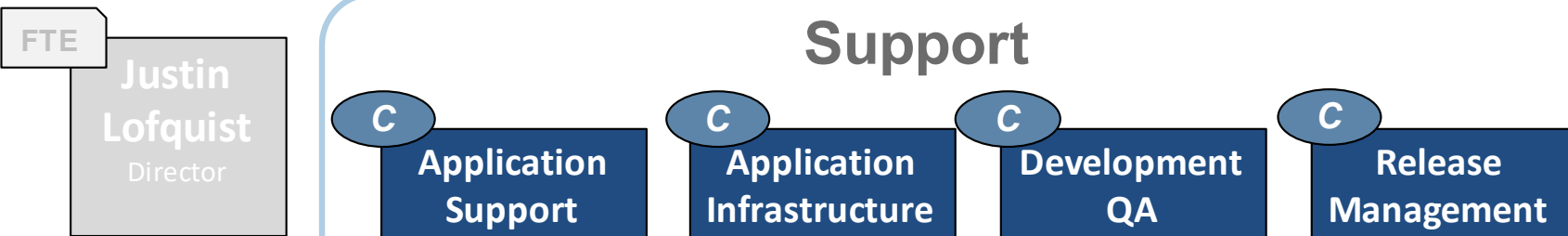
Software



Analytics



Support



Investment Details

<p>Business Purpose</p>	<p>NERC Alerts is utilized by the NERC Situational Awareness team in order to implement section 810 of the NERC Rules of Procedure, related to the issuance and exchange of information and data. Alerts are generated based on reliability and security needs, and the application serves notifications to approximately 6,500 unique external users, representing almost all registered entities, and maintains a 96-98% participation rate.</p> <p>This effort reduces the number of user accounts required to access NERC resources, improving the ERO’s security posture through increased account management effectiveness.</p>
<p>Planned Efforts</p>	<ul style="list-style-type: none"> • Functional enhancements to current application • Transfer user accounts to NERC’s central authentication model
<p>Key Drivers</p>	<ul style="list-style-type: none"> • Producing a Highly Reliable and Secure Bulk Power System (BPS) • Managing Reliability Risk • Managing Corporate/Security Risk • Modernizing Technology
<p>Investment</p>	<p>\$175,000</p>

Investment Details	
Business Purpose	<p>GADS Wind data collection was implemented prior to the introduction of the ERO Portal. Additionally, significant modifications are required to incorporate the updates proposed in the GADS Section 1600 Data Request, to presented to NERC’s Board of Trustees for approval in November of 2022.</p> <p>GADS Wind version 2 will be build on the ERO Portal, and is expected to share common functions and data structures with the GADS Solar application that will also be developed in 2023.</p>
Planned Efforts	<ul style="list-style-type: none"> • GADS Wind Registered Entity Site to ERO Portal • Functional changes to reflect modifications to the Section 1600 DRI
Key Drivers	<ul style="list-style-type: none"> • Producing a Highly Reliable and Secure BPS • Introducing Innovation and New Capabilities • Managing Reliability Risk • Enabling and Promoting Collaboration • Creating Efficiency
Investment	\$240,000

Investment Details

<p>Business Purpose</p>	<p>The GADS Section 1600 Date Request, to be presented to NERC’s Board of Trustees for approval in November of 2022, will define the collection of inventory, performance, event, and connected energy storage data for utility-scale solar plants that are 20 MW or larger.</p> <p>This will be a new data collection effort to provide NERC with the ability to assess the performance of solar photovoltaic generating facilities.</p>
<p>Planned Efforts</p>	<ul style="list-style-type: none"> • Build new solution to support NERC, Regional and registered entity business processes as they relate to submission, management and analysis of GADS Solar performance.
<p>Key Drivers</p>	<ul style="list-style-type: none"> • Producing a Highly Reliable and Secure BPS • Introducing Innovation and New Capabilities • Managing Reliability Risk • Enabling and Promoting Collaboration • Creating Efficiency
<p>Investment</p>	<p>\$300,000</p>

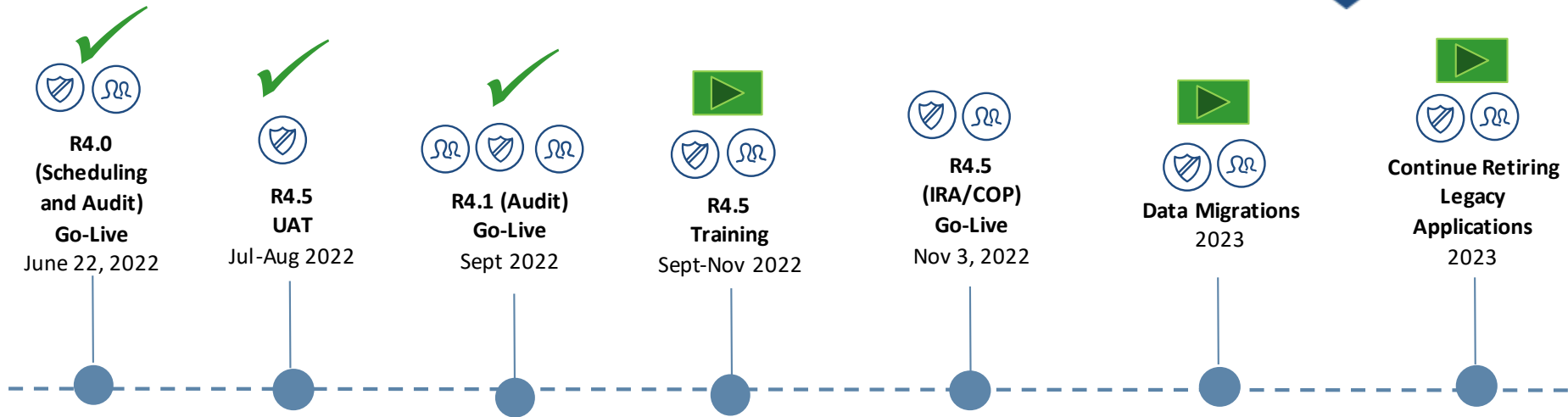
Investment Details

<p>Business Purpose</p>	<p>The RCIS is a legacy application that provides real time communications amongst registered entities around time-sensitive information relating to grid operations.</p> <p>This effort will take advantage of advancements in communications technologies to provide a more secure, reliable solution.</p>
<p>Planned Efforts</p>	<ul style="list-style-type: none"> • Replace existing RCIS system with a new platform, accommodating current business needs and requirements.
<p>Key Drivers</p>	<ul style="list-style-type: none"> • Producing a Highly Reliable and Secure BPS • Managing Reliability Risk • Enabling and Promoting Collaboration • Modernizing Technology
<p>Investment</p>	<p>\$400,000</p>

Investment Details


<p>Business Purpose</p>	<p>Enterprise Analytics is an ecosystem of solutions that operate in concert to provide data and analytical capabilities to the ERO Enterprise.</p> <p>The need for ready access to reliable, consistent data and corresponding analytics tools drives this investment in capabilities to the ERO Enterprise.</p>
<p>Planned Efforts</p>	<ul style="list-style-type: none"> • Enhance capabilities for NERC and the ERO Enterprise, including <ul style="list-style-type: none"> ▪ New analytical capabilities ▪ Increased access to datasets and ease of use ▪ Ensuring data integrity and consistency
<p>Key Drivers</p>	<ul style="list-style-type: none"> • Producing a Highly Reliable and Secure BPS • Introducing Innovation and New Capabilities • Managing Reliability Risk • Enabling and Promoting Collaboration • Modernizing Technology • Creating Efficiency
<p>Investment</p>	<p>\$155,000</p>

- Financial and Accounting / Human Resource Systems
- Design and build ERO Portal v2, supporting XRM platform roadmap and Customer Identity Access Management (CIAM)
- Feature enhancements to solutions portfolio (~22 applications)



AUDIENCE IMPACT KEY

Registered Entities ERO Enterprise Staff

 *In progress*

 *Complete*

Operations Leadership Team:
 NERC and ERO Enterprise leadership;
 Provides vision and executive oversight

Product Management Team:
 Comprised of NERC and Regional compliance and enforcement leadership, and NERC IT;
 Determines business needs for Align and ERO SEL;
 defines and supports project scope and delivery

Align User Group
 Represents Region and registered entity end users of Align and ERO SEL; provides input into functionality and business needs; supports project delivery through requirements definition and user acceptance testing



- November or December briefing on the 2022 independent review of the ERO – SEL
- Early planning underway for an in-person meeting in 2023



Questions and Answers

Background and Reference Material

Enterprise Solutions

- Compliance, Enforcement and Mitigation Align
- Secure Evidence Locker SEL
- Generation Analysis E-GAR
- Reliability Coordinator Information RCIS
- Wind Generation Availability GADS Wind
- Geo-magnetic Disturbances GMD
- Centralized Organizational Registration CORES
- Resource Adequacy RA
- Standards Balloting System SBS
- Bulk Electric Network Exception Tracking BESNet
- Coordinated Functional Registration CFR

Enterprise Solutions

- Misoperations Data System
 - Event Analysis Management
 - User Management and Records
 - External Collaboration
 - Phasor Measurement Unit
 - ERO Registered Entity Portal
 - Joint Registration Organization
 - Curtailment Events
 - Grid Security Technology
 - NERC Membership
 - ERO Training Portal
- | | |
|--|------------|
| | MIDAS |
| | TEAMS |
| | UMR |
| | Extranet |
| | PMU |
| | ERO Portal |
| | JRO |
| | CRC |
| | GST |

- Bulk Electric System Performance Risk Analysis
- Reliability Assessment Data System
- Resource Adequacy Upgrade
- Corporate Risk Management
- NERC Public Site
- Perimeter Protection Enhancements

- NERC Application Platform upgrade (xRM)
- Master Data Management
- Inadvertent Upgrade
- Central Repository of Curtailments Upgrade
- Automated Testing Framework
- SEL Refresh
- Cloud Security Enhancements