Summary of 2016 Board of Trustees Standards Oversight and Technology Committee Survey
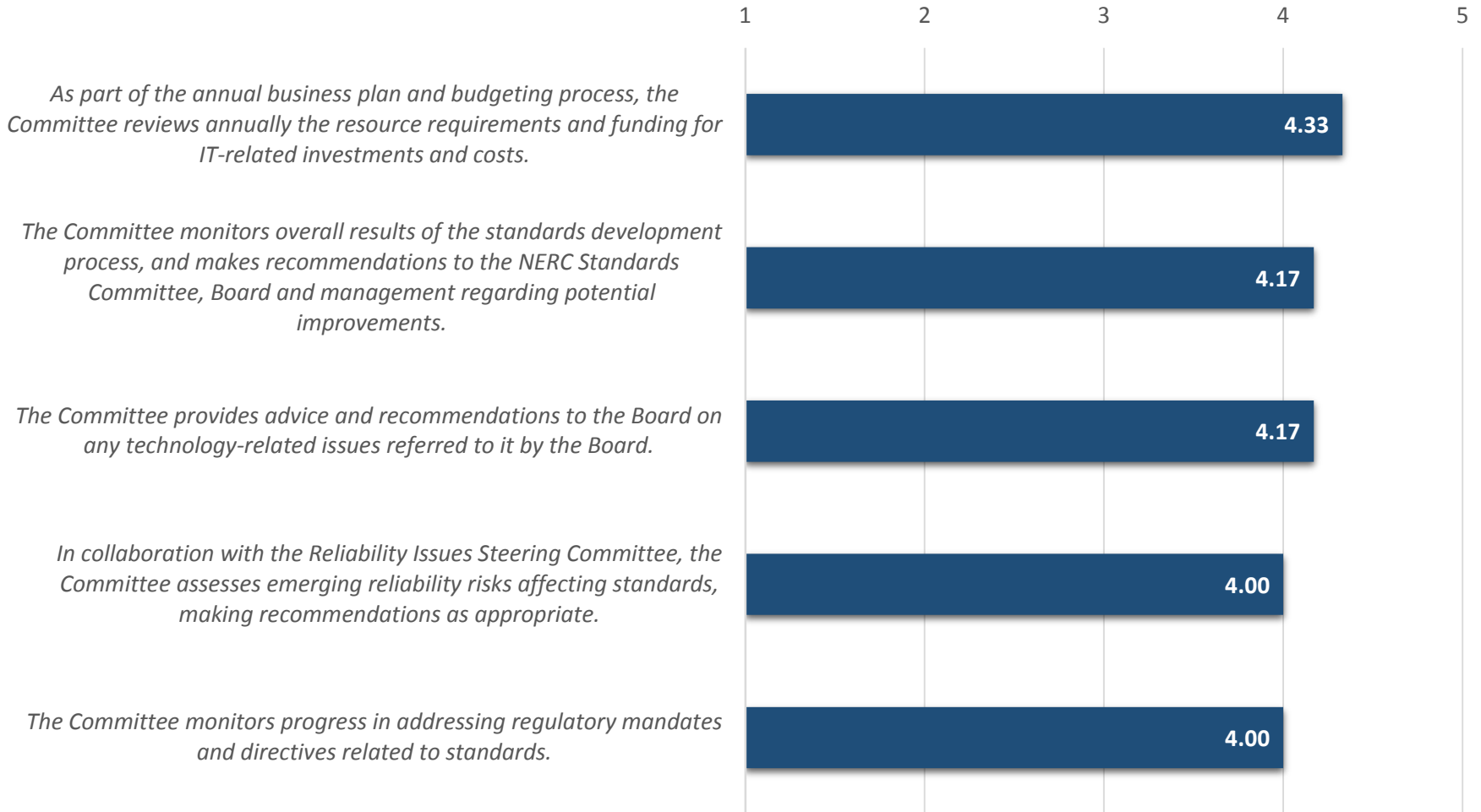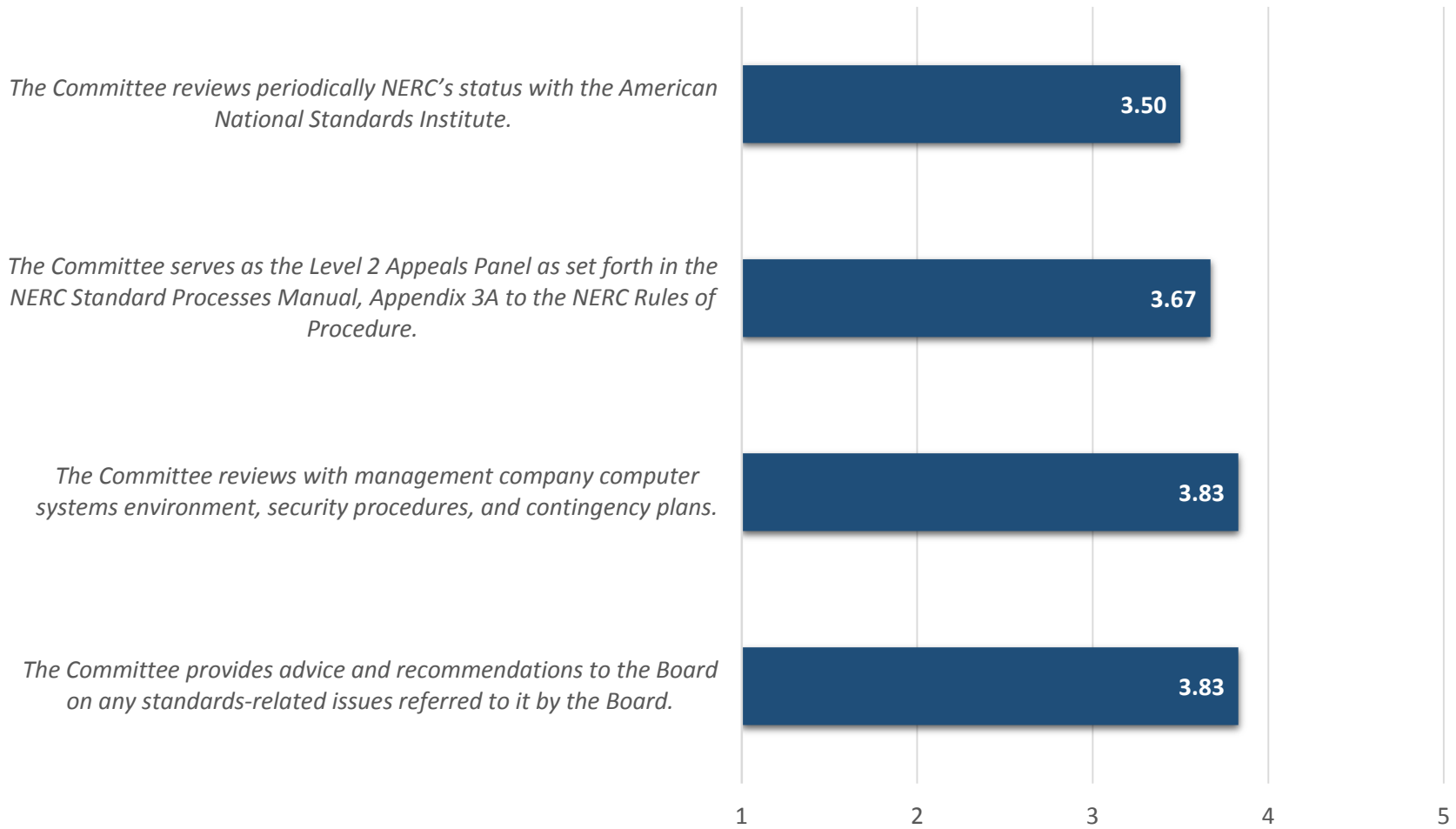
RELIABILITY | ACCOUNTABILITY

- NERC engaged TalentQuest to conduct its annual Board of Trustees Standards Oversight and Technology Committee Survey through an online methodology.

- The Standards Oversight and Technology Committee survey was administered from November 8 to December 20, 2016, to a total of six (6) Committee members.

- 6 Committee members responded to the survey.

  - 100% response rate.

- Respondents were asked to rate items on a 1 to 5 point scale to indicate their evaluation for each rated item:
  - 1 = Needs Prompt Attention ("unacceptable performance")
  - 2 = Below Expectations ("performance area with opportunity for improvement")
  - 3 = Meets Expectations ("meets the required standard of performance")
  - 4 = Exceeds Expectations ("exceeds the required standard of performance")
  - 5 = Outstanding ("far exceeds the required standard of performance")
- Additional items were evaluated by selection of "Yes" or "No" to indicate agreement or disagreement.
- For any item rated "1" (Needs Prompt Attention), "2" (Below Expectations), or "No", mandatory comments were required to explain the rationale for the rating or selection.

- The overall Standards Oversight and Technology Committee survey average was 3.94, with item averages ranging from 3.50 to 4.33.

- Given the lowest item averages are well above 3.00, the Standards Oversight and Technology Committee is seen to be operating at expectations or higher.

RELIABILITY | ACCOUNTABILITY

SOTC Highest Rated Items

Item	Rating
As part of the annual business plan and budgeting process, the Committee reviews annually the resource requirements and funding for IT-related investments and costs.	4.33
The Committee monitors overall results of the standards development process, and makes recommendations to the NERC Standards Committee, Board and management regarding potential improvements.	4.17
The Committee provides advice and recommendations to the Board on any technology-related issues referred to it by the Board.	4.17
In collaboration with the Reliability Issues Steering Committee, the Committee assesses emerging reliability risks affecting standards, making recommendations as appropriate.	4.00
The Committee monitors progress in addressing regulatory mandates and directives related to standards.	4.00

RELIABILITY | ACCOUNTABILITY

The Committee reviews periodically NERC's status with the American National Standards Institute. — **3.50**

The Committee serves as the Level 2 Appeals Panel as set forth in the NERC Standard Processes Manual, Appendix 3A to the NERC Rules of Procedure. — **3.67**

The Committee reviews with management company computer systems environment, security procedures, and contingency plans. — **3.83**

The Committee provides advice and recommendations to the Board on any standards-related issues referred to it by the Board. — **3.83**

Scale: 1 2 3 4 5

RELIABILITY | ACCOUNTABILITY

- Across all Committee surveys, 4 "Yes/No" items were asked in regard to committee functioning. Each committee, including the Standards Oversight and Technology Committee, rated these items with a 100% response of "Yes":
  - The number of Committee meetings is appropriate.
  - The size of the Committee is appropriate.
  - The information provided in support of the agenda is appropriate and available in a timely manner in advance of Committee meetings.
  - The Committee Chair manages meetings efficiently to allow for open, equal, and sufficient discussion and construction input on important issues.

RELIABILITY | ACCOUNTABILITY

NERC and ERO Enterprise IT Projects Update

Stan Hoptroff, Vice President and Chief Technology Officer
Standards Oversight and Technology Committee Meeting
February 8, 2017

RELIABILITY | ACCOUNTABILITY

- ERO Enterprise IT Projects Update

- E-ISAC IT Projects Update

- NERC Corporate IT Projects

- IT Projects Cost/Benefits

- ERO Enterprise IT Strategy Timeline

- E-ISAC IT Strategy Timeline

- 2016 Applications and Sources

- 2017 Applications and Sources

- 2018–2020 Applications and Sources

- Priorities Looking Ahead

- User Management and Resources (ERO Applications)

  - Improve client experience, reduce complexity, and reduce support risk

- Enterprise Reporting – Generation Data ✓

  - Enable ERO data access and analysis

- GADS – Wind Turbine Generation

  - 1600 Data Request

- Compliance Monitoring and Enforcement Program (CMEP)

  - Steering Committee active, vendor education and professional services interviews completed

- E-ISAC Portal Enhancements and Support ✓
  - Members Executive Committee requested features and improvements completed

- Cybersecurity Risk Information Sharing Program (CRISP) Data Management Tools Evaluation & Support
  - Data Repository in progress

- E-ISAC Cyber Automated Information Sharing System (CAISS) ✓
  - Implementation of Machine-to-Machine communications pilot underway (STIX/TAXII)

- Document Management Program
  - 2016 – IT, HR, Finance, Policy and External Affairs, Legal and Board (Governance), and Executives/ERO Operations/MRC ✓
  - 2017 - Compliance, Enforcement, Standards and Training, Reliability Assessment and System Analysis, Reliability Risk Management, Internal Audit, and Facilities
  - 2018 – Continued focus on training and adoption
- Audio/Visual Solution ✓
  - Ease of use, security, reliability, and reduced travel
- Information Security
  - Email Encryption ✓
  - Network Architecture update

RELIABILITY | ACCOUNTABILITY

- Reduce Reliability Risk to the Bulk Power System
- Increase Capability
- Reduce Corporate Risk
- Increase Work Quality
- Increase Efficiency
- Reduce or Avoid Cost

ERO Enterprise IT Strategy Timeline

	2017				2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

Entity Information and Communication
- Entity Registration (2017 Q1–Q4)
- NERC Announcements (2018 Q1–Q4)
- NERC Alerts (2019 Q1–Q4)

Information Sharing
- Document Management (2017 Q1–Q2)
- Extranet Document Collaboration (2017 Q1–Q4)
- Extranet Discussion Groups (2018 Q1–Q2)
- NERC.com Improvements (2017 Q2–Q4)

Data and Analytics
- GADS Wind, Wind Portal, GAR Wind (2017 Q1–Q3)
- GADS Solar (2017 Q4 – 2018 Q1)
- GADS Releases DADS Releases (2019 Q1–Q4)
- TEAMS Major Release (2020 Q1–Q4)
- Ongoing Data Integrations (2017 Q1 – 2018 Q4)
- TADS Releases (2019 Q3 – 2020 Q1)

Standards and Compliance
- Planning and RFP (2017 Q1–Q4)
- Structured Incremental Implementation (2018 Q1 – 2020 Q4)

E-ISAC IT Strategy Timeline

		2017				2018				2019	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Information Sharing	Portal Platform Selection and Development		Portal Platform Go-Live		Portal Platform Selection and Development					
	CAISS Pilot		CAISS Production							
Data Analysis	CRISP Data Analysis with E-L-K				Malware Submission Forensics Tools					
	Event Viewing Tool Visualization				Data Warehouse					
Collaboration	Communications Tools		Disaster Recovery HF Communications		Secure Communications					
	GridEx Preparation and Support				User Management and Records integration				GridEx Preparation and Support	
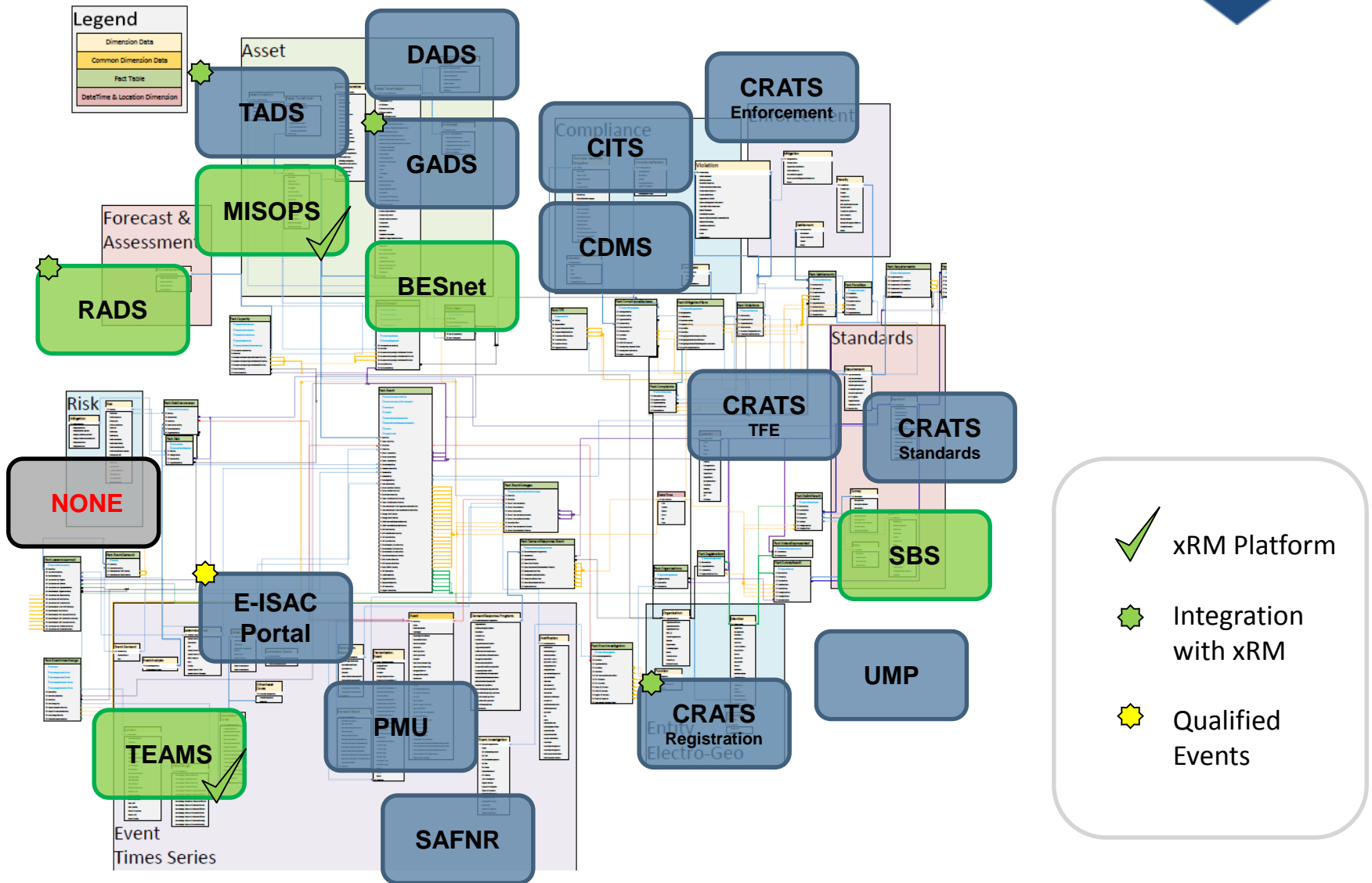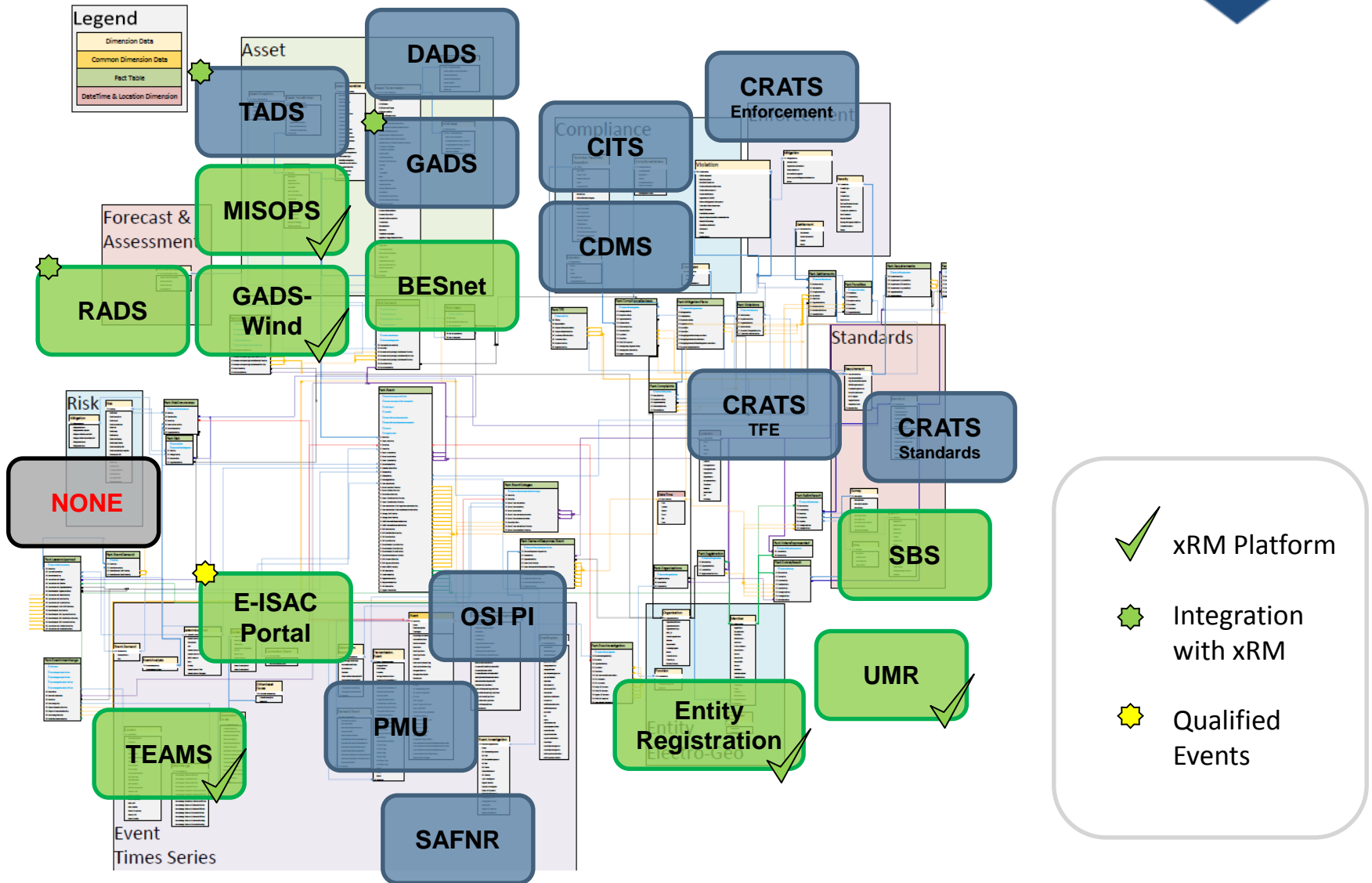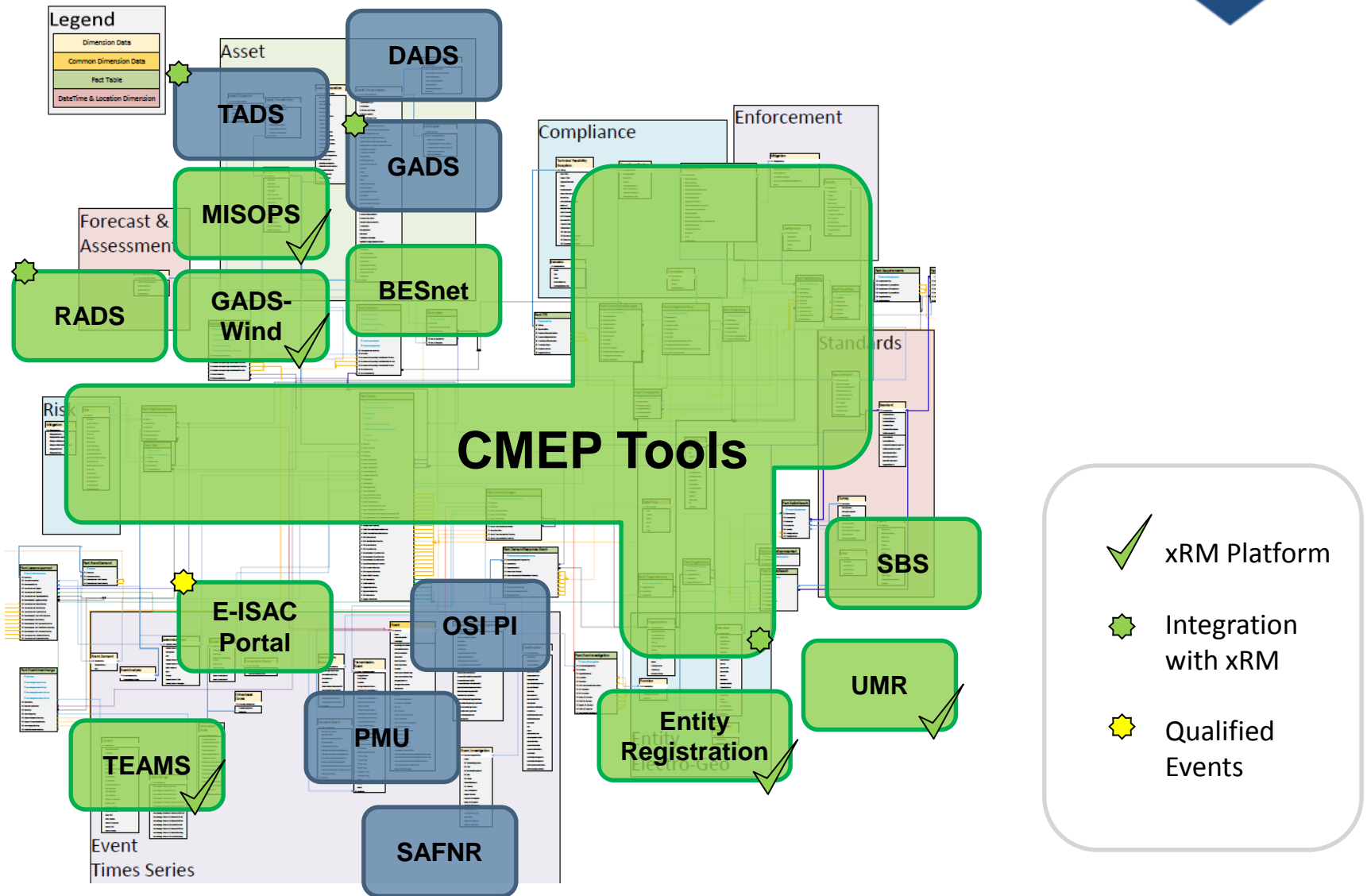
- Registered Entities
  - Public Website Enhancements
  - Registration Application
  - Access for Misoperations and GADS-Wind
- E-ISAC
  - E-ISAC Portal Platform
  - E-ISAC Cyber Security Automation
  - CRISP Analytical Capabilities
- ERO Enterprise
  - CMEP Technology Program
  - Enterprise Reporting – TADS and events data to be extracted and loaded
  - Geo-Magnetic Disturbance IT Requirements

RELIABILITY | ACCOUNTABILITY

Questions and Answers

Additional Information

Benefit Area	Potential Beneficiaries			Measurement Options
	NERC	REGIONS	REGISTERED ENTITIES	
Reduce Reliability Risk	X	X	X	**Deliverable Confirmation**
				Metric Based
				Surveys
Increase Capability	X	X		**Deliverable Confirmation**
				Surveys
Reduce Corporate Risk	X	X		**Deliverable Confirmation**
				Metric Based
				Auditable Records
Increase Work Quality	X	X	X	**Time/Labor Comparisons**
				Delivery Confirmation
				Metric Based
				Surveys
Increase Efficiency	X	X	X	**Time/Labor Comparisons**
				Surveys
				Anecdotal Evidence
Reduce Cost	X	X	X	**Financial Reporting**

RELIABILITY | ACCOUNTABILITY

IT Projects Cost/Benefits

	Solution	Status	Primary Benefits
ERO Projects	**RADS** Reliability Assessment Data System	In Production	Increase Efficiency 👍 Increase Capability 👍 Increase Work Quality 👍
	MIDAS Misoperations Information Data Analysis System	In Production	Increase Efficiency 👍 Increase Capability 👍 Reduce Reliability Risk **TBD** Increase Work Quality 👍
NERC Projects	**CRATS Enhancements** Compliance Reporting and Tracking System	In Production	Increase Efficiency 👍 Increase Work Quality 👍
	UMR User Management and Records	In Production	Increase Efficiency Reduce Cost
	InfoHub Document Management	*Ongoing Deployment*	Increase Efficiency Reduce Corporate Risk

- Evolution of the Industry
  - Generation and transmission decoupled from distribution
  - Independent generation
  - Vertical disintegration of some utilities
- Functional Model accommodated those changes
  - Accounted for different types of operations
  - Did not cause or recommend organizational changes

- Initially created to describe Control Area operations
- Expanded to include planning and reliability functions
- Approved by NERC Board of Trustees in 2007
- Currently on Version 5
- Functional Model Advisory Group (FMAG) began work in November 2015
- Solicited industry comments September 2016

- Provides guidance for Reliability Standards Development
- Does not depend on market structure (or whether a market even exists)
- Defines functions as sets of tasks
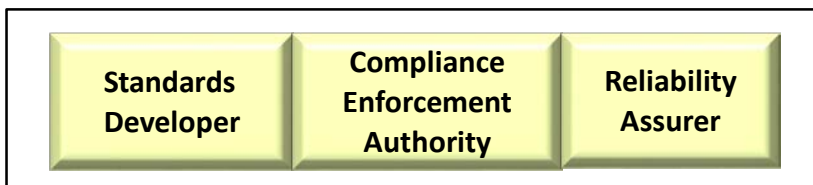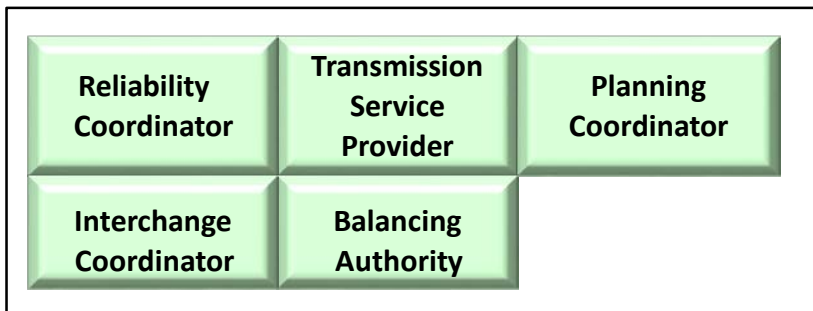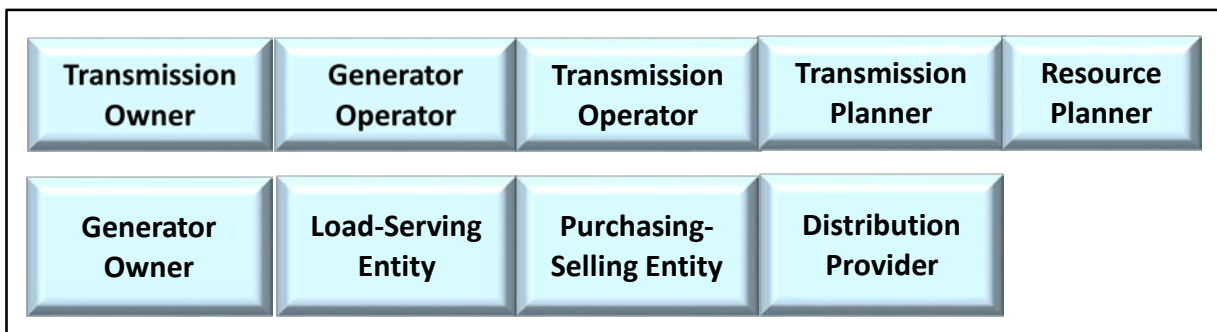
- Each function is described by:
  - The function (for example, "Transmission Operations")
  - The entity performing the function (for example, "Transmission Operator")
- Each function and entity description includes:
  - List of reliability tasks
  - List of relationships and responsibilities
- Entities may perform tasks in multiple functions

- The FMAG considered revisions to the Functional Model in 2016
  - Updating tasks and relationships
  - Clarifying some of the planning functions
- Outreach and input on proposed revisions
  - Reviewed by NERC Standing Committees
  - Comments from the industry

- General confusion/disagreement over Functional Model's purpose

- Uncertainty on role of Functional Model

  ▪ Registry criteria in Rules of Procedure is separate

  ▪ No impact on Compliance and Enforcement

- Standards Committee directed FMAG to pause work

- Limit changes to alignment of terms
- Require industry input before future work, if needed

Questions and Answers

- Background
  - FERC issued Order No. 829 on July 21, 2016
  - Standard must be filed by September 2017

- Status
  - Draft standard posted for comment and initial ballot
  - Proposed standard will be presented by August 2017

Questions and Answers

Guidance and Technical Basis Update

Howard Gugel, Senior Director of Standards and Education
Standards Oversight and Technology Committee
February 8, 2017

RELIABILITY | ACCOUNTABILITY

- Initially designed to support results based standards
- First used in FAC-003-2
- Contained an "information only" disclaimer
- Incorporated into standard development template
- Disclaimer paragraph was omitted

- Provides drafting teams a mechanism to:
  - Explain the technical basis for Reliability Standard
  - Provide technical guidance to help support effective application
- To further clarify Guidance and Technical Basis (GTB):
  - NERC staff and Standards Committee leadership to coordinate
  - Captured in Task 3 in Standards Committee Strategic Plan

- The GTB is a mechanism to explain technical basis
- The GTB reflects standard drafting team's intent in understanding technology and the technical requirements
- The GTB should provide a sound technical basis to help understand the Requirements
- The GTB does not prescribe compliance approaches or compliance guidance

Questions and Answers

- 11 standards related directives in progress

Project	Regulatory Directives	Regulatory Deadline
Project 2013-03 Geomagnetic Disturbance Mitigation	4	6/4/2018
Project 2015-09 Establish and Communicate System Operating Limits	2	N/A
Project 2015-10 Single Points of Failure	2	N/A
Project 2016-02 Modifications to CIP Standards (Revisions unrelated to Definition of "Low Impact External Routable Connectivity")	2	N/A
Project 2016-03 Cyber Security Supply Chain Management	1	9/27/2017

- February 2017 (3 planned)

- May 2017 (0 planned)

- August 2017 (2 planned)

- November 2017 (3 planned)
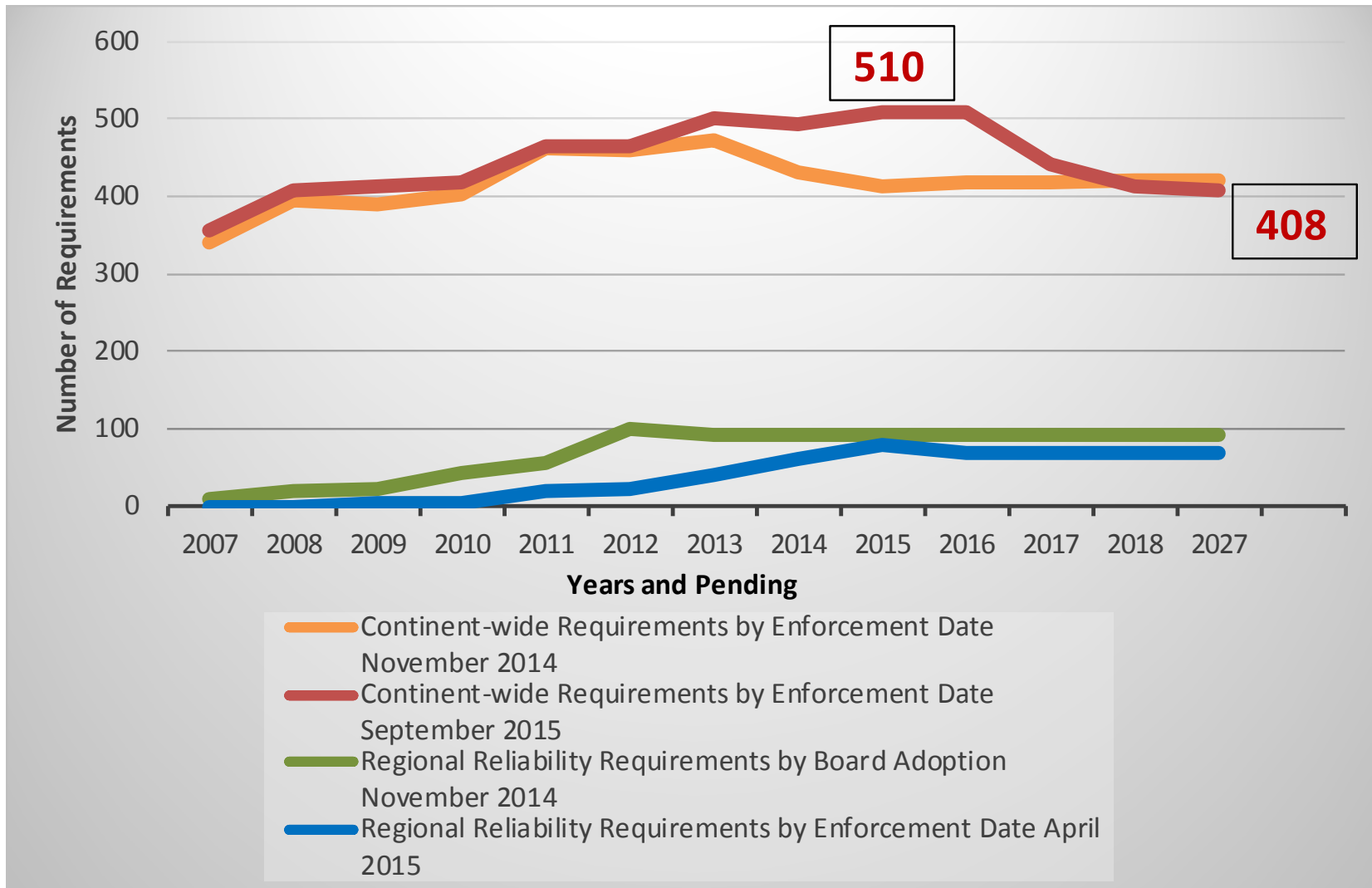
- 2017-2019 Standards Committee Strategic Plan

Questions and Answers