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NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

ERO Enterprise IT Application Strategy

Stan Hoptroff, Vice President and Chief Technology Officer
Standards Oversight and Technology Committee Meeting
May 6, 2015

RELIABILITY | ACCOUNTABILITY

Today's Topics

- Electric Reliability Organization (ERO) IT Guiding Principles/ERO Applications Update
- Electricity Sector Information Sharing and Analysis Center (ES-ISAC) Technology Update
- Cybersecurity Risk Information Sharing Program (CRISP) Technology Update
- Document Management Business Requirements

Today's Topics

- 2015 and 2016 Ongoing Major Initiatives
- Project Management and Reporting
- Priorities Looking Ahead
- Supplemental Information
  - 2017-2018 Ongoing Major Initiatives

ERO IT Guiding Principles

- Reach consensus on ERO Enterprise priorities:
  - Event Analysis (EA) application
  - Reliability Assessments application
  - Compliance and Registration
  - Enterprise Reporting and Data Management
- Ensure that the right information is provided to the right people at the right locations
- Ensure consistent, disciplined decision-making process (Technology Leadership Team (TLT) and “gated process”)
- Recognize NERC and Regional-specific IT requirements, business needs, activities, and realities

ERO IT Guiding Principles

- Recognize a bias for proven off-the-shelf solutions with minimal modifications or configurations
- Ensure data integrity and data sharing via proven integration techniques
- Conform to the ES-ISAC Code of Conduct
- Ensure important cross sector institutional relationships are respected and nurtured (National Council of ISACs, American Gas Association, etc.)

ERO Applications Update

- Reliability Assessment Data System (RADS-NERC)
  - Development and testing to be completed by 06/30/2015
- Event Analysis (NERC)
  - Configuration and testing to be completed by 07/14/2015
- Enterprise Reporting Phase 1 – Open Access Technology International, Inc. (OATI) Applications ✓
  - Project completed on 03/13/2015
- Enterprise Reporting Phase 2
  - ERO TLT business case review planned for 06/12/2015

ERO Applications Update

- Compliance Monitoring and Enforcement Program (CMEP) Tool Assessment
  - CRATS – Compliance Reporting and Tracking System (NERC)
  - CITS – Compliance Information Tracking System (NPCC, FRCC, SERC)
  - webCDMS – Web Compliance Data Management System (WECC, RF, TRE, SPP, MRO)
  - OATI contract consolidation (webCDMS) – Team formed and addressing issues (e.g., data ownership and draft of “benefited parties” clause completed)
  - Determine reasonable improvement investments in legacy (CRATS) system – Business case approved by TLT on 04/10/2015 and ERO Executive Management Group review on 06/26/2015
  - Determine strategic information management requirements – Q3 2015
  - Potential new vendor(s) RFI/RFP – Q4 2015

ES-ISAC Technology Update

- ES-ISAC Information Sharing Portal planned improvements:
  - Development in progress of new portal interfaces and communications with expected completion by 6/1/15
  - Development of additional enhancements for 2015 GridEX III exercise; support targeted to begin 6/1/15
- Office and Systems Separation Effort
  - Construction of separate ES-ISAC offices and computer room under way; systems separation to follow

CRISP Technology Update

- Currently, 20 participants enrolled in the program
- Analysis is being performed for 16 of the 20 participants
- Two additional installs to be completed over the next month
- First CRISP Technical Workshop for participants was held on April 21-22, 2015

Document Management
NERC Business Requirements

- Ensures proper classification and management of confidential information
- Addresses a number of internal audit recommendations/ mitigates corporate risk
- Improves information access and search capabilities
- Facilitates working group, team, and stakeholder collaboration
- Supports the document retention policy and procedures

Document Management
NERC Business Requirements

- Simplifies document retrieval
- Improves version control of documents
- Improves workflow control (review and approval of documents)
- Increases efficiency and employee productivity

2015 Major Ongoing Initiatives

- New functionality – $1.9M
  - RADS-NERC – $530K
  - EA – $220K
  - Enterprise Reporting – $500K
  - CRATS (CMEP) Improvements – $550K
- IT infrastructure – $1.7M
- Client peripherals – $1.5M
- Application support – $1.3M
- Data analytics – $100K
- Total Budgeted Funds – $6.6M
- Document Management Program $663K – Reserve funding required

2016 Major Ongoing Initiatives

- New functionality – $2.3M
  - Legacy Application Replacement – $500K
  - Document Management – $650K
  - Enterprise Reporting – $500K
  - Compliance Reporting & Tracking System (CMEP) Improvements – $40K
  - Enterprise Application Enhancement (New Solutions) - $610K
- IT infrastructure – $1.9M
- Client peripherals – $1.6M
- Application support – $1.7M
- Data analytics – $100K
- Total Projected Budget – $7.6M

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Total 2015 and 2016 IT Budget

	($000's)	
Information Technology Budget	**2015**	**2016**
Contracts and Consultants	$ 1,730	$ 2,162
Office Costs (maintenance / supplies only)	1,554	1,595
Fixed Asset (Capital) Expenditures	3,319	3,811
Major Initiatives	**$ 6,603**	**$ 7,568**
Personnel	3,272	3,924
Meetings, Travel and Conferencing Expenses	51	96
Office Costs (excluding maintenance / supplies)	590	645
Total Information Technology Budget	**$ 10,516**	**$ 12,233**

Project Management and Reporting

- Weekly Reporting
  - Current phase (status) – Design, development/test, etc.
  - Condition – Red, yellow, green
  - Planned completion – Planned close date (includes post go-live)
  - Percent compete – Internal PMO estimate
  - Deliverables report – Major milestones and deliverables
  - Risk register – Identified, occurred, avoided, mitigated, assigned
- Tollgate Process
  - Multiple stage gates for progress review with sponsors
  - Code reviews by Enterprise Architect
  - Signoff by sponsors by phase on deliverables at each gate
  - Scope freeze after design phase reduces changes and controls cost
  - Code freeze 30 days prior to go live to ensures application stability

Priorities Looking Ahead

- Complete development for RADS-NERC (Q2 2015)
- Identify business needs for enhanced CMEP tool(s) (Q2 2015)
- Complete configuration for EA solution (Q3 2015)
- Expand the creation of central databases for reporting and analysis (Enterprise Reporting Phase 2 and Phase 3) (Q4 2015)

Priorities Looking Ahead

- Further leverage our xRM platform for consistent client experiences; for example, alerting and registration (Q1 2016)
- Identify ES-ISAC Portal additional features and CRISP enhancements and expansion (Q4 2015)
- Document Management Program – Governance, Design, and Architecture (Q1 2016)

Questions and Answers

2017-2018 Ongoing Major Initiatives - By Year

2017 Ongoing Major Initiatives Preliminary Estimates

- New functionality – $3.1M
  - CMEP application – $2M
  - Document Management- $330K
  - Enterprise Reporting - $300K
  - Enterprise Application Enhancement – $390K
- IT infrastructure – $1.9M
- Client peripherals – $1.6M
- Application support – $1.7M
- Data analytics – $200K
- Total – $8.5M

2018 Ongoing Major Initiatives Preliminary Estimates

- New functionality – $2.2M
  - Enterprise Reporting – $500K
- IT infrastructure – $1.4M
- Client peripherals – $1.6M
- Application support – $1.7M
- Data analytics – $200K
- Total – $7.1M

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FAC-003:

Research and Development Results of Gap Factor Verification

Thomas Burgess, Vice President and Director, Reliability Assessment and Performance Analysis

Standards Oversight and Technology Committee Meeting

May 6, 2015

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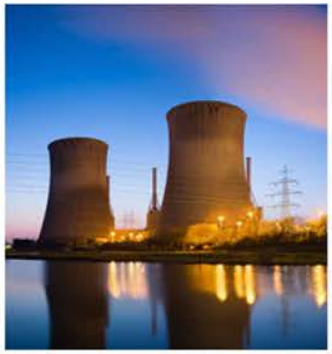

Background

- March 2013 — FAC-003-3 (Order 777) directed testing for Minimum Vegetation Clearance Distances (MVCD)
- July 2013 — Project plan submitted to FERC
- January 2014 — Advisory team assembled and project initiated
- October 2014 — Planned testing completed by NERC and EPRI

Preliminary Findings

- Testing included various tree shapes
  - Vertical grow-in
  - Horizontal blow-in
- Indicates a gap factor of 1.0 may be more appropriate than the present value of 1.3 contained in FAC-003-3
- Actual MVCD may increase
  - Increase varies with system voltage levels
  - Initial findings for increases of clearance distances range from 1’ to 3.5’
- Being verified with additional testing

Going Forward

- Various communication tools for preliminary results
  - Webinar (March 25, 2015)
  - Standards and Compliance Workshop (April 1-3, 2015)
  - April 2015 NERC News
  - MRC Info Session (April 2, 2015)
- May 2015 – Advisory Alert with preliminary report and data
- May 2015 – Conclude validation testing
- June 2015 — File NERC report with FERC
- July 2015 – NERC Advisory Alert with final report and data
- July 2015 – Initiate changes to Reliability Standard FAC-003-3

Questions and Answers

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Reliability Standards Quarterly Status Report

Valerie Agnew, Senior Director of Standards
Standards Oversight and Technology Committee Meeting
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Progress on FERC Directives

	Pre-2013 Directives*	Post 2012 Directives*	Total
Issued prior to year-end 2012	191		
Issued since year-end 2012		52	
Resolved as of March 31, 2015	167	43	
Remaining	**24**	**9**	33
Projected to be resolved in 2015	19	6	25
Projected remaining at year-end 2015	5	3	8

*Does not include directives for other NERC departments

Progress on Paragraph 81 and Independent Experts' Review Panel (IERP)

	Current Status	P81 and IERP Recommendations for Retirement
Total*		281
Addressed	238	
In current projects	35	
Not assigned	8	

*Unique requirements

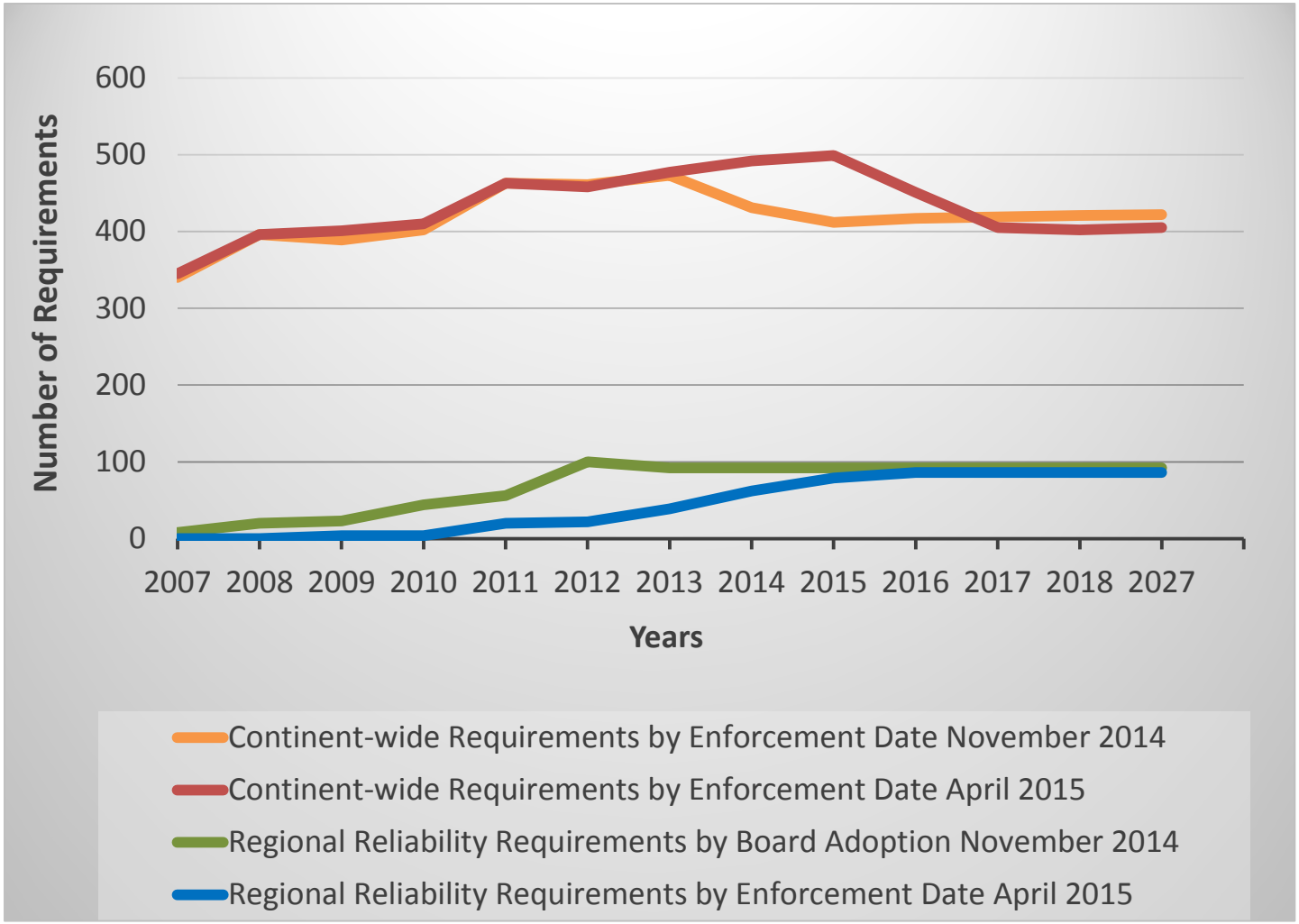
Progress on Paragraph 81 and IERP (continued)

Resolution	Number	Percent
Retired	110	46%
Modified	103	43%
Retained	25	11%
Total	238	

Reaching Steady-State in 2015

- February (3)
- May (5 planned; now 3)
- August (4 planned; now 4 plus a directives project)
- November (3 planned; now 5 plus a directives project)
- Early 2016 (2)

Trend for Number of Requirements



Questions and Answers