

2015 Highlights

Operating Committee
January 21, 2016

vermont electric power company



Health & Safety

- Overview

- Alignment with improvements to incident reporting process and software (e.g. Catsweb)
- Improvement of safety culture and accountability
- Evaluates effectiveness of safety programs

- Measure

- Zero employee lost time injuries in 2015
- Zero at-fault vehicle incidents in 2015. Year end total ~1.5 million miles traveled
- Identification of safety “near-miss” events that result in sustainable improvements

- Results

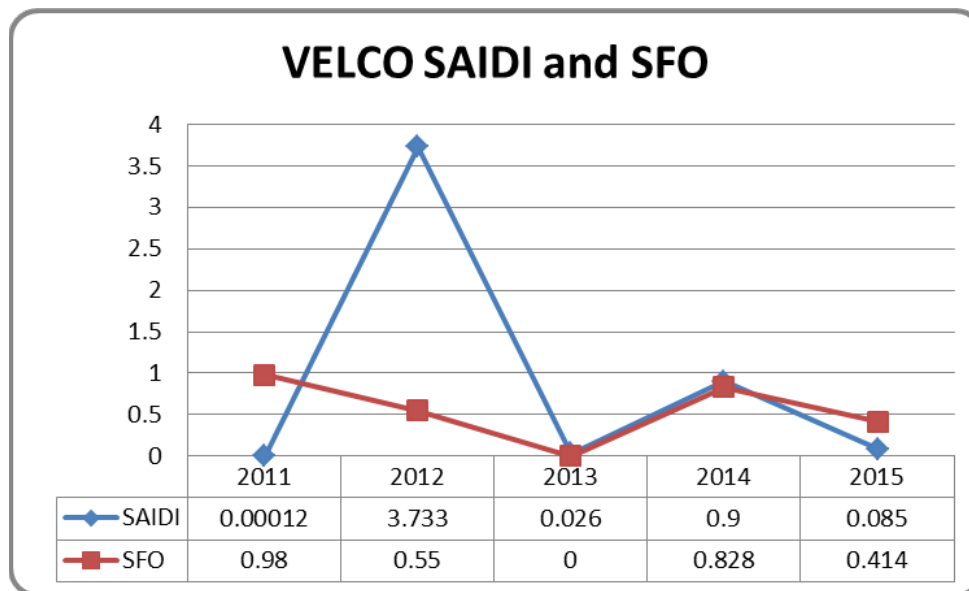
Solid performance on all three Safety KPIs

- No Lost Time injuries (Distinguished)
- No At Fault accidents (Distinguished)
- Near Miss improvements (Near Distinguished)

- Other efforts

- Field operations safety improved through a safety audit smart phone application, developed in-house, that generated over 200 field crew audits used to identify and address safety items
- Initiated physiological education, stretching/strengthening exercises, aka “line crew yoga,” at field safety meetings

Operations 2015 Performance



- **2015 System Average Interruption Duration Index (SAIDI) = 0.085 (Distinguished Level)**
 - Four events – delayed restoration of tapped distribution, 115 kV transmission protection misoperation, VELCO contractor dump truck contact with distribution circuit, and permanent 115kV fault with failed cross-arm
 - Five Year Average = 0.949
 - KPI Goals (Distinguished = 1.0, Target = 3.0, Threshold = 5.0)
- **2015 System Forced Outage Rate (SFO) = 0.414 (Distinguished Level)**
 - Five Year Average = 0.554
 - KPI Goals (Distinguished = 0.5, Target = 0.9, Threshold = 1.3)
 - Three events – 115 kV circuit switcher low SF6 gas, contractor damaging 115 kV transmission structure with tracked dump vehicle, and permanent 115 kV fault with failed cross-arm

Operations 2015 Performance

ISO-NE 2015 Outage Coordination Metrics

- Ninety Day Planning metric (Outages submitted > 90 Days)
 - ISO Target = 50%
 - VELCO End of Year = 62%
- Long Term Planning metric (Outage submittals > 21 days)
 - ISO Target = 80%
 - VELCO End of Year = 96%
- Planned Outages metric (Outage submittals > 5 Days)
 - ISO Target = 85%
 - VELCO End of Year = 89%
- FERC Metric Tracking on Lengthy Outages (Outage submittals > 30 days)
 - ISO Target = 98%
 - VELCO End of Year = 100%
- Outage Cancellations before Day-Ahead Market Close metric (Prior to 10:00AM)
 - ISO Target = 65%
 - VELCO End of Year = 38%
 - Can be attributed to a low number (4) of cancelled outages used in the metric calculation, and these were due the line work being completed earlier than expected

In 2015 the Outage Coordination group processed 1,180 outage applications, not including the rework of applications to meet changes associated with weather, crew changes and etc. Approximately 950 of these applications required studies and the development of switching plans for execution by the System Operators

Operations 2015 Performance

Energy Management Systems

- Advanced Applications Metrics
 - State Estimator Convergence = 99.99%
 - Contingency Analysis Convergence = 99.89%
- SCADA/EMS Upgrade
 - \$4.5M project involved nearly a year of work to upgrade the software applications and IT networks
 - VELCO IT internally designed and commissioned a new SCADA/EMS network
 - Provides full redundancy at both the Pinnacle Ridge Main Control Center (MCC) and West Rutland Backup Control Center (BCC)
 - Validated all applications and functions in a test environment
 - Many uncovered software bugs by the EMS team that required rework and revalidation
 - Successfully commissioned on November 10th
 - Lessons learned by VELCO and EMS vendor

2015						
			OSI SE SOLUTION STATUS	OSI CA SOLUTION STATUS	OSI SE SOLUTION QUALITY **	
Months			Converged Solution %	Converged Solution %	Target Avg. <150 (Lower is better)	
Jan	1/1/2015	- 1/31/2015	99.99	100.00	103.20	
Feb	2/1/2015	- 2/28/2015	99.94	98.71	100.63	
Mar	3/1/2015	- 3/31/2015	100.00	99.98	95.56	
Apr	4/1/2015	- 4/30/2015	100.00	100.00	100.56	
May	5/1/2015	- 5/31/2015	100.00	100.00	97.86	
Jun	6/1/2015	- 6/30/2015	100.00	99.97	104.52	
Jul	7/1/2015	- 7/31/2015	99.99	100.00	99.50	
Aug	8/1/2015	- 8/31/2015	100.00	100.00	96.45	
Sep	9/1/2015	- 9/30/2015	100.00	100.00	94.02	
Oct	10/1/2015	- 10/31/2015	100.00	99.99	98.13	
Nov	11/1/2015	- 11/30/2015	99.99	99.99	88.43	
Dec	12/1/2015	- 12/31/2015	100.00	100.00	97.02	
Yearly Average			99.99	99.89	97.99	

Capital Project Performance - Schedule

Project Schedule Execution – Critical Project Completion

- Overview
 - Focus on 2015 projects based on criticality to organization
 - Alignment with scheduling process improvement effort
 - Leverages new project scheduler resource and software
 - Alignment with 2015 effort to improve schedule process, with particular focus on schedule performance reports
- Measure
 - Ability to leverage process, resources, and tools to execute 2015 projects in accordance with schedule
 - Project list developed critical project scheduled to be completed (installed, used & useful, etc.) by the end of 2015
 - Projects included: CIP Cyber Security Projects, transformer replacements, fiber projects and radio site installations
- Results
 - KPI Goals (Distinguished = 27, Target = 19, Threshold = 14)
 - Completed 23 out of 27 scheduled projects, resulting in a KPI ranking between target and distinguished
 - Four projects not completed in 2015 will be completed in early 2016

Capital Project Performance - Cost

Project Execution

- Overview
 - Developed to measure effectiveness of managing project costs, with focus on projects to be commissioned within the year
 - Focus on identifying and acting upon cost saving opportunities
- Measure
 - Capital project cost performance, based upon a comparison of actual vs. forecasted expenditures
 - Specific to the following projects: Structure Reliability (2015 Scope of Work), Georgia Transformer, E. Fairfax and Physical Security Upgrade
- Results
 - KPI Goals (Distinguished = 90%, Target = 100%, Threshold = 105%)
 - Expected to achieve distinguished rating, with more than 10% savings achieved

Capital Project Performance – Capital Budget

Project Execution

- Overview
 - Developed to measure effectiveness of managing overall capital budget
- Measure
 - Overall capital budget performance (actual capital expenditures in 2015) compared to the budget established in 2014
- Results
 - KPI Goals (Distinguished = +/- 5%, Target = +/- 10%, Threshold = +/- 15%)
 - Expected to achieve target rating
 - Capital expenditures affected by several items, including adjusted milestone payments and a delayed transformer delivery