PG&E Synchrophasor Project

Strategic Partners

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Keys to Managing Technical and Business Visions
Sustainability Factors

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Pacific Gas and Electric Company®

Project Lifecycle & Next steps

- Maintain system past project end date
- End user training
- Support personnel training on new hardware
- System monitoring, patches, upgrades
- Leadership support for software and hardware maintenance

PG&E Synchrophasor Project Sustainability

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- Work in tandem with the NERC, WECC, and other reliability coordinators in making sure PG&E investments are coordinated and we have the measures in place to pass any future audits.
- Work with the CAISO to make sure real-time operations between PG&E and ISO are making efficient use of the technology.
- What Synchrophasor technology is and how it adds value to real-time grid monitoring
- How to monitor and communicate key system reliability metrics
- Approach to successfully diagnose and analyze a system event
- Actions that could be taken when emerging problems are detected
- Case studies: disturbance analysis, success stories, decision-making
- Use of new features such as display builder and GIS functionality

Key components of sustainability

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- Overall improved performance of the Dispatch Training Simulator (DTS) - Stability in DTS discussions to create a rich source of fast PMU data using TSAT
- Enhanced use of the existing DTS to train on PMU Synchrophasor functionalities
- Work to set-up the Dispatch Training Simulator (DTS) for improved simulation capabilities to closer to the real-time environment (using eTV and PhasorPoint)
- Develop a plan from IT for moving weather data into ODN for eTV. This is required by the project specifications and greatly desired by operations.
- Improved model accuracies for use with contingency analysis for real-time operation
- Transient Stability Analysis tool (TSAT) for gradual transition to the real-time operation with PMU Synchrophasor functionalities
- Enhanced use of linear state estimation (LSE) to provide fast state estimation solutions for real-time operation – Transition from Engineering to real-time

Key components of sustainability cont.

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- Improvements in operation Engineering support tools including Post Event Analysis and Real-time voltage instability Indicator (RVII) – Next step would be the integration of reactive margin calculations with contingency analysis once the operation and planning engineering have developed operational procedures for future real-time applications.

- Evaluation of the User interfaces including debugging and engineering analysis

- Enhancements in use of Engineering data concentrator

Additional benefits of sustainability cont.

- Observability of the grid - beyond the SCADA system - Disturbances, oscillations, islanding, angles diverging, etc.
- Valuation and measures such as Volt / VAR Optimization Matrices
- Improvements in Voltage deviations due to optimization
- Detection of un-damped grid oscillations that may lead to a blackout
- Monitoring of diverging angle differences that may lead to a blackout
- Monitoring low voltage regions that could lead to instability
- Improvements in VAR requirements due to optimization
- Improved Congestion management: comparison of the critical stability limited and voltage limited critical paths to make efficient and informed use of corridor transfer capacity
- Capturing performance index differences, Largest voltage differences, Largest flow differences, Observability, Bad data detection
- Determination of margins for MW capacity across existing congestion corridors
- Immediate replay of a disturbance that just occurred
- Much faster post-event analysis and disturbance re-creation using PMU time-tags