

Western EIM Implementation Update

September 6, 2017

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Presented to: The EIM Governing Body



PGE: Serving Oregon since 1889

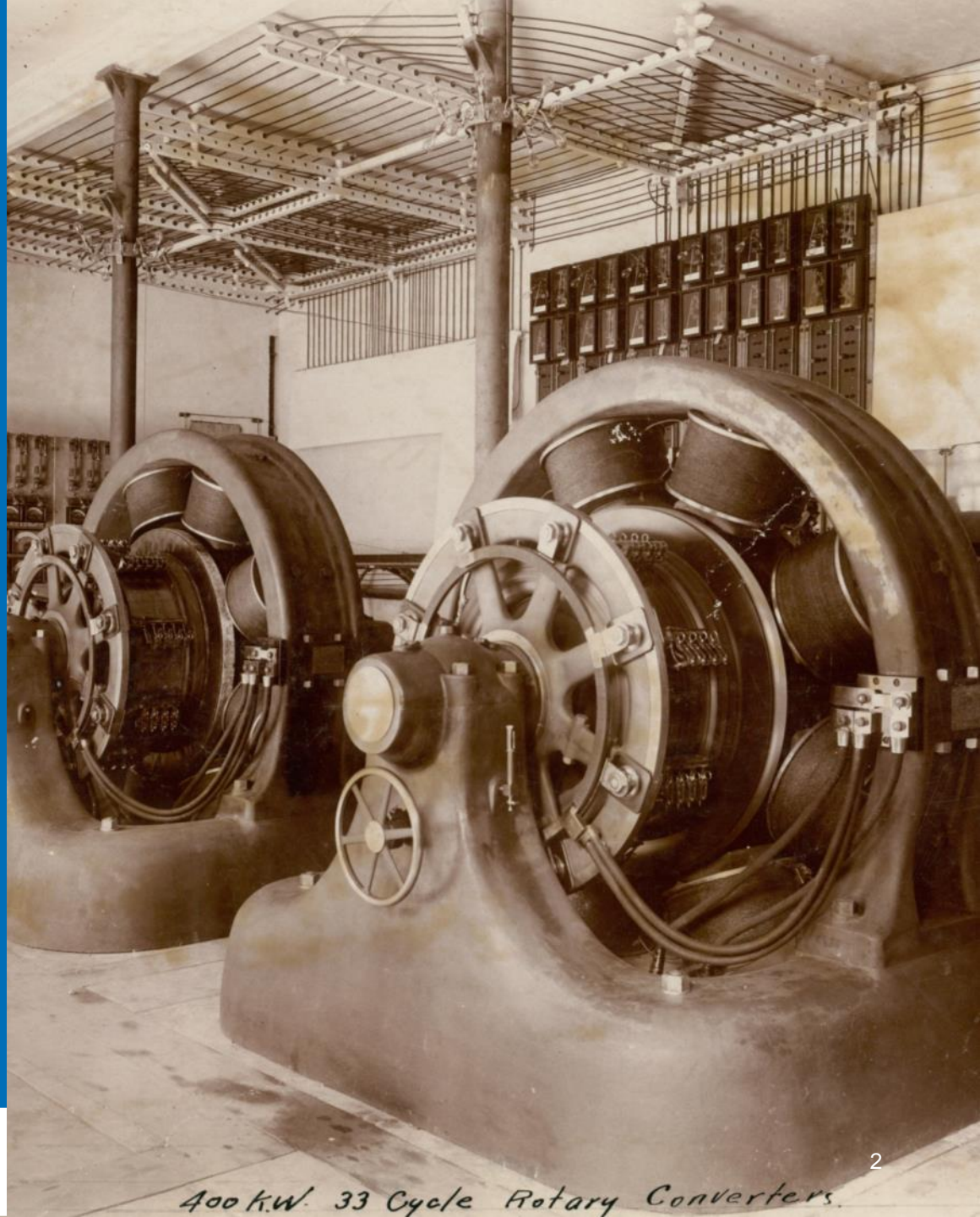
Serving 1.8 million Oregonians

45% of Oregon's population

51 cities served

Diversified power system:

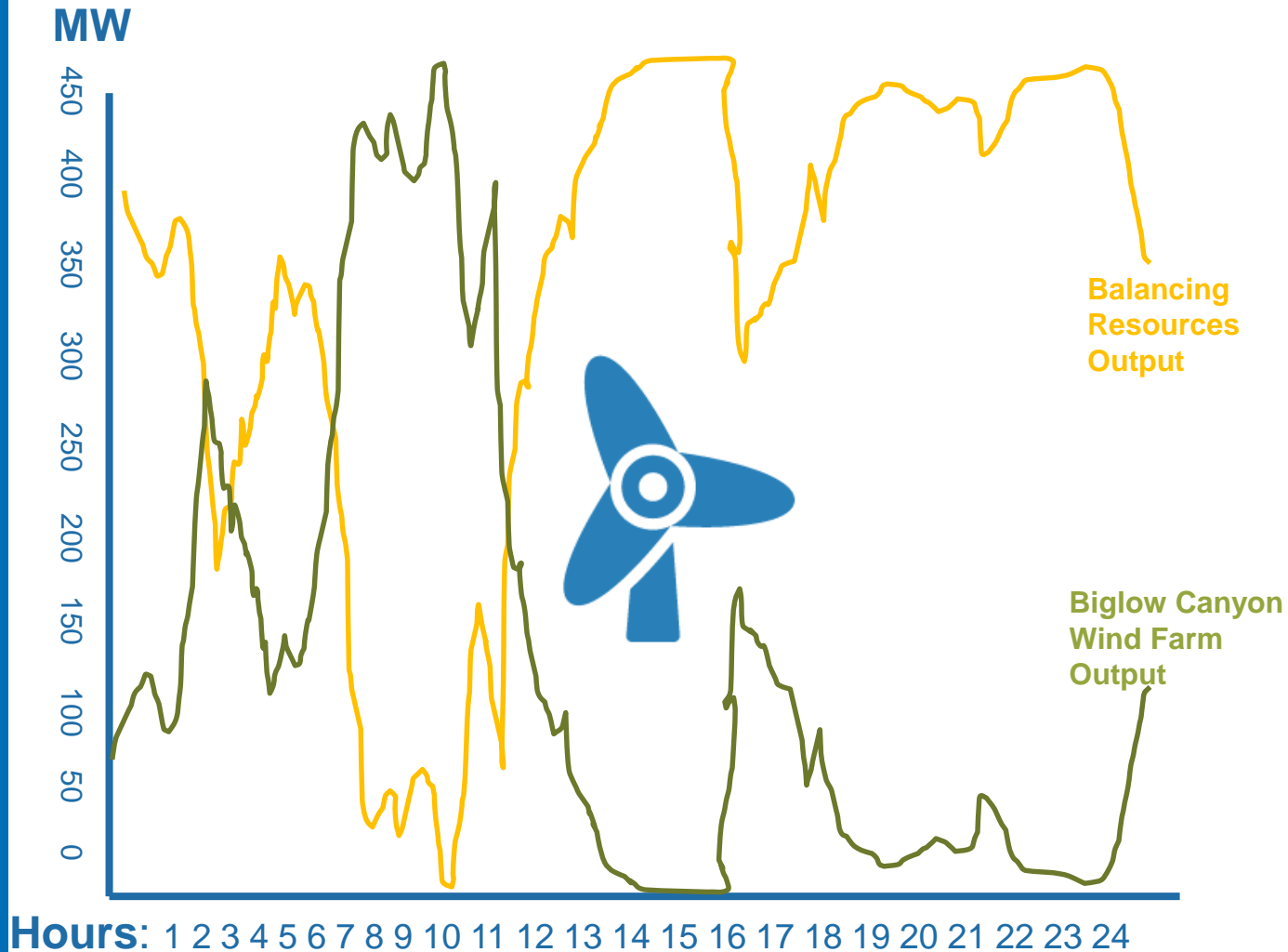
- 16 power plants
- 3,843 megawatts (MW) of generation
- Summer peak load of 4,038 MW (2017)
- Winter peak load of 4,073 MW (1998)



400 kW. 33 Cycle Rotary Converters.

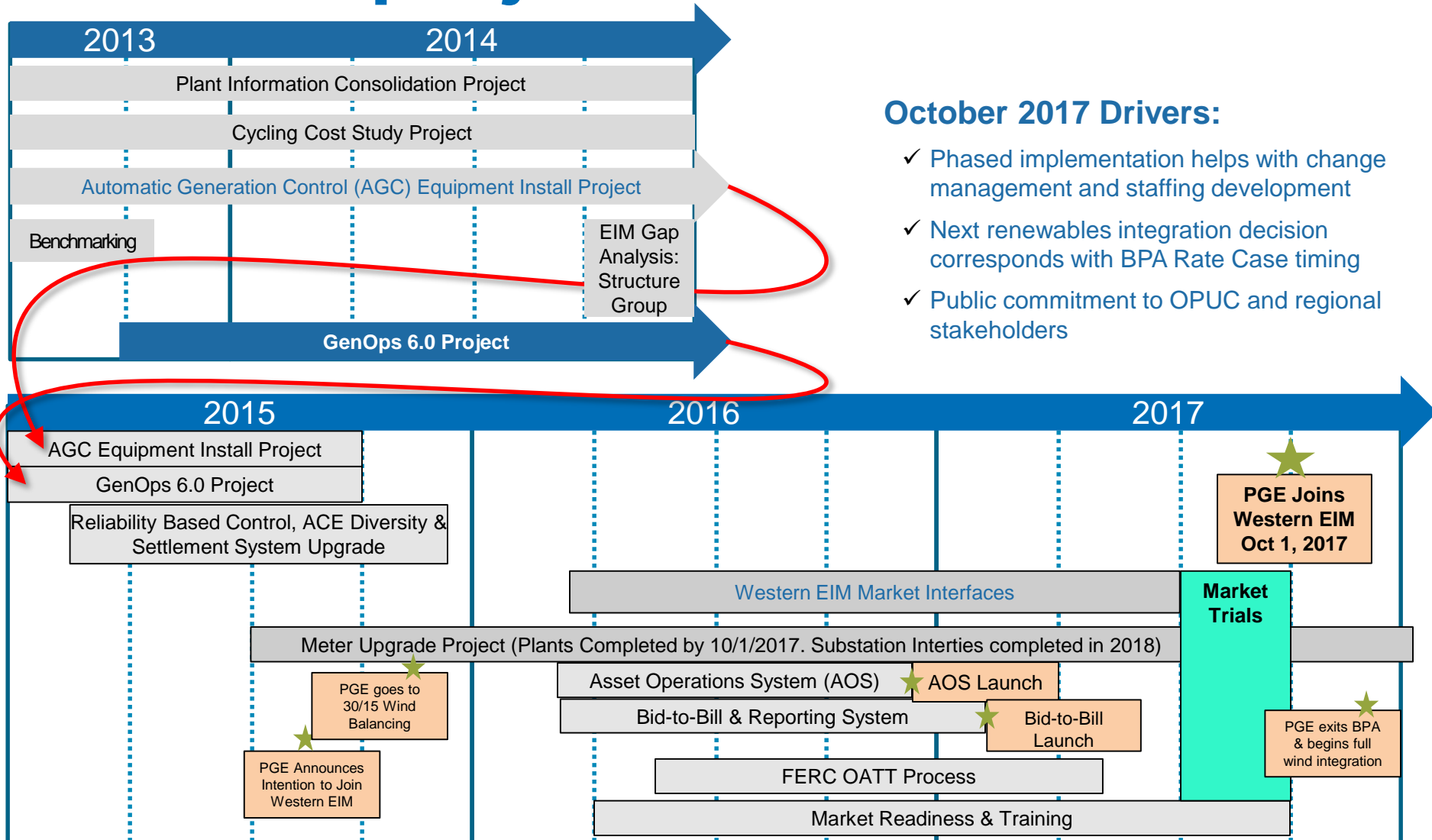
- Roughly 15% of PGE's generation comes from RPS resources like wind and solar
- By 2040, 50% of PGE's generation must come from RPS resources
- Moving to EIM helps PGE to "self-integrate" its wind
- More efficient plant dispatch should lead to \$2-4M per year in savings vs. prior, with additional savings as VERs increase
- PGE retains flex-capacity requirements for balancing in EIM

The VERs Balancing Act



Balancing VERs (wind): A Simplified Look

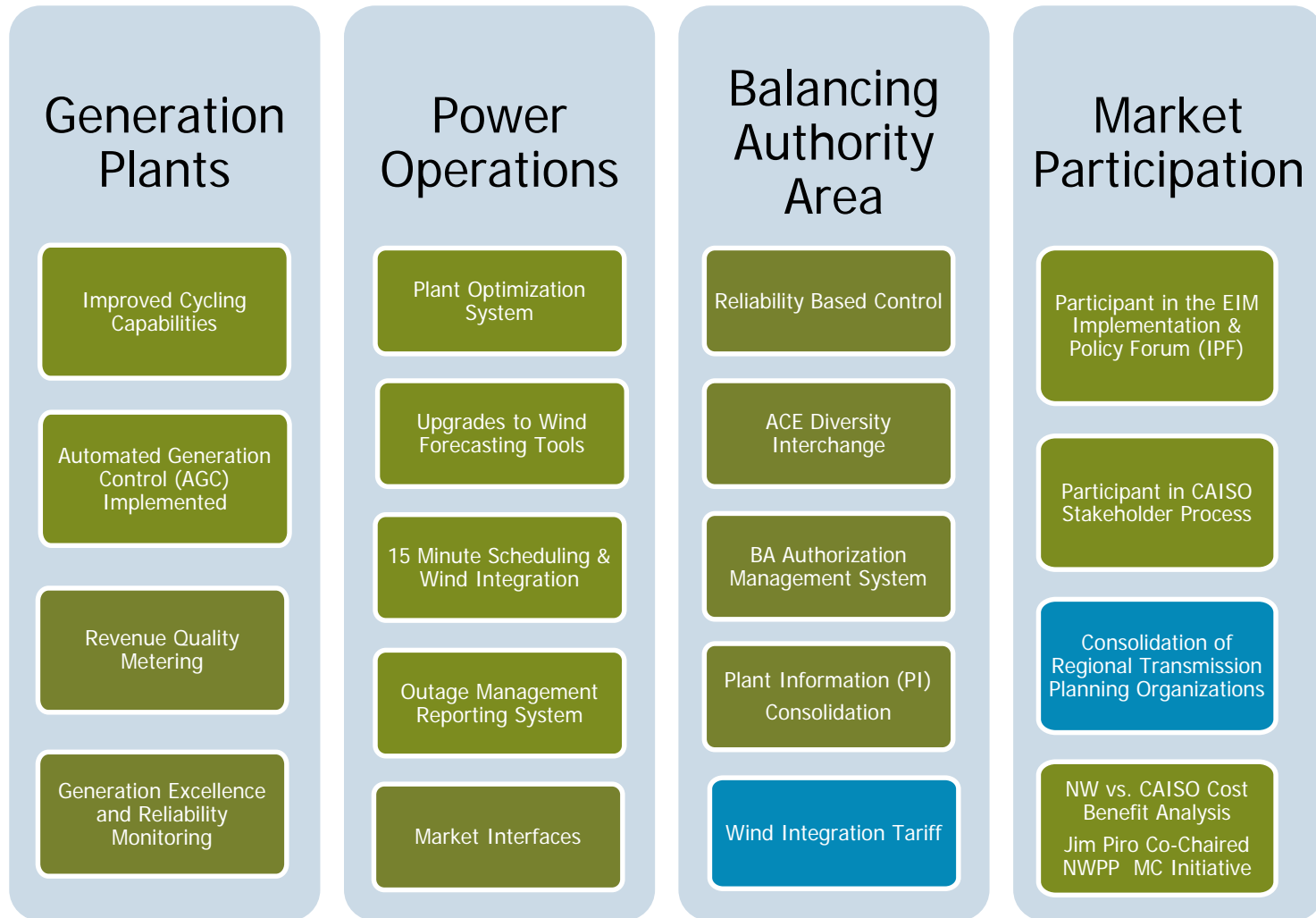
Overall project schedule



October 2017 Drivers:

- ✓ Phased implementation helps with change management and staffing development
- ✓ Next renewables integration decision corresponds with BPA Rate Case timing
- ✓ Public commitment to OPUC and regional stakeholders

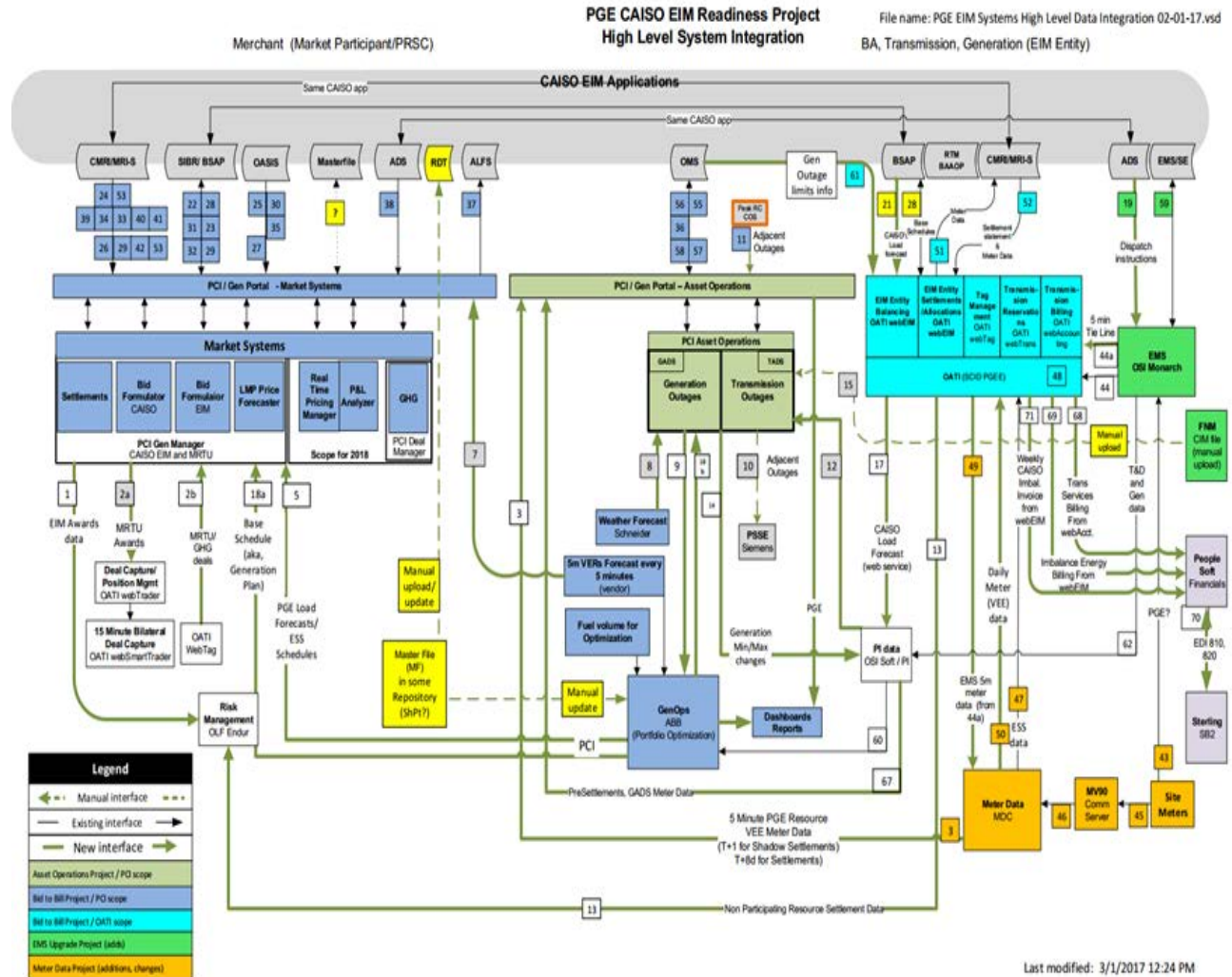
PGE's Journey to EIM



In Process
Completed

EIM Systems Integration

- Software Vendors: 4
- Days spent testing with ISO systems: 184
- Testing cases run: 1,120
- Disconnects identified and remedied through systems testing: 827
- PGE employees affected by EIM: ~350
- ISO computer based training courses completed: 644



Project Challenges

- PGE entered Parallel Operations during one of the region's worst heatwaves. PGE hit a new record of 4,038 MW net system load, August 3 while the Portland temperature was 105.
- Ensuring that PGE's most flexible units are accurately represented and dispatched in the CAISO market model.

Key Accomplishments

- Implemented 4 new systems and upgraded 3 existing systems
- Updated all business processes for large cross functional teams
- Completed Market Simulation, Functional Testing of all EIM Systems, and Interfaces necessary for EIM operations
- CAISO completed an on-site review of PGE's metering plan that exceeded expectations
- Completed 43 EIM employee qualification assessments
- Completed Readiness Criteria and filed with FERC



PGE Next Steps

- **Market Based Rate Authorization pending final FERC action**
- **Updating process documentation and training with lessons-learned from parallel operations**
- **October 1st – GO LIVE!!!**
- **December 14th - Exit BPA and integrate wind into PGE's Balancing Authority**
- **Developing a smaller team for Phase II improvements**
- **PGE will facilitate ways for smaller BAAs to participate in the Western EIM who may not have the same net savings benefit**



Service Provider Options

- **Leverage existing EIM Entity investments using service provider model**
 - **Reduces implementation and ongoing costs**
 - **Minimizes scope of internal expertise gap**
 - **Allows focus on key economic optimization drivers**
- **Range of Services can vary by entity and change over time**
- **Services provided are cost based**
- **Functional separation to protect market-sensitive information**



Longer Term Goals

- **Continue coordination with BPA on regional transmission issues and implementation of the Coordinated Transmission Agreement (CTA)**
 - **Evaluating Rate of Change (ROC) constraints using real time information**
 - **Use of EIM data to inform curtailments and re-dispatch process**
- **Work with the Department of Market Monitoring to receive market based rate authority in the entire EIM footprint**
- **Continue coordination with CAISO and the EIM Entities to prioritize EIM stakeholder issues and market enhancements**



Questions?

