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# EnergyImbalanceMarket

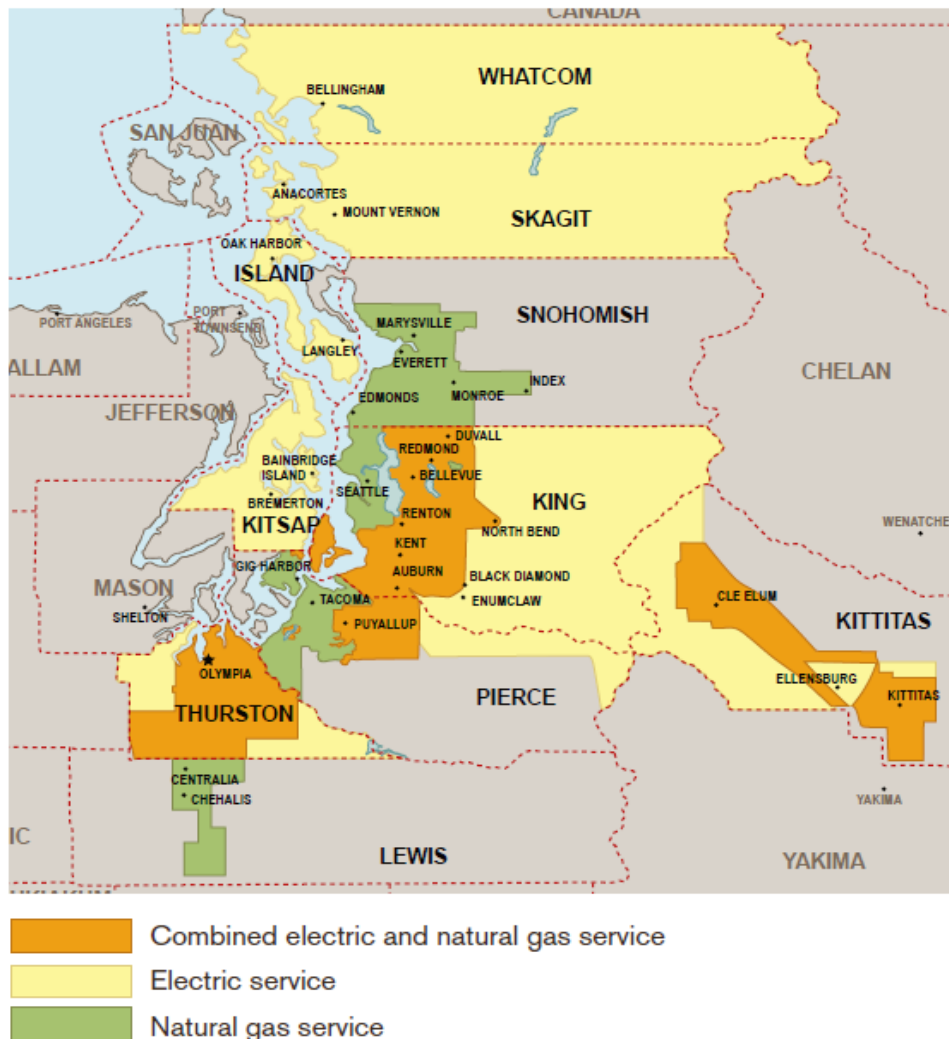
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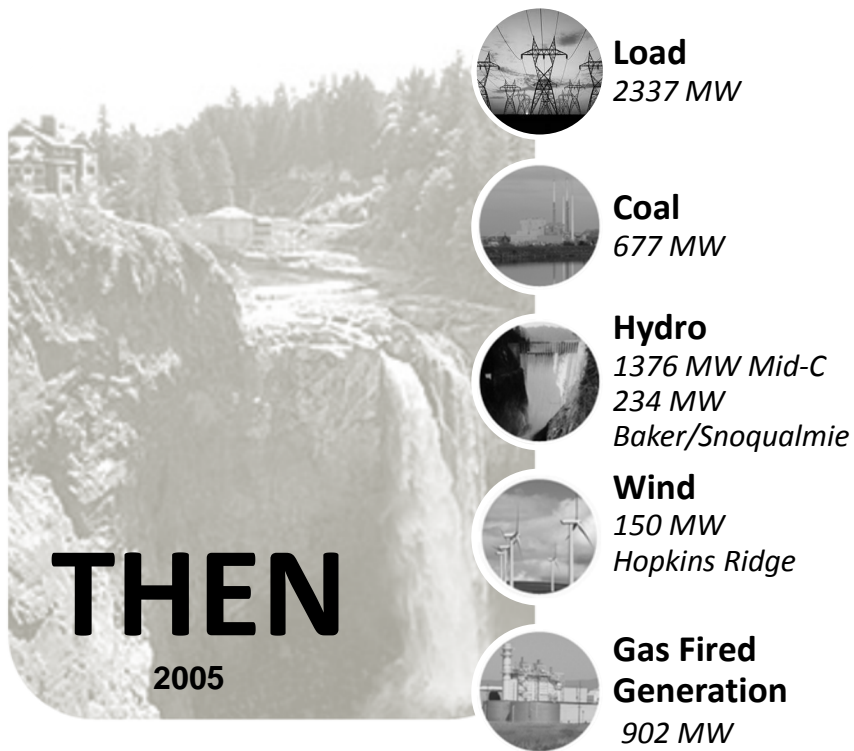
Puget Sound Energy  
October 5, 2016

# PSE Overview and Service Area

- **Headquarters:** Bellevue, Wash.
- **Revenues:** \$3.19 billion
- **Assets:** \$10.8 billion
- **Employees:** 2,700
- **Customers:**
  - More than 1 million electric
  - More than 770,000 natural gas
- **Electric Load**
  - Average 2,585 MW
  - Peak 4,912 MW
- **Gas Load**
  - Average 295,000 MMBTU
  - Peak 838,834 MMBTU

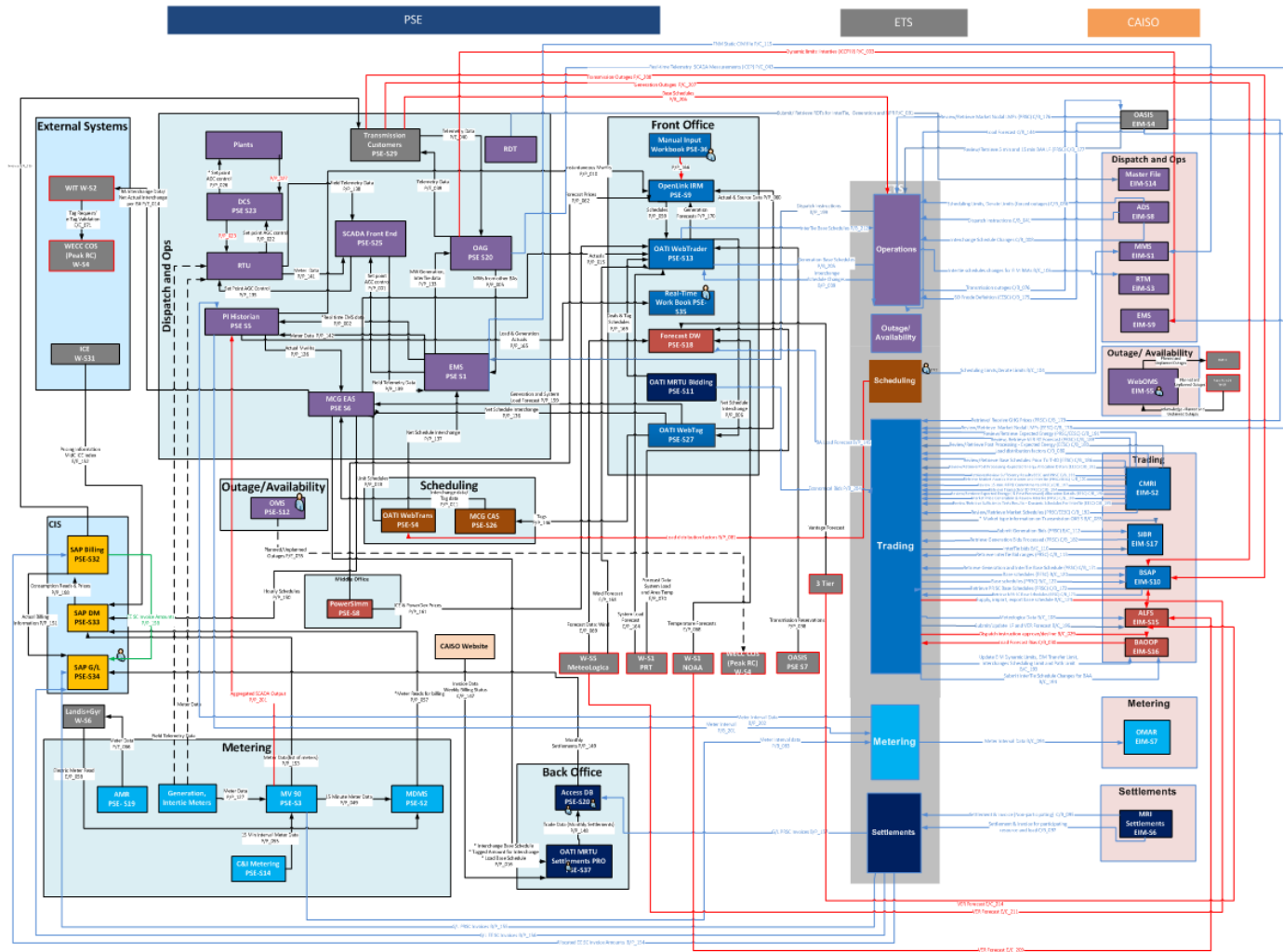


# Managing PSE's changing resource mix



# System Interfaces

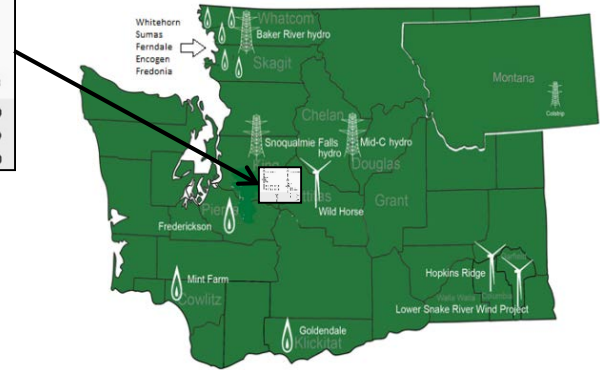
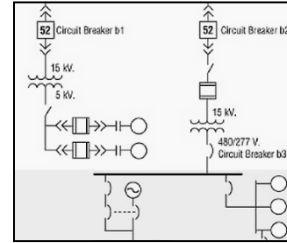
Total PSE Applications Impacted: ~28  
Total Number of Added/Changed Interfaces: ~97



# System Integration

## Full Network Model

- PSE Inputs:
  - Real Time Load, Generation, Voltage, and Transmission Flow Values
- CAISO Outputs:
  - Pricing Nodes, CAISO State Estimator



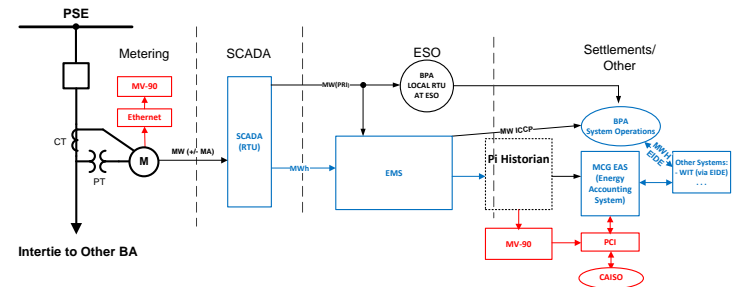
## Master File

- Resource characteristics and costs (i.e., ramp time, start up, capacity)

RDT Processing Errors for file: BAD_Intertie_RDT_v2.xls			
Sheet Name	Resource Id	Cell Location	Error Message
Intertie Resource	TEST_MARKET01_E_F_DAO_TEST_MARKET01_E_F_DAO	A3	Resource Id > 32 characters
Intertie Resource	TEST_MARKET01_E_F_DAO_TEST_MARKET01_E_F_DAO	B3	Energy Type needs to be 'FIRM', 'NFRM', 'WHL', or 'UCTG'
Intertie Resource	TEST_MARKET01_E_F_DAO_TEST_MARKET01_E_F_DAO	C3	Minimum Hourly Block Limit needs to be a valid number
Intertie Resource	TEST_MARKET01_E_F_DAO_TEST_MARKET01_E_F_DAO	F3	Certified for A/S Non Spin RTM needs to be 'Y' or 'N'
Intertie Resource	TEST_MARKET01_E_F_DAO_TEST_MARKET01_E_F_DAO	G3	Spinning Reserve Cap needs to be a valid number
Intertie Resource	TEST_MARKET01_E_F_DAO_TEST_MARKET01_E_F_DAO	I3	Certified for RUC needs to be 'Y' or 'N'
Intertie Resource	TEST_MARKET01_E_F_DAO_TEST_MARKET01_E_F_DAO	N3	Wheeling Reference Number > 32 characters
Intertie Resource	TEST_MARKET01_E_F_DAO_TEST_MARKET01_E_F_DAO	B4	Energy Type needs to be 'FIRM', 'NFRM', 'WHL', or 'UCTG'
Intertie Resource	TEST_MARKET01_E_F_DAO	C4	Minimum Hourly Block Limit needs to be a valid number
Intertie Resource	TEST_MARKET01_E_F_DAO	D4	Certified for A/S Spin needs to be 'Y' or 'N'
Intertie Resource	TEST_MARKET01_E_F_DAO	F4	Certified for A/S Non Spin RTM needs to be 'Y' or 'N'
Intertie Resource	TEST_MARKET01_E_F_DAO	G4	Spinning Reserve Cap needs to be a valid number
Intertie Resource	TEST_MARKET01_E_F_DAO	H4	Non-Spinning Reserve Cap needs to be a valid number
Intertie Resource	TEST_MARKET01_E_F_DAO	I4	Certified for RUC needs to be 'Y' or 'N'

## Metering

- 5 minute (Generation Meters)
- Settlement Quality Meter Data
- ISOME or SCME

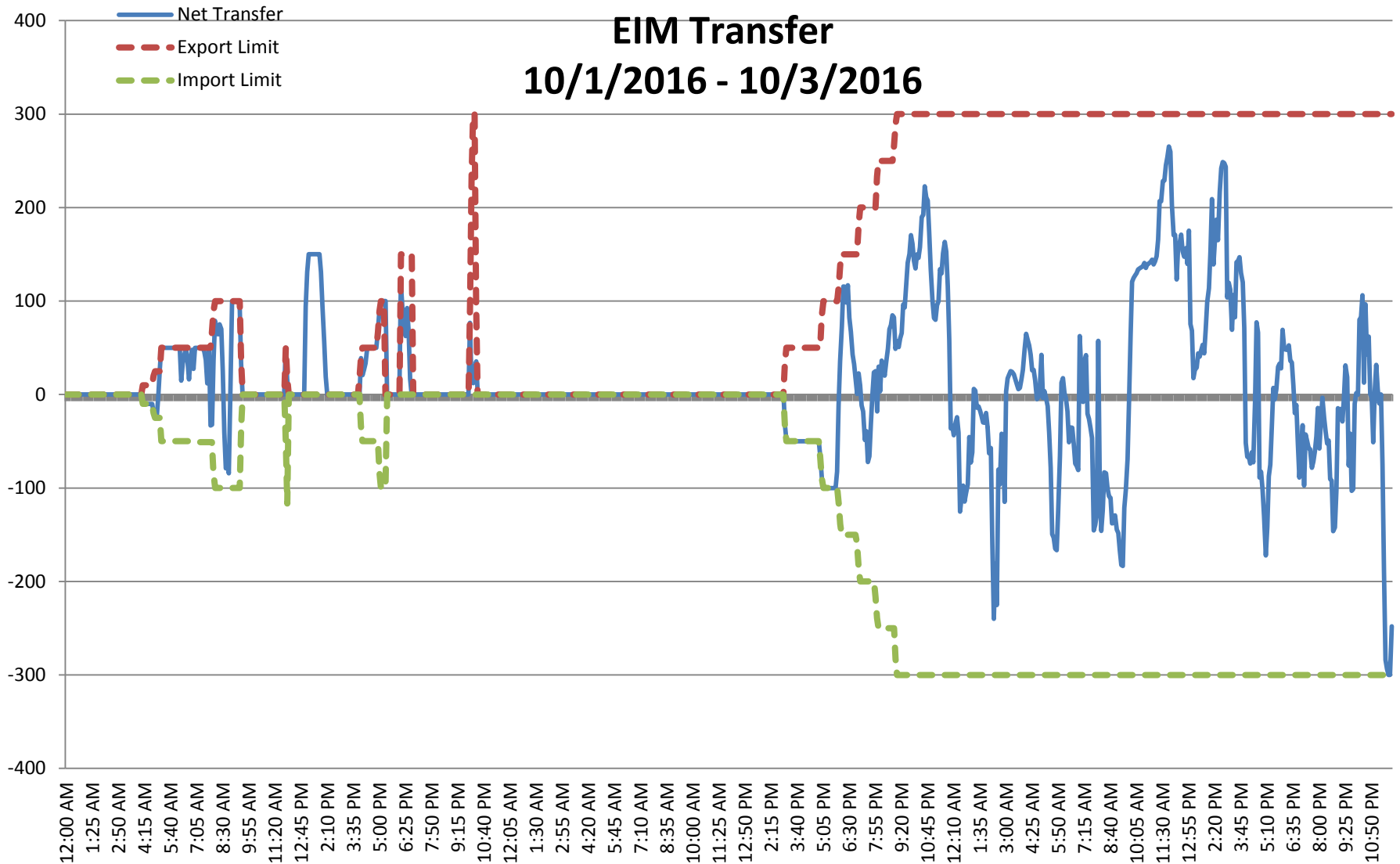


# Early Observations

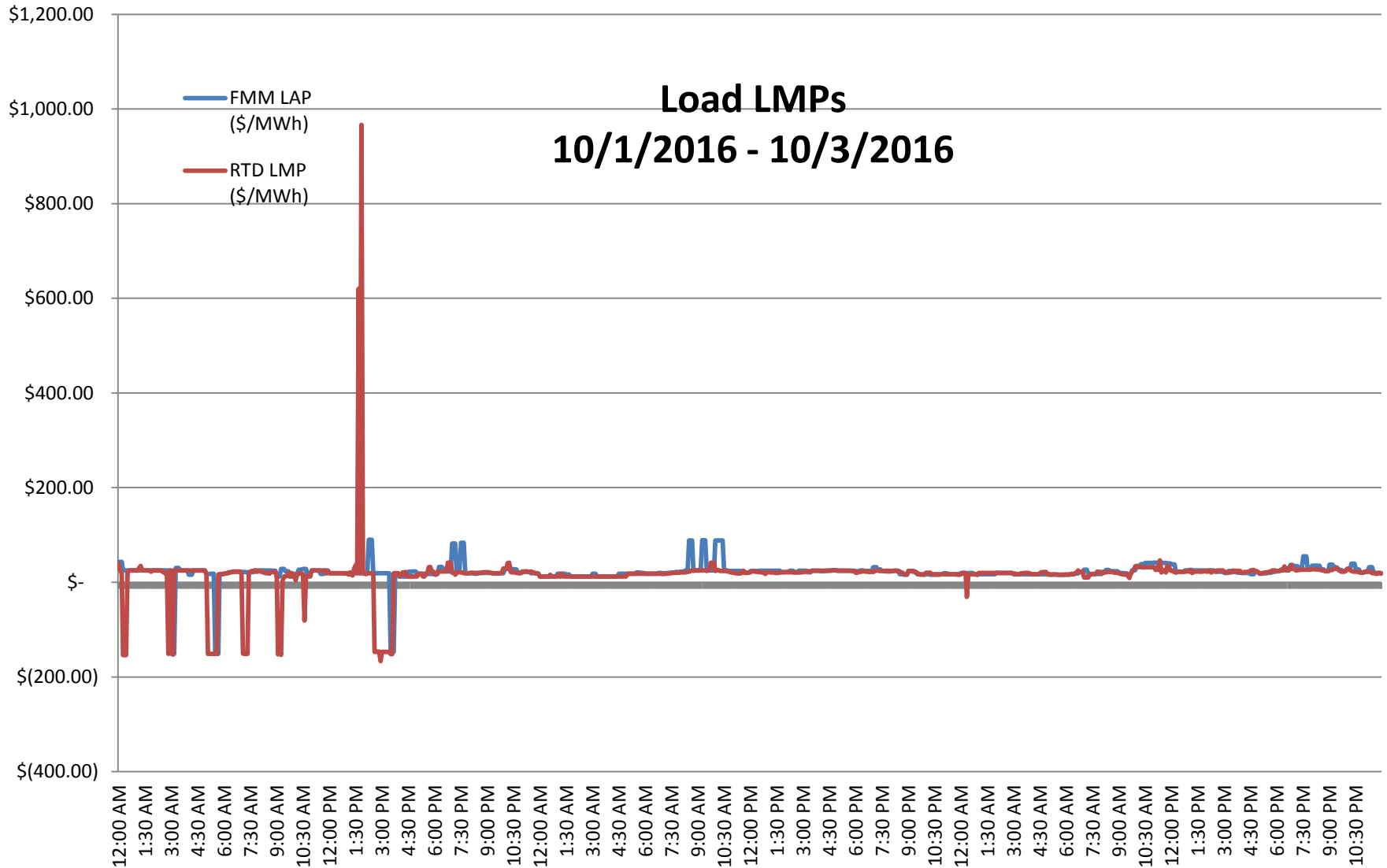
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- No sufficiency test failures
  - Balancing
  - Flex Ramp
  - Capacity
- Very few FMM and RTD infeasibilities. Zero infeasibilities on 10/3.
- ELAP prices are normal with a few exceptions
- PSE participating generation consistently following Dispatch Operating Targets

# Market Transfers



# Market Pricing





# Questions

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