



Energy Imbalance Market (EIM)

Costs and benefits of Seattle City Light joining the California EIM

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WHY CALIFORNIA NEEDS THE EIM

- Solar and wind generation is exceeding local loads and has to be exported or wasted (curtailed)
- Resource variability is exceeding market's ability to absorb, without curtailment
- Difficult to achieve greenhouse gas targets while curtailing renewable resources



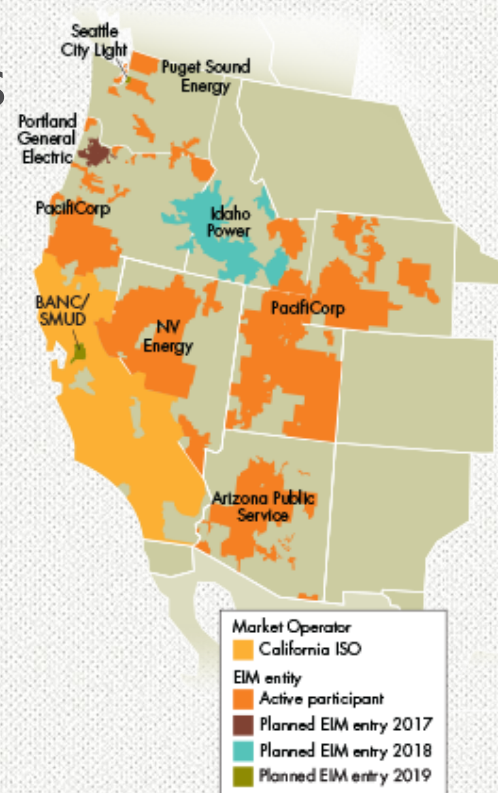
WHY SCL NEEDS THE EIM

- Loss of wholesale and retail revenue is putting pressure on retail rates
- Adding new renewables, to our portfolio, is not cost effective at this time
- Support of regional greenhouse gas goals is fundamental to achievement of climate policies
- Limited new wholesale revenue opportunities



ENERGY IMBALANCE MARKET (EIM)

- 5 minute energy-only auction
 - Enhances integration of renewables
 - Reduces energy supply cost
 - Responds quickly to events
 - Monetizes value of storage and flexibility
- Ten utilities have joined / are scheduled to join by 2020
- Seattle City Light is planning for 2019 entry



HOW SCL OPERATES TODAY

- Develop portfolio
 - Owned assets
 - Contract assets
 - Focus on sufficiency
- Forward trading
 - Monthly reshaping
 - Hedging of price risk
 - Focus on revenue stability
- Day-ahead trading
 - Daily reshaping
 - Focus on monetizing storage
- Real-time trading
 - Hourly reshaping
 - Focus on monetizing flexibility

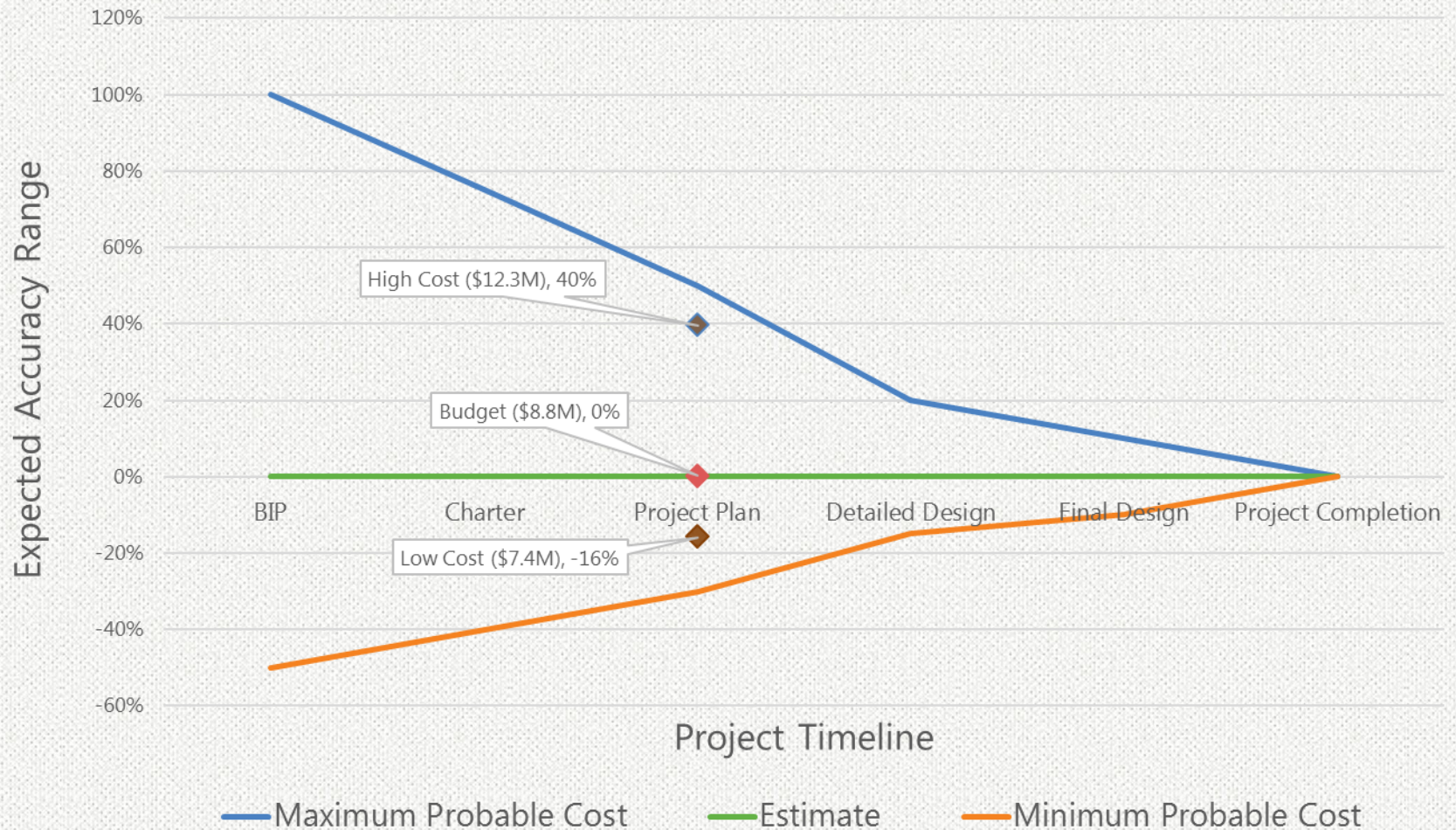
SCL OPERATIONS WITH EIM

- Balanced schedule – able to not be in market
- Sub-hourly reshaping – follow renewable generation
- Monetize storage – buy low, sell high
- Monetize flexibility – generate when needed most

BUSINESS CASE - COSTS

- Startup
 - \$8.8M in capital, \$3.6M in O&M
 - Primarily staffing, training, market systems
- Ongoing
 - \$2.8M in recurring O&M
 - Primarily staffing, software maintenance, market fees

CAPITAL PROJECT COST ESTIMATES



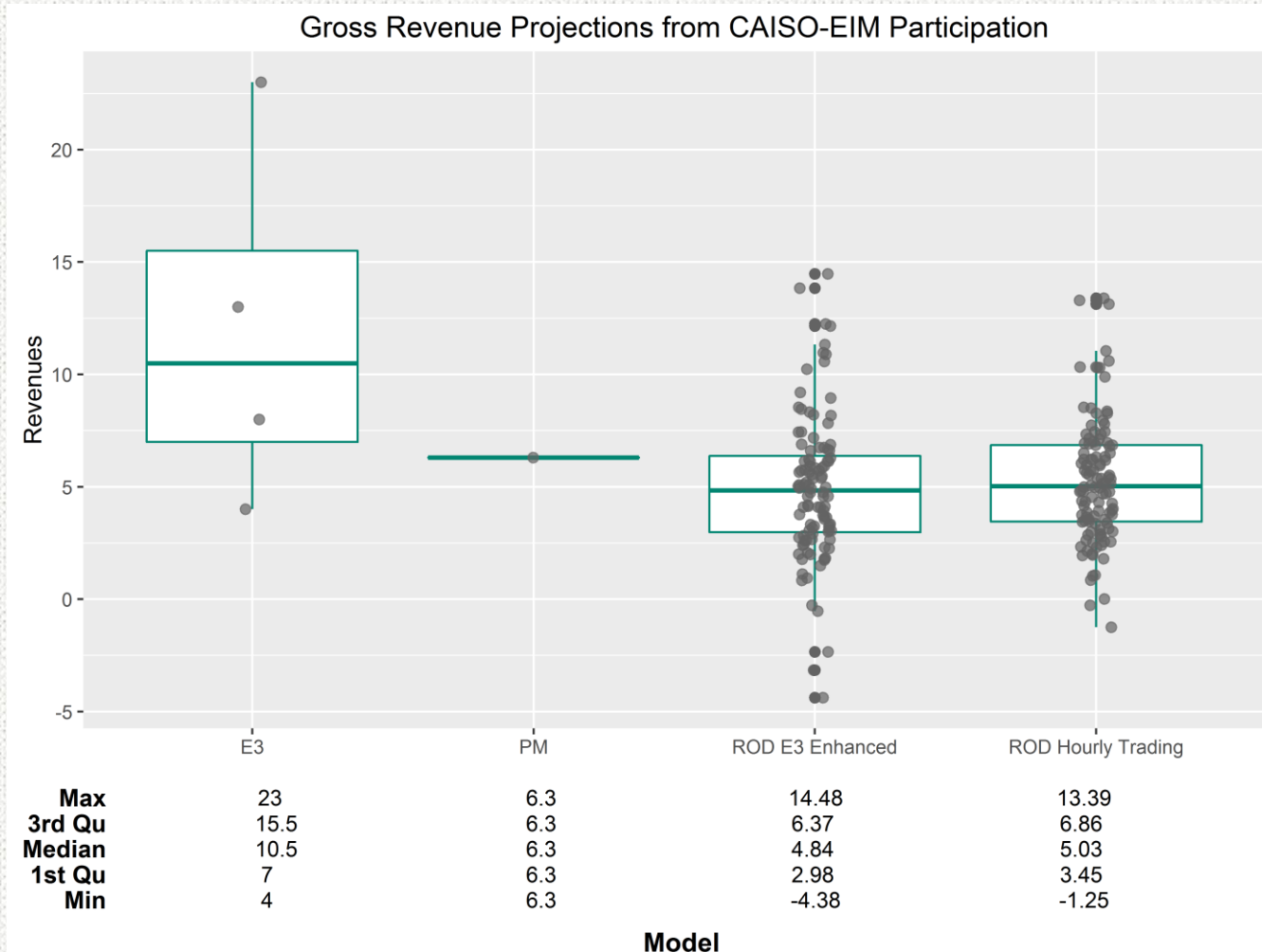
RISKS

- Project risks
 - Cost overrun
 - Schedule overrun
 - Market experience
 - Appropriate staffing
 - Cost shifts between CIP and O&M
- Operational Risks
 - Revenue variability
 - Rate impacts
 - Evolution of markets
 - Change management

BUSINESS CASE - BENEFITS

- Environmental
 - Integration of renewables, reduced greenhouse gas
- Financial
 - \$5.4 million incremental revenue (expected case)
 - \$2.6 million net revenue
- Reliability
 - Improved grid visibility, reduced congestion
- Risk management
 - Easy in/easy out, voluntary market

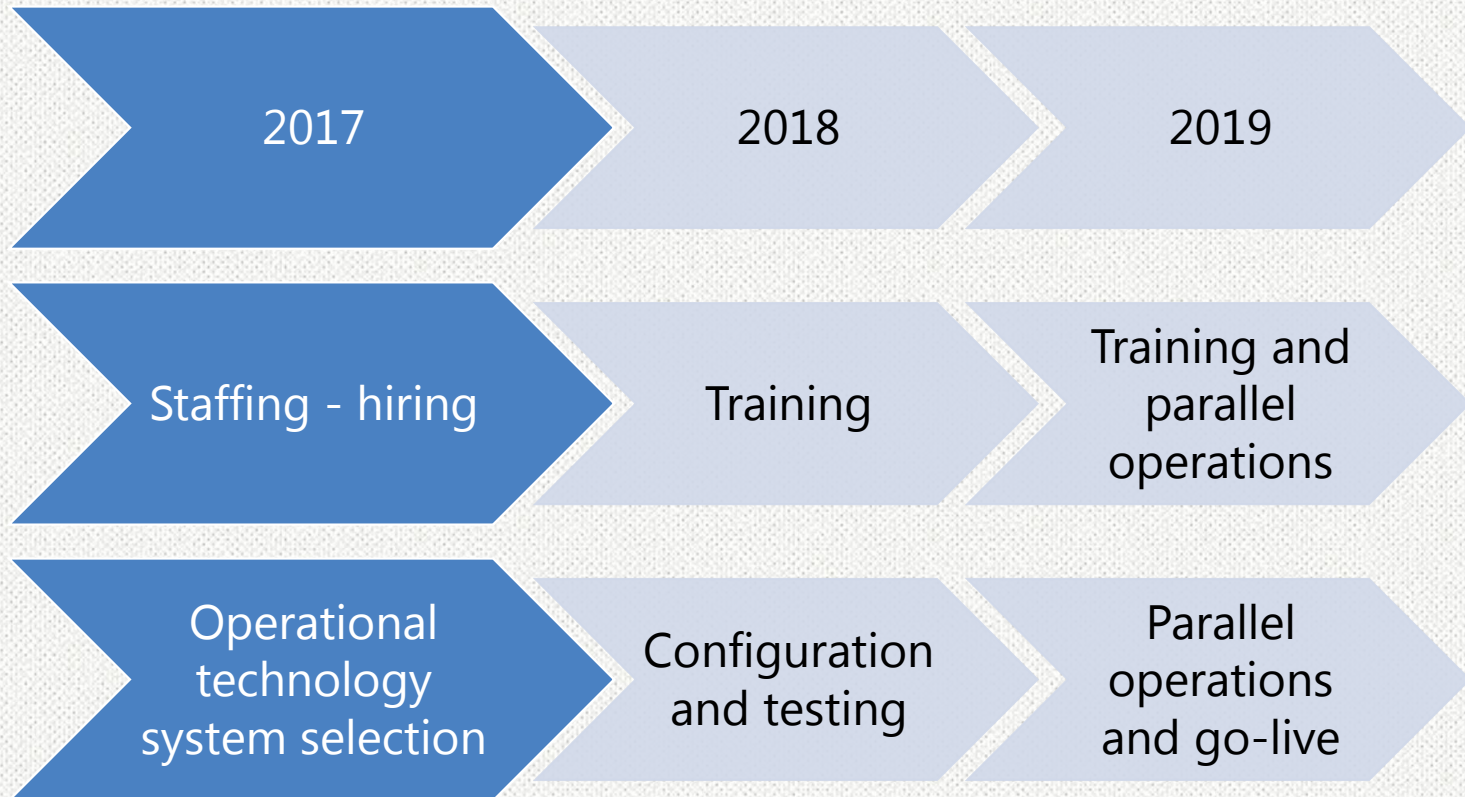
VARIABILITY OF REVENUE



BUSINESS CASE – NET PRESENT VALUE

- \$14M increase in portfolio value over the 15 year expected life of investment
- 5 year simple payback period based on expected results, including 20% contingency on CIP
- In addition, \$20 million in additional regional benefit for carbon reduction, based on the social cost of carbon for same period

TIMELINE



REAL WORLD EFFECTS

- CAISO benefit analysis
 - \$143M in benefits recognized by regional utilities
 - 359,320 MWh of renewables not been curtailed
 - 153,706 tons of carbon has been avoided
 - Since start of market – November 2014
- Prior to entry in EIM market
 - SCL made \$3.4M revenue in 2016 at CAISO market border in daily market
 - Demonstrates CAISO need and City Light capability to deliver

KEY TAKEAWAYS

- Beneficial to net wholesale revenue and rate stabilization account
- Impact on renewable integration and reliability add to value proposition
- Prepares City Light for future market evolution
- Engaging in market during development makes success more likely
- Demonstrates Seattle's environmental leadership and dedication to climate action



CITY LIGHT

OUR VISION

To set the standard—to deliver the best customer service experience of any utility in the nation.

OUR MISSION

Seattle City Light is dedicated to exceeding our customers' expectations in producing and delivering environmentally responsible, safe, low-cost and reliable power.

OUR VALUES

Excellence, Accountability, Trust and Stewardship.

