

Informational

**No Board
Decision
Requested**

Board Presentation – Energy Imbalance Market (EIM) Update

**Bryan Bradshaw – Manager of Structuring and
Optimization**

May 13, 2019



Background

- At the end of 2016, Chelan assessed the benefits of participating in the CAISO EIM market
 - E3 modeled revenue estimates
 - A composite analysis of costs were assessed
 - The results were not compelling to join at the time, however, the District committed to following the evolution of the market and reassessing the benefits at a later date

Updated Analysis

- At the end of 2018, E3 updated revenue estimates
 - Revenue estimates are lower than the 2016 analysis
 - Lower hydro flexibility – the 2016 analysis used 2015 as the model year which was a low hydro year and had higher than normal hydro flexibility
 - Reduced price volatility – intra hour price volatility is lower in recent years

Cost Estimates

- Cost estimates can vary widely
 - Working with a partner, costs may be able to be reduced materially
 - Estimates range from \$6 to \$12 million upfront to join the EIM with \$1.5 to \$3 million ongoing
 - The low range of the estimate assumes leveraging third party systems and expertise
 - As a point of reference, Seattle City Light estimates upfront cost to be \$14 million with ongoing costs to be approximately \$2.8 million

2016 Analysis

Sensitivity	EIM Market Access (MW)	Volatility (% of Historical)	Annual Revenue (\$ Million)		
			RT15	RT5	EIM Total
Base	150	100%	\$4.10	\$3.80	\$7.80
Low market access	100	100%	\$2.80	\$2.50	\$5.30
High market access	300	100%	\$7.70	\$7.30	\$15.00
Reduced price volatility	150	60%	\$2.50	\$2.30	\$4.70
Reduced price volatility & Low market access	100	60%	\$1.70	\$1.50	\$3.20
Reduced price volatility & High market access	300	60%	\$4.60	\$4.40	\$9.00
No HA market*	150	100%	\$8.60	\$4.50	\$13.10

2016 Analysis

Net Benefit (\$ millions)

	Lowest	Base	Highest
Revenue Forecast	\$3.2	\$7.8	\$15.0
Net Benefit (lowest)	-\$3.3	-\$2.2	-\$0.1
Net Benefit (lower)	-\$2.8	-\$1.1	\$1.7
Net Benefit (mid)	-\$2.6	-\$0.5	\$2.7
Net Benefit (higher)	-\$2.4	\$0.0	\$3.6
Net Benefit (highest)	-\$1.2	\$1.4	\$5.6

2018 Analysis

Sensitivity	EIM Market Access (MW)	Volatility (% of Historical)	Annual Revenue (Nominal \$ Million)		
			RT15	RT5	EIM Total
Base – Q4 2017-Q3 2018	150	100%	\$2.40	\$0.70	\$3.10
Low market access	100	100%	\$1.70	\$0.50	\$2.10
High market access	300	100%	\$4.30	\$1.30	\$5.60
Reduced price volatility	150	100%	\$1.50	\$0.40	\$1.90
Reduced price volatility & Low market access	100	60%	\$1.00	\$0.30	\$1.30
Reduced price volatility & High market access	300	60%	\$2.60	\$0.80	\$3.40
Partially limited HA market	150	100%	\$2.90	\$0.70	\$3.60
Extremely limited HA market	150	100%	\$4.80	\$0.90	\$5.70

2018 Analysis

Net Benefit (\$ millions)

Lower Expenses

	Lowest	Base	Highest
Revenue Forecast	\$1.3	\$3.1	\$5.6
Net Benefit (lowest)	-\$1.8	-\$1.4	-\$0.8
Net Benefit (lower)	-\$1.6	-\$0.9	\$0.0
Net Benefit (mid)	-\$1.5	-\$0.7	\$0.4
Net Benefit (higher)	-\$1.4	-\$0.5	\$0.7
Net Benefit (highest)	-\$0.8	\$0.2	\$1.6

Net Benefit (\$ millions)

Higher Expenses

	Lowest	Base	Highest
Revenue Forecast	\$1.3	\$3.1	\$5.6
Net Benefit (lowest)	-\$3.9	-\$3.5	-\$2.9
Net Benefit (lower)	-\$3.7	-\$3.0	-\$2.1
Net Benefit (mid)	-\$3.6	-\$2.8	-\$1.7
Net Benefit (higher)	-\$3.5	-\$2.6	-\$1.4
Net Benefit (highest)	-\$2.4	-\$1.4	\$0.1

Discussion

- The economics are not compelling at this time
- The effort for District to join the EIM is significant
- Reasons to consider additional due diligence
 - Market is moving towards a more organized structure
 - A substantial portion of the WECC footprint is in the EIM
 - It is likely not a question of if to join but when to join
 - Day-ahead EIM may materially change the way parties transact in the market and impact daily liquidity
 - Be a part of the market price formation rules