Power Resources Update

PRESENTED BY Bill Her
DATE 12/21/18
Agenda

- Current Energy Markets Overview
- Resource Adequacy Overview
- CA RFP Update
- OCEI RFP Update
Recent Market Volatility

2019 Forward Curve Prices $/MWh
Recent Market Volatility

**Historical Spot Market Prices vs 2019 Future Prices for Energy**

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<td>$29.31</td>
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**Average**

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**Annual Costs for 6,700 Gigawatt Hours**

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**Deviation from Average (%)**

|       | 19%   | 9%    | -6%   | -19%  | -8%   | 31%   | 13%   | -21%  | -16%  | -1%   |

**Deviation from Average ($)**

|       | $46,507,427 | $22,719,055 | $(15,755,641) | $(48,008,818) | $(21,074,122) | $77,982,740 | $33,459,609 | $(52,911,683) | $(39,843,360) | $(3,075,207) |
Reasons

- Market driven by natural gas prices
- Low storage levels
- Cold start to early winter
- Canada pipeline issue reduces supply to the NorthWest

Source: U.S. Energy Information Administration
Resource Adequacy Overview

• Process by which Load Serving Entities ensure there are enough resources to supply their demand obligations
• LSE’s provide forecast of their demand to CEC
• CPUC calculates and provides RA Requirements
• Different Categories - System, Local*, Flexible
• Year-Ahead vs. Month-Ahead
• Challenges
  • Market Structure
  • Liquidity
  • Requirements Change
  • Regulatory Uncertainty
CA RFP Status Overview

• 25 projects and 18 developers in consideration at this stage of evaluation
• Continuing advanced analytics on optimal portfolio – running 30,000+ portfolio scenarios
• Next step: Select 12-14 projects to move forward in this process
• Form PPA in process
• 1/7/19-1/18/19 Provide form PPA and get redlines back
• 1/23/19: Select 5-7 projects to move forward on full negotiations
• 3/13/19: Complete negotiations with 2-4 counterparties
  • Seek Board approval 3/20/18
• 4/10/19: Complete negotiations with 2-4 counterparties
  • Seek Board approval 4/17/18
CA RFP Procurement Targets

• 4-8 projects
• 500-700MWs
• 1.5-2 million MWhs
• Annual load: ~6TWh
  → 2021 RPS: 36%
  → Long-term (>10yr) contracting 65% of RPS
• Build a diverse portfolio:
  • Pnode vs. hub offers
  • Tenor: 10-20yr
  • Solar and wind
  • Battery storage add-on
  • 2020-2023 COD dates
  • Alameda County, NP15, SP15
OCEI RFP Status Overview

- Current projects include multiple BTM proxy demand response and IFM storage proposals with a wide range of project sizes and varying execution risks
- Next steps: Select final counterparties to move forward on providing form PPA and negotiations
- 1/7/19-1/18/19: Provide form PPA and get initial redlines back
- 1/23/19: Select final projects to move forward on full negotiations
- 3/13/19: Complete negotiations with counterparties
  - Seek Board approval 3/20/19
- Current RA proceeding may eliminate local RA value