Primus Power is on track to deliver EnergyPods™ to California’s Modesto Irrigation District starting 2014.
How will storage integrate into Modesto’s system?
Modesto’s 25 MW McHenry solar farm
Modesto will use EnergyPods to integrate renewable wind and solar energy
Modesto will use EnergyPods to integrate renewable wind and solar energy

25 MW McHenry Solar Farm

8.7 MW up in 15 min

15 MW down in 15 min

4-Aug-12
Modesto will use EnergyPods to integrate renewable wind and solar energy
Modesto receives wind from the Bonneville Power Administration area. Forecasting wind is tricky.
Modesto currently integrates intermittent renewable solar and wind energy with thermal generators
EnergyPods vs. thermal generators for flexibility and balancing

<table>
<thead>
<tr>
<th>Natural Gas Reciprocating Engines</th>
<th>Primus Power EnergyPods™</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Firming range (MW)</strong></td>
<td>4 to 50</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>$73M</td>
</tr>
<tr>
<td><strong>Time to full power (sec)</strong></td>
<td>300</td>
</tr>
<tr>
<td><strong>Water use (liters)</strong></td>
<td>66,000</td>
</tr>
<tr>
<td><strong>Natural gas (mmBTU)</strong></td>
<td>2,900,000</td>
</tr>
<tr>
<td><strong>Pollutants (metric tons)</strong></td>
<td>20 NOx, 72 CO, 72 VOC</td>
</tr>
<tr>
<td><strong>CO₂ emissions (metric tons)</strong></td>
<td>66,000</td>
</tr>
<tr>
<td><strong>Sound (dB)</strong></td>
<td>95 (jackhammer)</td>
</tr>
<tr>
<td><strong>Installation time (months)</strong></td>
<td>36 to 54</td>
</tr>
<tr>
<td><strong>Area (acre)</strong></td>
<td>1</td>
</tr>
</tbody>
</table>

Annual data, based on 35 MW average use. EnergyPods are charged with renewable solar and wind energy.
Modesto will use EnergyPods™ for energy balancing and local area stability applications

Modesto will use storage to:
1. Balance renewable energy
2. Reduce load peaks
3. Balance frequency & voltage
4. Avoid/delay capital upgrades
Modesto will save 30% by using EnergyPods™ instead of thermal generators.

Centralized thermal units vs. distributed EnergyPods™ for 50 MW of flex capacity

20 year Present Value Comparison

EnergyPods™ deliver value immediately, and defer upgrades of substations for 2 years.

Thermal units require spending 4 years before capacity comes online.

Notes:
- 28 MW EnergyPods™ deliver the same load balancing benefit as a 50 MW thermal plant.
- $4/mmBTU average natural gas price over 20 years.
- Thermal plant installation & commissioning: 4 years.
- 6% cost of capital.
Several partners are assisting our Modesto deployment

**Team**
- Decades of flow battery expertise
- >80% graduate engineering degrees
- Proven system integration experience
- Deep understanding of energy storage economics

**Grants**
- $14M Department of Energy • Energy Storage Demonstration Program
- $2M Advanced Research Projects Agency • Energy
- $1M California Energy Commission

**Patents**
- 8 granted
- 30 filed
- >350 claims
- US & International

**Investors**
- Chrysalix Energy Venture Capital
- KPCB (Kleiner Perkins Caufield & Byers)
- DBL Investors
- I2BF

**Partners**
- Integration & Control
- Bosch
- Sandia National Laboratories
- PGE
- EPRI
- 3rd Party Testing

**Proven system integration experience**

**Deep understanding of energy storage economics**
Thank you

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