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 daily load

Hydro
Coal & Gas
Wind
Solar
Storage
Modesto’s 25 MW McHenry solar farm
Modesto will use EnergyPods to integrate renewable wind and solar energy
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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>Firming range (MW)</td>
<td>4 to 50</td>
</tr>
<tr>
<td>Cost</td>
<td>$73M</td>
</tr>
<tr>
<td>Time to full power (sec)</td>
<td>300</td>
</tr>
<tr>
<td>Water use (liters)</td>
<td>66,000</td>
</tr>
<tr>
<td>Natural gas (mmBTU)</td>
<td>2,900,000</td>
</tr>
<tr>
<td>Pollutants (metric tons)</td>
<td>20 NOx, 72 CO, 72 VOC</td>
</tr>
<tr>
<td>CO₂ emissions (metric tons)</td>
<td>66,000</td>
</tr>
<tr>
<td>Sound (dB)</td>
<td>95 (jackhammer)</td>
</tr>
<tr>
<td>Installation time (months)</td>
<td>36 to 54</td>
</tr>
<tr>
<td>Area (acre)</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

- $191M for BAU
- $135M for EnergyPods™

$56M reduction = 30% savings

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
- KPCB
- DBL INVESTORS
- 12BF

Partners
- BOSCH
- Sandia National Laboratories
- PG&E
- EPRI
- KEMA
- 3rd Party Testing

Proven system integration experience
Thank you

Tom Stepien
CEO

3967 Trust Way
Hayward, CA 94545 USA
www.primuspower.com

Main +1.510.342.7600
Office +1.510.342.9159
Fax +1.510.342.7699
tom.stepien@primuspower.com