



GridSolar, LLC

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# **The GridSolar Pilot Project for the Boothbay Region**

**Presentation to the Legislature's Energy,  
Utilities and Technology Committee**

**December 11, 2013**

# Agenda

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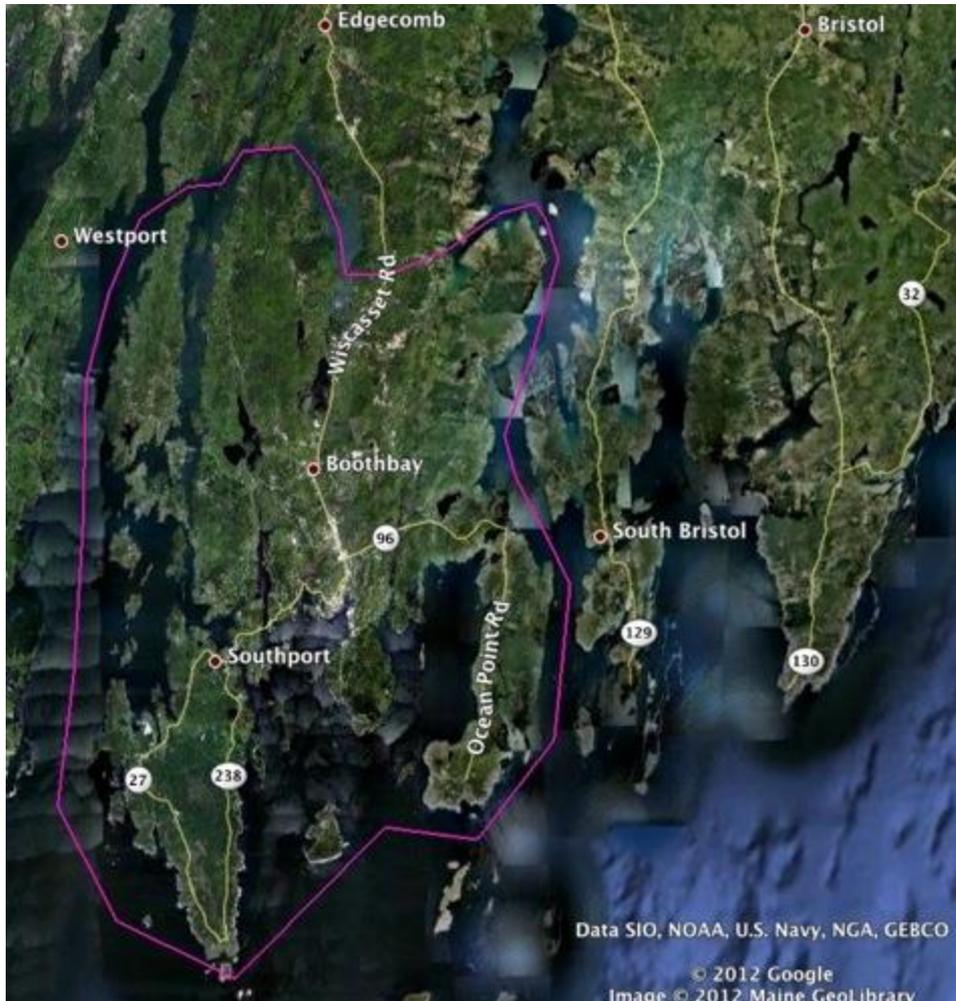
- Electric Grid Reliability
  - ME Turnpike Analogy
  - Peak Load Problem
  - “Shock and Sag”
- Boothbay Pilot
  - Process
  - NTA Resources Procured
  - Preliminary Results

# Shock and Sag



- **When a Reliability Event Occurs, the electric grid has two responses:**
  - **"SHOCK"** – frequency and voltage responds immediately, which can cause power failure.
  - **"SAG"** – power flows on specific lines and circuits exceeds carrying capacity causing them to overheat and sag. If sag exceeds clearance, they will short causing power failure.

# Boothbay Pilot



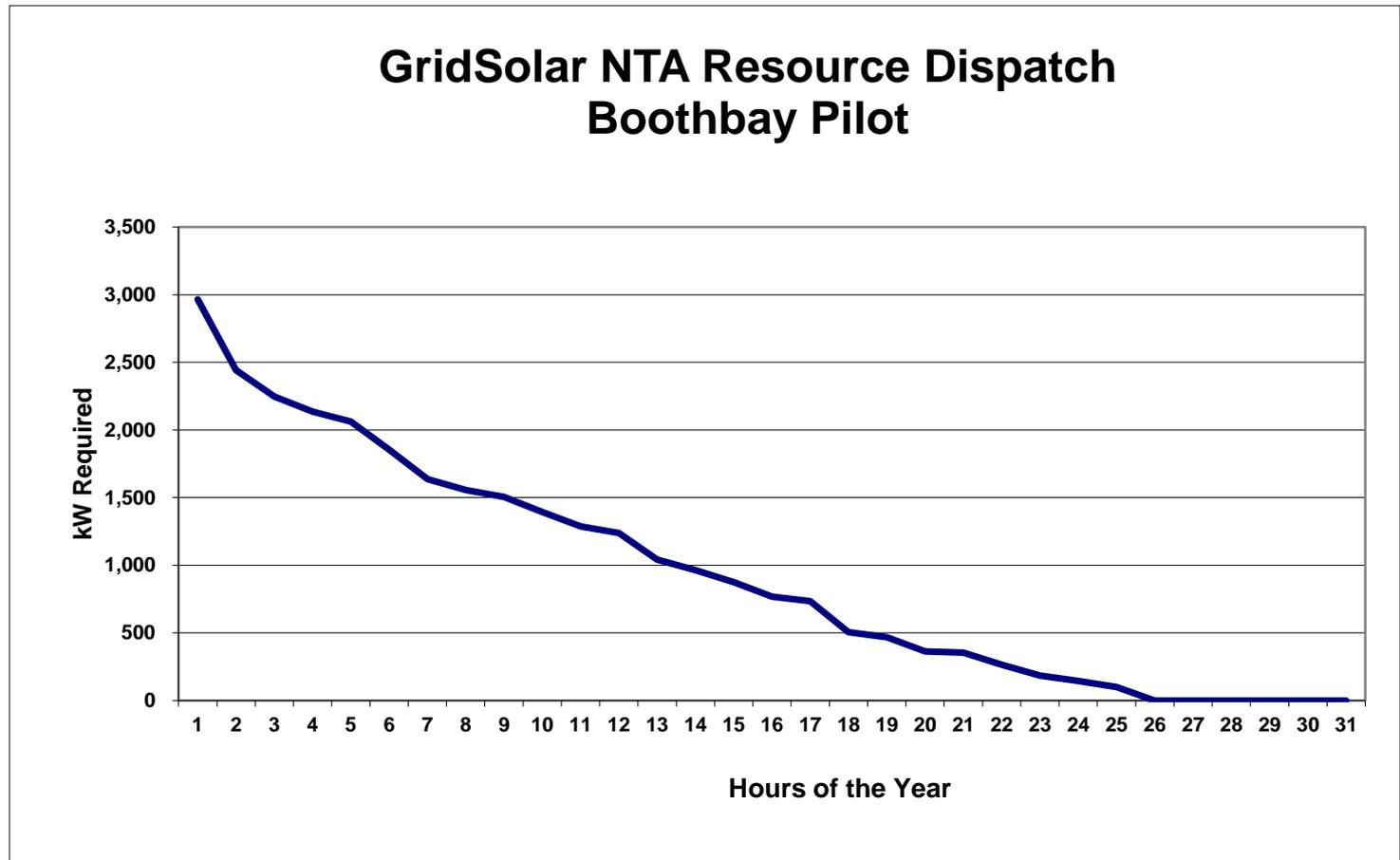
Radial nature of electric service and local distribution circuits on the Boothbay peninsula defines the electrical region for the Pilot Project

# Boothbay Pilot



- **Hybrid Solution**
  - CMP – Voltage Support investments to address instantaneous response issues – “SHOCK”
  - NTA Options – Manage thermal conditions on conductor feed into the region – “SAG”
- **Benefit** – Avoid \$18 million upgrade to CMP Sub-Transmission Line serving the region.

# NTA Operations



## ○ **Key Terms of Pilot**

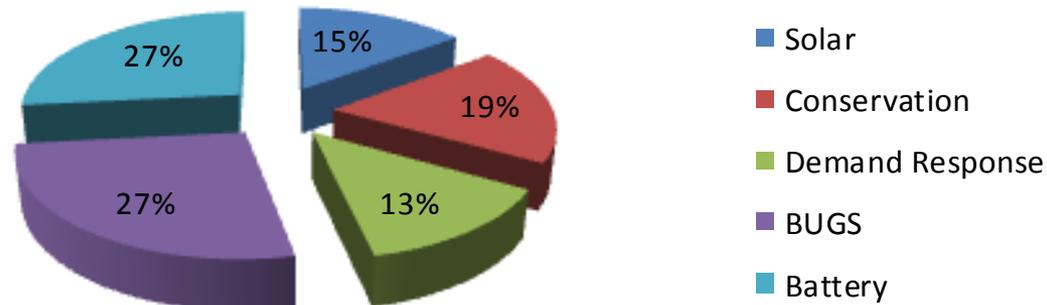
- Term – 3 Years
- Need – up to 2 MW of NTA Resources
- NTA Types – 250 kW from various categories
- PUC approves all contracts for NTA Resources

# NTA Resources



		RFP I	RFP II	Totals	Pct.
<b>Solar</b>	(kW)	168.8	106.8	275.6	15%
<b>Conservation</b>	(kW)	237.0	111.3	348.3	19%
<b>Demand Response</b>	(kW)	0.0	250.0	250.0	13%
<b>BUGS</b>	(kW)	500.0	0.0	500.0	27%
<b>Battery</b>	(kW)	0.0	500.0	500.0	27%
<b>Totals</b>	(kW)	905.8	968.0	1,873.8	100%

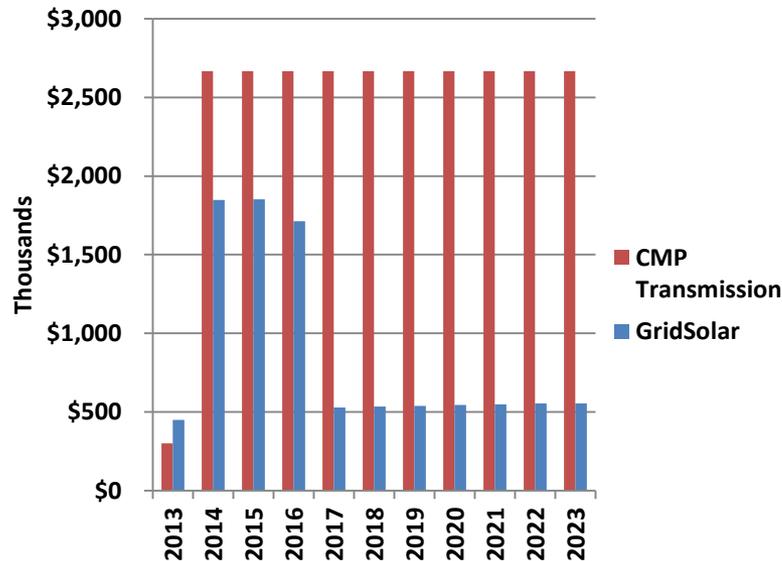
## NTA Resources By Category



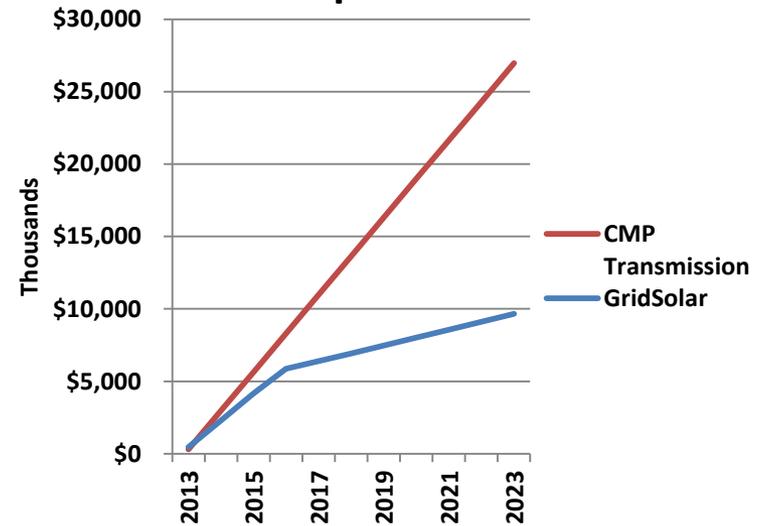
# Comparative Costs



## Annual Revenue Requirement



## Cumulative Revenue Requirement



Note: The costs of the Hybrid components have been removed from both the CMP Transmission Solution and the GridSolar Solution.

# Boothbay Project is a Step Toward to Smart Electric Grid



*The Smart Grid Can Deliver*

**Market**  
MW

**BENEFITS**

- Enhanced energy security
- Reduced greenhouse gases
- Improved urban air quality
- Increased grid asset utilization

"Valley Filling"  
(Energy for PHEVs)

kW  
hours of day

Category	Before	After
CO <sub>2</sub> Emissions	High	Low
Urban Emissions	High	Low
Electricity Sales	Low	High
Infrastructure Requirements	High	Low
Utility Rates	High	Low

Pacific Northwest  
National Laboratory  
Energy Research Center



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