

GridSolar, LLC

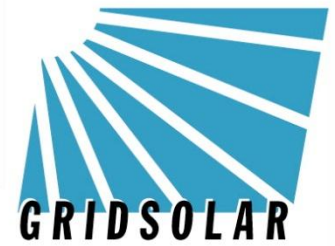
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# **The GridSolar Pilot Project for the Boothbay Region**

**September 11, 2012**

# Agenda

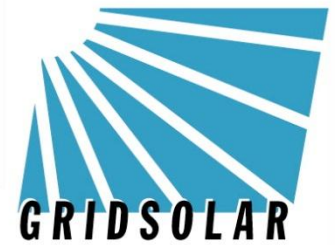
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- Overview
- GridSolar Concept
- Boothbay Pilot
- Process / Schedule
- RFP Details / Discussion
- Bid Evaluation

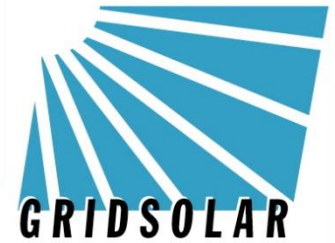
# Overview

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- Began with CMP proposed MPRP – Summer 2008
- Settlement – 2 Pilot Projects (MidCoast, Portland Loop)
- Evolving NERC Standards created uncertainty
- MidCoast Pilot – Reduced in size and scope to Boothbay Region

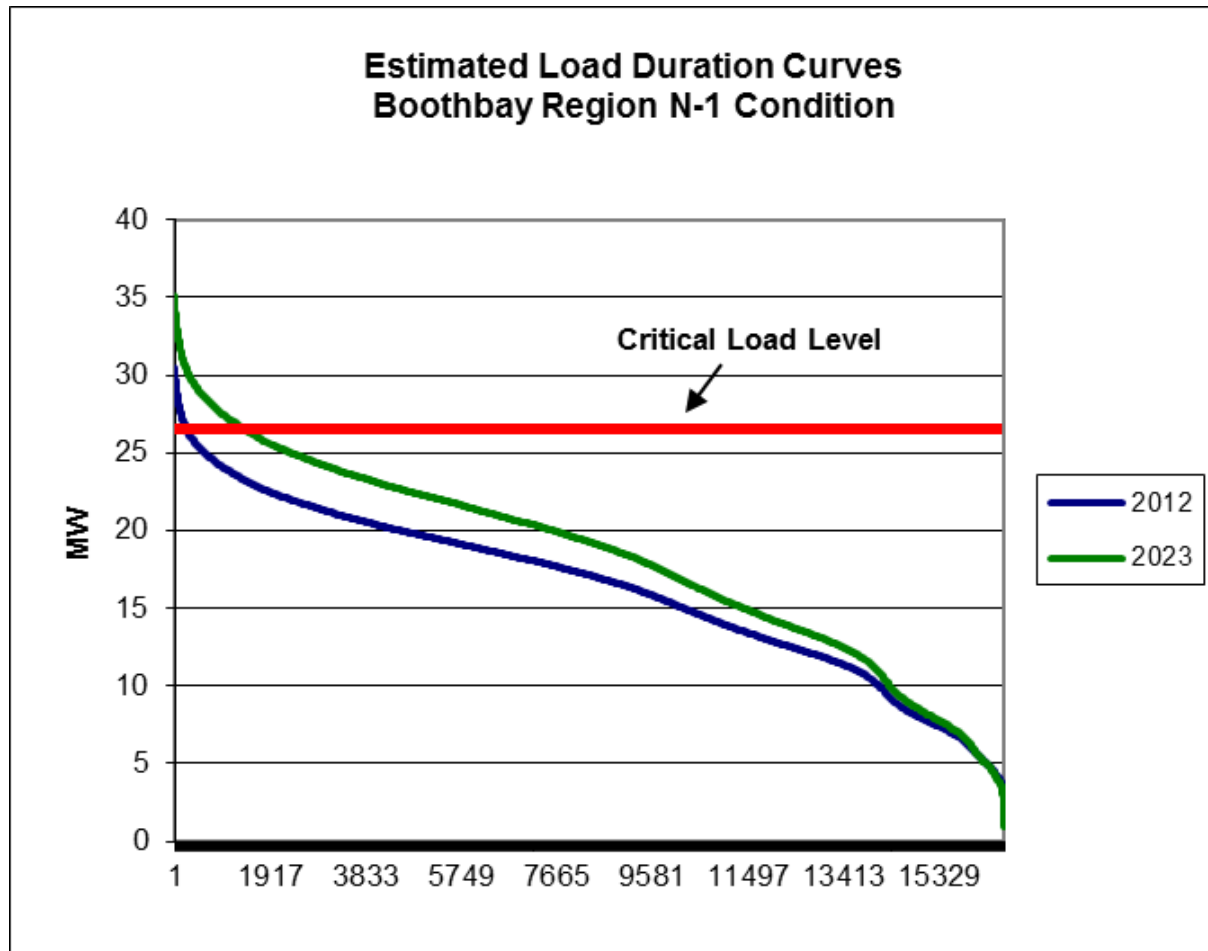
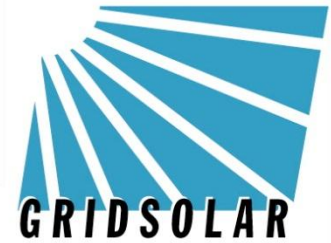
# GridSolar Concept



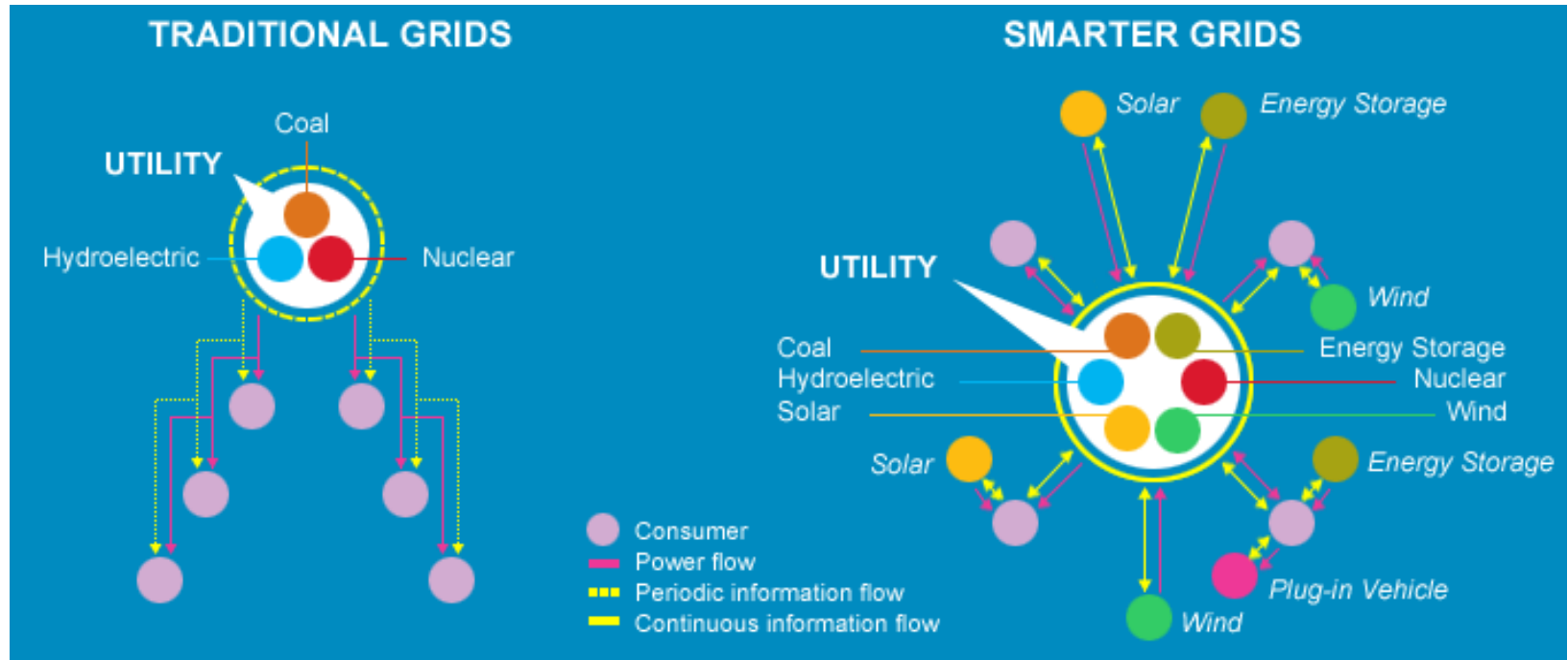
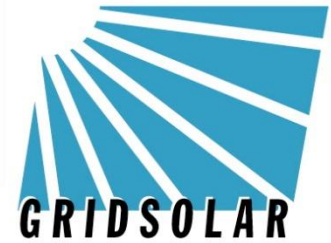
Traditional Utility Vision in which peak load is met by large generating facilities located far from load requiring expensive transmission

GridSolar Vision in which peak load is met through a smart electric grid using small-scale distributed solar generation located close to load

# Reliability is a Peak Load Problem

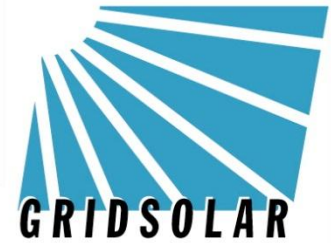


# Smart Electric Grid



One-way power flows from generators to load is replaced with network structure, two-way power flows and more efficient use of the grid.

# Smart Electric Grid



*The Smart Grid Can Deliver*

**BENEFITS**

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

"Valley Filling"  
(Energy for PHEVs)

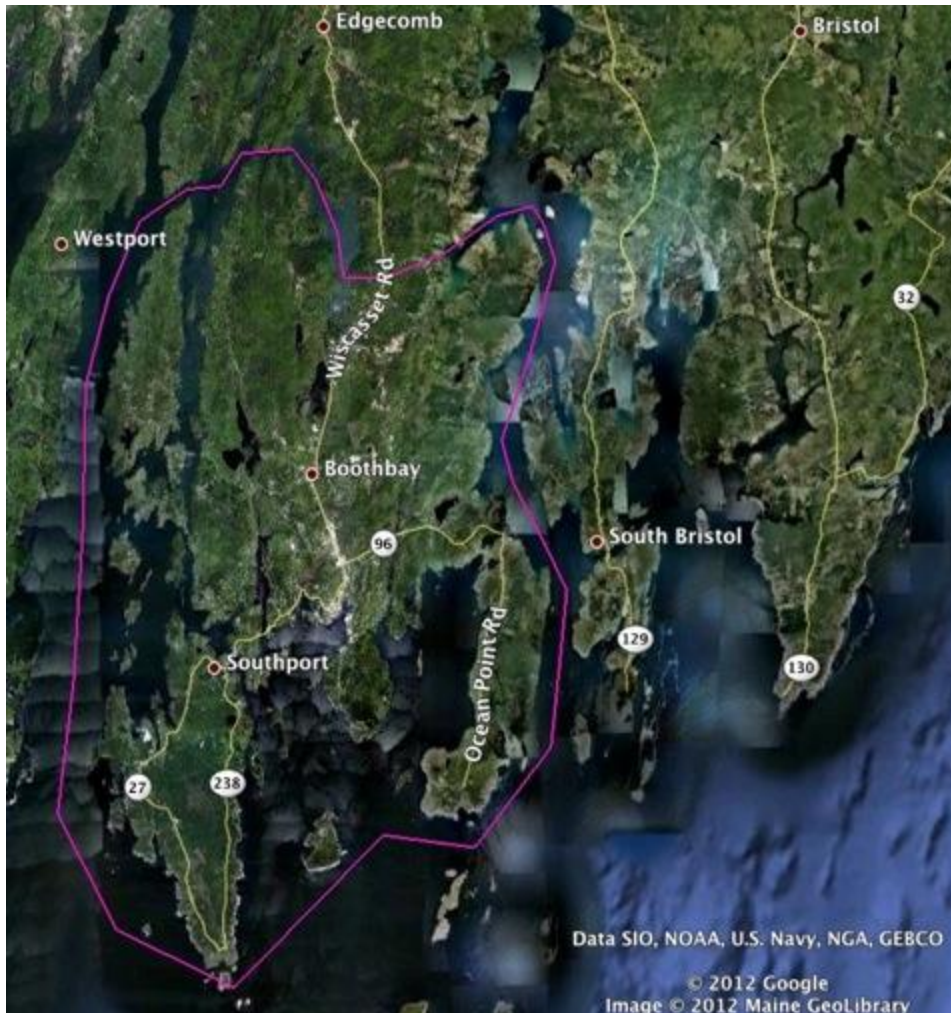
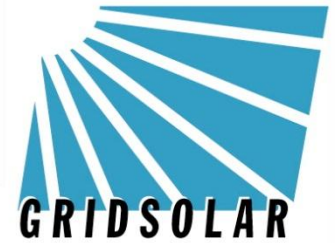
kW

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

# Boothbay Pilot

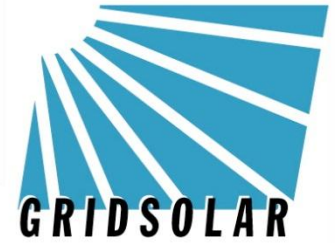


Radial nature of electric service to Boothbay peninsula defines the electrical region for the Pilot Project



# Boothbay Pilot

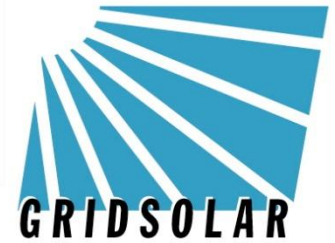
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- Hybrid Solution
  - CMP – Voltage Support investments to address instantaneous response issues
  - NTA Options – Manage thermal conditions on conductor feed into the region
- Benefit – Avoid \$18 million upgrade to CMP Line 23.

# Process

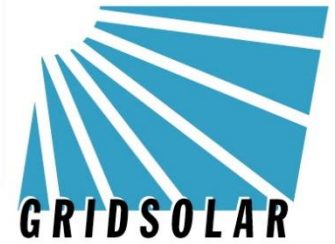
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- Key Terms of Pilot
  - Term – 3 Years
  - Need – up to 2 MW of NTA Resources
  - NTA Types – 250 kW from various categories
  - PUC approves all contracts for NTA Resources

# Schedule (Subject to change)

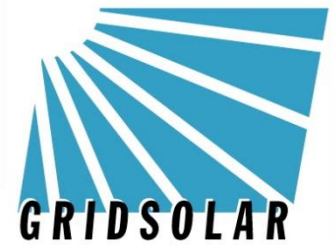
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- Prepare RFP
- Solicit Reviews and Comments
- 10/1 – Issue RFP
- 10/26 – Responses Due
- Evaluation of Bidder Responses
- 11/16 – GridSolar to make recommendations to PUC
- 12/21 – Final Approval from PUC
- 1/15 – GridSolar to execute contracts with approved NTA Resources

# Schedule (Subject to change)

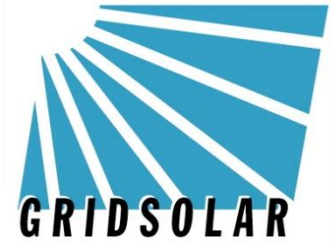
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- May 2013 – Initial Field Test of Operating Protocols
- 7/1/13 – Commercial Operations Date for NTA Resources
- Summer 2013 – Field Test / Audit of NTA Resource performance
- Fall 2013 - Field Test / Audit of NTA Resource performance
- January 2014 – Report to Maine PUC

# RFP Details

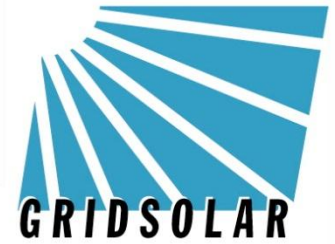
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- NTA Resources
  - Passive NTA Resources
    - Energy Conservation
    - Solar, Wind, Tidal Prime Power
  - Active NTA Resources
    - Demand or Load Response
    - Back-up or Standby Generation (BUGS)
    - Energy Storage
    - Batteries

# RFP Details

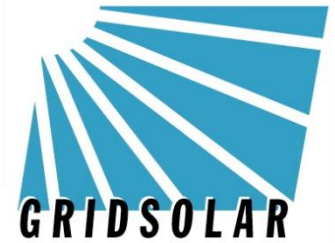
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- NTA Requirements
  - Location
  - Interconnection
  - Performance
  - Metering / Monitoring
  - Communications
  - Control (Dispatch)

# RFP Details

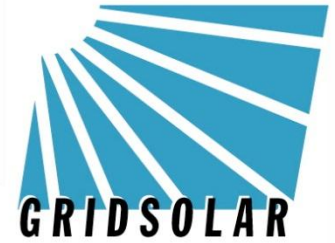
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- NTA Resource Availability
  - Primary Dispatch – super peak hours, when load conditions approach the thermal limit of Line 23
  - Secondary Dispatch – to support scheduled or unscheduled CMP line maintenance work

# RFP Details

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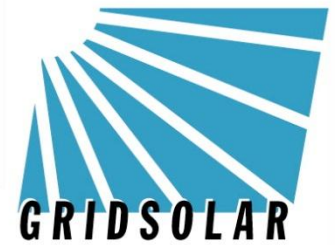


- NTA Resource Payments
  - 3-year Initial Contracts
  - Amount - \$/kW-month based on bids accepted
  - Payments – monthly over term
  - kW
    - Initial Capacity Ratings
    - Adjustments to Capacity Ratings based on performance



# Bid Evaluation

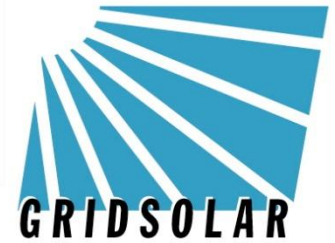
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- Criteria is set forth in the Stipulation
- Cost effectiveness is important, but not determinative
- Pilot Program – designed to learn, evaluate and inform

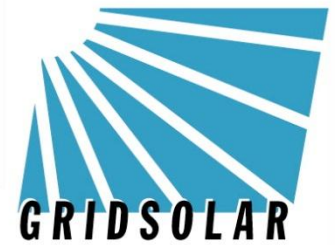
# Operations

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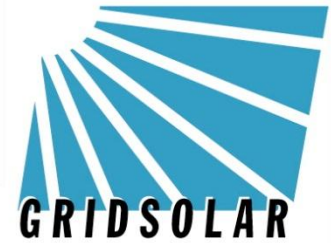
- GridSolar/CMP will monitor line conditions
- As a condition approaches a critical level, CMP will notify GridSolar to dispatch “on” NTA Resources – xx kW
- GridSolar will dispatch Active NTA Resources based on algorithm
- When notified by CMP, GridSolar will dispatch “off” NTA Resources

# Dispatch of NTA Resources

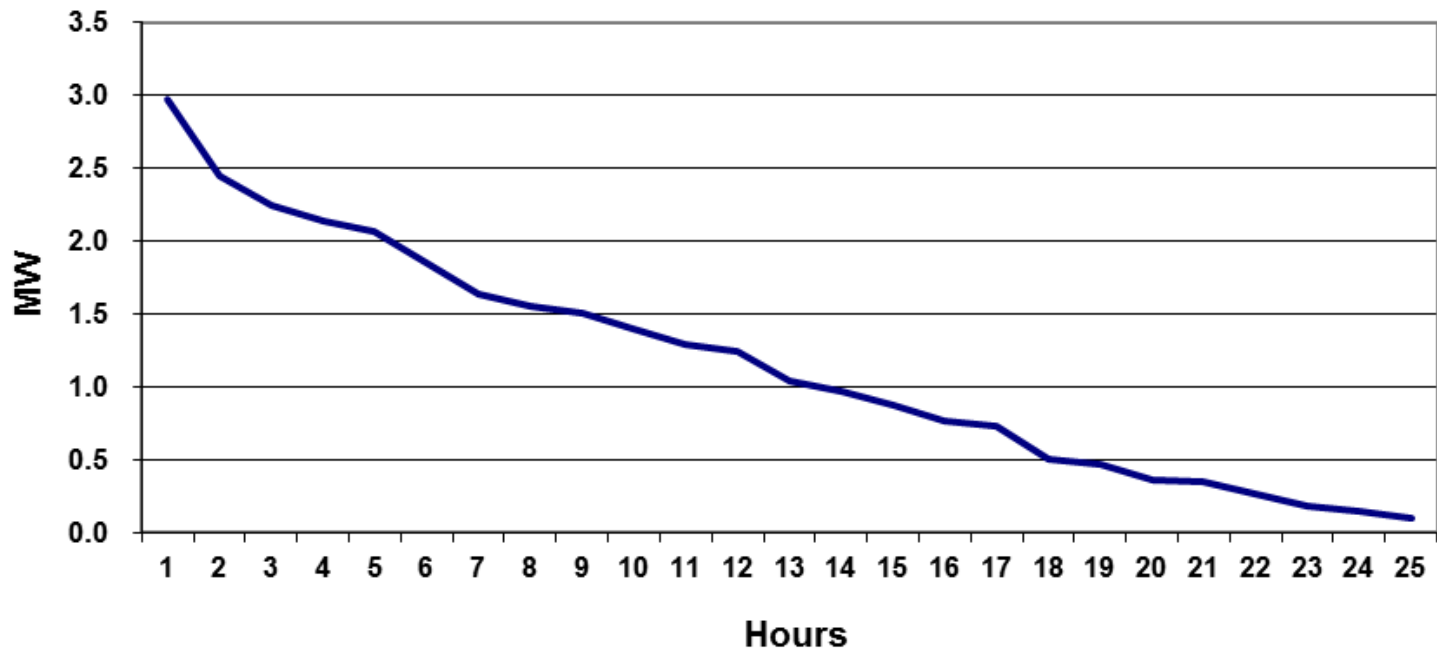


- Planning v. Operations Criteria
- Expectation
  - NTA Resources will be required during only a very few hours each year
  - GridSolar will call upon NTA Resources based on their operating characteristics and the need on the grid
  - GridSolar will conduct multiple tests consistent with the Pilot nature of this project.

# Smart Electric Grid

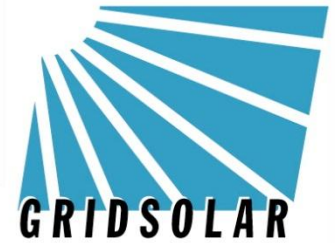


**Distributed Resource Dispatch Duration Curve  
Boothbay Region - 2023**



# Documents

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- Available for Download at [www.gridsolar.com](http://www.gridsolar.com)
- RFP
  - Body of the RFP
  - Exhibits B-K – NTA Resource Application Forms
  - Exhibit L – Capacity Ratings
  - Exhibit M – Sample NTA Resource Application Forms
- We will post updates and related documents to this web site.



# GridSolar, LLC

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Contact Information

[www.gridsolar.com](http://www.gridsolar.com)

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