Solar Technology

150+ Projects
North America and UK

3 Billion kWh
And Counting

1.3 GW
Operating Assets

10 GW
Operating | Construction | Pipeline
Solar - The Basics

EVOLUTION, DEPLOYMENT, DEVELOPMENT

Evolution of Solar Cell Technology
- Density energy production per square foot of solar cells increased over time
- Reduction in error rates for solar cell technology has reduced, reducing the cost of solar cells
- Refined installation procedures
- Improvement in inverter technology, voltage, size

Solar Photovoltaic Projects
- Rooftop distributed energy projects
- Behind the meter projects
- Utility scale projects

Development Timeline
- Solar irradiance resource maps, consistent and known
- Interconnection, low voltage or high voltage
- Permitting
- Site acquisition, roof, land, parking lot?
- 12-24 months

SEE THE IMPACT FOR GENERATING CLEAN ENERGY

3,275,909,615 Kilowatt-Hours of Electricity
2,302,231 Metric Tons of Carbon Dioxide

THIS IS EQUIVALENT TO:

- 5,517,654,018 Miles / Year Driven by an Average Passenger Vehicle
- 259,055,998 Gallons of Gasoline Consumed
- 730,627 Tons of waste recycled instead of landfilled
- 5,330,151 Barrels of Oil Consumed
Solar

MONTANA

Resource In The North
- Scotland, UK
- Seasonal resource variability, summer vs winter
- Not just an equatorial resource

What solar offers
- Energy as available
- Paired with storage to offer capacity, capture ITC

DISTRIBUTED GENERATION (DG) PROJECTS

- Athenian School
  Denville, CA
  Fixed Tilt Ground Mount
  0.42 MWdc

- Atlantic County
  Criminal Courts Complex
  Mays Landing, NJ
  Rooftop and Carport Installations
  1.54 MWdc

- Oceanic Time Warner
  Mililani, HI
  Fixed Tilt Roof and Carport Mount on Five Different Sites
  0.86 MWdc

- Mannen Sports
  Arena and School
  Morristown, NJ
  Fixed Tilt Roof And Carport Mount
  3.19 MWdc

- Estee Lauder
  Melville, NY
  Fixed Tilt Roof Mount
  0.60 MWdc
When using energy storage, excess solar energy is stored within batteries before the energy is inverted from DC to AC.

Energy from the battery is utilized when solar panels are no longer producing, resulting in a smoothed production curve.
Solar

COST & RELIABILITY

Cost
- Varies by site based on installation
- Site preparation work
- Interconnection
- Improvement in inverter technology, voltage, size
- Split between panels and balance of plant

Reliability & Life
- 35 year life
- Degradation ~1% per year
- Capacity factors in the low 20s
- Few moving parts

Keys To Operational Reliability
- Well trained technicians
- Product warranty, panels, inverters and balance of plant
- System monitoring – key performance indicators