EnergyPath 2018
US Power Markets and Solar Power
Matthew Tripoli, PE
Introduction – Matthew Tripoli
ET Energy Group Introduction

R&D & Manufacturing
- Tier 1 Module Manufacturer Based in China
- Shipped 5 GW+ of modules worldwide to date

Project Development Financing & Investment
- Regional teams worldwide
- 500 MW North American pipeline
- Development to project financing

EPC & O&M
- Global Tier-1 EPC
- Advanced O&M platform
- Assets diagnosis & optimization services
ET Capital North America - 2017 Projects

ET SOLAR GROUP
Global Leading Energy Solutions Provider

Oregon QF | 60.0MWp | Oregon, USA
Electric Transmission
Pennsylvania’s Electric Grid

Source: NREL
Power Generation
Where we’ve been . . .

U.S. utility-scale electric generating capacity by initial operating year (as of Dec 2016)
gigawatts

- other
- solar
- petroleum
- hydro
- nuclear
- coal
- natural gas

wind
Power Generation
Where we’ve been . . .
US Power Generation Mix
Avg. Daily MWh’s

Source: EIA
Pennsylvania’s Fuel Mix
Annual MWh’s

Source: 90.5 WESA
Market Deregulation / Restructuring

Pennsylvania Power & Light Company
(one, regulated company)

Source: PPL
Unique Markets in Every State

Deregulated States as of January 2017

- Electricity and Natural Gas
- Natural Gas Only
- Electricity Only
- Regulated

ElectricityPlans.com
Figure 2.4 Modeled U.S. National Average System Costs by Market Segment, Q1 2017 & Q1 2018

Note: Detailed information about national system prices by market segment and component is available in the full report.
Photovoltaic Solar Resource of the United States

Annual average solar resource data are shown for a tilt=latitude collector. The data for Hawaii and the 48 contiguous states are a 10km satellite modeled dataset (SUNY/NREL, 2007) representing data from 1996-2005.

The data for Alaska are a 40 km dataset produced by the Climatological Solar Radiation Model (NREL, 2003).

This map was produced by the National Renewable Energy Laboratory for the US Department of Energy. October 13, 2009: Author: Billy J. Roberts.
Top 10 Solar States

State ranking based on the cumulative amount of solar electric capacity installed through Q1 2018

Pennsylvania

30th

visitPA.com

- **New Jersey**: 2,447 MW, 381,919
- **Georgia**: 1,553 MW, 173,639

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Forecast – Utility Scale Solar

12 Gigawatts

Source: Bloomberg NEF
Community Solar Markets

Sources: Solar Electric Power Association¹⁹, Vote Solar,²⁰ and NCCETC and Meister Consultants Group (MCG) research
Coin Flips for PA

- Restructured Market
- Pennsylvania AEPS
- Community Solar
- Low Solar Penetration
- Neighbors
PA – Potential Capacity Additions
Things to Watch
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Forecast – US Renewable Installations

Source: Bloomberg NEF
California Duck Curve

Source: greentechmedia.com