Fate of Renewable Energy Under Trump

Dan Whitten
@DanWhitten
@SEIA

Lauren Randall
@TheLRandall
@sunrun

Peter Kelley
@peterlkelley
@aunewa

Matthew Wagner
@DTE_Energy

S&P Global
Market Intelligence

Steph Tsao
@spglobal_tsao
@MichaelCopley
Solar Energy 2017
This year it’s about the trade case
September 2017
The Solar Industry Today

47.1 GW of solar installed through the end of 2016

Enough to power 9.1 million American homes

68% 10-year average annual growth rate

Workers employed in the solar industry: 260,000

1.5 million individual installations nationwide
Growth in Solar Led by Falling Prices

Source: SEIA/GTM Research U.S. Solar Market Insight
Lawrence Berkeley National Laboratory, Tracking the Sun
Total Capacity Triples by 2022

U.S. Solar PV Deployment Forecast

Yearly Installed Solar Capacity (MWdc)

- Residential (PV)
- Non-residential (PV)
- Utility (PV)
Potential Impacts of Import Restrictions

- According to a variety of analysts, the remedies proposed could more than double the price of solar nationwide.
- If remedies requested by Suniva are put into effect, U.S. solar industry would lose 88,000 jobs next year.

Deployment and Jobs Impacts of Suniva Petition

<table>
<thead>
<tr>
<th>Year</th>
<th>Installed Capacity (Suniva Proposal)</th>
<th>Installed Capacity (Baseline)</th>
<th>Jobs (Suniva Proposal)</th>
<th>Jobs (Baseline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

October 4, 2017
What SEIA is Doing to Fight This Case

- Legal
- Research
- External Affairs
- Lobbying
- Communications
SEIA and our state affiliates successfully lobbied Congress in support of our position, and as a result, 16 Senators and 53 House members from both parties sent letters to the ITC, urging them to reject Suniva and SolarWorld’s petition in favor of U.S. solar jobs.

October 4, 2017

www.seia.org
Low Costs Support U.S. Manufacturing
Create a planet run by the sun

Actual neighborhood of Sunrun customer homes
Future

All home energy assets participate to offer:
1. Consumer control – Dispatchable through the Sunrun Portal
2. Local smart response – Management of the ecosystem to reduce consumption or move consumption into off-peak hours
3. Network smart response – Enables 3rd party revenue streams through DR and beyond
Wind energy is on sale in America: 66% off
Wind contracts beat natural gas cost projections

Sources: EIA, Lawrence Berkeley National Laboratories, 2016 Wind Technologies Market Report, August 2017
Trend: New turbines reaching higher winds and more areas

Wind resource at 80-meter turbine height

Wind resource at 110 meters
More turbines over larger areas = more predictable output

Wind variability

Wind uncertainty
Grid operators and utilities report breakthroughs in reliability

“Ten years ago, we thought hitting even a 25 percent wind penetration level would be extremely challenging, and any more than that would pose serious threats to reliability…”

“Now we have the ability to reliably manage greater than 50 percent wind penetration. It’s not even our ceiling.”

Bruce Rew
VP of Operations
SPP regional grid operator
February 2017

“I don’t think 5 or 10 years ago I’d be comfortable telling you we could not sacrifice reliability when we’re going to have 35% of our energy come from wind.

“I’m telling you, I’m very comfortable with that today.”

Ben Fowke
CEO of Xcel
May 2017
Wind farms and factories benefit all 50 states

88% of new wind capacity is in states that voted for Trump

Wind will generate $85 billion in economic activity through 2020 – mostly in rural areas
Trend: Major brands cutting costs & pollution with wind

Source: Non-utility purchases by year of announcement, inc. physical and virtual PPAs, direct ownership, and large-scale REC purchases from a single wind farm, AWEA U.S. Wind Industry Annual Market Report Year Ending 2016
Trend: Cities buying more wind energy

- Over 200 city purchases to date
- Nearly 7 percent of U.S. wind power capacity
- Renewable commitments from Pittsburgh, Chicago, Atlanta, San Diego, Washington, D.C., many others
Trend: More transmission getting more low-cost wind to market

Regional grids: Benefits exceed costs many times over

Eastern Interconnect Planning Collaborative

High-voltage DC lines coming

DOE WindVision 2050 case

Sources: DOE; AWEA U.S. Wind Industry Annual Market Report Year Ending 2015. Wind project capacity includes projects under construction
U.S. offshore: the next frontier
Consumer savings include health costs of pollution

New technologies helping wind and wildlife to coexist

Bats feeding on pond

Five minutes after acoustic deterrent turned on

Renewable NRG Systems, Vermont
Deal to phase down Production Tax Credit ended boom-bust era

State renewable standards keep generating demand
Creating a Lower Carbon Future

Matt Wagner
Manager – Renewable Energy
Who is DTE Energy?

- **DTE Energy** is a Fortune 300 company operating in 550 communities throughout Michigan.

- DTE is among the largest utilities in the country – Two business units, DTE Electric, founded in 1903, and DTE Gas, founded in 1849, service more than 3 million customers throughout Michigan.

- DTE’s non-utility subsidiaries provide energy-related services to business and industry in 17 states.

<table>
<thead>
<tr>
<th>Subsidiary</th>
<th>Customers</th>
<th>Service Territory</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTE Electric</td>
<td>2.2 million</td>
<td>7,600 sq mile</td>
</tr>
<tr>
<td>DTE Gas</td>
<td>1.2 million</td>
<td>14,700 sq mile</td>
</tr>
<tr>
<td>Non-regulated</td>
<td>Gathering pipelines near gas production areas</td>
<td>Partial ownership of major interstate pipelines</td>
</tr>
<tr>
<td>businesses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
80% Carbon Emissions Reduction Plan

• DTE recently announced a broad sustainability initiative to reduce carbon emissions by more than 80 percent by 2050.
  ➢ 30% by early 2020’s
  ➢ 45% by 2030
  ➢ 75% by 2040
  ➢ 80% by 2050

• These carbon emissions reductions will be achieved via a long-term shift by DTE to produce over 75 percent of its power from renewable energy and highly efficient natural gas-fired powered plants.
DTE’s Renewable Energy Portfolio

• DTE is Michigan’s largest producer of renewable energy with a portfolio that now includes 13 wind parks and 31 solar arrays in Michigan.

• 1,000 MW of renewable energy capacity enough to power 400,000 homes

• DTE has driven investments of more than $2 billion in renewable energy since 2008.

• DTE exceeded the state of Michigan’s 10% Renewable Portfolio Standard (RPS) by 2015.
  ➢ Over 900 MW of Wind (both owned and contracted), 66 MW of Solar and 23 MW of Biomass and Landfill Gas

• DTE will file a plan to meet Michigan’s new 15% RPS in early 2018.
  ➢ 12.5% by 2019 and 15% by 2021
Carbon Reduction Action Plan

- Add approximately 4,000 MW of renewable energy capacity
- Add 3,500 MW of natural gas-fired energy capacity
- Retire the company’s coal-fired plants
- Invest in electric grid and gas infrastructure modernization
- Invest in energy efficiency and energy waste reduction
- Reduce energy and water at DTE’s own facilities by 25 percent or more
Transforming DTE's generation portfolio

In 2005, DTE Electric emitted 42 Million Tons of CO₂

- 78% Coal
- 18% Gas
- 3% Nuclear
- 1% Solar
- 1% Wind and Other

By 2050, DTE Electric will only emit 8 Million Tons of CO₂

- 40% of Generation Emits CO₂
- 60% of Generation Emits no CO₂

- 40% Coal
- 30% Wind and Other
- 20% Gas
- 10% Solar
- 1% Nuclear
DTE’s Newest Wind Projects

Pinnebog Wind Park
- Commissioned December 2016
- Located in Huron County
- 30 wind turbines, 50 MW

Pine River Wind Park
- Commissioning expected December 2018
- Located in Isabella & Gratiot Counties
- 65 wind turbines, 161 MW
- Will be DTE’s largest wind park to date

“Future” Wind Park
- Request for proposals issued
- Commissioning expected 2020
- Located in Michigan’s lower peninsula
- Up to 150 MW
DTE’s Newest Solar Projects


- Largest solar array in Michigan
- 200,000 solar panels
- 48 MW on 250 acres

O’Shea Solar Park – Detroit

- One of the largest urban arrays in the U.S.
- 7,400 solar panels
- 2 MW on 10 acres
• MI Green Power is a pilot program designed for any customer wishing to go beyond the 10% renewable energy that they already receive from DTE’s generation fleet.

• The program requires no on-site installation, no upfront investment, no operating and maintenance obligations, and no long term commitment.

• The 150,000 MWh pilot program is sourced from the new Pinnebog Wind Park in Huron County and the new Lapeer and Detroit solar arrays.

• Program subscribers pay a fixed cost-based subscription fee and receive an energy & capacity credit starting based on energy & capacity value.

• dteenergy.com/migreenpower.com
Thank You,

Matt Wagner
Manager – Renewable Energy