The Case for On-Site Wind

Bill Basa, Northern Power Systems
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Defining the Market

Small Wind?
Community Wind?
“On-Site Generation”

13M
1-10kW

37M
100kW

120M
1.5MW+

(Images from Google SketchUp, 2010)
Rational Choice

We see demand from people who want wind as the result of a rational choice about economics:

- Better than average to excellent wind resource
- Higher Capacity Factor
- Lower Installed Cost

The question is how to best utilize incentive structures to facilitate people making good choices about distributed generation.
Making the right choice

Solar Intensity

Wind Density
The right wind sites outperform solar

<table>
<thead>
<tr>
<th>Example</th>
<th>100kW Solar</th>
<th></th>
<th>100 kW Wind</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Capacity Factor</td>
<td>AEP</td>
<td>Wind Speed</td>
<td>Capacity Factor</td>
</tr>
<tr>
<td>MA VT MN</td>
<td>13%</td>
<td>113,880</td>
<td>5.0 m/s</td>
<td>15%</td>
</tr>
<tr>
<td>IL KS OR</td>
<td>15%</td>
<td>131,400</td>
<td>5.5 m/s</td>
<td>19%</td>
</tr>
<tr>
<td>AZ CA</td>
<td>18%</td>
<td>157,680</td>
<td>6.0 m/s</td>
<td>23%</td>
</tr>
</tbody>
</table>
Wind costs less per installed kW

Cost for different sizes of wind and solar
(Dollars per installed kW)
Northeast U.S.
Mean Wind Speed Greater then 5 m/sec at 37m

There are 819 out of 7544 Water Treatment Plants in this Region greater then or equal to 5 m/sec
Average Annual Wind Speed
(238 greater then or equal to 5.5 m/sec)
Incentive Support

- Incentives need to fit within a larger economic payback
  - US for-profit entities demand a 7 year or lower payback;
  - US non-profit customers need 10 year or less.

- The $ levels of incentive needed to create these paybacks for a given technology and size range will vary by location based on:
  - The level of available natural resource (expected capacity factor)
  - Utility rates.
Where Incentives have produced most Northwind100 projects:

- **MA, OH, WI**
  - Common elements:
    - Predictable and accessible funding;
    - Good utility support (likely result of aggressive RES requirements);
    - Reasonably high utility rates.
  - Italy and United Kingdom
    - Small Wind FITs of €0.30/kWh and £0.241/kWh
Successful incentives:

- Rebates based on both capacity and performance
  - NJ, VT
- Renewable Tariffs with long-term contracts for small wind
  - $0.216/kWh in VT; €0.30/kWh in Italy; £0.241/kWh in UK
- State Investment Tax Credits
  - NC, GA, HI, ND, OR(?)
- RES Carve Outs
  - CO first including other technologies than Solar
  - Potential to transition incentives to market-based tool.
Two Broader Concepts To Keep in Mind:

- Incentives need to limit size eligibility to target on-site generation.
  - Encourage more local projects, more local jobs
  - Reduce transmission/distribution loss
  - Reap behavioral benefits of increases conservation and efficiency

- Any capped incentive needs to set aside/reserve funds separately for Small Wind and Solar.
  - There are far more eligible solar sites than any other technology. Technology-specific allocations level the playing field and allow small wind projects to have equal access incentives.
Thank you!

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