Important Information about Wind and Vermont's Energy Future

The Current Wind Picture

Wind projects that are already producing power, or permitted by the State:

Searsburg:	6 MW, 11 turbines	- 550 kW each; enough power for 1,600 homes
Sheffield:	40 MW, 16 turbines	- 2.5 MW each; enough power for 16,000 homes
Lowell:	63 MW, 21 turbines	- 3 MW each; enough power for 24,000 homes
Georgia Mtn.:	10 MW, 4 turbines	- 2.5 MW each; enough power for 4,200 homes
Deerfield:	30 MW, 15 turbines	- 2.0 MW each; enough power for 13,000 homes

Total power from currently permitted grid-scale wind: 150 MW; enough power for 58,800 homes

Vermonters Support Clean Wind Energy

According to a poll conducted by WCAX in 2012, nearly 70% of Vermonters support building wind turbines on state ridgelines, while just 17% of Vermonters were opposed.[1]

The Goal for Wind

VPIRG supports a plan to generate at least 25 percent of Vermont's electricity needs from in-state wind power by 2025. This would require an additional 380 MW of installed capacity or 126 more 3MW turbines at 33% capacity factor in the state. To provide the same amount of energy from community scale 100 kW turbines would require approximately **7,855 new installations**. To provide that power from residential 10 kW turbines would require approximately **104,740 turbines**. And to get it from typical residential solar installations would take **193,500 rooftops.**

To replace a single 3 MW turbine would require around 30,560 solar panels. If placed back-to-back, this number of panels would stretch nearly from Burlington to Montpelier.

To generate 25% of Vermont's electricity needs from solar, it would take about 3,870,000 panels which would span Vermont from North to South 28 times if placed back-to-back.

Climate Benefits of Wind

Wind power in New England is projected to save 828 lb of CO_2/MWh generated[2], or 1.27 billion lb annually if Vermont were to get 25% of our electricity (1525 GWh) from wind. That's the equivalent of taking 111,000 cars off the road.[3]

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How Much Power Can Wind & Solar Produce?

One 3 MW turbine will produce about 8,700,000 kWh per year (w/ a 33% capacity factor).
One 2.5 MW turbine will produce about 7,227,000 kWh per year (w/ a 33% capacity factor).
One 1 MW turbine will produce about 2,890,800 kWh per year (w/ a 33% capacity factor).
One 100 kW turbine will produce about 140,160 kWh per year (w/ a 16% capacity factor).
One 10 kW turbine will produce about 10,512 kWh per year (w/ a 12% capacity factor).
One 5.5 kW solar tracker will produce about 8,672.4 kWh per year (w/ a 18% capacity factor).
One 5 kW solar installation will produce about 5,694 kWh per year (w/ a 13% capacity factor).

One Wind Turbine At the Kingdom Community Wind Project Will Produce Power Equal To:

1,528 residential 5 kW solar installation or
1,003 5.5 kW solar trackers or
828 residential 10 kW wind turbines or
62 community 100 kW wind turbines

Power To Be Generated By All Vermont's Permitted Wind Farms Equals:

76,154 residential 5 kW solar installations
50,002 5.5 kW solar trackers
41,250 residential 10 kW turbines
3,094 community 100 kW turbines
50 grid scale 3 MW turbines

To calculate expected output from total wind projects:
150 MW (total permitted) x 0.33 (capacity factor) x 8760 (hours per year) = 433,620 MWh per year, or roughly 8% of our 5,494,000 MWh electric demand (# from 2009).[4]

To calculate the annual power output of a wind turbine:
(Installed megawatt capacity) x 0.33 (capacity factor) x 8760 (hours per year) = Annual power output in MWh

To calculate the annual power of a solar installation:
(Installed megawatt capacity) x 0.13 (capacity factor) x 8760 (hours per year) = Annual power output in MWh

Wind Turbines Present No Threat to Public Health

A comprehensive and independent analysis of potential human health impacts associated with exposure to wind turbines was recently released by the Massachusetts Department of Environmental Protection, in collaboration with the Massachusetts Department of Public Health. This analysis concluded that:

"There is no evidence for a set of health effects, from exposure to wind turbines that could be characterized as a 'Wind Turbine Syndrome'."[5]

"We conclude the weight of evidence suggests no association between noise from wind turbines and measures of psychological distress or mental health problems."[6]

"There is insufficient evidence to determine whether there is an association between noise from wind turbines and annoyance independent from the effects of seeing a wind turbine and vice versa."[7]

[1] "Poll: Where Vermonters Stand on Energy Issues" May 25th, 2012. Keith McGilvery. [http://www.wcax.com/story/18604822/poll-where-vt-voters-stand-on-energy-issues] Accessed 01/02/12
[2] Vermont CEP pg. 118 vol. 2
[3] [http://www.epa.gov/otaq/consumer/f00013.htm] Accessed 02/01/2012
[4] Vermont CEP
[5] Wind Turbine Health Impact Study: Report of Independent Expert Panel (2012) pg. ES-7
[6] Ibid. pg. ES-7
[7] Ibid. pg. 28