

# Offshore Wind Working Group

November 29, 2017



# Agenda

9:00 Introductions and opening remarks

9:05 Administrative matters

9:15 Discussion of environmental issues

9:45 Discussion of offshore wind analysis

10:30 Key decisions facing the Working Group:

Procurement

Economic development

11:30 Schedule and agenda going forward

11:40 Public comment

12:00 Adjourn

# Projected avoided emissions

<b>Avoided emissions from a 200 MW wind farm</b>	<b>Units</b>	<b>CO<sub>2</sub></b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
<b><i>Annual</i></b>				
PJM average	<i>Tons</i>	373,667	497	283
Buonocore, et al.	<i>Tons</i>	455,000	1,495	618
<b><i>Lifetime (20 years)</i></b>				
PJM average	<i>Tons</i>	7,473,331	9,944	5,650
Howatt (Levitan)	<i>Tons</i>	9,900,000	118	13,686

# Analysis of rate impacts

- ▶ Use of public data:
  - ▶ DPL Integrated Resource Plan (IRP)
  - ▶ MD PSC Order 88192
  - ▶ Levitan report on MD OSW
  - ▶ EIA sales for three utilities
- ▶ Simplifying assumptions:
  - ▶ No change in DPL's 2016 RPS projections
  - ▶ No change in REPSA (including exempt customers)

# Hypothetical OSW project

- ▶ Skipjack (Deepwater Wind)
- ▶ Starting in 2022
- ▶ MD levelized net OREC cost = \$76.79
- ▶ MD first year net OREC cost = \$85.28
- ▶ Assumes same net terms as MD PSC order (net investment, job commitments)

## Delaware Offshore Wind Customer Impact

Input	Value	Source	Formula Notes
MD OREC levelized (2012\$) (\$/MWh)	\$131.93	MD PSC Order 88192	[a]
Year One OREC (2016\$) \$/MWh	\$145.26	Levitan March 27th Update Table 44	[b]
Year One Net OREC (2016\$) \$/MWh	\$85.28	Levitan March 27th Update Table 44	[c]
DPL Exposed Load average (22/23 and 23/24) (GWh)	6,471	DPL 2016 IRP Table 8	[d]
Project Size (MW)	32	Input	[e]
Capacity Factor	43.3%	Levitan Report ES-28	[f]
Monthly Consumption(kWh)	1,000	Input	[g]

Calculations	Value	Calculation Notes	Formula Notes
Gross OREC Impact to Net OREC Impact	58.7%	[c]/[b]	[h]
Annual Production (MWh)	121,379	[e]x[f]x8760	[i]
Annual Gross OREC Cost (2016\$)	\$17,631,450	[b]x[i]	[j]
Net OREC Cost (2016\$)	\$10,351,164	[c]x[i]	[k]
Gross Impact on Residential Rates Year One (2016\$/MWh)	\$2.72	[j]/([d]*1000)	[l]
Net Impact on Residential Rates Year One (2016\$/MWh)	\$1.60	[k]/([d]*1000)	[m]
Rate impact year one per \$1MM spent	0.15	[l]/([i]/10^6)	[n]
Gross Monthly Bill Impact for Year One OREC	\$2.72	[l]x[g]/1000	[o]
Net Monthly Bill Impact for Year One OREC (2016\$)	\$1.60	[m]x[g]/1000	[p]
Annual Gross Bill Multiplier per million Year One OREC	0.15	[o]/([i]/10^6)	[q]
Annual Net Bill Multiplier per million Year One OREC	0.15	[p]/([i]/10^6)	[r]

### Sources

MD PSC Order 88192

Levitan March 27th Update Tables for MD PSC (ML 214210)

DPL 2016 IRP

# DPL bill impacts

<b>Project Size</b>	<b>Gross Monthly Rate Impact</b>	<b>Net Monthly Rate Impact</b>	<b>Gross Monthly Bill Impact</b>	<b>Net Monthly Bill Impact</b>
<b>(MW)</b>	<b>\$/MWh</b>	<b>\$/MWh</b>	<b>\$</b>	<b>\$</b>
<b>8</b>	<b>\$0.68</b>	<b>\$0.40</b>	<b>\$0.68</b>	<b>\$0.40</b>
<b>16</b>	<b>\$1.36</b>	<b>\$0.80</b>	<b>\$1.36</b>	<b>\$0.80</b>
<b>32</b>	<b>\$2.72</b>	<b>\$1.60</b>	<b>\$2.72</b>	<b>\$1.60</b>
<b>64</b>	<b>\$5.45</b>	<b>\$3.20</b>	<b>\$5.45</b>	<b>\$3.20</b>
<b>128</b>	<b>\$10.90</b>	<b>\$6.40</b>	<b>\$10.90</b>	<b>\$6.40</b>

*Assuming monthly usage of 1000 kWh*

# Overall net costs for all utilities

<b>Project Size</b>	<b>Cost to DPL</b>	<b>Cost to DMEC</b>	<b>Cost to DEC</b>
<i>(MW)</i>	<i>\$MM</i>	<i>\$MM</i>	<i>\$MM</i>
8	\$1.71	\$0.52	\$0.36
16	\$3.41	\$1.04	\$0.72
32	\$6.82	\$2.09	\$1.44
64	\$13.64	\$4.18	\$2.88
128	\$27.29	\$8.36	\$5.76

# Questions for the Working Group

- ▶ Size/scale of purchase
  - ▶ 10s of MW or 100s of MW?
- ▶ Timing of purchase[s]
  - ▶ One large purchase?
  - ▶ Incremental approach?
  - ▶ When?
- ▶ Which utilities? (DPL, DEC, DEMEC?)
- ▶ Look at NJ, VA wind areas?

# Questions for the Working Group

- ▶ Economic development (port, supply chain)?
- ▶ Strategy to promote economic development:
  - ▶ Leverage wind power purchase?
  - ▶ Promote locational advantages?
- ▶ Investment sources?
  
- ▶ Environmental impacts?

# Report outline

1. Executive summary
2. Offshore Wind Working Group (EO 13)
3. Delaware and offshore wind
4. Offshore wind in MD
5. RPS overview and REC projections
6. Overview of benefits and costs
7. Supply chain and job opportunities
8. Possible paths forward
9. Recommendations
10. Appendices (including public comments)

# Schedule

- ▶ Future Working Group meetings
  - ▶ December 11, 1 to 4 p.m., PSC
  - ▶ January meeting?
- ▶ Public comment workshops
  - ▶ Monday, November 27, 6:00 p.m., Odessa
  - ▶ Tuesday, December 5, 6:00 p.m. at the Lewes Public Library, 111 Adams Avenue, Lewes
  - ▶ Future public comment workshops?

# Public comments

- ▶ At Working Group meetings
- ▶ In writing in between meetings
- ▶ At public comment workshops
- ▶ Public comments posted at:  
<http://dnrec.alpha.delaware.gov/energy-climate/renewable/offshore-wind-working-group/>



# Offshore Wind Working Group

## Energy and Climate Menu

Home

Contact Us

Livable Climate

Renewable Energy

Energy Efficiency

Transportation

Communities



The Offshore Wind Working Group was established by Governor Carney to study opportunities for Delaware to participate in developing offshore wind.



On August 28, 2017, Governor John Carney signed [Executive Order 13](#), establishing the Offshore Wind Power Working Group.

The Working Group will:

- Study how Delaware can participate in developing offshore wind
- Identify ways Delaware can benefit economically and environmentally from offshore wind power

### Contact

### Meetings

Meetings of the Offshore Wind Working Group are [posted](#)