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To: Offshore Wind Working Group

12/5/2017

RE: Public Comments on legislation to support offshore wind

I have attended most of the Working Group sessions, reviewed documents submitted to the Working Group, and have conducted independent research on the Maryland offshore wind projects, as well as progress in Europe, and on alternatives to offshore wind. It is clear offshore wind will come with a significant price premium to other renewable energy alternatives. There must be other offsetting benefits to Delawareans such as environmental, or economic development benefits. However, evidence is clear no such benefits exist. There is evidence from project developments in Europe the installed price of offshore wind will drop dramatically over the next decade. Therefore, I recommend no legislative changes requiring the use of offshore wind at this time. A better approach is to observe the results of planned projects in other states before acting in Delaware.

The Working Group focus has been on considering adding on to recently approved 368 megawatts (MW) of offshore wind projects in Maryland with a 50 to 200 MW Delaware project. Doing so would require immediate legislative action as project lead times are four to five years. So, the first working Group decision needs to be whether to rush to be included in the Maryland projects, or to wait for costs to come down.

Maryland is subsidizing construction with an Offshore Wind Renewable Energy Credit (OREC) which electric distribution companies are forced to buy to meet the Maryland Renewable Portfolio Standard (RPS). The electric distributors pass the cost onto consumers. I estimate the Maryland projects could cost residential electric customers \$760 over the life of the project with some businesses paying \$4.75 million.

The OREC price, negotiated with the Maryland Public Service Commission (MD PSC), averages \$185/megawatt-hour (MWh) of electricity produced by the windmills over a twenty year contract period. The price will be offset by the sale of electricity, and the avoided cost of buying onshore wind Renewable Energy Credits (REC). The net OREC price calculated by the MD PSC consultant is about \$137/OREC. To put that in perspective, a recent offshore wind project in the United Kingdom was priced at \$77, onshore wind REC prices in Maryland are averaging \$11, and Solar Renewable Energy Credits (SREC) are averaging \$6, just 4% of the net OREC price.

We might expect environmental benefits for the offshore wind projects. According to the Delaware Public Advocate, Andrew Slater, the Maryland PSC consultant found no emission savings on a global basis as injecting the wind generation into the thirteen state PJM electric grid consortium would force coal and natural gas fired power plants to run less efficiently offsetting any emission savings. The Maryland PSC reacted to this news by limiting the emissions savings calculation to only generators in Maryland! In any case, adding more solar or onshore wind would result in the same emission savings at a fraction of the cost.

A second environmental issue is the impact on wildlife. Windmills kill birds and bats, some of them endangered species. The US Division of fish and Wildlife estimates a million birds and bats are killed a year by onshore windmills. There is limited data on offshore kill rate as the bodies land in the sea and can't be



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easily counted. The familiar solar panels that would make up utility scale solar projects have no such impact. Offshore wind offers no special environmental advantage, and in fact may be negative overall.

What about economic development potential in Delaware? Maryland required a certain investment in port development, employment, and locally sourced materials to approve its' projects. Each state developing Offshore Wind is likely to have similar requirements. So how does Delaware stack up in the competition? A Consultant presented information to the Working Group New York has targeted 2400 MW of offshore wind by 2030, and Massachusetts 1600 MW by 2027. The Maryland projects total 368 MW. Keeping the cost to electric customers similar to Maryland the maximum size Delaware project would be 70 MW. It is clearly wishful thinking Delaware will attract economic development in this area.

Higher electric rates cost jobs and wages. A recent study I published showed Delaware has lost 22% of its manufacturing since 2009 while states with lower electric rates saw a 20% increase. So far this century Delaware medium household income has decreased in real dollars from \$70 thousand a year to \$58, a thousand dollars a month drop, according to US Census data. A lot of that drop came from a nearly 50% drop in energy intensive manufacturing jobs such as steel mills, auto assembly, and chemical plants that often averaged \$75 thousand a year wages for blue collar workers. Higher electric rates really hurt the poorest among us. Energy poverty is defined by the US Census as families paying more than 10% of their income on energy. Over 40% of Delawareans are in energy poverty with some families paying over a quarter of their incomes on energy.

There is a steep price to pay for higher electric rates. Offshore wind will add dramatically to that problem. National polls show the median contributions people are willing to make in higher electric bill to fund global warming reduction policies is \$10 a year. Delawareans are already paying an extra \$150 a year for Delaware's RPS and carbon dioxide tax programs. Offshore wind would add another \$38 a year, or more. Offshore wind could have negative environmental consequences, and negative economic consequences and should not be encourage at this time.

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