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Electronically filed February 16, 2015 and Fedexed to the Maryland PSC/refiled with minor corrections February 17, 2015

Comments of the Institute for Energy and Environmental Research (IEER) on the Application to the Maryland Public Service Commission regarding the Exelon Proposal to Acquire PHI (Case Number 9361)¹

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February 16, 2015

The following are my comments on behalf of the Institute for Energy and Environmental Research (IEER) (of which I am president) regarding Case Number 9361, the application for the acquisition by Exelon Corporation and Pepco Holdings, Inc. (PHI), In the Matter of the Merger of Exelon Corporation and Pepco Holdings, Inc., a matter that is now before the Commission. My curriculum vita is attached to these comments. I note here that I have been involved in the study of energy issues since 1970, am the principal author of the first evaluation of energy efficiency potential of the U.S. economy (1971), a co-author of *Investment Planning in the Energy Sector* (1976), and the author of *Carbon-Free and Nuclear-Free: A Roadmap for U.S. Energy Policy*. I have been a consultant to many organizations on energy issues, including the Lawrence Berkeley Laboratory, the Edison Electric Institute, the Tennessee Valley Authority, non-government organizations, and several agencies of the United Nations.

While this proceeding is called "the Matter of the Merger," it is in effect an acquisition by Exelon of Pepco Holdings, Inc. (PHI) because PHI would become a wholly-owned subsidiary of Exelon and subsumed under its management and control by buying out PHI stockholders. It is understood that the wires-only part of PHI would continue to be subject to the jurisdiction of the various Public Service Commissions, including the Maryland Public Service Commission (PSC).

¹ Sent electronically and by Fedex to David J. Collins, Executive Secretary, Maryland Public Service Commission, 6 St. Paul St., Baltimore, MD 21202-6806, Phone: 410-767-8067, Fax: 410-333-6495

Main conclusions and principal recommendation

Main conclusions: This merger will saddle Maryland ratepayers with risk of serious harm, including the billions of dollars in added debt that Exelon will take on to buyout PHI stockholders. They will be exposed to risks posed by the largest merchant nuclear fleet in the United States, even more than they are today. Putting nuclear energy into a clean energy standard that would replace renewable portfolio standards, an option advocated by Exelon, would seriously destabilize and damage Maryland's renewable energy industry and may devastate it. The merger will also do serious damage to Maryland's prospects for having a just, democratized, resilient energy sector that would be compatible with its goal of 90 percent greenhouse gas reductions relative to 2006 by the year 2050. The company promises no significant, measurable improvements in reliability above those of Pepco. In any case, it is the responsibility of the PSC to hold the wires-only utilities to specific standards of reliability and to enforce them; if reliability needs improvement, there is an adequate mechanism to address the problem. A costly and risk-laden acquisition by Exelon is not needed for that. The proposed customer investment benefit of a \$50 rebate on electricity bills to PHI customers, totaling \$100 million, is pathetically small compared to the more than \$1.8 billion in cash benefits for an above-market purchase price to PHI stockholders. The customer benefit is even small compared to severance and retention payments (\$163 million) and banker and equity transaction payments (\$263 million).

Principal recommendation: *The Public Service Commission should unequivocally and firmly reject the merger application.*

I. Energy system transformation

The need to greatly reduce greenhouse gas emissions is widely recognized. Maryland's 2009 Greenhouse Gas Emissions Reduction Act not only set a target of 25 percent reduction by 2020 but also spelled out longer term goals for the year 2050. Specifically, the legislation recognized that even greater reductions of 80-95 percent below the 1990 level by 2050 will be needed for climate protection. An explicit goal of 90 percent reduction below 2006 levels was indicated but not required by the law:

The State has the ingenuity to reduce the threat of global warming...by achieving a 25% reduction in greenhouse gas emissions from 2006 levels by 2020 and *by preparing a*

plan to meet a longer-term goal of reducing greenhouse gas emissions by up to 90% from 2006 levels by 2050.²

The most recent developments on climate, including the fifth report of the Intergovernmental Panel on Climate Change has indicated that even more stringent measures are necessary to have a moderate to good chance of keeping the rise in global temperature to below 2 °C.³

The increase in frequency and severity of weather events point to the need for increasing resilience. In the electricity sector, islandable microgrids will be critical for meeting this need. If a microgrid-centered resilience is to be compatible with zero-emissions energy sources it will require the development of large amounts of renewable distributed generation (DG), which will of necessity consist mainly of distributed solar photovoltaic generation.

This is not a matter of one or two percent distributed generation but rather of renewable DG that forms the backbone of a transformed electricity grid. Large increases in distributed solar generation will provide a junction of three historic transformations: (a) drastic reduction of energy-related CO₂ emissions; (b) the possibility of democratizing the energy sector through ownership and control of electricity generation by members of the public, including low-income households and small businesses; and (c) building a renewable resilient grid, with other elements, like demand response and distributed storage. The merger would put Exelon in control of PHI; that will be three strikes against the prospects of such a future:

1. Exelon policies, such as opposition to virtual net metering as well as the Exelon's CEO's opposition to net metering, create obstacles for broad ownership of distributed solar energy, especially but not only for low-income households. Indeed, in 2014 it was instrumental in defeating legislation to promote renewable energy in Illinois. In fact, Exelon's CEO even opposes net metering of rooftop solar PV installations.
2. Exelon would buy PHI, which includes Pepco, which supported community net metering in Washington, D.C., where it was enacted into law in 2014, in contrast to Maryland.
3. Maryland ratepayers would be part of the largest system of centralized merchant generation⁴ in the United States, including, of course, in the PJM grid. The entrenched interests represented by centralized generation in general and by Exelon in particular pose risks to creating a democratized, just, resilient, and renewable grid. These risks are already present to some extent by Exelon's size in the PJM grid and its ownership of Baltimore Gas and Electric Company (BGE), which serves roughly half the customers in

² Greenhouse Gas Emissions Reduction Act of 2009, Section 2-1201(4); italics added.

³ For the implications of the IPCC5 report for the United States, see Section III of Makhijani and Ramana 2014.

⁴ "Merchant generation" refers to generating plants outside the jurisdiction of state regulatory commissions in places, like Maryland, where electric generation has been deregulated and separated from electricity transmission and distribution, which remain regulated. Owners of merchant generating plants must bid into an electricity market that is overseen by independent system operators (ISOs). In Maryland's case, the ISO is PJM (www.pjm.com).

Maryland. The merger would significantly exacerbate this problem by giving Exelon control of over 80 percent of Maryland's electricity ratepayers.⁵

A. Net metering and virtual net metering

I will consider the first two points in some detail first.

According to a May 15, 2014, article in *Crain's Chicago Business*, in 2014 Exelon was influential in killing legislation designed to accelerate renewable energy development in Illinois, where it owns both nuclear generation and the distribution, utility Commonwealth Edison:

An effort in Springfield to overhaul Illinois' clean-energy law to jump-start renewable power projects in the state is dead for this legislative session.

The initiative — pursued for more than a year by environmentalists who say the state's law to require more of the power consumed here to come from clean sources is broken — has stalled. So says state Sen. Don Harmon, D-Oak Park, who has led the negotiations over the issue.

He confirmed the effort died after Exelon Corp., by far the most influential energy industry player in Illinois, threatened earlier this year to close two or three of its six nuclear power plants in the state due in part to subsidized wind farms that it says are dampening power prices and making some of its nukes unprofitable.

The issue, he said, "caused everyone to take a step back."⁶

That defeat was not the last word. The Illinois Clean Jobs Coalition was formed in February 2015 to promote renewable energy, including the establishment of a 35 percent renewable portfolio standard by 2030. Many organizations and labor, business and political leaders are part of this coalition. Mayor Rahm Emmanuel of Chicago supports it.⁷ Neither Exelon, the largest merchant generator in the state, nor Chicago's wires-only utility Commonwealth Edison, owned by Exelon, are part of it.

Exelon is also making efforts to include nuclear energy from existing power plants as part of the tradable "clean energy credits," such as the Tier 1 Maryland Renewable Energy Credits (RECs). This was, for instance, one of the suggestions made by Exelon to the U.S. Environmental

⁵ Fraction of ratepayers calculated from KEMA Draft 2011, Table 3-2.

⁶ Daniels 2014, italics added

⁷ Magrisso 2015

Protection Agency (EPA) in its comments on the Clean Power Plan.⁸ Replacing the present renewable energy definition, which in Maryland does not include nuclear energy and which will not include large-scale hydropower after 2018,⁹ would be a severe, potentially fatal, blow to the renewable energy industry not only in Maryland but in the entire mid-Atlantic region. Maryland's Calvert Cliffs nuclear power plant generates about 14,300 GWh per year.¹⁰ In 2013, this was about 40 percent of Maryland generation.¹¹ In contrast, toward the end of 2013, Maryland's solar PV capacity at all scales was just 158 megawatts,¹² which corresponds to a generation of about 190 GWh per year; this is about 1.3 percent of Maryland's nuclear generation and only about 0.3 percent of Maryland's electricity use.

Overall, solar electricity generation in the United States is very small. In 2013, installed capacity was about 5,000 megawatts, which corresponded to about 0.2 percent of US electricity generation. Less than half of this was distributed generation. And most of the solar capacity was in California; only one state, New Jersey, in PJM is in the top ten of cumulative solar PV capacity. In the third quarter of 2014, a total of 38.6 MW of solar PV were installed in New Jersey, compared to 642.1 MW installed in California.¹³ Yet, parts of the utility industry are so threatened by this that the term "death spiral" for the utility business model has passed into common usage.¹⁴

One of the main expressions of the panic implied by the phrase "death spiral" has been increasing opposition to net metering of distributed solar generation. While Exelon and its subsidiary in Maryland, BGE are operating under the current net metering law, Exelon's CEO has an expressed view that net metering should be replaced by a different, much lower price for solar electricity supplied to the grid from distributed solar sources. In a May 2014 speech in Washington, D.C., he said:

As I said earlier, if you put a solar panel on your roof, that is your choice. If you have excess power and want to sell that power back to the grid, that's fantastic for the grid. But what has to happen to enable that? The design of the system, the local distribution system, has got to handle the voltage fluctuations. They've got to be able to dispatch the power out and they've got to be able to dispatch the power in. There's a specific capacity need that each customer has. If they've got a 200 amp service entrance on their house, that utility distribution system needs to be designed to provide them 200 amps at any instantaneous moment

⁸ Exelon CPP Comments 2014, pp. 70-71. In its comments, Exelon also proposed including existing large-scale hydropower for "clean energy credits," which would further undermine new wind and solar projects.

⁹ Maryland GGRP 2013, p. 86

¹⁰ Exelon Calvert Cliffs Fact Sheet 2015. The generation figure is for 2014.

¹¹ EIA Maryland 2014

¹² MEA 2015

¹³ SEIA 2014. . North Carolina is also in the top ten, but only a small sliver of that state, in its eastern portion, is part of PJM.

¹⁴ Tabors 2014, p. 22

they want. Just because they put a solar panel on doesn't mean they're disconnecting from the grid. There's a dependency, but there should be an enabling on the grid to allow that and the consumer should be compensated at the wholesale price of energy.¹⁵

It is quite common for houses to have 200-amp service. For Mr. Crane to pick out 200-amp service to customers with distributed solar is clearly discriminatory. For instance, Mr. Crane did not suggest larger connection charges for the heavier lines needed for multi-million dollar mansions; nor did he suggest greater charges for suburban developments with detached housing and large lots where longer distribution lines must be strung to supply electricity. All of them demand electricity at any moment they want to the limit that the supply line allows. He did not suggest lower charges for people living in apartment buildings or those with 100-amp service. It is the obligation of a distribution utility to provide a connection to customers on a non-discriminatory basis. To suggest that there should be a special charge for some customers just because they have solar generation is both discriminatory and divisive. And such a policy would also put roadblocks in the way of developing distributed solar generation that is a critical element in the future grid that we need.

It is widely acknowledged that calculating the value of the grid to rooftop solar and the value of solar to the grid and to societal needs is a complex issue that eventually needs to be resolved by moving to a more comprehensive set of considerations about distributed generation generally and solar generation in particular. I agree with this point of view. But the suggestion that distributed solar energy exports to the grid be compensated at the wholesale price of electricity is unreasonable, unfair, and inequitable. For example, Mr. Crane did not mention the reduction in transmission and distribution losses during peak load periods and the investment savings potential of such a reduction. Nor does he suggest that any capacity credit be given to distributed solar generation. Both should be part of any fact-based consideration of the value of solar energy to the grid.

A move away from net metering to a more complex system that takes account of the value of the grid to distributed solar generators and the value of distributed solar generation to the grid should be done in a deliberate manner as the other parts of distribution system are improved, as the smart grid develops, and as the capacity of distributed generation to contribute to resilience and to ancillary services, including via islandable renewable microgrids, is increased. All relevant considerations, including the value of a stronger distributed grid with distributed storage and distributed ancillary services need to be taken into account. The value of solar should be set in the context of the need for a resilient, renewable smart grid, possibly with real time prices and smart appliances. Mr. Crane made a general motherhood-and-apple-pie statement that exporting solar electricity is “fantastic for the grid.” But his specific position on compensation of solar electricity exports at the wholesale price suggests that the owner of

¹⁵ Crane 2014, ca. min. 56:27 to 57:32

solar generation (Mr. Crane’s “consumer”) should make fantastic contributions to the grid owners, like reduction of transmission and distribution losses on hot sunny days, free of charge – a position that I would argue is a variance with capitalist economics 101. It is not a position that serves the cause of the development of a sound value of solar in the context of the needs for climate protection, energy democracy, grid resilience, and energy justice.

For the moment, the cost to ratepayers of net metering is minor and will continue to be so for many years. A 2014 study done by Lawrence Berkeley National Laboratory estimates that at a distributed, “customer-sited” solar PV penetration of 2.5 percent of electricity use, the rate increase would only be 0.2 percent for a northeastern utility operating in an environment where generation has been deregulated.¹⁶ This implies a bill increase of 30 or 40 cents per month. Maryland’s current law sets a goal of 2 percent solar by 2022; a significant fraction of that will be utility-scale. At the end of 2013, only about 18 percent of Maryland’s solar capacity was residential; another 40 percent was commercial (presumably distributed) capacity.¹⁷ At that rate only about 1.1 percent of Maryland’s solar generation will be sited at the customer’s premises, less than half of the 2.5 percent value used in the study cited above. Maryland’s solar renewable energy credit system may produce somewhat higher costs than estimated in the Lawrence Berkeley study. Even so, the cost of distributed solar PV would be less than two dollars a month by 2022 for a typical residential customer,¹⁸ all other things being equal. Maryland is still more than seven years away from reaching that cost level. And all other things do not have to be equal.

B. Community net metering and other options to promote energy justice and energy democracy

We do not minimize the implications of an increase of even two dollars a month in electricity bills for low-income ratepayers. The way to deal with the issue of equity is to combine the goals of energy justice, energy democracy, and reducing greenhouse gas emissions, not to eliminate new avenues that would open up the potential for long-term, stable, and low energy bills for them.

This is not the place to deal with the need to direct larger investments in greatly increasing energy efficiency of low-income households. The EmPOWER program, approved by the Maryland PSC has done good work that is continuing; it can and should be greatly expanded. IEER is working on a Maryland-specific energy justice study and will forward it when complete to the Commissioners, which should be well before the end of 2015. By reducing the electricity

¹⁶ LBNL 2014, p. ix. The study used Massachusetts data in its calculations (Section 3.2).

¹⁷ MEA 2015

¹⁸ We used an estimate of \$150 per solar renewable energy credit to make this estimate (Renewable Energy Certificates 2014). Evidently, there is some uncertainty in this calculation; future prices of solar renewable energy credits are uncertain since they are tradable commodities.

(as well as other energy sources) needed to fulfill needs for energy services such as heating, cooling, lighting, etc., the effect of a small increase in rates can be more than offset. The issue, therefore, is not net metering or the expansion of distributed solar, but the ensuring equitable access of both efficiency and solar to low-income households. Of these two issues, the expansion of programs to enable equitable access to the benefits of owning or leasing distributed solar generation to low-income households is very germane to the proposed merger and therefore to these comments.

There are a number of ways in which low-income households, as well as all renters and many homeowners without suitable roofs or carports, can benefit from distributed solar energy. One general principle is to disconnect ownership of the solar generation equipment from the location of the solar PV structure. Community solar systems with virtual net metering provide a specific approach that enables ownership or leasing by all such households in principle, though we recognize that financing will be a major issue.

Maryland has, despite more than one attempt, not enacted community solar legislation. In 2014, prior proposals were scaled down to a mere pilot project. But even this specific program, that would have enabled low-income and many other households in Maryland to evaluate for themselves whether community solar systems were desirable and affordable, was opposed by Exelon.¹⁹

In contrast, while Pepco has not always been an exemplary promoter of net metering and solar energy, has made a great deal of progress to the point of supporting community solar systems with virtual net metering in Washington D.C. in 2013.²⁰

In her testimony to the Public Service Commission of the District of Columbia on the matter of the same merger that is at issue in Maryland in Case 9361 before the Commission, Anya Schoolman, Executive Director of DC SUN, noted this contrast:

Pepco has made significant strides, however, and is now on a trajectory to assist in growing distributed solar generation. For example, Pepco worked cooperatively with stakeholders on the Community Renewable Energy Act of 2013.... Contrast these efforts with those of Exelon, which [redacted] and recently opposed legislation in Maryland that would have set up a pilot program for community energy-generating facilities.²¹

¹⁹ Exelon statement on House Bill 1192, as reproduced in Attachment C of Schoolman 2014, pdf pp. 247-248; Phelps 2014, p. 14. Exelon couched its opposition as saying it supports renewable energy but not the specific bill at hand.

²⁰ Schoolman 2014, pp. 25-27

²¹ Schoolman 2014, pp. 27-28. The redaction indicated in the quote was an official one in the public version of Schoolman 2014

Upon passage of the community solar legislation in 2013 in Washington, D.C., a Pepco Region President, Donna M. Cooper, made the following statement:

Care and respect for the environment have long been fundamental principles that guide our business, and enable our success today and into the future. Not only are we committed to delivering safe and reliable electricity, we are also committed to collaborating with the District of Columbia government and other stakeholders to become a model of innovative environmental policies and practices, including the expansion of renewable energy to District of Columbia residents.²²

It would set back efforts to democratize the grid and promote distributed generation, especially among low-income households and all renters, to put Exelon in place of Pepco in Maryland. The recent history of PHI in the District of Columbia and of Exelon in Maryland and in Illinois point firmly and clearly to that conclusion. Indeed, the facts above indicate that Maryland should reconsider its decision to allow merchant generating companies like Exelon to own wires-only companies like BGE and Pepco. I recognize that that is beyond the scope of the present proceeding but the suggestion does present itself as a public policy matter, given the potential importance of distributed solar energy in Maryland.

According to the National Renewable Energy Laboratory, Maryland has a rooftop solar PV technical potential of over 14,500 GWh per year (about equal to Calvert Cliffs generation) and an urban utility-scale solar PV potential of over 28,000 GWh.²³ Since urban utility scale potential can, in general, be designed to be community-owned and distributed (being in urban areas), Maryland's total distributed solar PV potential is about two-thirds of its electricity use. These NREL estimates do not include urban areas like parking lots that also have significant solar PV potential, so the actual distributed solar PV potential is somewhat greater. Just for clarity, I am not arguing that all of this potential should be developed. But in a renewable electricity system that is also resilient and democratized, distributed solar can and should play a role that is far larger than the current solar carve-out of 2 percent in Maryland's law.

C. Reliability

I am long-time Pepco customer who was frustrated with the relatively high reliability problems and prolonged blackouts compared to other area utilities, especially as I live in one of the more vulnerable areas. But that was up to and including the 2012 derecho. Since that storm Pepco has made great strides in its reliability performance. I have followed not only my own situation but also Pepco outage maps in its service area. There is no question in my mind that my experience is widely shared.

I give credit to the company and to the Maryland and District of Columbia PSCs for that accomplishment. Reliability is not negotiable and PHI can, should, and, since mid-2012, has been able to perform. The

²² As quoted in VoteSolar 2014.

²³ NREL Potentials 2012, Tables 2 and 4

notion that Exelon, which brings significant liabilities to the table and will incur significant debt to acquire PHI, would greatly improve things is speculation at best. It is also noteworthy that Exelon makes no binding commitments to make significant and measurable improvements in reliability performance.

Of course, any prolonged outage especially in the winter imposes significant hardships. It is important to move in the direction of renewable, islandable microgrids that will keep essential community services going without interruption. That will be a long-process. As I see it, it will involve a significant role for distributed solar and distributed storage and far greater efficiency investments than are being made at present. We are much better off with a wires-only utility whose revenues are decoupled from efficiency investments. Over the next decade or less, we should also address the issue of the value of distributed solar to the grid and of the grid to solar. The prospects for these things are not enhanced by the merger of PHI with a company that has huge merchant generation interests. On the contrary, as I show below they will likely be set back and harmed by the merger.

II. Nuclear costs, revenues, and subsidies

A. Subsidies

Exelon has stated its position on subsidies, notably the production tax credit for wind energy, as follows:

The wind PTC has achieved its goal of jumpstarting the industry and is no longer necessary. More than 13,000 MW of new installed wind capacity were added in 2012, surpassing all other electricity generation sources in new installations for the first time ever. This growth comes on the heels of wind accounting for 35% of new generation over the last five years. The PTC has worked.

However, the subsidy is distorting today's wholesale electricity markets, putting at risk the operation of more reliable clean generation. Perversely, because of the PTC subsidy, wind producers often pay the market to run (rather than getting paid by the market to run), yet still profit because of the subsidy's steep \$35 per megawatt hour (pre-tax) payout. For example, a wind producer could pay the market \$10 per MWh and still make \$25 because of the value of the PTC. This forces around-the-clock baseload power, like nuclear and coal, producers to pay to run their plants or to shut down for long periods of the day when their power is needed most. In Texas, for instance, where new generation is needed, investors are reluctant to build new power plants – even low-cost natural gas – because subsidized wind has so distorted the market.²⁴

It also adds the following in the same vein, more generally:

²⁴ Exelon's Public Policy Positions 2014-2015

Competitive markets, not taxpayer or ratepayer subsidies, are the more efficient and least cost way to incent new generation when it is needed. Subsidized plants are paid for by consumers who will bear the risks of these plants rather than shareholders by paying more for these plants than they could have obtained from the market.²⁵

For the record, I would like to note that IEER is in accord with the notion that prolonged subsidies for decades for any large energy source are, in general, not a good idea. But they are useful to jump start industries that have a larger public purpose. So I have no problem with that part of Exelon's policy views quoted above.

However, subsidies should be designed so as to be predictable and therefore create a reliable investment climate. Phaseout of the subsidies should be gradual, over many years, so as not to create boom and bust problems in the industry and in employment. In the case of the wind industry, there was a sudden shift from a significant production tax credit to zero, from one day to the next. Exelon supported an immediate end to the PTC at the time of its last expiry; this sudden end has done a great deal of damage to the industry. In that regard, Exelon supported poor policy that has created a large amount of disruption in an industry that is vital to a renewable energy future.

The specifics of the discourse indicate that Exelon did so to protect its nuclear assets, but it is presenting this private gain as sound public policy. The most important evidence for is this that Exelon's public policy statements make no mention of what is arguably the largest subsidy in the energy business – the freedom from having to buy only the amount of nuclear liability insurance that insurance companies will offer – currently only \$375 million. The rest is a promise by the whole nuclear industry to pay in case of a serious accident up to a maximum of \$121.255 million per reactor (escalated with inflation). But the industry does not have to buy this insurance or even to pool the \$12.6 billion in a reserve fund. It is just a promise to pay. The difference between \$12.6 billion and the actual damages, may have to be met by taxpayers, if Congress appropriates the money.²⁶

The taxpayer is potentially on the hook for hundreds of billions of dollars in the event of the most serious nuclear accidents. Accident damages in the worst cases have been estimated by nuclear authorities to be in the hundreds of billions of dollars.²⁷ The nuclear power industry could not buy insurance that would cover even a significant fraction of the maximum estimated losses. As the 1986 Chernobyl and 2011 Fukushima accidents show, the most serious nuclear accidents are essentially never ending pollution events that can and have caused vast amounts of land and other resources to be written off essentially forever. Given these estimates and facts, it is difficult to estimate a reasonable value of the subsidy. I believe it is fair to say that

²⁵ Exelon's Public Policy Positions 2014-2015

²⁶ NRC 2014. The NRC also requires "licensees to maintain a minimum of \$1.06 billion in onsite property insurance at each reactor site."

²⁷ IRSN 2013 and Travis et al. 1997

the nuclear power industry would not exist without it. One might say that for the nuclear industry, the Price-Anderson Act subsidy is the whole enchilada. The Price-Anderson Act expires in 2025.²⁸ That is much more time for planning for the end of a subsidy than the wind industry had. Would Exelon or Mr. Crane be willing to give up the Price-Anderson government-supplied crutch in that year?

To have advocated an end to the production tax credit for wind energy in a manner that has severely disrupted the wind industry without ever mentioning the Price-Anderson Act is disingenuous at best. It indicates a proclivity to present a partial view in a manner that obscures the larger public policy issues and the costs and benefits. The effect is to make the company appear as a defender of competitive markets when in fact its existence depends on a subsidy that persists after decades – in fact, it is practically guaranteed to last as long as the industry, since the industry would shut down without it.

To make matters worse, it is hardly a settled fact that the wind industry's production tax credit has been responsible for the merchant nuclear industry's woes. For one thing, it has nothing to do with the large increase in costs of operating existing nuclear power plants (see Section II.B just below). Second, in its public policy positions, Exelon echoes an argument made in a 2012 report by Huntowski, Patterson, and Schnitzer that the ability of the wind industry to pay others to take their electricity and still make a profit ("negative electricity price") is harming conventional generation, including nuclear, which is the most inflexible of all generation technologies, since it cannot be ramped up and down rapidly.²⁹

However, the Huntowski, Patterson, and Schnitzer study does not estimate specific damage to the nuclear industry in terms of the cost impact of the production tax credit on the nuclear industry. In the real world, the cost crisis in a part of the merchant generation nuclear fleet is first of all driven by rapid increases in the costs of operating these plants. The declining cost of natural gas is the other major factor. There has been and continues to be a large surplus of natural gas electric generation capacity, including among combined cycle plants, which are the most efficient natural gas plants. Indeed, there is so much surplus capacity that the EPA proposed increasing the capacity factor of such plants to replace coal-fired generation as one of the main ways to reduce CO₂ emissions.³⁰

The decline in natural gas prices generally and to the electric power sector in particular has led to a large increase in generation using that fuel; together they have had a depressing effect on wholesale electricity prices in merchant markets. Indeed, wholesale electricity prices tend to be correlated with natural gas prices;³¹ in recent years both have been low (apart from seasonal fluctuations in some markets). In response to Exelon's claims blaming wind generation for negative electricity prices, the American Wind Energy Association issued a detailed report that

²⁸ NRC 2014

²⁹ Huntowski, Patterson and Schnitzer 2012, including p. 7.

³⁰ 79 FR 34830 (June 18, 2014), p. 34851. This is part of EPA's Clean Power Plan.

³¹ Phillips 2015

concluded, among other things, that the problem was far smaller than claimed by Exelon and that a significant portion of it was due to the inflexibility of nuclear power plants to reduce their output at short notice.³²

While we may cast a skeptical eye on these dueling claims, the AWEA's analysis points in the direction of causes other than wind for the nuclear industry's woes. At least one Commissioner of the Federal Energy Regulatory Commission seems to agree. A trade publication, *RTO Insider*, noted the following about his views following the release of the AWEA study:

At last week's Federal Energy Regulatory Commission meeting, Commissioner John Norris said the AWEA study provided "very compelling evidence" that "the PTC and negative pricing ... are having none or negligible impact on nuclear facilities."

"If that's not a factor [in nuclear's woes], as the AWEA study would seem to indicate, let's get it out of our rhetoric," Norris said, calling on Exelon to respond to the analysis.³³

Exelon's policy webpage, cited above, still contains the claim about wind energy without an analytical rebuttal of the AWEA study.

The point of going into Exelon's positions on subsidies and the role of the production tax credit in the present context is that the public deserves a more complete view from those who, like Exelon, are in a privileged position, due to their economic power, to influence public policy. The above facts and analysis show that Exelon does not measure up to that standard. Not only that; the specifics of its positions and, even more, of the views of its CEO, have the potential to do grievous harm to Maryland's energy future. Exelon is already a very large presence in Maryland. It would be wrong to increase that presence and influence by allowing Exelon to acquire PHI.

B. Nuclear revenues

Total costs for keeping existing nuclear power plants in operation have increased in recent years from around \$31 per megawatt-hour in the first part of the last decade (until 2007) to \$44 in 2012 (all in 2012 dollars).³⁴ As is widely recognized, this has occurred at a time when wholesale power prices have been falling, mainly due to low-cost natural gas. The wind industry, in my view, is too small in most ISO regions to affect the larger picture on an annual average basis, except perhaps in Texas. Moreover, the cost spread between the most economical and least economical plants is huge. The most economical quartile of the nuclear

³² AWEA 2014

³³ RTO Insider 2014. Quoted as found in article.

³⁴ NEI 2014, p. 6

power fleet had costs averaging \$28.22 per MWh over three years (2010-2012); the least economical quartile cost was \$62.36.³⁵ Moreover, some uncertainty hangs over future capital costs to maintain existing plants because the reactors are aging and because of post-Fukushima backfits, among other causes.

One way that Exelon is trying to increase its nuclear revenues is to create a “clean energy” standard in which nuclear generation, including that from existing plants, would be given clean energy credits, similar to the Tier 1 credits for renewable energy in Maryland today. In its comments on the EPA’s Clean Power Plan, Exelon advocated this as one way to increase revenues and save nuclear plants at risk. It advocated the same for existing hydropower:

One way that states could choose to help ensure the continued vitality of existing nuclear and hydropower plants is to include such generation in their portfolio standard programs through what might be called a “clean energy credit.” Doing so would place a value on the environmental attributes of nuclear and hydropower generation, *just as Renewable Portfolio Standard (“RPS”) programs place a value on the environmental attributes of wind or solar.* Today, few if any state RPS programs encompass all forms of zero-carbon electricity and some may even credit carbon-emitting generation such as clean coal and waste coal. That is unsurprising, given that RPS programs ordinarily seek to achieve state policy goals other than, or in addition to, CO₂ emissions reductions. Most state RPS programs do not encompass nuclear power, and although many include some types of hydropower, they generally exclude the existing large-scale hydropower that provides the largest source of reliable renewable generation.³⁶

It is manifest that existing nuclear power plants (or hydropower plants or solar or wind plants for that matter) do nothing to reduce CO₂ emissions. They form the baseline of where we are. There is no particular cause to subsidize one or another existing source of energy. To argue that states should meet goals for reducing CO₂ emissions by keeping existing plants open is to sell an old coat, in some cases, a threadbare one.

To allocate credits of the renewable energy type to existing units would create huge costs without any incremental reduction in CO₂ emissions. At the January 2014 price of Tier 1 RECs in Maryland of about \$15,³⁷ the two Calvert Cliffs plants alone would cost Maryland ratepayers about \$215 million dollars every year. That is about \$4.3 billion for the 20 years or so of the remaining licensed life of the plant. Compare this to the one-time contribution of \$100 million that Exelon proposes to give PHI ratepayers.

³⁵ NEI 2014, p. 5

³⁶ Exelon CPP Comments 2014, p. 71, italics added.

³⁷ Renewable Energy Certificates 2014, on the Web at <http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=5>, viewed on February 12, 2015.

As already noted, putting nuclear power into a clean energy standard that would replace the existing renewable portfolio standard would do serious damage to and may even wipe out the renewable industry in Maryland. Specifically, Maryland's 20 percent RPS by 2022 implies about 11 or 12 million renewable energy credits in that year, depending on the success of efficiency programs. Calvert Cliffs would inject over 14 million "clean energy" credits if the RPS were replaced by a "clean energy" standard that included all Maryland nuclear generation.³⁸

Further, I fail to see the logic of applying the term "clean energy" to nuclear energy, even though I recognize that it has essentially no CO₂ emissions at the power plant. "Clean" is not a one-dimensional attribute. Every 1,000 megawatt reactor generates enough plutonium in the spent fuel to create 30 nuclear bombs if separated. Fueling it involves uranium mining, processing, and enrichment, all of which create large amounts of radioactive waste. It uses vast amounts of water for cooling. A severe accident at Calvert Cliffs could devastate the Chesapeake Bay essentially forever. Spent fuel, a source of serious harm in case of a severe accident, keeps piling up at the site with nowhere to go. It is true that the federal government has failed to fulfill its commitments to dispose of commercial spent fuel. But for practical purposes, this finger pointing about who is to blame does not change the reality or severity of the risk to Maryland or the likelihood that it will continue for the foreseeable future.³⁹

³⁸ The inclusion of nuclear power would do significant harm even if the number of "clean energy" credits were expanded to accommodate existing nuclear generation. First, as noted, a great deal of money would flow to an existing source of energy – doing nothing to *reduce* CO₂ emissions for present levels. Second, when an existing nuclear reactor shuts down, as they all must sometime, there would be a sudden deficit of a very large number of credits. This would likely cause the prices of credits to rise rapidly, destabilizing "clean energy" credit markets. That in turn would push electricity rates upward and create economic hardship, and financial uncertainty. The licenses of the two Calvert Cliffs reactors expire in 2034 (Unit 1) and 2036 (Unit 2), unless renewed beyond the 60 years they are now authorized to operate. It is noteworthy that all commercial nuclear power reactors that have permanently shut down have done so before the expiry of their authorized operating lifetimes. Shut down dates are in Appendix C of NRC Information Digest 2014. Licenses were initially issued for 40 years; in many cases, as with Calvert Cliffs, they have been extended by 20 years.

³⁹ It would be helpful to the public discourse if the Public Service Commission would adopt definitions of renewable and clean energy. I recommend the definition of the Intergovernmental Panel on Climate Change for the former: "Renewable energy is obtained from the continuing or repetitive currents of energy occurring in the natural environment and includes non-carbon technologies such as solar energy, hydropower, wind, tide and waves and geothermal heat, as well as carbon-neutral technologies such as biomass." [IPCC Glossary 2007, p. 814] Uranium and thorium are the only natural nuclear energy resources; they are primordial and are not obtained from "continuing or repetitive currents of energy occurring in the natural environment." The IPCC does not define "clean energy." I recommend the following definition: "*Clean energy* sources must be obtainable and usable without significant or lasting harm to health, ecosystems, and the environment. They must produce energy with zero or near zero direct CO₂eq emissions and low emissions of other pollutants. Their production and use must not cause irreversible ecological damage or intergenerational damage to the environment either during routine use or as a result of severe accidents. They must not use or produce fissile materials, which can be used to make nuclear weapons. Examples: solar energy, wind energy, and run of the river hydro systems, deployed with due attention to ecosystem integrity, are clean energy sources. Fossil fuels and nuclear power are not clean energy sources; neither are large hydropower reservoirs that emit significant amounts of methane. The use of biomass may or may not be clean energy. Palm oil produced by clearing tropical forests is an example of dirty biomass energy."

I am not arguing here for the premature shutdown of nuclear power reactors. I am pointing out that it is unreasonable to ask for CO₂ emission reduction credits for any existing plant and especially for large ones; existing plants should be part of the baseline from which one sets the reduction targets.

Exelon is already a large part of the Maryland economic and political scene since its generating units sell into the Maryland market and since it owns BGE. Its Constellation unit also has renewable energy assets in the state. The point of the above is that given Exelon's biased advocacy of increasing nuclear revenues and against community net metering (and indeed for Exelon's CEO against net metering, *tout court*) increasing Exelon's economic and political power in Maryland increases the risk of economic harm and will set back the goal of achieving a democratized and equitable distributed, renewable generation system, especially when compared with the record of Pepco. It is to invite harm of great magnitude to ratepayers (with the proverbial peanuts thrown in).

III. Profits

The Exelon press release announcing the merger had the following statement:

The transaction will further expand Exelon's regulated holdings, ensuring a balanced earnings mix as power prices recover.⁴⁰

I was not able to find this remarkable statement in Exelon's application to the Maryland PSC, nor in its May 30, 2014, filing to FERC.⁴¹ A complete filing would have included and explained it in detail. The reason for the omission is not far to seek. Exelon's acquisition of PHI bolsters its position on Wall Street and with its shareholders, while a part of its merchant fleet is in economic trouble. This gives Exelon a huge stake in maintaining the guaranteed profits from the regulated side, potentially at the expense of ratepayers either directly or, by limiting choice, indirectly.

I understand that Exelon states in its application that Pepco and Delmarva Power & Light will be "fully ring-fenced and will issue their own debt through direct access to credit markets."⁴² However, as part of one company, the wires-only utilities will be obliged to carry out a coordinated corporate strategy whose aim it is to create a steady stream of guaranteed profits. I have confidence that the Commission will continue to ensure that the cost of energy acquired by the wires-only part of Exelon will be done on the basis of least cost, as the rules require,

⁴⁰ Exelon Press Release 2014 (April 30)

⁴¹ Exelon and PHI MD PSC Application 2014 and Exelon and PHI FERC Application 2014

⁴² Exelon and PHI MD PSC Application 2014, p. 27

regardless of whether the power is offered by Exelon merchant plants or some other offerer. The real problem is that even the ring-fenced utilities will be more likely to take actions that will ensure a large power market for all merchant offerers, including Exelon, which is the largest among them. For instance, the tendency, when the parent corporation's revenue and profit goals are not achieved would be to resist strong new efficiency initiatives. It is more than likely that community solar systems with virtual net metering will have a much harder time becoming a reality in Maryland in the event the merger is approved. Marylanders will simply not have the same opportunity that Pepco affords the people of the District of Columbia. A deep restructuring of markets that would increase distributed solar generation to 20 or 30 percent in the long-term would become much more difficult.

All of these structural concerns are greatly increased by the public statements of Exelon's CEO. For instance, in one speech he treated the electricity system as a sort of pie to be divided up among the various suppliers:

And then we all support renewables, but we need to make sure the penetration of the renewables are not at the detriment of the reliable clean sources of generation that can come. So, that's where we want the future to be and we can't just hope for the future or bet on it to come, we have to engage with all the stakeholders and that's what many of the excellent folks in the room here are engaged in over the next couple of years to design our future, not just let our future be dictated upon us by special interest lobbies and commercial...It's kind of interesting, the large lobbies that we all have – its commercial. At the end of the day, solar wants to sell more panels, wind wants to sell more turbines, nuclear wants to stay relevant in the game going forward. So, we all know what we are here for. We are here to run a business and provide a return to the shareholders, while providing a product that the consumer can use, but we need to do that in a combined coordinated approach versus being at each other's throat.⁴³

Consumers have no inherent interest in maintaining existing nuclear or any other particular source of energy. They are interested in their attributes; the nature of the attributes needed for a twenty-first century grid is, in many ways, quite different from the 100-year model of the grid we live with today. Society is not obligated to ensure that any particular source of energy continues into the indefinite future. For instance, today a number of attributes such as near-zero CO₂ emissions, near-zero water requirements, no fuel requirements, and essentially no mining beyond the initial materials to build the plant provide a set of economic and ecological attributes of solar and wind energy that are compelling. In addition, Maryland has the good fortune of having a large distributed solar resource, which can enable a widespread ownership and participation in the generation of electricity. The sector can be democratized. I believe it

⁴³ Crane 2014, ca. min. 1:10:04 to 1:11:18, italics added

should be. That may not be a goal of the Public Service Commission at present, but at the very least, it should not take actions that would make its achievement much more difficult, especially for low-income households and small businesses.

Perhaps Mr. Crane has an obligation to Exelon shareholders to take the view he did. But neither society nor the Public Service Commission has the responsibility to follow him. No ring-fencing can cure the problems and risks attendant upon approval of the merger, though it may diminish some of them. Where there is a fence there is the potential for holes in the fence that, in time, tend to become reality. A wires-only PHI needs no ring-fence. Given the positions of Exelon and its CEO discussed above, the harm is palpable and potentially huge. No conditions and incentives can cure the basic problems and risks that the approval of the merger will create. The Maryland PSC should reject the Exelon-PHI merger application.

Thank you for your consideration of these comments.

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