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Introduction

I appreciate the opportunity to address the interaction between the requirements of EPA's proposed regulations for carbon emissions from existing fossil fuel-fired power plants ("Clean Power Plan" or "proposed rule") and Commission-jurisdictional electric markets. Exelon strongly supports EPA's goal of reducing carbon emissions from the electric power sector. As EPA notes in the Clean Power Plan, the current level of carbon emissions is environmentally unsustainable, and action must be taken now in order to prevent significant, irreversible environmental damage and major economic loss.¹ By providing regulatory certainty, well-designed carbon reduction rules will be a driving force to modernize our aging electric system so that our customers will continue to have a safe and reliable electric system to support our Nation's economic growth.

The Commission plays a significant role in ensuring that the electric system is prepared for implementation of the Clean Power Plan. As I discuss below, there are important steps FERC can take to better harmonize its market rules with EPA's regulation. But equally critical is FERC's role in advising EPA to ensure that EPA's regulation is consistent with the market rules that FERC has already approved, and that implementation of the regulation does not distort electricity markets in ways that will harm consumers or the environment. While it is certainly not FERC's role to usurp EPA's statutory obligations, as EPA evaluates recommended changes and finalizes the rule, FERC has a responsibility to offer its expertise to ensure that EPA chooses options that work in concert with wholesale markets.

The Clean Air Act does not require a choice between greenhouse gas regulation and efficient markets. Markets have internalized the cost of pollution many times in the past, and though the statutory authority being used to regulate carbon may be different, the outcome need not be. Simply put, Commission-jurisdictional markets can be a tool to implement the Clean Power Plan if FERC and EPA work together. Below, I describe several concerns and offer recommendations to address potential distortions while ensuring the emissions reductions intended by EPA. In sum, we request that FERC leverage its expertise to inform EPA's revisions to the Clean Power Plan by:

1. Advocating for comparable treatment of all sources of emissions-free generation. The proposed devaluing of nuclear and hydroelectric energy in the emission targets is inconsistent with the FERC's goals of ensuring that the system maintains an adequate supply of resources that have access to firm fuel supplies; and
2. Supporting the option of a "Reliability Dispatch Safe Harbor" as part of EPA's final rule. This option would co-optimize greenhouse gas reductions and reliability using existing Commission-approved mechanisms, obviating concerns over electric reliability and effectively capping consumer costs.

¹ 79 Fed. Reg. at 34,841-44 (June 18, 2014).

Background on Exelon

Headquartered in Chicago, Exelon conducts business in 48 states, the District of Columbia, and Canada. The company is one of the largest competitive U.S. power generators, with power plants in 19 states; the company owns 33,742 megawatts (“MW”) of capacity, comprising one of the nation’s cleanest and lowest-cost power generation fleets. Exelon has made substantial investments to shift its generation fleet to a lower-carbon portfolio, and is now the least carbon-intensive generator of the 20 largest investor-owned generators in the United States. Exelon owns and/or operates 24 of the nation’s 100 nuclear reactors, making us the Nation’s largest owner and operator of nuclear generation. Exelon’s nuclear plants provide more than one-quarter of the U.S.’s nuclear generation, avoiding approximately 150 million metric tons of carbon dioxide (CO₂) annually. In addition, Exelon has made significant investments in renewable generation. We own and operate over 1,500 MW of hydroelectric generation, 250 MW of solar, and 1,300 MW of wind, making Exelon one of the Nation’s largest wind generators. Exelon also operates about 5,000 MW of low-emitting natural gas generation in New England and Texas. In total, Exelon’s current fleet net generating capacity is 55 percent nuclear, 28 percent natural gas, and more than ten percent hydro, wind, solar, and other clean generation, with the remainder being oil and waste coal generation. Exelon has built its business strategy on the fundamental principle that a clean, reliable, and affordable energy portfolio is essential to sound public policy and to sustainable investor value.

Exelon also owns three utilities, which reliably deliver electricity and natural gas to more than 7.8 million utility customers in central Maryland (Baltimore Gas & Electric Company), northern Illinois (Commonwealth Edison), and southeastern Pennsylvania (Philadelphia Electric Company or PECO). Finally, our Constellation-branded family of competitive retail businesses serves more than 2.5 million residential, public sector, and business customers with electricity, gas, energy management services and distributed generation, including more than two-thirds of the Fortune 100.

FERC Should Encourage EPA to Value All Resources Comparably to Avoid Market Distortions

FERC-jurisdictional markets utilize least-cost dispatch to provide electricity most cost-effectively to consumers.² To take full advantage of that model, the Commission should encourage EPA to require that all resources that can reduce CO₂ emissions be treated equally, including supply-side carbon-free resources and demand-side resources.³ Not doing so either in the final rule or

² As the Commission has explained, “In a competitive market, prices do not differ for new and old plants or for efficient or inefficient plants; commodity markets clear at prices based on location and timing of delivery... Such competitive market mechanisms provide important economic advantages to electricity customers... For example, a competitive market with a single, market-clearing price creates incentives for sellers to minimize their costs, because cost-reductions increase a seller’s profits. And when many sellers work to minimize their cost, competition among them keeps prices as low as possible. While an efficient seller may, at times, receive revenues that are above its average total costs, the revenues to an inefficient seller may be below its average total costs and it may be driven out of business because over time it results in an industry with more efficient sellers and lower prices.” *PJM Interconnection, LLC*, 117 FERC ¶ 61,331, at P 141 (2006).

³ We also note that disparate treatment by EPA of *emitting* sources in the Clean Power Plan is also a potential source of substantial market distortions, particularly the regulation of existing NGCC under Clean Air Act section 111(d) and new NGCC under Clean Air Action section 111(b). We have offered EPA solutions to that concern as

in states' implementation could significantly distort markets, some examples of which are outlined below.

Artificial Incentives for NGCC

The Clean Power Plan envisions that states could achieve EPA's emissions goals partly by shifting dispatch from existing coal plants to natural gas combined-cycle generators ("NGCCs") ("Building Block 2"). There are a number of ways to achieve this type of "redispatch," most of which would be consistent with the least-cost dispatch model that all grid operators utilize. But there is one method that is not consistent with that model: A state could encourage this sort of redispatch by artificially increasing the marginal cost of higher-emitting generators (like coal plants) while reducing the marginal cost of lower-emitting generators (like NGCCs). For instance, a state could adopt an emissions credit or rate-trading program that taxes higher-emitting fossil fuel plants and subsidizes lower-emitting (but still carbon-emitting) fossil fuel plants. As a result of such a subsidy, an NGCC would be able to sell electricity for less than its true marginal cost, similar to subsidized wind today. Such a subsidy could have the effect of lowering the market price of electricity for all generators – further muting the market signals to invest in clean generation as well as incentivizing additional fossil generation, hardly EPA's intent. This incentive would further disadvantage clean but unsubsidized sources in the market, leading to their premature and uneconomic retirement. In the long run, however, the premature retirement of nuclear or hydropower plants will result in increased electricity prices, as they are replaced with higher-cost generation, such as NGCCs.⁴

Perverse Incentives to Replace Existing Nuclear Generation with NGCC

Quite obviously, a critical objective of the proposed rule is to reduce CO₂ emissions from the electric power sector. EPA has determined that the best system for doing so is to rely upon the interconnected electric system, and, among other things, increase generation from low- and zero-emitting facilities.⁵ To do so, it is essential to preserve the progress already made in reducing CO₂ emissions and to prevent the emissions *increases* that would result from the replacement of existing zero-emissions facilities with new fossil fuel plants. All of a state's existing nuclear and hydropower capacity is available as zero-carbon resources and should be counted accordingly. However, the proposal does not achieve this goal, due in part to two design features: first, the proposed state goals' expression in a rate format (lb./MWh) that is

well. See Exelon Comments to EPA at 85-93, available at http://www.exeloncorp.com/assets/policy/docs/EXC_EPA-HQ-OAR-2013-0602.pdf.

⁴ See PJM's Clean Power Plan analysis, available <http://www.pjm.com/~media/committees-groups/committees/mc/20150120-webinar/20150120-item-05-carbon-rule-analysis.ashx> (at 42-45, 114, 131) (showing that nuclear retirements would increase compliance costs); see also Burtraw, Linn, Palmer, and Paul, "The Costs and Consequences of Clean Air Act Regulation of CO₂ from Power Plants" at 9 (January 2014) ("The total social cost is least under cap and trade with auction... The cost is more than doubled under the tradable performance standard"), available at <http://rff.org/RFF/Documents/RFF-DP-14-01.pdf>.

⁵ In relying on the building blocks as the best system for emission reduction, EPA is not seeking to require those building blocks or direct states to invest in any particular type of generation technology. Instead, EPA is identifying the building blocks as proven methods for displacing emissions from affected units. EPA has no emissions-related interest in encouraging one type of zero-emissions generation more than another type; accordingly, the rule should be neutral among zero-emission generation sources and treat all zero-emissions megawatts the same, as all displace carbon emissions.

actually higher than the emissions rate of existing natural gas-fired generation in the majority of states⁶ and second, EPA proposes to account for only 6% of nuclear generation and 0% of hydro generation in the emission rate calculations.⁷

New and existing fossil fuel plants should not get more credit for CO₂ reductions than zero-carbon generation, which could easily occur under this construct. For example, consider the following, which takes emission rate-trading to its logical conclusion. Suppose a state's emissions rate target was 1,286 lb./MWh. An existing NGCC with a CO₂ emissions rate of 900 lb./MWh would be credited with 386 lb./MWh. Nuclear power emits no CO₂ per MWh, which should mean it would receive a credit equal to the target, or 1,286 lb./MWh. However, because only six percent of nuclear generation counts in the proposed formula, it is credited with only 77 lb./MWh. Nuclear would have to generate five times the MWh to receive the same CO₂ credit as one MWh of natural gas. Because the credits have financial value, this creates a subsidy to natural gas at the expense of zero-emitting nuclear generation, which could serve to actually increase emissions if it leads to nuclear retirements.⁸ The same is true for hydro.

The slides attached as **Appendix A** demonstrate this point another way. Imagine a hypothetical state with half coal generation and half nuclear and hydro generation, with an emission target of 1,410 lb./MWh. Under the Clean Power Plan, the state's existing emission rate would be 1,887 lb./MWh, because only a limited amount of its nuclear capacity (6%) and none of its hydro capacity is included in the denominator of its emission rate. If a nuclear plant retires in that state and the state opts to replace it with new NGCC capacity and include new NGCC generation in its compliance plan (which it has the option to do under the Proposed Rule), the state could reduce its emission rate to 1,410 lb./MWh, *increase its emission by 40%*, and still comply with the Clean Power Plan. This only occurs because most of the state's nuclear generation is not included in its starting emission rate or in its emission rate target (and none of its hydro generation is included either). Thus, it is largely irrelevant to the state whether that nuclear or hydro generation remains in operation because it doesn't count when the state calculates its emission rate.

One option that avoids these distortions entirely is the Reliability Dispatch Safe Harbor option

⁶ As proposed, 25 states' final 2030 goals exceed 900 lb./MWh, which is approximately the average emission rate of an existing NGCC plant.

⁷ EPA officials have indicated that they will be reevaluating the treatment of nuclear in the proposed rule. *See, e.g.*, Administrator McCarthy's comments to the Senate Environment and Public Works Committee, July 23, 2014 ("nuclear energy is a zero-emitting carbon energy generating technology and for that reason we have actually gone to great lengths in this proposal to make sure states are aware of that and that nuclear energy is factored into the standard-setting process...we have heard that maybe we didn't go far enough or we went too far. So we'll be listening to those comments, because we have heard them") available at <http://www.c-span.org/video/?320607-1/hearing-epa-power-plant-standards>.

⁸ See Burtraw, Linn, Palmer, and Paul, "The Costs and Consequences of Clean Air Act Regulation of CO₂ from Power Plants" at 9 (January 2014) ("Under the tradable performance standard, the asset value is used to subsidize production. In particular, the benchmark emissions rate is above the observed emissions rate for most natural gas units, providing a valuable net subsidy to production that reduces the variable cost of generation, leading to lower costs for the generator on the margin that is setting electricity price. Consequently, given the relatively greater level of electricity production, the marginal abatement cost is about 50 percent greater than under cap and trade with auction."), available at <http://rff.org/RFF/Documents/RFF-DP-14-01.pdf>.

discussed below. Another alternative that largely avoids them would be for EPA to evaluate state obligations based on the mass of pollutants emitted rather than the emission rate.⁹ If, however, EPA maintains the rate-based standard, FERC should encourage EPA to include all zero-carbon generation in the rate targets as well as in compliance determinations, in order to facilitate states' ability to fully credit these resources, including their incorporation into any interstate credit trading, such as is currently done with renewable energy credits. In a rate-trading scheme, this would provide some measure of recognition to these resources and potentially keep them and their reliable baseload generation available to the grid in order to both support reliability and minimize consumer costs.

Devaluing nuclear and hydroelectric energy in the emission targets is inconsistent with the Commission's goals of ensuring that the system maintains an adequate supply of resources that have access to firm fuel supplies.¹⁰ The deep freeze brought on by the polar vortex in January 2014 resulted in more than 35,000 megawatts of outages. In the eastern part of the U.S. and Texas, natural gas plants accounted for 55 percent of these outages. Nuclear units accounted for only three percent of forced outages – despite making up 12 percent of total capacity – and were least affected by the weather conditions, operating at 90 percent capacity through the polar vortex event.¹¹ In contrast to natural gas plants, which receive their fuel supply through a gas pipeline system that may be constrained under certain circumstances, nuclear facilities' fuel is unaffected by weather.¹² Further, in contrast to wind or solar power, nuclear facilities continue to generate electricity at all times of day and in all weather conditions. The ability to rely on nuclear power in all circumstances will become increasingly important as the Nation's electricity system becomes less reliant on coal, and more reliant on gas pipelines and on renewable technologies that are weather-dependent.

⁹ In other rules where EPA established emission reduction goals for the electricity sector based on the reductions that could be achieved by the response of the system – including the Cross-State Air Pollution Rule, the Clean Air Interstate Rule, the NOx SIP Call, and the Clean Air Mercury Rule – EPA expressed state or system-wide emissions reduction goals in the form of a targeted mass, rather than a targeted rate. Even when EPA used a target emission rate to calculate the reduction potential, the obligation in the final rule was a tonnage reduction. For example, under the NOx SIP Call, EPA set emissions reductions obligations equivalent to an emission limit of 0.15 lb./mmBtu from EGUs, based on a determination of cost-effective controls, but finalized states' obligations by multiplying this rate by generation to determine the targets in tons of pollutants to be reduced. These rules collectively demonstrate that mass-based standards, by establishing a clear price signal, work with the current least-cost dispatch system. See Exelon Comments, *supra* note 3, at 104-109 for discussion of legal basis for mass-based standards with trading.

¹⁰ *Centralized Capacity Markets in Regional Transmission Organizations and Independent System Operators and Winter 2013-2014 Operations and Market Performance in Regional Transmission Organizations and Independent System Operators*, 149 FERC ¶ 61,145 (2014).

¹¹ North American Electric Reliability Corp., "Polar Vortex Review" (Sept. 2014) at 13, 32, available at http://www.nerc.com/pa/rrm/January%202014%20Polar%20Vortex%20Review/Polar_Vortex_Review_29_Sept_2014_Final.pdf.

¹² Natural gas availability can also constrain the operation of coal plants, which often require natural gas as a startup fuel and are increasingly relying on co-firing with natural gas to meet other requirements of the Clean Air Act.

FERC Should Support EPA’s Adoption of a Reliability Dispatch Safe Harbor for Compliance

A number of organizations have recommended that EPA offer states the option of complying by imposing a carbon adder rather than by measuring emissions from covered sources. This is unsurprising given FERC’s longstanding reliance on market-based mechanisms to achieve reliable and cost-effective operations for consumers. As PJM’s Executive Vice President of Operations Michael Kormos explained in his pre-filed comments in this docket, if an explicit price is reflected in dispatch, the market will produce efficient results inclusive of that constraint.¹³ Likewise, as EEI explained in comments to EPA, imposing a carbon adder “would alter the dispatch of units to better reflect their CO₂ emissions and provide a mechanism for continued emission reductions from existing units in a way that both respected system requirements and ensured reliable operation of the portions of the grid administered by the RTOs.”¹⁴ EEI further notes that “Importantly, because the carbon adder relies on existing market structures, it could be implemented soon after state compliance plans are approved (and before 2020) to start reducing emissions.”¹⁵

As discussed further below, one way to implement this concept is through a “Reliability Dispatch Safe Harbor.”¹⁶ This proposal would reduce the market distortions inherent in EPA’s proposal and would thus provide critical market signals to prevent nuclear capacity from premature retirement, while at the same time capping compliance costs for consumers. If nuclear capacity retires because of flaws in market design that prevent the zero-carbon attributes from being adequately valued, customers will see higher financial and environmental costs associated with the replacement cost of the carbon-emitting resources that will be built in its place. Therefore, we recommend that the Commission support EPA offering this option to states as a cost-effective way to preserve the market signals the Commission and the RTO/ISOs have developed.

Reliability Dispatch Safe Harbor Overview

The Commission will hear from several stakeholders that the interim targets proposed by EPA in the Clean Power Plan are not achievable by the 2020 deadline or that achieving them will be too costly and will jeopardize electric reliability. Many stakeholders are concerned that the multi-state coordination necessary to achieve least cost compliance is not achievable by the 2020 beginning of the interim compliance period. The Reliability Dispatch Safe Harbor proposal addresses these concerns as well as the need for compliance timeline flexibility and regulatory certainty.

Under this proposal, a state that voluntarily opts into a “Reliability Dispatch Safe Harbor” program that co-optimizes reliability and greenhouse gas reductions would be deemed to

¹³ Kormos Comments at 4.

¹⁴ EEI Comments to EPA at 166-167, available at [http://www.eei.org/issuesandpolicy/testimony-filings-briefs/Documents/EEI_111\(d\)_Comments_Final_12012014.pdf](http://www.eei.org/issuesandpolicy/testimony-filings-briefs/Documents/EEI_111(d)_Comments_Final_12012014.pdf).

¹⁵ *Id.*

¹⁶ See **Appendix B** for examples of organizations that have recommended this concept with slight variations. Please note that Exelon’s comments to EPA refer to “Smart System Dispatch” but the concept is the same: utilizing existing least-cost dispatch mechanisms to co-optimize for reliability *and* greenhouse gas emission reductions.

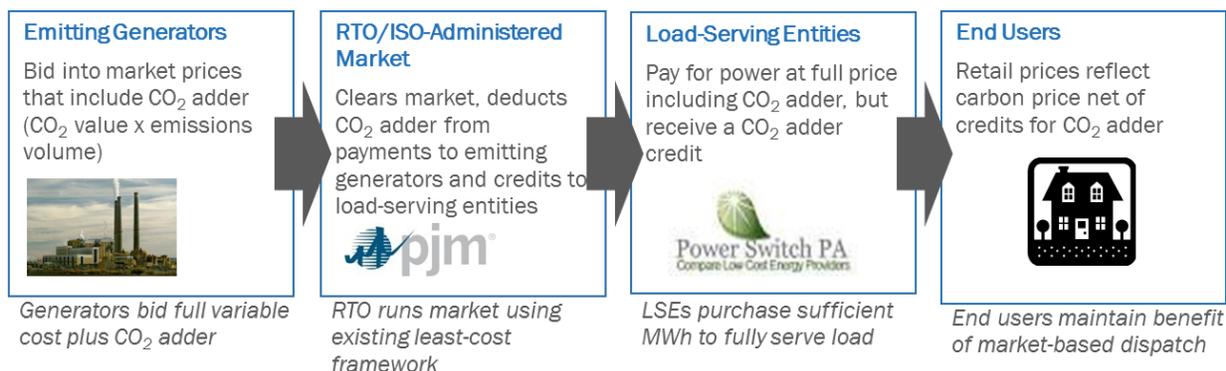
comply with its interim Clean Power Plan obligations through 2029. This program would use a cost of CO₂ emissions predetermined by EPA and apply it to each emitting unit to establish a unit-specific variable cost that would be included in the unit's market bid. (A similar approach can be deployed in states without organized markets.) Based on data released by several grid operators, we estimate that applying the cost of CO₂ emissions necessary to approximate the interim targets would result in a retail rate increase of between two and five percent on a regional basis.¹⁷ This cost is within the range of routine customer rate increases; the average rate increase by U.S. utilities that increased their rates during the past year was 3.2 percent.¹⁸

By allowing each state to decide whether it will opt in, this program allows individual states to elect a multi-state compliance strategy without the need for complex multi-state negotiations. Given that it can be implemented virtually immediately, EPA should also provide an incentive for states to join the Reliability Dispatch Safe Harbor program sooner than 2020 by rewarding such states with a form of early action credit through a lower cost of CO₂, calculated to achieve equivalent overall carbon pollution reductions through 2029.¹⁹

Reliability Dispatch Safe Harbor Mechanics

Based on its own modeling, EPA would determine a uniform per-ton adder for CO₂ emissions that would result in emissions reductions commensurate with EPA's overall interim goal. Carbon-emitting generators in a state that opts into this program would include that carbon value as a variable cost of operating, and the state would be deemed to comply with its interim goals as long as it requires its generators to participate in the program, regardless of the state's actual emissions and emissions rate during the safe harbor period.

In states with organized markets, the RTOs would dispatch the system as usual, as depicted in the figure below and as further described in **Appendix C**.



This approach would preserve the reliability benefit of the current least-cost dispatch mechanism; coal and other emitting units needed for reliability would be able to run when needed rather than being limited as a result of run-time or other non-economic limits that could otherwise be included in states' plans. Thus, the *order* of dispatch would be altered in

¹⁷ See Exelon Comments, *supra* note 3, at 33-34.

¹⁸ *Id.*

¹⁹ This could be a low-cost option to address the President's recent budget proposal's desire to incent states to go beyond the reductions required by the Clean Power Plan.

most states, but the *mechanism* and focus on reliability would not.

Reliability Dispatch also provides an effective cap on the cost of compliance for consumers. The carbon adders would be returned to the load-serving entities in the state, and if the state directed the funds to be used to mitigate consumer impacts, we estimate that states could eliminate at least 75 percent of the rule's impact on retail electric rates, limiting the increase to two to five percent on a regional basis, as noted above.

The same principles behind the Reliability Dispatch Safe Harbor concept could be applied outside organized markets. Vertically-integrated utilities similarly determine least-cost dispatch among the owned or purchased generation sources available to serve that utility's native load, and customers pay rates based on the average fuel cost of the units dispatched plus fixed costs and returns. To qualify for this safe harbor, a single utility dispatching multiple generation sources could agree to reflect a CO₂ adder in the dispatch cost of its fossil generation, much like the RTO would. The utility would then determine least cost dispatch including the CO₂ adder and customers would pay rates based on the change in average fuel cost associated with the units dispatched, again along with fixed costs and returns.

In summary, Reliability Dispatch Safe Harbor offers a number of benefits:

- Provides states and customers with a simple voluntary approach to compliance that provides flexibility to comply in a manner that balances all competing priorities – reliability, costs, the environment, fuel diversity, power quality, and transmission.
- Resolves the compliance questions surrounding the reasonableness and viability of EPA's building blocks; participating states are deemed to be in compliance with the rule during the safe harbor period.
- Ensures effective deployment of capital in coal units by allowing existing units with limited remaining operational lives to be fully utilized without additional costly retrofits.
- Provides appropriate price signals to maintain and expand clean energy and natural gas utilization.
- Ensures electric reliability at both the state and regional level by linking greenhouse gas abatement to reliability dispatch – when emitting units are needed, they can run.
- Achieves significant greenhouse gas reductions at lowest cost.
- Collected fees can be utilized to significantly offset customer costs or to achieve other public policy objectives at states' discretion.
- Provides states and industry with a longer compliance runway, allowing for improved planning and regulatory certainty while beginning to transition the fleet under what is effectively a cost cap.

This option would achieve EPA's statutory obligations to reduce greenhouse gas emissions using the best system available, while not muting the price signals necessary to the efficient operation of the electric grid as well as necessary to incent investment, key objectives of the

Commission. Beyond encouraging EPA to permit this compliance option, the Commission should facilitate the program by requiring RTOs to amend their tariffs to enable the program to be implemented in states that choose to participate.

Conclusion

In sum, the Commission has a critical role to play in ensuring that the Clean Power Plan is able to leverage the mechanisms of the electric system to reduce emissions most cost-effectively, rather than working against the power system. Most notably, FERC must ensure that the Plan – and states' implementation plans – are consistent with the market rules that FERC has approved and do not distort electricity markets in ways that will harm consumers or the environment. FERC has a responsibility to offer its expertise to ensure that EPA chooses options that not only work in concert with wholesale markets, but that fully harness the ingenuity, flexibility and operational efficiencies that these markets provide.

Appendices

- Appendix A: Treatment of Existing Nuclear
- Appendix B: Comments in Alignment with Reliability Safe Harbor Concept
- Appendix C: Reliability Dispatch Safe Harbor Mechanics