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10/23/18



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Lt. Governor

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STEFANIE A. BRAND
Director

OCT 22 2018

BOARD OF PUBLIC UTILITIES
TRENTON, NJ

October 22, 2018

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OCT 22 2018

BOARD OF PUBLIC UTILITIES
TRENTON, NJ

VIA ELECTRONIC MAIL (Zec.Comments @bpu.nj.gov) AND
HAND DELIVERY

Ms. Aida Camacho-Welch, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 3rd Floor
Suite 314
Post Office Box 350
Trenton NJ 08625-0350

Re: I/M/O the Implementation of L. 2018, C. 16 Regarding the
Establishment of a Zero Emission Certificate Program for Eligible
Nuclear Power Plant
BPU Dkt. No. EO18080899

Dear Secretary Camacho-Welch:

Enclosed for filing please find an original and ten copies of the Division of Rate Counsel's Comments in the above matter proceeding. These comments are being submitted pursuant to the Board of Public Utilities' Notice dated September 11, 2108 in this matter. Pursuant to the Notice, these comments are also being submitted electronically to ZEC.Comments@bpu.nj.gov.

We have also enclosed one additional copy of the materials transmitted. Please stamp and date the copy as "filed" and return to our courier. Thank you for your consideration and attention to this matter.

Respectfully submitted,

Stefanie A. Brand

Stefanie A. Brand
Director, Division of Rate Counsel

*Case mgmt
list copied*
Enclosure
SAB/lg

I/M/O THE IMPLEMENTATION OF L. 2018, C. 16
REGARDING THE ESTABLISHMENT OF A ZERO
EMISSION CERTIFICATE PROGRAM FOR ELIGIBLE
NUCLEAR POWER PLANTS ORDER INITIATING THE
ZERO EMISSION CERTIFICATE PROGRAM,
DESIGNATING COMMISSIONER, SETTING MANNER
OF SERVICE
BPU Dkt. No.: EO18080899

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RECEIVED
CASE MANAGEMENT

OCT 22 2018

BOARD OF PUBLIC UTILITIES
TRENTON, NJ

STATE OF NEW JERSEY

BEFORE THE BOARD OF PUBLIC UTILITIES

RECEIVED
MAIL ROOM

OCT 22 2018

BOARD OF PUBLIC UTILITIES
TRENTON, NJ

In the Matter of the Implementation of L.) BPU Docket No. EO18080899
2018, c. 16 Regarding the Establishment)
of a Zero Emission Certificate Program)
for Eligible Nuclear Power Plants)

COMMENTS OF THE
NEW JERSEY DIVISION OF RATE COUNSEL

October 22, 2018

Introduction

In a Public Notice issued September 11, 2018, the New Jersey Board of Public Utilities (“BPU” or “Board”) solicited comments from stakeholders on various issues related to the Zero Emission Certificate (“ZEC”) Program, which Governor Phil Murphy signed into law on May 23, 2018. In its Public Notice, the BPU identified seventeen (17) questions pertaining to the ZEC Program. The Board announced that three Public Hearings would be held to take comments from interested parties on these questions. In addition, the BPU invited written comments to be filed by October 22, 2018. The Division of Rate Counsel (“Rate Counsel”) participated in each of the three public hearings and hereby files its written comments in response to the Board’s Public Notice.

Rate Counsel represents and protects the interest of all consumers -- residential customers, small business customers, small and large industrial customers, schools, libraries and other institutions in our communities across the State. Rate Counsel is a party in cases where New Jersey utilities or businesses seek changes in their rates and/or services. Rate Counsel also gives consumers a voice in setting energy, water and telecommunications policy that will affect the rendering of utility services well into the future.

The ZEC Program will provide financial incentives to certain eligible nuclear operators inside or outside the state for the continued operation of their nuclear units. Nuclear operators have argued that these incentives are necessary to prevent their nuclear units from being shut down due to financial hardship. Nuclear unit owners maintain that declining energy prices at PJM are not sufficient to ensure continued operation. The Legislature enacted legislation providing for these incentives because it believes that these nuclear units provide environmental and other benefits to the State that would be lost if they shut down in the near future. Ratepayers

would pay for these incentives through a surcharge on their electric bills, which, if there are nuclear plants that are deemed eligible, would initially be set at 0.4 cents per kWh. This surcharge would result in an increase of \$4 per month for a household using 1,000 kWh per month.

Given the important issues raised by the ZEC Program, Rate Counsel welcomes the opportunity to provide these written comments and to work with the various stakeholders on implementing the legislation in a manner consistent with New Jersey law, while protecting New Jersey ratepayers from excessive and unnecessary charges.

(1) What specific metrics should the Board utilize to determine if a nuclear power Unit (“Unit”) should be deemed eligible for ZEC credits?

Rate Counsel notes that there are four primary metrics that should be met if a Unit is to be deemed eligible for ZEC credits. First, each Unit requesting participation in the ZEC Program should demonstrate that the Unit makes a “significant and material contribution to the air quality in the State by minimizing emissions that adversely affect the citizens of the State, and if the nuclear power plant were to be retired, that that retirement would significantly and negatively impact New Jersey’s ability to comply with State air emissions reduction requirements.” N.J.S.A. 48:3-87.5(e)(2). Second, each Unit should demonstrate, to the satisfaction of the Board, that it “will cease operations within three years unless the nuclear power plant experiences a material financial change.”. N.J.S.A. 48:3-87.5(e)(3). Third, subsidies under the ZEC Program are limited to payments for no more than 40% of the total megawatt-hours of electricity distributed by public utilities in the State in the preceding energy year. Therefore, the Board is required to rank each Unit that meets the first two metrics discussed above. Only those Units that rank high enough in air quality impact and financial distress and fall within this 40% limit should qualify for the ZEC Program.

Fourth, the Board must also assess whether the 0.4 cents per kWh surcharge would result in just and reasonable rates. Under settled New Jersey law, utility ratepayers have the right to utility rates that are not excessive. In re Redi-Flo Corp., 76 N.J. 21, 39 (1978). This is a principle grounded in constitutional due process protections. In re Industrial Sand Rates, 66 N.J. 12, 23-24 (1975). The Board has an overriding obligation to ensure that rates are just and reasonable that was not and cannot be superseded by the ZEC statute. If, after examining the revenue requirement needed for the nuclear Unit, the Board finds that the subsidy resulting from the charge is substantially in excess of the amount required to keep the unit in operation, then the \$0.004/kWh rate is not just and reasonable and the Board should accordingly reject it.

The review will require a certain subjective analysis by the Board. This analysis must, however, be based on credible information provided by the Applicant. A mere certification is not sufficient. No unit should be determined eligible without a clear demonstration by the Applicant that anticipated revenues will be insufficient to keep the unit in operation for the next three years.

If the Board finds that a nuclear unit is in financial distress to the point that it will shut down within the next three years, and that its closure will impact New Jersey's air quality or result in other environmental detriment, then it must still consider whether the Unit's energy production ranks within the 40% limit imposed by the Act and if the \$0.004/kWh subsidy results in just and reasonable rates. The Board is not required to award ZECs for a full 40% of New Jersey's generation. It may award a substantially lower amount if the evidence before it does not justify providing subsidies to such a large amount of generation. In addition, the Board is required to ensure that all rates are just and reasonable, including the \$0.004 per kWh subsidy referenced in the Act. If a Unit requires a subsidy of less than \$0.004 per kWh to continue

operations, then the Board must take that into account and award a lower or no subsidy. These four metrics – environmental impact, financial hardship, relative ranking, and the amount of any required subsidy – must all be analyzed by the Board as it evaluates various Applicants for participation in the ZEC Program.

(2) Referencing N.J.S.A. 48:3-87.5(a) and (e)(3), how should the risk-adjusted cost of capital for a Unit be determined.

The ZEC Program should not be based on the desired earnings of nuclear generators, but on the minimum reasonable operating income necessary to keep the Unit open during the next three years. The discounted cashflow model (“DCF”) is the primary model used by the Board to evaluate the utilities’ required return in a base rate case, and this model should be utilized to evaluate the risk-adjusted cost of capital required for the Units applying for subsidies under the ZEC Program. The Board is required under the Act to rank Applicants based on both financial criteria and on environmental impacts and the owners of nuclear Units may inherently have different required returns to keep each Unit operating for the next three years. Therefore, in addition to a traditional DCF analysis, the Board should also consider other measures for evaluating the risk-adjusted cost of capital claims made by the Applicants.

For example, the Board should consider cost of capital claims considering recently-authorized returns for regulated New Jersey utilities. In addition, the Board should consider actual returns earned by suppliers of other electric generation. The Board should also consider the actual returns earned in the past by the Unit as well as the total return earned over the Unit’s period in operation to date. The Board should consider returns earned by other business ventures being undertaken by the nuclear operator or its affiliates and the impact of the Unit on the corporate earnings per share of the consolidated entity. Finally, in evaluating whether a particular return is reasonable, the Board should also consider the returns that would be required

by owners of alternative generation that could replace the Unit while maintaining (or improving) air quality in the State. Rate Counsel anticipates that the issue of an appropriate risk-adjusted return will be far more difficult than the traditional analysis required in a base rate case, given the complexity of a business decision as to whether an unregulated nuclear Unit should be shut down.

- (3) **Referencing N.J.S.A. 48:3-87.5(a), the Act requires the Board to consider the cost of “operational risks” and “market risks” for Units. What information should or should not be included in these two categories?**

The legislation states that the Board should consider the costs of operational risks and market risks that “would be avoided by ceasing operations” among a list of operational and capital expense factors. New Jersey is part of the PJM regional transmission organization (“RTO”) that includes 13 states and the District of Columbia. PJM is responsible for managing operational and market risks of wholesale electricity for the region. The Board’s oversight of the ZEC Program should not distort PJM market rules or operational requirements. Uneconomic units should be allowed to retire if replaced with newer, cleaner, and cheaper generation resources.

The Board should consider the “net” operational and market risks associated with maintaining legacy nuclear generation in the face of the changing energy market dynamics. Thus, in evaluating operational and market risks, the Board must offset these risks with operational and market benefits that may accrue from shutting down a particular Unit. Lower-cost renewable energy and expanded energy efficiency programs are changing the dynamics of the energy marketplace and these changes should be considered when evaluating Applicants. The ZEC Program should not penalize other generation with the same carbon-free attributes as nuclear generation, but at lower cost to ratepayers. In addition, the Board should consider the

ZEC Program's market risk impact on the Governor Murphy's Executive Order #8 to deploy 3,500 MW of offshore wind by 2030.

(4) Referencing N.J.S.A. 48:3-87.5(a) and (e)(3), what specific financial information should the Board request that Units applying for the ZEC Program provide?

Under the legislation's eligibility requirements, the Board determines whether a particular nuclear plant provides "fuel diversity, air quality or other environmental benefits" to New Jersey, and whether those benefits are at risk of loss because the financial condition of the plant will, unless there is a "material financial change," cause the plant to cease operations within three years. P.L. 2018, ch. 16, section 3. Therefore, the legislation requires the Board to answer the following questions:

- What is the minimum reasonable revenue requirement that the nuclear operator needs over the next three years in order to cover its cost of operations and capital upgrades?
- How likely is it that a particular nuclear unit will recover its minimum reasonable revenue requirement, and will it shut down in the next three years if the operator is unable to recover this minimum revenue requirement?
- What is the cost of shutting down the unit and what costs would be avoided if the unit were shut down.
- What impact does the nuclear unit have on air quality, "fuel diversity," or other environmental benefits in New Jersey?
- If a particular unit did shut down, what are the likely resources and costs for replacement power and what impact would the replacement resources have on air quality or "fuel diversity" and other environmental benefits in New Jersey?

With regard to the first question, Rate Counsel believes that any nuclear unit filing an application for the ZEC Program should provide extensive financial information. This financial information should include information on both historical and projected revenues and operating costs as well as capital costs. The Applicant should also provide information about the operating

return or operating income that it believes is necessary in order to keep the unit open. While Rate Counsel recognizes that nuclear operators would like to earn as much money as possible, it is important to remember that their rates and revenues are unregulated. When they were earning substantial profits in the past, they were free to keep those earnings. Thus, information on the historical earnings of the unit should be provided. The Applicant should also provide information about any amounts that it or an affiliate received when restructuring was adopted in compensation for stranded costs. The Board should ensure that New Jersey ratepayers are not being forced to compensate a nuclear operator for costs that it already recovered through stranded cost payments.

On the revenue side, the Applicant should provide information about current and future market prices and the future income that it anticipates if the unit is operational. In determining future revenues, the Board should consider not only energy sales and capacity payments, but also other sources of incentive payments that may be available from governmental entities or other sources to promote nuclear energy, and/or carbon-free energy. The Board should review forecasts based on reasonable and objective expectations of future market prices and get input from PJM and/or the PJM Independent Market Monitor to ensure that the projections are reasonable. We urge the Board to make the filing requirements comprehensive, since the statute provides a very short time period for review, leaving little time for follow-up discovery. A detailed list of proposed filing requirements is included in an appendix to these comments.

- (5) Referencing N.J.S.A. 48:3-87.5(e)(2), what information should be provided to the Board to demonstrate that the Unit makes a significant and material contribution to the air quality in the state? What information should be provided to demonstrate that the Unit minimizes harmful emissions that adversely affect the citizens of the state? What information should a Unit provide to demonstrate that, if the Unit were to be retired, the retirement would significantly and negatively impact New Jersey's ability to comply with State air emissions reduction requirements?**

Under the ZEC program, an Applicant must include detailed local and regional air dispersion modeling and an examination of the replacement resources that would be required if the unit does shut down. This must be done on a unit specific basis, as the impact will likely be different depending on the size and location of the unit. The Applicant's air quality modeling should at a minimum adhere to the New Jersey Department of Environmental Protection's air quality modeling protocols.¹ An Applicant must provide a reasonable assessment regarding what types of generation might replace the nuclear unit based on either expected new resources documented in the PJM interconnection process or public announcements.² For the last four or five years, renewables have accounted for at least half of the new generation built in this country. According to the U.S. Energy Information Administration, in 2017, renewables accounted for 55% of the 21 GW of U.S. capacity additions. A renewable scenario for replacement generation is a plausible future and should be considered by the Board.³ So, an assumption cannot be made that if a nuclear plant shuts down it will be replaced by a natural gas or coal plant. It is just as likely that the lost capacity will be replaced by a combination of renewable resources. The Board should consider that energy from a retiring nuclear facility may be replaced with renewable resources. As a result, the loss of the nuclear plant may have no adverse impact on air quality or other environmental benefits in New Jersey. In fact, the impact may be positive.

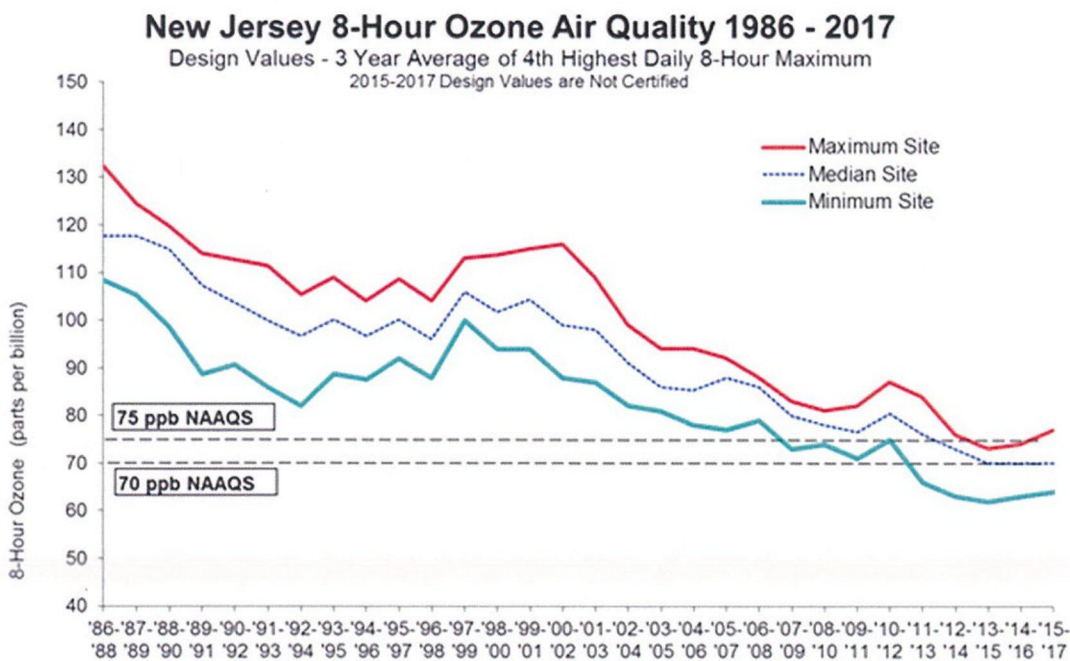
The legislation expresses a specific concern about the potential impact of a nuclear unit shut-down on the State's attainment of the federal Ozone National Ambient Air Quality Standard. N.J.S.A. 48:3-87.3(b)(2). The trend in New Jersey Ozone emissions is declining as shown in the following figures:

¹ Available at <https://www.state.nj.us/dep/aqpp/downloads/techman/1002.PDF>

² <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx>

³ A 2016 study analyzed the health and environmental benefits associated with offshore wind scenarios within PJM.³ The study authors found \$690 million per year in benefits under a 3,000 MW New Jersey offshore wind scenario.

Figure 1 New Jersey Ozone Emission Trend⁴



Bureau of Evaluation and Planning 3-19-18

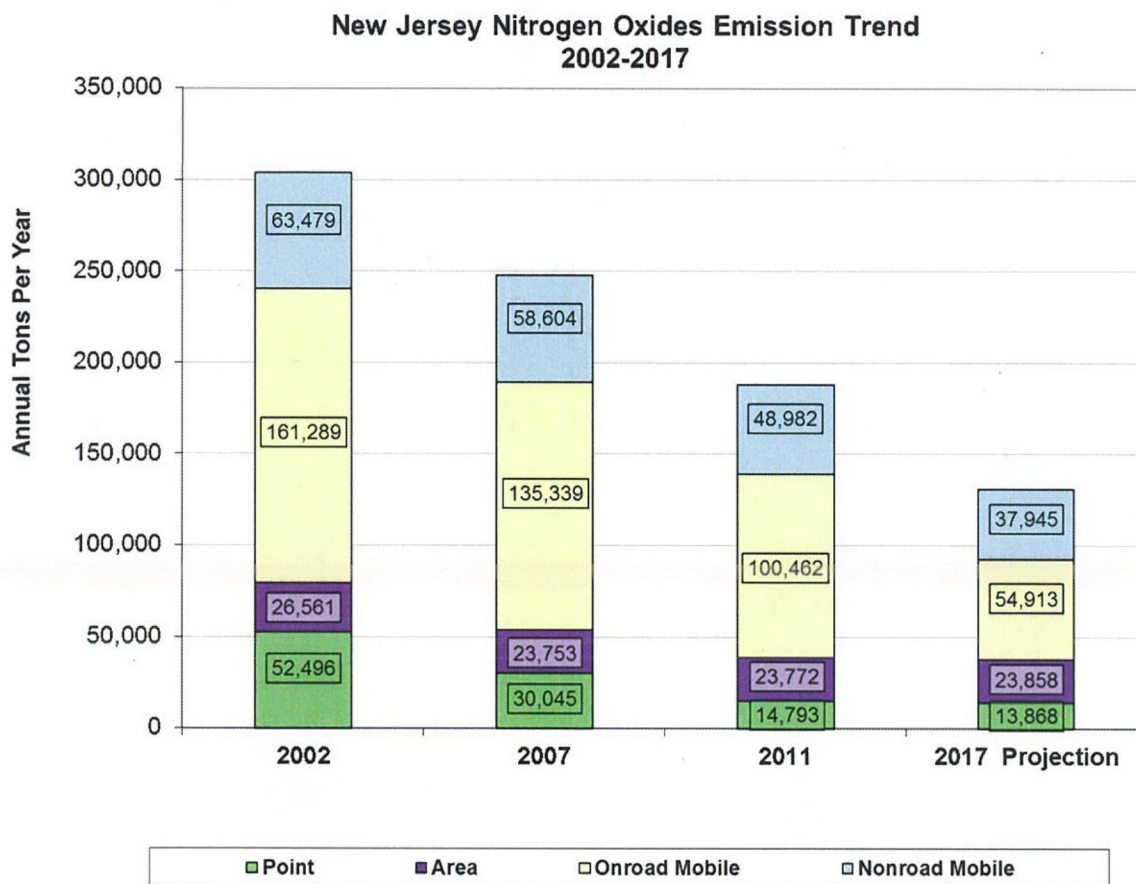
Ozone forms because of the chemical interactions and transport of oxygen, nitrogen oxides (NO_x), volatile organic compounds (VOCs), and sunlight.⁵ NO_x and VOCs are emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources. In New Jersey, the primary sources of human-made NO_x emissions are motor vehicles, construction equipment, power plants and industrial, commercial, and residential fuel combustion; and the primary sources of human-made VOC emissions are consumer products, such as household cleaners, paints and solvents, motor vehicles, lawn and garden equipment and gasoline stations.⁶ Local emissions of ozone precursors and transport of pollutants into the state impact New Jersey air quality. Therefore, reductions in both nitrogen oxides and VOCs will help reduce ozone levels. The following figures show the trend in NO_x and VOCs in New Jersey.

⁴ <https://www.nj.gov/dep/cleanairnj/ozone.html>

⁵ <https://www.nj.gov/dep/cleanairnj/whatissmog.html>

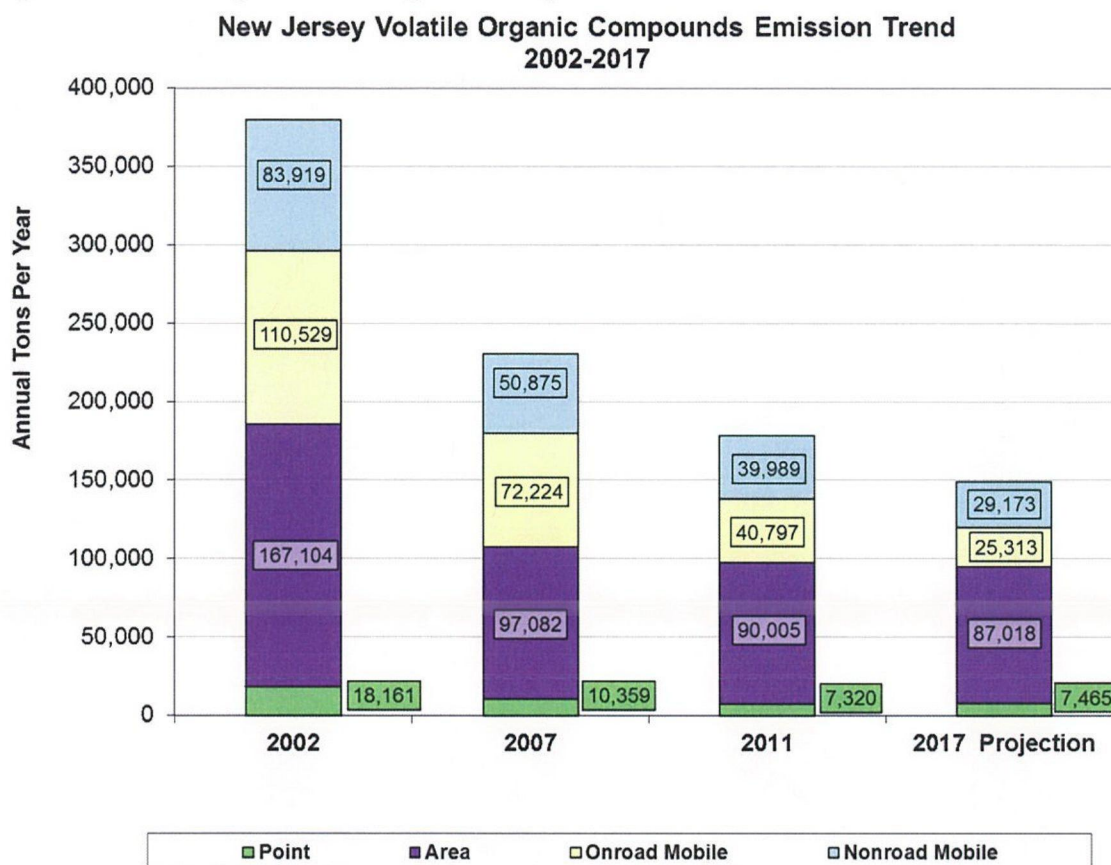
⁶ <https://www.nj.gov/dep/dsr/trends/pdfs/ozone.pdf>

Figure 2 New Jersey Nitrogen Oxide Emission Trend⁷



⁷ <https://www.nj.gov/dep/baqp/inventory.html>

Figure 3 New Jersey Volatile Organic Compounds Emission Trend⁸



The trend shows overall reductions in both NO_x and VOCs within the state. The charts also show that 71 percent of the 2017 projected NO_x emissions are from mobile sources that are not addressed by the ZEC program. Area sources (not power plants) and mobile sources account for 94 percent of the state's projected VOC emissions that are not addressed by the ZEC program. These facts should be taken into account when analyzing whether a nuclear unit's closure will significantly and negatively impact the State's ability to comply with emissions reduction requirements.

⁸ <https://www.nj.gov/dep/baqp/inventory.html>

- (6) **Referencing N.J.S.A. 48:3-87.5(e)(4), the Act requires that eligible Units certify that they do not receive any direct or indirect payment or credit under a law, rule, regulation, order, tariff, or other action of this State or any other state, or a federal law, rule, regulation, order, tariff, or other action, or a regional compact, despite its reasonable best efforts to obtain any such payment or credit, for its fuel diversity, resilience, air quality, or other environmental attributes that will eliminate the need for the Unit to be retired. What should the Board interpret fuel diversity, resilience, air quality, and other environmental attributes to include?**

Any payment made to the nuclear unit outside of established wholesale market compensation for energy, capacity, and/or ancillary services should be considered a direct or indirect payment or credit. The Board should not need to distinguish between fuel diversity, resilience,⁹ air quality, and other environmental benefits to include such⁹ a payment or credit as an offset to the costs of continued operation of the nuclear unit. Each Applicant needs to provide the Board with amounts, projections, and the basis for projections of all such payments or credits. For example, if New Jersey rejoins the Regional Greenhouse Gas Initiative (“RGGI”), then RGGI payments received by the New Jersey nuclear units should be considered by the Board as payment for the environmental attribute of the nuclear unit.

- (7) **What information about other benefits, subsidies, or tax implications should be provided to the Board as part of a ZEC application?**

The Board must consider the comprehensive financial condition of each Unit when determining if a Unit should be authorized to participate in the ZEC Program. This would include an analysis of all other financial benefits, subsidies, or tax implications associated with the Unit. All other sources of financial benefit and subsidies should be given the same weight as market revenues when evaluating whether a Unit requires additional subsidy through the ZEC Program. The ZEC Program subsidy should effectively be the subsidy of last resort.

⁹ <https://nj.gov/infobank/eo/056murphy/pdf/EO-7.pdf>

New Jersey is in the process of re-entering the RGGI, and payments or revenues that result from that initiative must be considered, as it provides a way of “leveling the playing field” for non-carbon generating sources that will provide a specific benefit to the nuclear units seeking ZECs. In addition, FERC is currently considering a variety of proposals to modify the PJM capacity market to promote competitiveness in the face of ever-increasing state policy-driven subsidies as discussed below.¹⁰ FERC is concerned about the impact of incentive payments for various types of resources on both the energy and capacity markets. FERC has opened a proceeding to determine what market rule changes are required to ensure the minimum offer price rule (“MOPR”) applies to new and existing capacity resources. There can be no doubt that these proposals will impact – and likely increase – capacity prices paid to the nuclear units and those increases, pursuant to Section 3(i)(3) of the Act, must be quantified and deducted from any award of ZEC revenues.

In addition, PJM is considering changes to energy price formation in response to calls from resources such as the nuclear plants that claim they are not being appropriately valued in the current energy markets.¹¹ Any price increases and corresponding additional revenues that result from changes in the energy markets should also be deducted from the ZEC revenues to avoid windfall payments.

Thus, applicants will need to provide the Board with financial models illustrating the profitability of a Unit under different ranges of wholesale capacity and energy prices. In addition, any program established by the Board should also make clear that if FERC or the U.S. Department of Energy or PJM make any other changes that impact the way nuclear plants are compensated for their environmental or “fuel diversity” attributes, that those additional revenues

¹⁰ <https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=14961693>

¹¹ <https://www.pjm.com/committees-and-groups/task-forces/epfstf.aspx>

will be deducted from ZEC revenues.¹² Applicants will need to provide the Board with analyses of the impact on a Unit's financial performance if PJM/FERC addresses the impact of ZECs in proposed changes to the wholesale markets.

(8) What forecasts, projections, or estimates should be included, or disallowed, as part of a ZEC application process?

With regard to its financial analysis, the Board should generally utilize the same framework that it uses to determine revenue requirements in a base rate case. Therefore, financial information should have a foundation in historical results. This is especially important for operating expenses. Operating expense forecasts, projections or estimates should be linked to historical data. Deviation from historical results should be based on known and measurable changes. General inflationary adjustments should be prohibited.

Capital cost estimates must be based on necessary capital upgrades and should be supported with independent competitive bids or other supporting documentation.

Market prices for electricity will be a major variable in the Board's determination of the need for a ZEC subsidy. While the Board should consider market price forecasts for energy and capacity over the next three years, it should analyze the Unit's financial condition in light of current market prices as well. Given the uncertainties inherent in any forecast, the Board should, at a minimum, examine the Unit's financial condition assuming the then-current market price for electricity. Any forecasts that deviate significantly from current market prices should be viewed cautiously. The Board should avoid authorizing participation of a Unit based primarily on speculative forecasts or projections.

In addition, the evaluation of forecasted market prices must be an iterative process. This is because the market prices for each Unit are, to some extent, dependent on what other sources

¹² <https://info.aee.net/hubfs/DOE%20Power%20Subsidy%20Plan.pdf>

of electric generation are available at any given time. Therefore, if one nuclear unit shuts down, there is likely to be a resulting impact on the remaining units. Decisions by the Board regarding which units to subsidize through the ZEC Program will have a ripple effect on market prices throughout the region. It may therefore be necessary for the Board to evaluate various combinations of nuclear subsidies and/or shut-downs to optimize its selection of ZEC participants.

(9) What other information, confidential or not, should the Board request to fully evaluate whether or not a Unit is at risk of closure due to financial hardship?

Once the Board reviews and assesses financial and environmental information provided by the Applicant, it will have to make a decision regarding how likely it is that a particular nuclear unit will shut down unless a ZEC Program incentive is provided. The Board should have the ability to review any information that it deems appropriate in order to evaluate whether or not a Unit is at risk of closure due to financial hardship. This may include information about the overall financial condition of the Unit's owners, not only direct owners but its parent company and affiliates as well. The Board must ascertain not only the financial condition of a particular Unit but how that Unit impacts the overall financial condition and business strategy of the owner and its affiliates. In some cases, there may be clear financial impacts such as tax losses that can be used by affiliated entities. In other cases, continued operation of the Unit may have perceived strategic benefits even if the financial condition of the Unit is weak.

For example, while a nuclear operator may forecast low energy market prices during the next three years, that operator may anticipate higher energy prices in the long term. In that case, the operator may be disinclined to shut the Unit down within the next three years because they anticipate greater profits in the long term. There may be other reasons for keeping a nuclear unit open, such as the desire to maintain or increase market share. The nuclear operation may

provide business or financial synergies that are beneficial to the parent company or its affiliates, even though the Unit may not be meeting short-term financial objectives. Each Unit must be evaluated comprehensively in order to determine whether or not a ZEC subsidy is necessary. While the information in the appendix provides a framework for the Board's review, the Board must not be restricted in its ability to review any documents of the Unit owner or its affiliates that are deemed necessary, regardless of confidentiality concerns.

The decision as to whether a nuclear unit should be shut down is a complex and difficult one for the corporation. The Board's task will be to get behind the more transparent factors impacting that decision and instead put itself in the place of the parent company or ultimate decision-maker in evaluating the likelihood that a particular Unit will be shut down without the ZEC subsidy.

(10) What other relevant factors, such as sustainability or long-term commitment to nuclear energy production, should the Board consider and evaluate?

The Board's mandate is to ensure safe, adequate, and proper utility services at reasonable rates for customers in New Jersey. To the extent that other resources provide safe, adequate, and proper energy and capacity to New Jersey, the Board should not be in the position of picking winners and losers. The Board retains the ability to determine that no unit should receive ZEC payments based on information filed as part of the application.

The Board should be strictly guided by the requirements of the legislation in determining whether a specific unit should participate in the ZEC Program. The New Jersey Legislature has determined that there may be nuclear units that impact New Jersey's air quality and that at least some of these units may require subsidies in order to continue to operate. The Board should not independently be taking steps to provide a preference to nuclear units as part of the ZEC Program over and above those preferences outlined in the legislation.

(11) What factors and expenses should the Board consider in analyzing a Unit's avoided costs if the Unit retires?

In evaluating the likelihood that a Unit will shut down within three years unless a ZEC subsidy is provided, the Board should consider the actual costs of shutting down the Unit, as well as the avoided costs if the Unit is shut down. In evaluating avoided costs, the Board should examine avoided costs to both the Unit owner as well as the potential cost impact to unrelated parties. The Board should also consider what would constitute the shut-down of a nuclear Unit, i.e., would the nuclear Unit be decommissioned and/or dismantled, or could the Unit be reactivated at some point in the future. The Board should also consider what funds might be available to assist the nuclear operator in shutting down a Unit, such as amounts collected from ratepayer-funded decommissioning funds. This analysis will require the Board to compare the financial costs of shutting down the Unit with the financial benefits of avoiding ongoing operating and capital costs.

In addition, the Board should consider not only the net costs or benefits of a shut-down, but also the other opportunities available to both the Unit owner and its affiliates for use of the resulting cash flow. If the Unit owner or its affiliates have few investment choices available, then continued operation of the nuclear Unit would be viewed more favorably by the corporation. Therefore, the Board should attempt to determine the overall impact on the affiliated entity of the savings resulting from avoided costs and to evaluate the other investment opportunities available to the corporate entity should the nuclear Unit be shut down.

On a broader framework, the Board should also examine the price impact on other units if one unit shuts down or the conversely, if a nuclear unit is subsidized to remain operational. For example, based on basic principles of supply and demand, if one of the nuclear units in Salem County shuts down, that will likely increase energy and capacity prices for the other remaining

units in PJM. The Board must take that price impact into account when deciding whether the other units at that location will continue to have insufficient revenue to stay open. A recent study of nuclear subsidy literature by researchers at Penn State highlights this issue and recommends: “The interactions between market outcomes and entry/exit decisions are dynamic and evolve over time under conditions of substantial uncertainty. A rigorous assessment of the impacts of subsidies for uneconomic generation resources must account for the dependence of entry and exit decisions on subsequent decisions by other players in the market.”¹³ That price differential will then impact the second operator’s evaluation of its avoided costs as well as its potential for alternative investment opportunities. Therefore, the Board cannot examine this issue in isolation for one Unit but must examine the impact of another Unit’s shut-down when evaluating each Applicant’s avoided costs and alternative investment opportunities.

(12) What information about parent or affiliate companies of the nuclear power plant should be requested for the Board to holistically consider the Unit's financial condition?

As addressed above, the Board must evaluate the impact of shutting down a Unit not only on the unit owner, but also on its parent company or its affiliates. A comprehensive analysis is required to evaluate the likelihood that a particular Unit will be shut down. This includes a comprehensive financial analysis, considering the impact of the Unit on the costs and benefits at affiliated entities. In this regard, the Board must have the ability to review all financial documents relating to affiliates that potentially impact on the decision of whether to shut the nuclear unit down.

¹³ Seth Blumstack et al. *Analysis of state policy interactions with electricity markets in the context of uneconomic existing resources: A critical assessment of the literature*. September 28, 2018. Page 3. Available at <https://www.eme.psu.edu/sites/default/files/files/Penn%20State%20Study%20FINAL.pdf>

There may also be non-financial factors that would impact on a parent company's decision as to whether a particular Unit should be shut down, such as long-term financial expectations, operating synergies, or maintenance of market share. Any document deemed relevant to this examination should be made available to the Board. This could include current or historical strategic plans, business plans, correspondence with investors or credit rating agencies, incentive compensation benchmarks, or any other document that the Board believes is required in order to comprehensively examine the likelihood of a shut-down. Rate Counsel anticipates that the parent companies of some nuclear units may resist providing such documentation to the Board. However, in order for the Board to make an informed determination of the likelihood of a shut-down, it is imperative that it have access to all relevant documentation and evidence, whether it be in the possession of the Unit owner or of its parent company and/or affiliates.

- (13) Assuming that any Unit is deemed eligible to receive ZECs by the Board, in ranking eligible Units (N.J.S.A. 48:3-87.5(d) through (g)), how should the Board factor each Unit's potential to maximize benefits to New Jersey and to minimize the rate impact on the ratepayers of New Jersey's electric distribution companies?**

The Board should require ZEC Program applicants to provide supporting documentation and air modeling calculations needed to model local NJ impacts, county level impacts, and state level impacts to ensure that the environmental benefits accrue to NJ ratepayers at the least cost. The Board should rank the remaining nuclear units that do provide local and regional air quality benefits by both the quantity of air quality benefits and the amount of revenue required to maintain the nuclear units. This ranking of benefits with costs ensures that New Jersey ratepayers are receiving the greatest quantity of environmental attributes at the least cost.

The Penn State study noted two additional findings and recommendations that the Board should heed in the implementation of the program and evaluation of applications: 1) the PJM

market for energy, capacity and ancillary services is interconnected and impacts overall electricity costs. A subsidy program may result in lower energy prices, but higher overall costs by retaining uneconomic assets paid by ratepayers; and 2) the quantification of air emission impacts from retiring nuclear units does not mean that subsidizing nuclear units is the best mechanism for addressing air emissions impacts.¹⁴

- (14) Assuming that any nuclear power plant is deemed eligible to receive ZECs by the Board, in ranking eligible Units (N.J.S.A. 48:3-87.5(d) through (g)), how should the Board factor the Unit's physical location (in-state, out-of-state, and specific venue) within PJM?**

The Board must assess the impact the closure of a nuclear unit will have on New Jersey air quality, “fuel diversity,” and other environmental benefits. As noted, the legislation specifically references concerns that the retirement of nuclear units will adversely impact New Jersey’s ability to meet federal and state air quality standards for ozone. The unit's location will implicitly impact the effect on local air quality. The Board’s rankings should be based on local air pollution impacts, and then regional air pollution impacts. The Board has stated that the ZEC rule should help ozone non-attainment within New Jersey.¹⁵ If a nuclear unit's retirement has no impact on New Jersey ozone non-attainment such as a scenario where the retiring unit is replaced with renewable generation or decreasing load, it should be ineligible to receive ZEC credits. Therefore, a nuclear operator requesting participation in the ZEC Program will need to demonstrate not only that it will shut down a nuclear unit without an incentive, but also that the replacement resources will have a detrimental impact on New Jersey air quality that is significant enough to justify payment of the incentive.

¹⁴ Seth Blumstack. 2018. Page 3.

¹⁵ New Jersey county specific non-attainment status available at https://www3.epa.gov/airquality/greenbook/anayo_nj.html

- (15) Referencing N.J.S.A. 48:3-87.5(i)(3), how should the Board determine the revenue amount received by any selected nuclear power plant in an energy year for its fuel diversity, resilience, air quality, or other environmental attributes from other sources?**

Applicants need to demonstrate the minimum revenue requirement required to operate the plant during the term of the credit. The legislation is unclear what the definition of “fuel diversity” is. However, it should be noted that PJM has repeatedly and consistently stated that its capacity auctions are attracting “diverse, competitive resources,” and it has not identified any specific threat to “fuel diversity,” even though some nuclear plants have already shut down. The PJM Independent Market Monitor has also not identified any threat to New Jersey from a lack of “fuel diversity.”¹⁶ Absent some specific, credible threat to our supply of generation, the Board should not grant hundreds of millions of dollars in ratepayer subsidies based on a threat to some undefined goal of “fuel diversity.”

- (16) Should the application include/allow voluntary commitments as a condition of approval?**

No. Voluntary commitments may not be enforceable and are not justified for propping up nuclear units that do not need any market support. Ultimately, ratepayers will bear the cost of the ZEC Program, we do not see commitments would lower the impact the cost of the program. In fact, voluntary commitments may result in unintended additional costs to all ratepayers.

- (17) Please discuss how the recently issued FERC Order regarding the PJM Capacity Market, Docket Nos. EL16-49, ER18-1314, and EL18-178, relates to or otherwise impacts the Board's consideration of the ZEC Program?**

The June 29, 2018 FERC Order unequivocally states that the integrity of the PJM wholesale capacity market is jeopardized by "out-of-market payments provided or required by certain states" and then goes on to specifically mention ZECs as one of those problematic out-of-

¹⁶ http://www.monitoringanalytics.com/filings/2017/IMM_Testimony_NJSEEC_20171204.pdf

market payments.¹⁷ The FERC Order later repeats the opening paragraph language and again specifically mentions ZEC Programs as problematic.¹⁸ PJM has highlighted its concerns over nuclear subsidies in its filing on DOE's nuclear and coal NOPR..¹⁹

After the June 29 Order, numerous parties filed motions for rehearing with most of them claiming that the Commissions erred and exceeded its authority by invalidating legitimate state policies without any evidence that capacity markets had been harmed, or were likely to be harmed. State utility commissions with ZEC Programs (Illinois and New York) filed rehearing requests and indicated a willingness to seek further appellate relief if the Commission does not return to the status quo prior to the June 29 Order. It is difficult to know how to factor in these rehearing requests and likely appeals regarding current New Jersey state proceedings.

The Board will also need to consider the impact of the ZEC program on other nuclear units that do not receive ZECs. Because New Jersey is part of a regional wholesale electricity market, it is possible that a Unit receiving ZECs may impact a lower-cost non-ZEC nuclear unit with PJM, so that the non-ZEC nuclear unit becomes uneconomic. An unintended consequence would be that all nuclear units within the PJM market would require subsidies to compete with other nuclear units, and thereby increasing costs to all ratepayers.

FERC and PJM actions may render the ZEC program superfluous since proposals under consideration may neutralize the subsidies a nuclear unit receives. Further, the FERC and PJM changes may result in higher prices for energy and/or capacity. The increased prices will increase revenues for nuclear units and the incremental revenue should be deducted from any ZECs.

¹⁷ <https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=14961693>

¹⁸ Order at ¶ 150 and 153.

¹⁹ <https://www.pjm.com/-/media/documents/ferc/filings/2017/20171023-rm-18-1-000.ashx>

Other Comments

Rate Counsel filed a Motion on September 21, 2018 with the BPU and the Attorney General seeking access to the confidential information submitted by Applicants subject to a non-disclosure agreement. The statute in this case included unprecedented language that required us to do so even though Rate Counsel routinely obtains such information and have always complied with the governing non-disclosure agreement. To Rate Counsel's knowledge, no one has objected to this motion and given that the time to object has passed, Rate Counsel expects to participate fully in the proceedings going forward. Rate Counsel very much appreciates the opportunity to provide these written comment and we look forward to participating in all future proceedings on behalf of ratepayers.

APPENDIX

Proposed Minimum Filing Requirements

Unless other specified, the requested information should be provided by unit, and should include all supporting assumptions, workpapers and calculations:

1. Description of each nuclear unit owned by the Applicant (including those for which a subsidy is not being claimed), including the permit expiration date
2. Date of deregulation
3. Net Book Value of the unit at date of deregulation
4. Stranded costs claimed by the company at deregulation
5. Compensation received for stranded costs
6. Current net book value of the unit
7. Current cost of capital, as well as required cost of capital for each of the next five years
8. Actual investment, non-fuel operating expenses, fuel expenses, taxes, other expenses (including but not limited to all allocated and/or overhead costs), as well as revenues, showing earnings for each of the past five years
9. Details of all allocated overhead costs, including the basis for the allocation factors utilized
10. Projected investment, non-fuel operating expenses, fuel expenses, taxes, and other expenses (including but not limited to all allocated and/or overhead costs), as well as revenues, showing projected earnings for each of the next five years
11. Supporting documentation for all projected cost allocations
12. Annual cash flows for each of the past five years as well as projected cash flows for each of the next five years
 - a. Include forecasts of locational PJM capacity and energy market prices at each unit.
 - b. Include and itemize expected revenues from PJM capacity and energy markets.
13. Power market into which unit is bid, for capacity and energy
14. PJM or other capacity supply offer price for capacity for past five years.
15. PJM or other energy market supply offer price for energy (average annual) for past five years.
16. Indication of cleared MW in PJM or other capacity market, past five years.

17. Hours over the past five years when energy bid was not accepted
18. MWhs produced over each of the past five years and projected for the next five years
19. Cost of operational and market risks avoided by ceasing operations
20. The costs that would be incurred by the company to shut down the unit
21. The impact on company earnings during each of the next five years, if the unit shuts down.
22. Explanation for how the unit makes a significant and material contribution to the diversity and resiliency of the energy resource mix for electricity delivered in New Jersey
23. Explanation for how the unit makes a significant and material contribution to the air quality in New Jersey by minimizing emissions that result from electricity consumed in New Jersey, by minimizing harmful emissions that adversely affect the citizens of New Jersey, and an explanation as to how a retirement would significantly and negatively impact New Jersey's ability to comply with State air emissions reduction requirements.
24. Supporting air dispersion modeling results and supporting files to the assertion that the unit makes a significant and material contribution to the air quality in New Jersey.
25. Current and historical financial analyses conducted by the Company for each unit for the past three years. (Supporting workbooks and input assumptions)
 - a. Cost of generation
 - b. Cost of capital
 - c. Discounted cash flow analysis
26. Results from internal or commissioned dispatch modeling of the impact of unit retirement scenarios.
 - a. Including all assessments of avoided emissions, based on differential (with and without each unit claimed for ZECs) scenario modeling.
 - b. Inclusive of all workpapers and modeling inputs and outputs.
 - c. If no such modeling conducted, explanation and computation of avoided emissions from retention of the unit.
27. Description and spending amounts for capital expenditures for the past three years.
28. Description and budgets amount for capital expenditures for the next three years.
29. Status of decommissioning funds for each unit, including decommissioning status reports filed with the Nuclear Regulatory Commission.
30. Amount of shortfall on decommissioning funds resulting from early retirement.

31. Planned refueling outages for the next three years.
32. Projections of fuel, operating, and capital costs.
33. Projections of energy, capacity, and natural gas prices used by the Company in evaluating financial condition of each unit.
34. Uranium fuel price projections.
35. Copies of hedges or other financial instruments used by the Company to mitigate market exposure of each unit.
36. Load growth projections of markets served by the unit.
37. Payroll spending for onsite employees, number of onsite employees.
38. Projection of subsidy requirements (\$/year) by unit and by MWh produced, in each of the next five years, to maintain minimum revenue requirements required to fully cover all costs including risk-adjusted cost of capital.