

NRG Energy, Inc. 804 Carnegie Center Princeton, NJ 08540

March 6, 2019

VIA EMAIL ONLY

Mr. Peter Van Brunt Deputy Attorney General Department of Law and Public Safety Division of Law P.O. Box 45029 Newark, New Jersey 07101

Re: I/M/O the Implementation of <u>L.</u> 2018, <u>c.</u> 16 Regarding the Establishment of a Zero Emission Certificate Program for Eligible Nuclear Power Plants <u>BPU Docket No. EO18080899</u>

Dear DAG Van Brunt:

Please accept this letter, in lieu of a more formal brief, on behalf of NRG Energy, Inc.

("NRG") in response to the question posed by Board Staff in its letter dated March 1, 2019.

Specifically, Board Staff requests an answer to the below:

Please describe how generators bidding into the PJM Energy and Capacity Markets typically cover their operational and market risks. Specifically, please discuss whether these risks are built into pricing bids (as defined by the PJM market guidelines), or assumed by the bidder?

NRG is a large-scale operator of conventional, nuclear and renewable generation

nationwide. In our view, it is generally accepted across the industry that a generator is

"profitable" if it covers its going-forward costs through market operations. Going-forward costs

are effectively equal to the cash costs of continuing to operate and are determined by taking total

expected revenues minus total expected unavoidable costs. A plant making more than its going

forward costs generates profits and should not be subsidized to avert a retirement that would not

have otherwise occurred.

In determining whether a power plant is making its going-forward costs from the markets, the plant operator should forecast its total expected revenues, which include capacity, energy, and ancillary revenues, accounting for expected availability and market penalties. The operator should also forecast future operating costs and capital expenditures. The difference determines the plant's expected future cash flows and corresponding profitability.

Note that it is the industry norm to discount "sunk costs" in determining power plant profitability. Sunk costs include capital investments in nuclear or other power plant technology that, once spent, will not be recovered. There is no explicit component in the generator's profit and loss statement for a "guaranteed return on investment." Whereas investment decisions often do factor in an owner's return requirements, capital at risk, is simply that – at risk. Once those costs are "sunk," they should no longer factor into considerations of profitability.

Given that nuclear generators earn significant revenues in the energy market due to their size and zero marginal cost, they rely primarily on the energy market to cover their fixed operating costs. Any additional revenue needs would be reflected in the plant's capacity market offers. However, one would not expect to see a desired rate of return on a sunk, historical acquisition or legacy investment costs in a forward capacity offer with a commitment three years hence. In many cases, the profit maximizing strategy is for a long-lived asset (such as a nuclear plant) to offer into the capacity market as a "price taker" and allow other, higher cost capacity suppliers, to set capacity clearing prices. Generators with large amounts of incremental margin or "inframarginal revenues" such as nuclear operators can more readily tolerate market volatility and can, and often do, participate in markets as price takers contributing large amounts of revenue to fixed costs.

More generally, capacity offers can include going forward costs, risk premiums for market and other operational business risks associated with non or underperformance, and in

2

some cases, recovery of investment costs over a horizon consistent with market rules and owner's expectations.

The statute requires each applicant to prove that the "nuclear power plant will cease operations within three years unless the nuclear power plant experiences a material financial change" or is unable to recover enough to cover "operational" and "market" risks. Under the statute, "operational risks" are defined to "include, but need not be limited to, the risk that operating costs will be higher than anticipated because of new regulatory mandates or equipment failures and the risk that per megawatt-hour costs will be higher than anticipated because of a lower than expected capacity factor." The majority of these elements are already accounted for in the PJM market design. For example, the risk of equipment failure primarily relies on evaluating past operational data, specifically the Equivalent Forced Outage Rate, or EFOR¹ metric. The risk of equipment failure may be updated based on known or anticipated changes to the generating resource (*e.g.*, a scheduled turbine overhaul expected to improve availability), and should be factored in developing the plant's risk adjusted going-forward costs to operate. Performance risk may also be a factor included in bids placed with PJM and is again a standard part of the PJM market design.

If Staff seeks to validate assumptions about nuclear plant operating risks, it should compare the specific plant-by-plant assumptions to industry standards. For example, the Nuclear Energy Institute provides performance benchmarks that may be useful in evaluating the Applicant's performance against industry norms. Comparison to standard industry performance is important in evaluating eligibility because the deteriorating financial condition of a given nuclear unit may be a product of poor performance or operational inefficiencies that result in

¹ Further background on outage expectations can be found from the PJM training session on the topic: <u>https://www.pjm.com/~/media/training/special-events/ip-eforp/eforp-training-slides.ashx</u>

higher costs or decreased safety metrics. If underperformance (both unit operation and management) are rewarded through the program then the subsidy will eliminate any incentive to improve. As a result, consumers will bear the higher costs for poor performance by the nuclear operator undermining a key benefit of proper functioning competitive markets. New Jersey should not break the value link between an incentive to perform, enhanced reliability, and the profitability of wholesale generators.

In regard to the requirement that applicants consider "the risk that per megawatt-hour costs will be higher than anticipated because of a lower than expected capacity factor," nuclear plants operate at extremely high capacity factors, since they self-schedule in the PJM energy markets (*i.e.*, they operate regardless of the PJM energy market price) and thus has very little risk of decreased capacity factor. While derates and forced outages reduce capacity factors, the lower availability would otherwise be reflected in facility's projected revenues.

Thank you for your consideration.

Very truly yours,

<u>/s/</u>

Abraham H. Silverman Jennifer S. Hsia

Counsel for NRG Energy, Inc.

Cc: Service List (Email Only)