Maillog No. 202462
File date: October 27, 2016

BEFORE THE
PUBLIC SERVICE COMMISSION
OF MARYLAND

In the Matter of Transforming Maryland's Electric Distribution Systems to Ensure that Electric Service is Customer-Centered, Affordable, Reliable and Environmentally Sustainable in Maryland	* * *	Administrative Docket PC 44

*　*　*　*　*　*　*　*　*　*　*　*　*　*

COMMENTS OF NRG ENERGY, INC. ON TRANSFORMING MARYLAND'S ELECTRIC DISTRIBUTION SYSTEMS

NRG Energy, Inc. ("NRG") respectfully submits these comments in the Matter of Transforming Maryland's Electric Distribution Systems proposed in Administrative Docket PC 44, pursuant to the Notice of Public Conference issued on September 26, 2016.

I. Comments on Ways to Transform Maryland's Electric Distribution Systems

In its Notice of Public Conference, Public Service Commission of Maryland ("Commission") indicated that it was initiating Public Conference 44 ("PC44") for the purpose of "commencing a targeted review to ensure that electric distribution systems in Maryland are customer-centered, affordable, reliable and environmentally sustainable." Moreover, the Commission noted that in its approval of the merger of Exelon and Pepco Holdings, it is required to initiate a proceeding to "examine opportunities to transform the electric distribution grid, including the incorporation of smart-grid technology, microgrids, renewable resources, and distributed generation." The Commission also initiated Public Conferences 40 and 43 to explore topics that could transform the ways in which Marylanders produce and consume electricity.

NRG appreciates the work of Maryland PSC staff in convening and gathering input from a diverse group of stakeholders. As the Commission is aware, Maryland law already contains a strong preference for competitive solutions to meeting our next-generation energy challenges. In fulfilling the promise of electric market restructuring, NRG urges the Commission to:

(i) ensure that any time-of-use or other bill innovations are driven by *competitive* retail electric providers, and not allow reforms coming out of this docket to detract from the “plain vanilla” nature of standard offer service envisioned by the Legislature;

(ii) ensure that competitive suppliers of DERs and other distributed technologies have open and fair access to customers and to the distribution system;

(iii) ensure that utility earnings are tied to “open access” outcomes on the distribution system, including whether the utility has facilitated the deployment of distributed resources by third parties; and

(iv) prevent a utility model where utility earnings are driven by offering DERs that could be offered by the competitive market, resulting in rate recovery or discriminatory grid outcomes that stifle competition.

NRG offers its perspective and recommendations on each of the seven topics raised in the Commission’s Notice below.

Additionally, NRG appreciates the work led by NARUC President Travis Kavulla to assist public utility commissions nationwide in establishing fair and forward-looking ratemaking processes for distributed energy resources. The draft *NARUC Manual on Distributed Energy Resources Compensation* published in July 2016 highlights numerous issues in setting fair and reasonable rates. NRG encourages the Commission to refer to this Manual which is expected to be finalized in November for insights into creating fair and reasonable rates for compensating DERs and taking into consideration equity and cross-subsidization concerns.

II. Introduction to NRG

NRG is at the forefront of changing how people think about and use energy, and is deeply involved in a number of proceedings across the country designed to examine the costs and benefits of distributed generation. NRG is the nation's largest independent power producer, with a diverse resource mix that includes over 50,000 Megawatts (MW) of both renewable and conversional generation, including approximately 4,850 MW located in Maryland. NRG affiliates also aggregate approximately 100 MW of demand response in Maryland. NRG's retail businesses serve nearly three million customers across more than a dozen states, including in Maryland, where NRG Home, NRG Business, Green Mountain Energy Company, and EnergyPlus Holdings LLC are licensed by the Commission to provide electricity and natural gas supply service.[1] By giving customers access to the latest tools to better monitor and manage their energy usage, NRG is also a pioneer in enabling customers to make smarter and more sustainable energy choices.

III. Maryland's Statutory Preference for Competition

As a preliminary matter, NRG notes that Maryland law has a strong preference for utilizing the competitive market to serve retail customers and drive investment outcomes whenever possible. The Maryland General Assembly enacted the Electric Customer Choice and Competition Act of 1999 ("the Act")[2] which restructured Maryland's retail electricity market, introduced competition and allowed for customer choice. The Legislature found that Maryland consumers would benefit from increasing competition in retail electricity markets.[3] NRG

[1] Reliant Energy Northeast LLC d/b/a NRG Home and NRG Business electric license number IR-2058 and gas license number IR-3480; Green Mountain Energy Company electric license number IR-2790 and IR 2345; Energy Plus Holdings LLC electric license number IR-1805 and gas license number IR-2216.
[2] Md. Code Ann., Pub. Util. § 7-501, *et seq*., as amended by Senate Bill 1 (Chapter 5, Acts 2006 Sp. Sess.)
[3] Maryland Code § 7-504 states that "The General Assembly finds and declares that the purpose of this subtitle is to: (1) establish customer choice of electricity supply and electricity supply services; (2) create competitive retail

respectfully submits that there is no reason to depart from this competition-first policy when it comes to distributed energy services that are increasingly becoming available to everyday consumers.

Indeed, the Act specifically limited the role of the regulated utilities to serving Standard Offer Service customers who either did not elect to shop or were unable to do so.[4] The anticipation was that customers would take advantage of the benefits of competitive retail access and shop for plans that met their specific needs, whether they were looking for fixed billing arrangements, cheapest price, or value-added energy services, including DERs. The Act further stipulates that Electric Distribution Companies ("EDCs") may not be regulated "except to . . . establish the price for standard offer service."[5] As such, the only electricity supply option that should be available from the regulated utilities is a "plain vanilla" SOS designed to meet the customers' basic electricity supply needs.[6]

The Commission codified these requirements in a number of places throughout COMAR, including when it prohibited utilities from offering hourly variable pricing to residential customers,[7] required utilities to calculate a single price for SOS customers,[8] and provided that

electricity supply and electricity supply services markets; (3) deregulate the generation, supply, and pricing of electricity; (4) provide economic benefits for all customer classes; and (5) ensure compliance with federal and State environmental standards."

[4] Maryland Code § 7-506(E); and § 7-510(C)2.

[5] *Ibid* at § 7-509(a).

[6] The existing SOS structure is not perfect, particularly in the way is allows utilities to lock in retail rates for 24 months at a time. True competitive markets benefit when SOS pricing reflects current market conditions. Making the SOS rates more market reflective would not only improve customer understanding of energy cost fluctuations and encourage customer responsiveness to price signals, but it would improve the competitive retail market by reducing the opportunity for "boom-bust" cycles inherent in the current procurement structure that relies on laddered 24 month supply contracts that serve to mask the underlying cost of electricity and diminish the effectiveness of the competitive retail market.

[7] COMAR § 20.52.02.04 ("A utility shall offer hourly priced nonresidential electric supply service to all nonresidential customers ineligible for Type I or Type II SOS, excluding special generation contract customers.")

[8] COMAR § 20-52.05.01(B) ("Calculate the price for each type of electric service offered to a customer under this subtitle[.]")

utilities must provide advance notice to residential customers of any change to SOS rates.[9] Clearly, the Commission, in implementing the Legislature's intent, did not envision that EDCs in Maryland would be providing anything other than plain SOS offerings.

The Maryland General Assembly was even more specific when it directed that "*as part of a competitive process*, the Commission shall require or allow the procurement of cost-effective energy efficiency and conservation measures and services."[10] It is not a stretch to analogize the "energy efficiency and conversation measures and services" language used in §7-510 to today's DERs, and NRG respectfully suggests that the Commission should likewise insist on securing for Maryland ratepayers the benefits of competition in this new distributed energy world.

This statutory commandment should be leveraged as a powerful means of driving innovation as well. As the Commission is aware, competitive retail suppliers and competitive firms providing demand reduction, energy efficiency and other DERs, have much stronger incentives, as well as the appropriate entrepreneurial mindset, to develop innovative ways to assist customers in taking advantage of the unique opportunities presented by DERs, EVs, and similar technology designed to improve efficiency and reliability. Indeed, one of the largest barriers (along with costs, which are falling quickly) to deploying these new systems is the utility's lock on the supplier-customer relationship. At the end of the day, if a supplier's offerings do not meet customer desires, the customer will simply switch suppliers. There is no such similar incentive for the utilities to react to customer needs in this manner or seek out the most cost-effective means to provide a competitive service, nor should there be, consistent with

[9] COMAR § 20-52.05.01(D) and (E) ("Provide affected customers at least 30 days notice, and if possible 2 months notice, of new prices for electric service under this subtitle;" and "Post on the utility's internet website, the actual price payable each month for each service offered under this subtitle.")
[10] MD Code 7-510(c)(4)(C) (emphasis added).

the utilities' charge to provide a backstop, universal service in exchange for regulated rate recovery.

Further, the General Assembly's preference for a competitive retail marketplace strongly suggests that competitive suppliers should be the ones to offer innovative products, like time of use pricing or flat bills. Such offerings would provide an important point of differentiation between plain vanilla default service offered by the utilities, and offerings created by competitive suppliers. Allowing utilities to provide anything but a "plain vanilla" Standard Offer Service undermines the abilities of alternative suppliers, who must compete to survive and thrive, from standing a chance to provide benefits to customers. The harm to competition in the burgeoning DER and demand response sectors of allowing EDCs to utilize their incumbency and their ratebase to quash competition would be even more profound.

For example, there is no question that the development of time of use and other offerings using the newly deployed smart meters in Maryland will involve some trial and error. If utilities are allowed to ratebase the costs of their experimentation, then they have a significant competitive advantage over competitive suppliers, which are risking *shareholder* dollars instead of ratepayer dollars in developing, advertising and deploying these new technologies. By contrast, if the Commission were to allow utilities to offer these new services, there would inevitably be cross-subsidization by SOS customers and those who shop for the products that meet their needs. If the EDCs were to ratebase these experiments, ratepayers would be taking technology risk as well. The risk of stranded costs is very real, as is the misalignment of competitive price signals.

The Commission itself has likewise expressed its support for retail suppliers offering value-added products and services, like time varying pricing plans, and has taken steps to enable the development of such products by competitive retail suppliers.[11] NRG's retail businesses are focused on delivering innovative products and services that engage and empower the state's retail electricity customers to take control of their energy consumption. NRG's ability to deliver such product innovations hinges on timely and efficient access to our customers' near real-time interval usage data every single day, and having our load settled at PJM based on that data.[12] As explained in our comments in the most recent EmPOWER Maryland proceeding, retail suppliers have access to this data and our load is being settled at PJM based on that data in the Pepco and Delmarva service territories. And thanks to the Commission's December 8, 2015 Order in that proceeding, BGE has taken steps to provide near real-time access to our customer's interval usage data as well.[13] As such, NRG urges the Commission to allow the competitive market time to develop and deliver the time-varying and other value-added products and services to Maryland consumers and refrain from mandating such products be provided by the regulated utilities, which will undermine retail supplier offers and frustrate the properly functioning competitive retail market.

---

[11] In Order 87285, the Commission stated that it is "generally supportive of [NRG's] request given that the leveraging of near real-time energy usage data to enable customer demand-side management tools is a recognized potential benefit associated with the deployment of Advanced Metering Infrastructure ("AMI")." The Commission further noted that "AMI deployment is ongoing in service territories beyond BGE, Delmarva, and Pepco (i.e. SMECO and Choptank Electric Cooperative), and may extend to other service territories in the future. Therefore, it is sensible for all parties to convene and to develop one general methodology for the delivery of this type of BQIU data via Batch CSV files. As such, the EmPOWER Utilities that are currently authorized by the Commission to deploy smart meters, along with NRG, RESA, and any other interested EmPOWER stakeholder, are directed to convene immediately a work group on this issue. BGE, on behalf of the work group, is directed to file a report no later than March 1, 2016 detailing the resolution of this issue, including a straw proposal for the data access methodology and an affirmation of the customer consent policy in compliance with the Code of Maryland Regulations."

[12] Comments of NRG Retail Affiliates, *In the Matter of Baltimore Gas & Electric Company's Energy Efficiency Conservation and Demand Response Programs Pursuant to the EmPOWER Maryland Energy Efficiency Act of 2008*, Case No. 9154, September 24, 2015.

[13] Ibid at Order 87285. In response to the Commission's Order, BGE implemented a manual solution to providing NRG with daily access to its customers' interval usage data. NRG understands that BGE is in the process of developing an automated solution to become available sometime in 2018. Moreover, BGE is in the process of enabling load settlement at PJM based on the interval usage data available from the deployed smart meters, which is set to begin in early 2018.

IV. Answers to Specific Questions

Question #1 - Rate Design: exploring time-varying rates for traditional electric service, DERs and EVs and considering pilot programs for driving desired results through performance-based compensation.

NRG supports utilizing a portion of the study funds earmarked as part of the BGE/Pepco merger to envision the end state of competition for DERs, EVs and other next-generation distributed generation technologies in Maryland. NRG respectfully submits that, unless the State has a clear vision of the competitive end-state for DERs and how innovative rate schedules and products can support that vision, it will be very difficult to answer fundamental questions such as:

- How will these resources expect to make money?
- How can the grid support deployment of DERs at scale?
- Are there places on the grid where investment in DERs can reduce distribution system costs more effectively than other areas?

In particular, the answer to the "end-state" question is critical to whether competitive firms, like NRG, further invest in Maryland, or whether jobs and innovation flee to other states more interested in fostering competition.

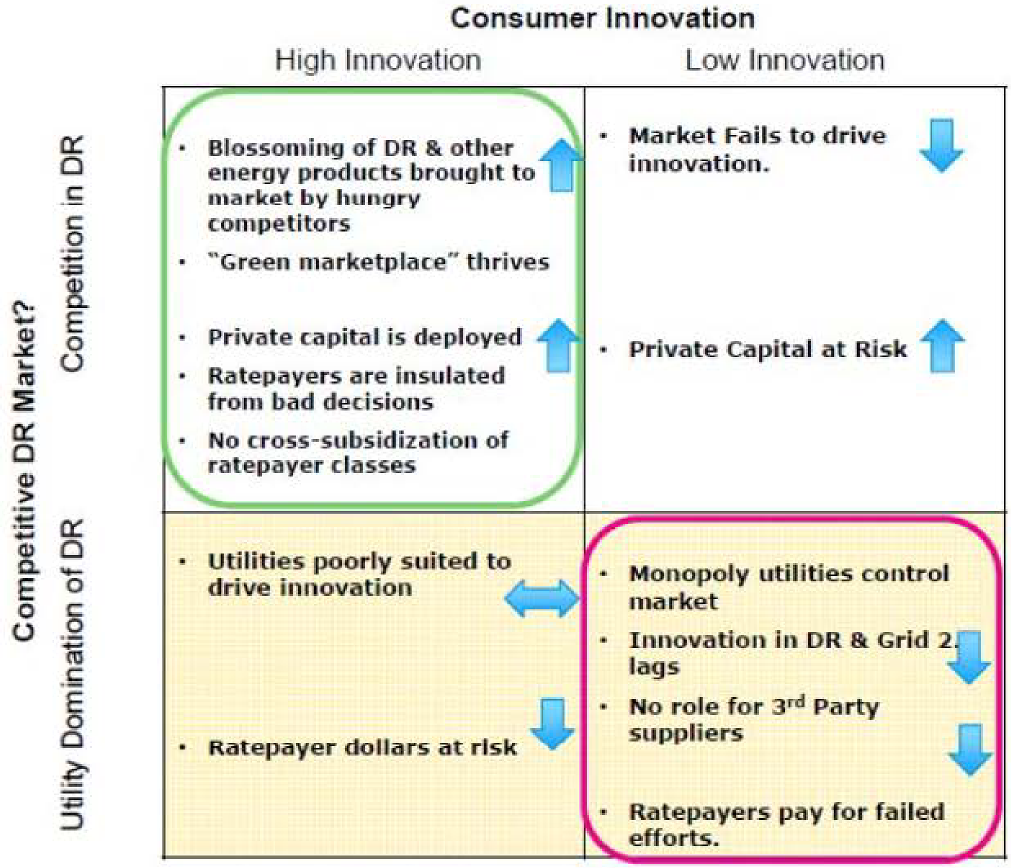
Specifically, in response to Question #1, NRG recommends three main areas of inquiry for the forthcoming study: *first*, how can the end-state drive private investment at the distribution level, minimizing stranded costs and cross subsidization risk; *second*, should the utility be a disinterested facilitator of DERs, or should the utility be earning revenues based on distribution level market outcomes; and *third*, how can we align utility earnings and incentives to how well the utility operates the distribution system as an open platform and facilitates a competitive environment for DERs. All of these topics deserve careful consideration in the PC

44 process and are critical to creating a robust, competitive market for DERs and other innovative energy services.

1. Private Investment of Dollars Should be Preferred Over Ratepayer Investments.

While we understand Question #1 to be largely focused on the performance-based metrics when the ***utility*** is offering the DER services, NRG respectfully suggests that it is appropriate to use the PC 44 study dollars to explore how to best drive investment of private, shareholder investment in DERs as a greatly preferred approach compared to investment in these resources by utilities on behalf of their ratepayers, along with the associated and unavoidable risk of cross-subsidization and stranded costs. In any study funded out of the merger funds, the Commission should make it clear that its goal is to drive private investment of shareholder dollars in DERs and other innovative rate products, rather than have all ratepayers fund experimentation in this rapidly evolving sector. In order to drive this outcome, the Commission should establish as a core principle in this investigation that shareholder investment should be preferred, whenever the resources being deployed can be owned by third parties, and that distribution utility investment should be focused on functions that are enabled by the utility's monopoly status.

Seeking the next great advance in energy market innovation from monopoly utilities is inconsistent with over 100 years of experience, which shows that innovation is largely driven by private parties investing shareholder dollars. As the chart below shows, the Commission should aim for the upper left box, where private innovation is maximized and ratepayer risk is minimized. Should the Commission incentivize utilities to directly compete with private investment in DERs, Maryland risks ending up in the lower right corner, where significant ratepayer dollars are put at risk, cross subsidization risks are high, and innovation is at a minimum:



How do we end up in the 1st rather than the 4th quadrant?

For Maryland's efforts to be a success, the Commission should align utility incentives with the objective of moving away from utility capital deployed on behalf of captive ratepayers toward private capital investment in DER resources. To accomplish this alignment, the Commission should strongly incent utilities to maximize competitive investment and minimize ratepayer expense. We discuss specific means of doing this below.

2. **The Distribution System Should be Operated by a Neutral Platform Operator that Has No Stake in Market Outcomes.**

NRG submits that a second core principle of this proceeding should be to establish the principle that utilities should operate the distribution system as an open-access platform, with no financial inventive to prefer deployment of one DER over another.[14] One of the biggest concerns for competitive suppliers of these services is whether they will be competing against an EDC that has the ability to favor its own rate-based investments. This includes both the asymmetry of information that the EDCs have about where to site DERs, the time and cost to interconnect, as well as their eventual dispatch. This concern is particularly acute at the distribution level, where principles of open access and transparency are less enshrined than they are on the bulk power system. As the operator of the distribution network, the EDC must be a disinterested party as it pertains to ownership and operation of individual resources.

Instead of fighting for market share against competitive suppliers, the EDCs should be encouraging the interconnection and hosting of DERs on the distribution system and establishing a comprehensive system that fully values the grid services that DERs provide, and ensures that cost-effective DER investments are financially viable. A Commission-mandated separation of interest is necessary to ensure that resources owned by a utility or its affiliates are not favored or subsidized by the utility, to the detriment of independent, competitively-owned and operated DERs.

The same principles hold equally true for electric providers competing for retail customers. While retail competition will never totally thrive in Maryland until SOS is eliminated and competitive retail suppliers are able to establish a direct relationship with their customers (e.g., through supplier consolidated billing), there is no question that the installation of AMI meters throughout Maryland, along with the insistence by the Commission that AMI data be

[14] While this role would ideally be provided by a truly independent third-party, the reality is that the distribution utilities in Maryland are likely to fulfill this role for the foreseeable future. So long as distribution utilities are not also competitors, this should be a workably competitive model.

shared in near-real-time with competitive retail electric providers, provides a necessary step towards competitive suppliers providing innovative billing and time-of-use products to Maryland consumers. These products, which include the "cost-effective energy efficiency and conservation measures" discussed in §7-510(c)(4)(C), are provided by competitive suppliers, investing shareholder dollars to test, market, and ultimately deploy, these innovative services. However, if the EDCs are permitted to simply ratebase that investment, innovation will suffer and prices are likely to go up for all customers. In short, Maryland consumers would be better served if the Commission were to allow *competitive* energy suppliers to offer time varying and other innovative "value added" services, whether or not the utility continues to offer standard service.

3. Utility Earnings Should be Tied to the Successful Deployment of DERs and Shopping Outcomes.

Traditionally, utility performance revenues at the distribution level have been driven by rate incentive mechanisms that reward reliability and safety functions. NRG asserts that in addition to the "Big Four" incentives (outage duration, number of outages, customer service, and safety), the Commission should strongly consider adding additional rate incentives, including adoption of competitively-sourced DERs, information transparency, and improved resiliency. We discuss these new proposals below.

In terms of existing rate mechanisms, Maryland's Revenue Decoupling Mechanism ("RDM") deserves special discussion. On one hand, the RDM ensures that utilities are not penalized for promoting policies that reduce energy consumption. On the other hand, however, the RDM does nothing to incent competition at the distribution level. The Commission's goal should be to link earnings to the outcomes beyond "bread and butter" results such as customer satisfaction and environmental impact. Superior performance for attracting "resiliency" DER resources needs to be measured based on benchmarks identified in advance (*i.e.*, by meeting a specified percentage of load served by enhanced resiliency solutions). EDCs facilitating customers and third parties to meet the benchmarks for their resiliency targets would benefit through enhanced revenues compared to utilities that lag in enabling such DERs.

Competition in distributed energy services will bring additional energy savings and enhanced energy value to consumers, beyond that which can be created by utility programs. RDM may reduce the utility's exposure to revenue loss due to these beneficial competitive activities, but does nothing to affirmatively incent the utility to support or facilitate them. Thus, the Commission should explore requiring utilities seeking access to RDM revenues to meet certain benchmarks for facilitating competitive access to the grid, such as those relating to interconnection time tables, access to information, etc.

The Commission should consider whether to decrement rates of return for utilities that frustrate adoption of micro-grid and DER investment by denying timely access to information or pose barriers to the building of such systems. Specifically, the Commission should investigate in PC 44 whether utility earnings should be tied to competitive metrics, including private DER investment and customer shopping outcomes. In addition to the enhanced resiliency metric discussed above, utilities should be rewarded or penalized based on:

- **Interconnection Processing Times:** The Commission should tie earnings to a requirement that the utility markedly improve interconnection processing times for small- to medium-sized DERs. The Commission could establish a minimum benchmark of improving process times by 20%, with an extra bump if the utility reduces interconnection processing times by greater than 50%, or, alternatively, for completing 90% of distribution level interconnection requests within one week.

- **Information Access:** The Commission should create a new category of rate incentives and rate demerits for a utility's information transparency. In order to avoid a decrease in earnings, the Commission should insist that utilities: (1) make real-time meter information available to third-parties with less than a 24 hour lag,

(2) allow customers and their agents improved access to historic meter data, and (3) make available grid condition and planning information that enables customers and developers to identify high-value areas of the grid, as well as constrained areas.

- **Competitive DER Market:** The Commission should tie earnings to enhanced adoption of competitive DERs. Top performing utilities (*i.e.*, those that attract the largest number of DERs on a load-ratio share) should receive a positive incentive, while bottom performing utilities should receive a demerit.

- **Transparent Reservation Price for DER Capacity:** The Commission should also consider tying rates of return to the establishment of a clear locational price signal to signal the value of additional DER on constrained portions of its system.

- **Facilitating Innovative Time-Of-Use Retail Products**: The Commission should also include a rate demerit for utilities that are not successful in attracting time-of-use and other innovative billing products offered by competitive retail suppliers. This will ensure that EDC earnings are aligned with a pro-competitive agenda that will encourage active support for competitive retail suppliers offering demand response, EV charging rates, or other time-of-use offerings.

Private microgrid investments offer just one concrete example of what NRG is proposing. The Commission could send an incredibly powerful signal of its support for private microgrid investments by rewarding utilities that facilitate competitive investments that enhance system resiliency. There is broad recognition that encouraging end-users to adopt behind-the-meter generation, storage and other technologies that can operate in "islanded" mode in the event of catastrophic loss of the distribution system, such as occurred during Super Storm Sandy, will enhance overall reliability. Positioning these resources at strategic points across Maryland can ensure continuity of emergency first-responder services and ensure that key community resources remain online. Microgrids or nanogrids that can operate even during a widespread outage thus contribute to reliability as they can reduce the demands on the system when operating in a grid-connected mode and be deployed during outages to avoid customer interruptions.

NRG thus submits that including an "enhancing resiliency" metric in the bucket of reliability-related revenue adjustments is sensible. By establishing minimum benchmarks for incenting competitively-sourced resiliency-enhancing DER investments, the Commission can ensure that utility earnings are decreased if the benchmarks are not met. A utility can avoid any decrease in its rate of return by establishing competitive programs that attract DERs capable of operating in "islanded" mode. An EDC could presumptively be eligible for full earnings if it adopted the type of local price for DERs discussed in more detail below, or could develop alternative plans to drive these outcomes. Either way, the EDC should be strongly incented to create a competitive framework that attracts private DER capital in a manner that leads to the increased resiliency of their systems – even though the resiliency increase occurs through non-utility spending.

Question #2: Benefits and Costs of DERs: calculating comprehensively the Maryland-specific benefits and costs of solar (and perhaps other DERs) – including specific consideration of solar's geographic and grid location – for potential use in future utility tariffs, with assistance of a consultant paid for by an undetermined portion of the $500,000 pledged by PHI as a result of Case No. 9361;

NRG recommends that Maryland focus on the 'benefits' side of the equation as opposed to the 'costs.' The direct economic costs of DERs are reasonably well understood, and, as an initial matter, should be the province of customers and developers as they consider potential DER projects. NRG supports state-specific evaluations of the value that DERs provide to both the local distribution system and the wholesale market, as a means to inform and calibrate DER compensation mechanisms. A number of states have completed such studies, and Maryland should follow suit to ensure that state-specific considerations are taken into account.

NRG respectfully suggest that the Commission's best and highest role in this proceeding should be to focus on establishing tariff-based or other mechanisms to value DER and enable customers and developers to monetize the value that the DER provides to the local grid as well as the bulk power system. Combined with tying EDC earnings to the installation and deployment of such technologies, the Commission can ensure that all stakeholders in Maryland are focused on harnessing the forces of competition to bring the maximum DER investment, consistent with prudent investment principles.

As just one example, Consolidated Edison ("ConEd") in New York has adopted a simplified "feed-in tariff" mechanism for compensating DER providers in select portions of its service territory. Under the Distributed Load Relief Program ("DLRP") and Commercial System Relief Program ("CSRP")[15], ConEd establishes a transparent price signal, which includes both a reservation payment (with a stated per kilowatt of capacity rate) and an energy payment (per kilowatt-hour of actual energy provided). This transparent suite of prices greatly aids in customers' understanding the system and the ability of third-party suppliers to finance investment in energy infrastructure. Under both programs, ConEd has maps (plain, easy to read street maps that show which side of the street is within which area) of its service territory and pre-identifies "Tier 1" and "Tier 2" networks, on its system. DERs within the highly congested Tier 1 areas receive a premium monthly reservation payment, with projects locating within the lesser congested Tier 2 networks receiving a discounted payment.

The DLRP and CSRP both provide access to transparent information about the value of DER options in a particular geographic location and in an incredibly transparent and easy-to-understand fashion. Requiring that Maryland utilities adopt a similar program will allow third-party competitive suppliers and end-use customers to direct their efforts to the areas on the system where DERs have the greatest value and would provide a major jump-start to the

[15] All utilities in New York have implemented the CSRP as a means to compensate customers that provide peak load relief services.

distributed future. Such a program could be replicated quickly across Maryland and developing such maps would be a suitable use of merger monies. With clear and predictable means to turn that value into actual revenues, customers and developers will be able to bring their own capital and innovation to bear in building out a resilient and sustainable energy infrastructure for Maryland.

Question #3: Advanced Metering Infrastructure (AMI): Maximizing AMI's Benefits for Maryland Ratepayers

Maryland electricity customers' ability to realize the full value of their AMI investment hinges on the proper management of the data produced by the recently deployed AMI and smart meter technology. Smart meters provide hourly customer consumption data, which can be relayed to customers or their retail electricity suppliers (with customer consent) very quickly – within 24 hours or less. This data is critically important not only to engaging and educating customers about their electricity use, but also to developing individually tailored products and services designed to help consumers take control of their energy consumption.

Suppliers must be able to retrieve that near real-time Bill Quality Interval Usage ("BQIU") data as fast as possible each day so they can quickly load data into their systems and present it to their customers promptly. The key to being able to offer customers products and services that enable them to change their behavior and shift their energy consumption is communicating information about their consumption to them as quickly as possible, so they are able to make a connection between what they were doing at a given time with their electricity usage during that time. Consumers simply cannot remember what they did days, weeks or months after the fact – therefore, time is of the essence. We live in the age of "Amazon.com" consumerism. Customers expect instant access to timely information in all aspects of their lives – from the number of steps they take in a day, to instant access to movies online, to the products and services that they buy. The older the BQIU data that is provided to consumers, the less valuable and useful it is to motivating them. Retail suppliers are eager to engage consumers with their data. And in Maryland, where AMI is deployed in three of the four major utility service territories, and where suppliers generally have access to their customers' near real-time BQIU data, and where at least two utilities (Pepco and Delmarva) are settling customer load at PJM based on that BQIU data, customers are on the cusp of having access to the innovative products and services that the market can deliver.

In fact, one of NRG's retail businesses tested its first product offer based on near real-time BQIU data in the Pepco service territory last summer. NRG Home piloted a demand response product called "Degrees of Difference" that provided residential customers with a bill credit for using less electricity than normal during high demand hours. Participating customers received an alert of upcoming periods of high electricity demand so that they could reduce usage. During these high demand hours, when participating customers adjusted their thermostats and held off on high-usage activities, such as running the dishwasher, washer and dryer, or oven, they earned Degrees of Difference bill credits.[16] This is just one example of many that are possible when competitive retail suppliers have timely and efficient access to their customers' near real-time BQIU data.

In Texas, where all suppliers are able to access near real-time BQIU data for all of their customers at one time, every single day, NRG's retail affiliate, Reliant, currently has more than 700,000 customers benefiting from at least one "Smart Energy" product or service. Reliant owns a "Smart House" in downtown Houston where it tests new technologies and new products to determine the most practical in-home applications so that it can then develop product and service

[16] Notably, the Degrees of Difference product offer required no investment from ratepayers – there was no surcharge on customers' bills to support the offer.

offerings. Examples of home energy management tools and offerings that Reliant offers in Texas, and which are made possible with access to near real-time BQIU data, include:

- An Account Management tool that allows customers to personally monitor their electricity use, set cost and usage alerts, and compare their energy use to that of their neighbors.
- Cost and Usage alerts - provided via email or text messages – notify customers when they are approaching any cost or usage thresholds they have selected.
- Home Energy Monitors that allow customers to track their usage in real time.
- Weekly Summary Emails that highlight the customer's electricity usage - and approximately what it costs - for the most recent week as compared to the previous week. This information is then used to generate an estimate of the next bill to help the customer better manage his or her electricity budget.
- Pricing Plans that encourage consumers to shift usage and conserve such as:
    - Reliant "Keep Your Cash Nights and Weekends" which provides a discounted price on electricity used every night after 8:00 p.m. and all weekend long. This plan allows customers to enjoy one fixed price during all other times.
    - Reliant "Truly Free Weekends Plan" which provides no electricity charges from 8:00 p.m. on Friday to 12:00 a.m. on Monday, and a low fixed price during the week.
- Payment plans that help customers budget their energy costs more easily, such as Reliant "Smart Start." Smart Start is a pre-pay plan that allows customers to pay as they go; the plan is very easy to understand – it is very similar to how many mobile phone plans are

structured – and it is growing in popularity. This plan gives the customer the ability to decide how much they want to spend.

- Reliant's "Solar Sell-Back" allows customers with solar PV systems installed at their home to choose to have sell-back savings automatically credited to their monthly Reliant bill for surplus electricity generated and returned to the grid. Interval data allows Reliant to determine the usage profile for the customer so Reliant knows how much electricity to purchase and Reliant purchases supply based on actual demand. This allows Reliant to offer better pricing to the customer and determine the amount of the credits that can be offered.
- Demand response programs such as "Degrees of Difference" provide customers a bill credit for using less electricity than normal during high demand hours. Degrees of Difference alerts customers to upcoming periods of high electricity demand so that the customer can reduce usage.

NRG urges the Commission to refrain from any further mandates to the regulated utilities for the purpose of maximizing AMI's benefits to Maryland consumers. The only action required by the Commission is to ensure that BGE delivers on its commitments to automate data access for retail suppliers to their customers' near real-time BQIU data via Batch .csv files and to settle all customer load at PJM based on that data as soon as possible, but no later than early 2018.

Question #4: Energy Storage: classifying storage properly in Commission rules and policies and valuing it appropriately as a distribution or customer-sited resource.

NRG supports Maryland's initiative to substantially increase its reliance on renewable energy. As a complement to those renewable resources, effective use of distributed and large-scale energy storage will be a critical element to the success of that renewable energy future, to provide firming and system load balancing to the grid. NRG anticipates that the low-carbon energy system of the future will rely on four primary resource types: (1) significant amounts of variable renewables (such as wind and solar) to provide a base quantity of energy; (2) a large amount of storage (including chemical, thermal and mechanical, both grid-connected and behind the meter); (3) pervasive load management through smart devices and multiple control systems managing aggregations of DERs; and (4) a complement of highly flexible gas-fired resources to balance load and supply as needed.

This distribution system transformation proceeding presents an opportunity to create a system that will encourage and facilitate increasing amounts of renewables and other DERs. NRG recommends that this proceeding likewise be viewed as a means to begin meaningful deployment of energy storage. As the state increases the share of the energy mix coming from weather-dependent renewables, the ability to store energy when it is available from the sun and wind and use it later when customers need it will be critical to managing both cost and reliability. Storage should be developed alongside the renewables that will help the State transform to a cleaner, more sustainable energy mix.

As part of the effort to encourage and expand the deployment of storage in Maryland, NRG supports a comprehensive review of Commission and utility rules and tariffs (as well as PJM market rules) to ensure that storage is afforded access to the power system on interconnection terms comparable to generating resources, and that the multiple services that energy storage can provide are appropriately valued and compensated. Utility rules governing the interconnection process should be reviewed and revised as necessary to ensure that customers or developers of storage projects have clear and predictable processes and schedules for evaluating and completing interconnection projects. Utility rules should also recognize the flexibility of energy storage, and be structured to enable storage resources to be compensated for all of the services they can and do provide. Again, the ConEd DLRP and CSRP models discussed above could provide an easy-to-implement price signal to reward first-movers in the distributed storage space, as would aligning EDC earnings with the goal of incenting the deployment of private capital in storage.

Other than large-scale pumped storage hydro-electric stations, energy storage on the electric system has generally been viewed as a novelty item, so tariff rules have never been written to clearly and unambiguously address the unique requirements and capabilities of energy storage. As costs continue to come down and storage becomes more of a central part of the electric grid, the utilities should have rules that apply specifically to storage facilities to make interconnections and operations more efficient and less prone to misunderstandings and one-off negotiated outcomes.

The Commission should direct that utilities and other stakeholders undertake a review of utility interconnection and service classification tariffs to implement storage-specific rules. The Commission should also encourage PJM to continue its efforts to reform its tariffs to better address storage, and to direct staff to participate in these discussions to ensure that storage can be efficiently deployed and operated according to clear and effective rules.

As noted in the literature surrounding energy storage, energy storage assets will need access to multiple revenue streams to be cost-effective. The review and revision of tariff rules must address the practical steps and changes needed to enable energy storage to fully access all appropriate sources of value, in both the distribution and bulk power systems. Multiple revenue streams are necessary to make storage cost-effective and to properly compensate the many aspects of value that storage can deliver, as discussed in literature regarding storage in electric systems. Depending on where the storage asset is located and how it is configured, these revenue streams could include payments from the customer - for the self-sufficiency, resiliency, price certainty afforded by the storage asset, or as a share of energy bill savings. Other revenues may come from providing local grid support services, either for the deferral of transmission & distribution investment costs, or as reactive support, for example. The PJM markets also offer potential revenues, to the extent the storage asset can contribute capacity, energy or ancillary services, whether directly for larger systems, or through some kind of aggregation for behind-the-meter assets. Because of the multiple operating modes of most energy storage assets, grid-connected storage assets should be able to access capacity payments, energy arbitrage between high- and low-price periods, and ancillary service revenues such as frequency regulation and operating reserves. Even if the asset cannot provide all of these services simultaneously, i.e., at exactly the same moment, it is reasonable to expect that a storage asset might participate in energy arbitrage between early morning hours and afternoon peak, be available as operating reserves or economic dispatch during the other hours of the day consistent with the obligations of a capacity resource, provide frequency response in virtually all hours around its then-current state-of-charge target, or to provide some of these services on weekdays vs. weekends, for example. The flexibility of many energy storage technologies makes them uniquely situated to operate in different modes at different times, and the rules should enable such operations to ensure the assets can provide their maximum value to the system at any given time.

While there is broad agreement that these revenue streams are needed and should be available, the rules do not currently provide the necessary flexibility for storage assets to be compensated consistent with the range of services they can provide. The rule review recommended above should focus specifically on ensuring that storage assets can access all of the revenue streams associated with the flexibility and multiple services storage can provide.

Question #5: Interconnection Process: Implementing Rules and Policies to Promote Competitive, Efficient and Predictable DER Markets that Maximize Customers' Choices.

With an enhanced interconnection process and market rules, DERs can provide myriad benefits to Marylanders. NRG posits that Public Conference 44 should explore the types of tangible interconnection process improvements discussed above, backed by real financial consequences for EDC earnings.

On the distribution company side, NRG recommends that the PSC work with DER and utility stakeholders to ensure (1) Simple interconnection requirements, and (2) Allow continuous parallels. ("Continuous parallels" allow a customer to track their own demand in real-time, such that if the grid connection drops, the distributed resources on the customer site can fill the demand instantaneously.) This ability to work in parallel is essential to maximize the benefits of islandable DERs.

Interconnection is also an important topic with regard to participating in markets. NRG encourages the PSC to support PJM in exploring enhancements that will allow DERs to play a role in wholesale market. NRG is a participant in the PJM stakeholder process currently underway that is discussing the rules around small generator interconnection and demand response energy injection. In particular, many stakeholders agree that PJM's planning and operations must incorporate the trend toward DERs and remodel the queue process to open the market for innovation. NRG also supports PJM stakeholder discussions to better understand barriers to energy storage resource participation.

For instance, Princeton HealthCare System's DERs built by NRG benefit the hospital's emergency care patients as well as the electric grid. Working with Princeton HealthCare System, NRG developed a microgrid integrating a 4.6 MW natural gas-powered combined heat and power system, a million-gallon chilled water, thermal-energy storage tank and a 200 kW solar energy array. This system reduces operating costs while protecting the environment and meeting the hospital's energy needs.

How can the Princeton HealthCare System hospital, a model of a distributed energy resource, benefit the grid? With effective interconnection rules, a DER customer such as the hospital can provide standard products sold in the market such as energy, capacity, demand response and ancillary services. By enabling load shifting and flattening, DERs may also enable the deferral of transmission asset investment. Finally, DERs often have the ability to island in the case of grid emergency. With the right processes in place, DERs can support the grid with black start capability, helping other customers to get power back to their homes and businesses, faster.

Question #6: Distribution System Planning: ensuring that utilities' distribution systems have the capability to handle increased DER penetration and evaluating the appropriate level of utility investment in distribution assets

NRG shares a vision of a future in which customers are engaged and empowered in their energy choices, where distributed energy resources are the norm rather than the exception, and where DERs are deployed using both customer and third-party capital. To achieve this goal, NRG submits that the distribution system transformation process needs to focus on (i) ensuring that each utility's financial incentives align with a vibrant market for DERs; (ii) ensuring that each utility implement an impartial 'platform' to facilitate the interconnection and management of DER by customers and DER suppliers; and (iii) that distribution planning by the utilities proactively take into account the ability for DERs and other 'non-traditional' investments and operations to provide grid support in place of more traditional transmission and distribution investments.

The Commission should direct that utilities implement structured programs in their planning and budgeting processes that consider DER-based alternatives to 'traditional' transmission and distribution investment to meet load growth or to upgrade aging facilities. When opportunities to leverage such alternatives are identified, the utilities should solicit proposals from the market on ways that DER investment could resolve the reliability need. Such an approach maximizes the use of private capital. The Commission should examine utility cost recovery structures to ensure that utility incentives are aligned with maximizing the use of DER-based alternatives and that they are not financially penalized for choosing cost-effective DERs over traditional wires approaches.

Question #7: Limited-Income Marylanders: Assessing the Effects of the Evolving Electric Distribution System on Marylanders with Limited Means

One of the pervasive challenges surrounding the evolution of the electric distribution system is how to ensure that Marylanders with limited means benefit from the deployment of the evolution, while acknowledging the consumer protection concerns that arise in the low and moderate income ("LMI") space. NRG respectfully submits that Maryland can ensure LMI customers benefit by aligning utility incentives with the goal of ensuring that LMI customers benefit from new DER investments, as well as promoting competitive retail suppliers to provide innovative billing and other products that are well-suited to the needs of citizens with limited or fixed incomes. While no state has met this challenge head-on, NRG submits three ideas that the Commission may wish to explore further:

1. Competitive retail suppliers in Texas and Pennsylvania offer "flat-bill" pricing options, which allow customers to pay the same amount each month (either for

the total bill (Texas), or for the supply portion of the bill (Pennsylvania)), regardless of usage. Others are taking advantage of "pre-pay" pricing plans that allow customers to pay as they go, similar to how many cell phone plans work. Still others have enrolled in real-time bill and/or usage alerts, which provide customers updates when their usage or bill approaches a customer-set target for the month. NRG's experience is that LMI customers, in particular, benefit from these innovative products. And as AMI meters roll out, this type of product becomes increasingly possible (especially if the Commission would allow for competitive suppliers to bill their customers directly for both supply and utility charges through supplier consolidated billing).

2. A second possible grounds for inquiry is whether the Commission can establish "investment zones" that provide a higher locational payments for DER owners and operators that install DER resources in economically challenged areas. For example, the Commission could direct utilities to establish reservation and dispatch payments for DER deployments that direct higher payments to customers in traditionally economically disadvantaged areas. Such a tariffed payment structure could help ensure that private DER capital is invested in areas that might otherwise be more challenging, absent the potential for a higher revenue stream.
3. Ensure that EDC earnings potential is tied to whether microgrid and other DER investments take place in communities with a high percentage of LMI customers. There is no question that the deployment of microgrids or other DERs that enhance system reliability would provide a direct reliability and

resiliency benefit to economically disadvantaged areas, which justifies potentially tying utility incentives to facilitating those outcomes.

Ultimately, universal electric service is a basic necessity and must continue to be available to all Marylanders, regardless of means. And as we move forward with the distributed energy revolution, all Marylanders must benefit. NRG looks forward to continuing the dialog on how best to secure the benefits of competition for everyone.

V. Conclusion

NRG appreciates the opportunity to submit comments on the Notice of Public Conference 44, which lays the groundwork for a successful transformation of Maryland's electric distribution systems.

Respectfully submitted,

/s/

Abraham Silverman
NRG Energy, Inc.
804 Carnegie Center
Princeton, NJ 08540
(609) 524-4696
Abraham.Silverman@nrg.com

Attorney for NRG Energy, Inc.
Admitted to practice in the State of Maryland