MEMORANDUM

TO: Power Plant Research Program, Maryland Department of Natural Resources

FROM: PSC 44 Energy Storage Workgroup Leaders

DATE: January 11, 2018

RE: Utility Ownership and Regulation of Front-of-the-Meter Energy Storage in Maryland

I. Introduction

The issue of whether electric distribution companies may own energy storage has not yet been addressed in most states with deregulated energy markets, including Maryland. And in the few states that have addressed the issue, the rationales behind their approaches are not rooted in a consistent policy approach.[1] Following several meetings of the Public Conference 44 Energy Storage Workgroup, as well as several rounds of written comments, this Memorandum reviews existing legal and policy considerations for utility ownership of front-of-the-meter energy storage in Maryland. This paper focuses on front-of-the-meter energy storage because there remain significant and complex issues related to ownership of behind-the-meter energy storage that the workgroup has not yet resolved. There were a diversity of views regarding the issue in the workgroup; however, from a policy perspective, the workgroup generally agrees that utilities should be allowed to own energy storage in front of the meter when it has the primary purpose of

[1] Massachusetts, for example, has an energy storage mandate and explicitly permits utility ownership of energy storage. *See Advancing Batteries to Enhance the Electric* Grid, The GridWise Alliance, Inc., July 13, 2017 at p. 15. In New York, utility ownership of energy storage integrated into the distribution system is permissible under certain circumstances. On February 26, 2015, in Track 1 of its "Reform the Energy Vision"(REV) proceedings, the New York Public Service Commission limited energy storage ownership by utilities to demonstration projects, storage sited on utility property with a distribution function, and where markets are not adequately serving low-income community needs. *See* CASE 14-M-0101, Order Adopting Regulatory Policy Framework. In a later Order, however, New York expanded its directive on utility-owned storage. *See* CASE 14-M-0101, ORDER ON DISTRIBUTED SYSTEM IMPLEMENTATION PLAN FILINGS, March 9, 2017, at p. 29-30 ("The Utilities should be striving to develop their abilities to plan and use energy storage as part of their normal course of business . . . To that end, we direct the Utilities to significantly increase the scope and speed of their energy storage endeavors. By no later than December 31, 2018, each individual utility must have energy storage projects deployed and operating at no fewer than two separate distribution substations or feeders, which shall be documented in a compliance filing)." Texas does not allow utilities to own energy storage projects that are intended to receive compensation from wholesale markets. *See* Texas Senate Bill 943 of 2011. However, on October 13, 2017, an Administrative Law Judge Proposal for Decision to the Public Utility Commission of Texas ("PUCT") recommended approval of an AEP Texas request to own utility-scale batteries on the distribution system. *See* PUCT Docket No. 46368, *Application of AEP Texas North Company for Regulatory Approvals Related to the Installation of Utility-Scale Battery Facilities*, at p. 83. On December 6, 2017, the Proposal for Decision was rescheduled for consideration by the Public Utility Commission of Texas on January 11, 2018. *See PUCT Filing No.* 46368-158.

supporting the distribution system.[2] It may be useful for the General Assembly or the Commission to provide additional clarity on the issue.

II. Background

Maryland policymakers did not anticipate or address energy storage when the State restructured the electric industry through the Electric Customer Choice and Competition Act of 1999, PUA §§7-501 *et seq.("Act").* The Act's stated purpose is to:

> (1) establish customer choice of electricity supply and electricity supply services;
> (2) create competitive retail 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.[3]

When Maryland deregulated the electric industry, it intended to segregate generation from distribution along clear and straightforward lines. *See* PUA §7-505(b)(3);[4] PUA §7-505(b)(10)(iii)[5]; and PUA §7-509(a)(1)[6].[7] For the most part, that goal was accomplished. Policymakers ordered the transfer of generation facilities to deregulated businesses, while regulated utilities retained distribution facilities.

Modern energy storage technology, however, potentially disrupts this framework by blurring the bright lines between generation and distribution, depending on how energy storage is used. Advances in utility scale electric batteries make storage useful for a variety of distribution purposes while also exhibiting the attributes and function of generation. Energy storage is a

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[2] This approach was brought to the workgroup's attention by The GridWise Alliance. The Maryland investor-owned utilities participating in the workgroup take the position that they are not prohibited from owning and operating energy storage resources when used primarily for distribution system support, just as any other utility asset used in the ordinary course for maintaining the safety and reliability of the utility's distribution system.

[3] PUA §7-504

[4] (b)(3) The Commission shall order an electric company to adopt policies and practices that are reasonably designed to prevent ... giving undue or unreasonable preference in favor of the electric company's own electric supply, other services, divisions, or affiliates...

[5] (iii) On or before July 1, 2000, the Commission shall require, among other factors, functional, operational, structural, or legal separation between the electric company's regulated businesses and its nonregulated businesses or nonregulated affiliates.

[6] (a)(1) On and after the initial implementation date, the generation, supply, and sale of electricity, including all related facilities and assets, may not be regulated as an electric company service or function except to:
(i) establish the price for standard offer service under § 7-510(c) of this subtitle; and
(ii) review and approve transfers of generation assets under § 7-508 of this subtitle.

[7] In written comments sent to PC 44 workgroup, BGE, Delmarva Power, and Pepco maintained that § 7-505(b)(3) is designed to address utility affiliate issues rather than prohibit utility participation in competitive markets. As to § 7-509(a)(1), BGE, Delmarva Power, and Pepco argued that energy storage resources would not even qualify as facilities or assets that relate to the generation, supply, or sale of electricity.

subject of continuing interest at both FERC and PJM, both of whom have encouraged the use of energy storage and may require its use in the future.[8]

III. Maryland Law

Although the Act effectively separated "generation" from "distribution," the Act does not define those terms. Moreover, although PUA §7-505 and §7-509 are generally read to prohibit the regulated distribution utilities from owning "the generation …of electricity, including all related facilities and assets…," the Act does not unambiguously prohibit a regulated utility from owning or using equipment capable of use for generation.

Moreover, even if the Maryland General Assembly intended for such an outright prohibition to exist, it was at least limited in 2006 when the Legislature added §7-510(c)(6), which expressly permits a regulated utility to own and operate generating facilities with Commission authorization:

> (6) In order to meet long-term, anticipated demand in the State for standard offer service and other electricity supply, the Commission may require or allow an investor-owned electric company to construct, acquire, or lease, and operate, its own generating facilities, and transmission facilities necessary to interconnect the generating facilities with the electric grid, subject to appropriate cost recovery.

The ambiguous and even contradictory statutory scheme of the Act, as amended, relies on a categorization of assets into generation and distribution that does not neatly address the emerging hybrid technology of electric storage. Although Maryland case law has yet to address issues surrounding electric storage, some Maryland authority does exist that may be useful in determining whether regulated utilities may own energy storage devices.

A. Should electric storage batteries be considered a source of generation?

If Maryland regulated utilities are not permitted to own generation, the question of whether electric storage batteries are classified as generation is consequential. Depending on its specific form and use, energy storage can have the attributes of generation, distribution, or both.

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[8] *See* FERC Docket No. RM16-6-000, *Essential Reliability Services and the Evolving Bulk-Power System-Primary Frequency Response;* FERC Docket No. RM16-23-000, Docket No. AD16-20-000, *Electric Storage Participation in Markets Operated by Regional Transmission Organization and Independent Operators;* FERC Docket No. PL 17-2-000, *Utilization of Electric Storage Resources for Multiple Services When Receiving Cost-Based Rate Recovery*, noting at p. 17 that: "[i]f we were to deny electric storage resources the possibility of earning cost-based and market-based revenues on the theory that having dual revenue streams undermines competition, we would need to revisit years of precedent allowing such concurrent cost-based and market-based sales to occur…" *But see* the dissent of Commissioner LaFleur noting at p. 1, expressing particular disagreement "with the Policy Statement's sweeping conclusions about the potential impacts of multiple payment streams on pricing in wholesale electric markets."

In 2014, then Governor O'Malley ordered the formation of a Resiliency Through Microgrids Task Force ("Task Force") to study various issues concerning the potential deployment of microgrids in Maryland. The resulting *Resiliency Through Microgrids Task Force Report ("*TF Report*")* recommends that the Commission allow electric distribution companies employing energy storage, as part of a public purpose microgrid, in their distribution functions to sell stored energy into the PJM markets. According to the TF Report, allowing utilities to receive compensation through the wholesale energy markets would facilitate the full benefits of energy storage technology, in the most cost effective manner. While recognizing that energy storage serves functions of generation, the TF Report concludes that storage systems do not require Commission CPCN authorization, reasoning that storage systems do not meet the COMAR 20.79.01.02(11) (a) definition of "generation station" because they store rather than produce electricity.[9] Although this conclusion may dismiss some of the engineering, mechanical, and chemical processes involved in energy storage systems, the PC 44 energy storage workgroup generally agreed that energy storage systems do not fall under the definition of a "generation station" under COMAR.

On the other hand, the energy storage workgroup also agreed that, from a legal standpoint, defining a generation station for purposes of the CPCN statute does not carry significant legal bearing on the question of whether storage should be considered generation. Fundamentally, the CPCN statute and its implementing regulations constitute a framework that the Commission uses to site or not site certain transmission and generation projects. The laws were not written to answer the question of which technologies might be considered generation in a deregulated regulatory scheme.

Although BGE, Delmarva Power, and Pepco (collectively, the "Joint Utilities") concede that energy storage devices like batteries do not fall clearly into the existing regulatory process, they emphasize that batteries are not capable of generating energy, but rather capture and absorb energy generated from another source, store it, and deliver it at a future time. The Joint Utilities maintain that even if PJM defines a particular application of energy storage as a generation service, the storage device is not actually a generator, energy storage resources are not actually generation assets, and the Commission should not classify them as such.

[9] The definition of "Generation station" at COMAR 20.79.01.02(11)(a) reads: "'Generation station'" means property or facilities located in Maryland constituting an integral plant or unit for the production of electricity…"

MEA and the Center for Renewables Integration, on the other hand, suggest that energy storage be considered generation if it is providing as its primary function a generation service, such as in certain circumstances participating in PJM wholesale energy markets. In that case, it would be appropriate to afford energy storage the same regulatory treatment that traditional generation receives when the storage serves a competitive function or service – i.e. if it is providing bulk energy or consumer services, or providing ancillary services. The Center for Renewables Integration suggests that the FERC policy statement summarizes the issues that need to be resolved if energy storage is seeking both rate based (i.e. cost-based) and market based revenues.[10] MEA in particular finds it self-evident that such energy storage resources would qualify under § 7-509(a)(1) as facilities or assets that relate to the generation, supply, or sale of electricity. Under such a reading, the Commission would not regulate those assets as an electric company service or function, and an electric company would not be able to recover on the costs of those facilities within its rate base.[11]

The Office of People's Counsel's ("OPC") view is that because the State is at a very early stage in the development of storage as a utility-scale asset, it is difficult to categorize all of storage's possible uses. As such, it would be premature to adopt rules at this time prohibiting utilities from owning storage because that type of regulatory framework could potentially prevent cost-effective solutions. OPC states that because there are a number of options for the

[10] FERC Docket No. PL 17-2-000, *Utilization of Electric Storage Resources for Multiple Services When Receiving Cost-Based Rate Recovery*, noting at page 11, "…if an electric storage resource seeks to recover its costs through both cost-based and market-based rates concurrently, the following issues…should be addressed: 1) the potential for combined cost-based and market-based rate recovery to result in double recovery of costs by the electric storage resource owner or operator to the detriment of cost-based ratepayers; 2) the potential for cost recovery through cost-based rates to inappropriately suppress competitive prices in the wholesale electric markets to the detriment of other competitors who do not receive such cost-based recovery, and 3) the level of control of the operation of an electric storage resource by an RTO/ISO that could jeopardize its independence from market participants." FERC continues in the policy statement, however, to note that there are ways to address each such issue, explaining on pages 13-14 that with respect to the potential for double recovery of costs, "crediting any market revenues back to the cost-based ratepayers is one possible solution" where the "market-revenue offset can be used to reduce the amount of the revenue requirement to be used in the development of the cost-based rate" and stating on pages 15-16 regarding possible price suppression, that "electric storage resources may concurrently receive cost- and market-based revenues for providing separate services. We do not share commenters' concerns and are not convinced that allowing such arrangements will adversely impact other market competitors." Finally, on the issue of RTO/ISO independence, FERC concluded on page 20 that "there is nothing unreasonable about an RTO/ISO exercising some level of control over the resources it commits or dispatches where it can be shown that the RTO/ISO independence is not at issue." FERC explained that RTO/ISO control will be lower when storage resources are dispatched through the organized wholesale electric market clearing process, and will be higher when resources are operated outside of the organized wholesale electric market clearing process to address reliability needs.

[11] Other hybrid approaches, also acceptable to MEA, would allow electric companies to recover the costs of storage assets only to the extent that they are used for distribution purposes.

ownership of utility-scale storage assets and different ways to deal with the costs and potential revenues from such assets, a case-by-case approach to addressing those questions is better for Maryland at this time. This will allow the Commission to consider the facts of each proposal and gives the best opportunity for utility-scale storage to actually be deployed in the State in the near term.

OPC suggests that the utilities should identify where and how storage assets could benefit their systems and describe how the assets would be useful.[12] This would include the function that the storage asset will provide to the utility, and any available alternative solutions. According to OPC, this type of information could lead to other questions of the utilities, which could elicit information relevant to determining what other opportunities to deploy storage assets may exist.

The Energy Storage Association, along with other stakeholders, emphasizes that energy storage systems bear the unique capability of providing services associated with generation, transmission, and distribution. Therefore, they maintain, the goal of the workgroup should be less focused on defining storage within particular functional categories and more upon ensuring that an effective competitive framework exists under which all cost-effective storage resources – including those owned by distribution utilities, and by third-parties and customers – are evaluated and procured. [13]

B. Would Maryland law permit regulated utilities to own front-of-the meter energy storage devices if they are treated like generation?

As part of the 2014 Task Force study, the Task Force directly confronted the question of whether Maryland law permits regulated utilities (or electric distribution companies ("EDCs")) to own and operate generation assets, as well as other questions concerning energy storage systems. In its report, the Task Force concluded that EDC ownership of generation was permitted, based on PUA §7-510(c)(6), if there is Public Service Commission approval after a

[12] Although supportive of exploring how storage resources can benefit their distribution systems, the Joint Utilities state that they can install energy storage, like any other distribution system asset, if it makes economic sense – even if the utility is unable to access all available value streams with such resources. Furthermore, the Joint Utilities maintain that they should be able to own and operate energy storage resources, and participate in any available markets. The Joint Utilities note that access to the markets can generate revenue that can then be used to offset the capital costs of the energy storage resource, all for the benefit of utility ratepayers.

[13] WGL Energy submitted written feedback suggesting that the definition of energy storage facilities as either generation or distribution is not as important as the functional classification of energy storage to support utility distribution versus competitive generation, as well as expressing WGL Energy's view that utilities should not be permitted to own and operate energy storage facilities that are used to support electricity supply merchant functions. This feedback may be discussed further at future energy storage workgroup meetings.

finding that the generation would help meet long term, anticipated demand in the State for electricity supply.[14]

Other conclusions of the Task Force relevant to energy storage are that under current Maryland law:

- The PSC is authorized to require or allow EDCs to construct and operate distributed generation facilities to meet long-term, anticipated demand in the State for electricity supply;

- EDCs can own and operate energy storage systems;

- EDCs are not prohibited from selling services from distributed generation facilities and energy storage systems into PJM wholesale markets;

- After PSC approval, EDCs can sell services from distributed generation facilities and energy storage systems to microgrid retail customers;[15]

Although the TF Report carries the authority of the State's former Energy Advisor and a staff assembled from the Maryland Energy Administration and other State agencies, it is not settled law, and incorporates the policy preferences of that particular Administration. It is important to note, therefore, that the views of the current Administration carry added significance, and are to some extent distinguishable. Indeed, as MEA notes in its analysis of the practicality of relying on 7-510(c)(6) as a basis for utility ownership of energy storage:

> "while there could be a situation in which the Commission used this provision to require the utility to act in accordance with this provision, there would likely need to be a compelling reason for the Commission to do so (i.e. a large spike in anticipated electricity demand). In the absence of such a compelling reason, it is difficult to see how this would apply."[16]

Although BGE's Microgrid proposal[17] afforded the Commission the opportunity to address the ownership of generation assets, the Commission declined to address the Task Force's conclusion that regulated utilities can own and operate a generating asset in the form of a microgrid under PUA §7-510(c)(6). Although the Commission ultimately rejected BGE's microgrid proposal, it did not base its decision on BGE ownership of generation assets. In response to the contention of parties who argued that BGE failed to make a showing of long-term

[14] *See* TF Report, p. 29.

[15] *Id.*

[16] MEA September 18, 2017 memo to the PC 44 Energy Storage Workgroup on Energy Storage Considerations.

[17] *In the Matter of the Baltimore Gas and Electric Company's Request for Approval of Its Public Purpose Microgrid Proposal,* Order No. 87669, Case No. 9416.

energy demand under PUA §7-510(c)(6), the Commission responded in its footnote 16 that it declined "to decide here whether the statute requires such a finding."

BGE, Delmarva Power, and Pepco maintain that there is no current law that prohibits utilities from owning energy storage when it is compensated like generation in PJM markets, and emphasize that PJM and FERC have not objected to the concept of allowing utilities[18] to recoup both cost and market-based revenues from energy storage systems that they own.[19] Other stakeholders like MEA, however, point out that Maryland's deregulation laws lend credence to the argument that utilities should not be able to recover on storage as a regulated asset when it serves a competitive function. Certainly, there is no explicit prohibition on utility ownership of energy storage, as neither the Maryland General Assembly nor the Commission have passed or promulgated any law that addresses the issue. The corollary to that fact, however, is that there is no explicit authorization (or regulatory framework) for utility ownership of energy storage, either.

In sum, the legal authority of utilities to own energy storage could be clarified. Although workgroup participants disagree regarding the legality of utility-owned energy storage, the workgroup generally agrees that utilities should be allowed to own front-of-the-meter energy storage when it has the primary purpose of supporting the distribution system. Given this threshold agreement, it would be useful for the General Assembly or the Commission to provide additional clarity on the issue. It would also be useful to discuss the ways under which the Commission could regulate such an ownership structure.

IV. Proposed Pilot Programs

One method of clarifying the potential costs and benefits of certain ownership and regulatory structures could be for the Commission to authorize or require utilities to conduct pilot programs that explore various ownership models that may more fully realize the potential for energy storage to provide value for Maryland ratepayers. To that end, the Energy Storage Association in late 2017 proposed a **"**Proof of Regulatory Concept Program" to test innovative regulatory concepts that can ultimately be the building blocks of a competitive framework for energy storage. In ESA's view, such a pilot program would also provide the benefit of being a

[18] In its policy statement, FERC conditions its acceptance of such a mechanism on establishing adequate protections against effects on market clearing prices, by establishing prohibitions on double recovery and appropriate cost recovery mechanisms. FERC Docket No. PL 17-2-000, *Utilization of Electric Storage Resources for Multiple Services When Receiving Cost-Based Rate Recovery*, at p. 17

[19] *See id.*

"learning-by-doing" process that allows all stakeholders to identify and adjust any regulations and permitting obstacles in order to facilitate the smooth deployment of energy storage in the future.

Under the proposed Proof of Regulatory Concept Program, the Commission could provide a list of regulatory mechanisms and commercial structures for the utilities to select over a period of 2-3 years, with a program size of 5-10 MW (with a minimum of 15 megawatt hours). The utilities could then select a minimum of two projects from the following regulatory applications:

- *Multiple Use Project:* The purpose here is to test multiple applications of energy storage. For this project, the utilities would be able to lease a distribution grid asset to a third-party developer when it is not being used for grid support, in order to participate in the wholesale market. Under this scenario, the Commission would direct the utilities as to how the additional revenues should be used to drive down costs for ratepayers.

- *Ownership Model Project:* For this project, the Commission would test out an alternative compensation mechanism that allows utilities to earn a similar return for contracting services from a third-party owned energy storage resource as if they rate-based the asset directly. One proposal discussed in the working group provides for a rate of return on the contract value, but there are alternative mechanisms that can be considered. Different arrangements regarding operational controls can also be tested for this project.

- *Virtual Power Plant Project:* This program allows utilities to contract with third-party developers who own and operate a portfolio of behind-the-meter resources and synchronize them as a larger, unified, and flexible resource to meet the utility's needs. Different arrangements regarding operational controls can also be tested for this project.

The Joint Utilities support the proposed Proof of Regulatory Concept Program, but only if a fourth "utility-centric" model is included as a fourth project option. In this model, the utility would own and operate the energy storage resource, and be able to offer the resource into all available PJM wholesale markets when not otherwise being used for utility grid support, with any realized market revenue being used to offset the costs of the energy storage resource, all to the benefit of the utility's ratepayers. The Joint Utilities argue that the inclusion of the fourth option is necessary to ensure a full and complete comparison of possible energy storage ownership models. Additionally, the requirement that each utility propose a minimum of two projects would ensure that diverse applications are tested under the program. OPC raised concerns about the need to demonstrate cost-effectiveness of pilot projects before they are approved as well as a desire for more insight into the utilities' decision making processes about

deploying storage and other distribution investments. Beyond these concerns, OPC also believes that certain issues surrounding the pilots require further discussion and consideration, including what insight or new information the pilots will offer, particularly in the short or medium term, and how the utilities will ensure that the pilot programs do not delay the deployment of other cost-effective storage assets that become available during the pendency of the programs.

ESA also recommended that timelines and next steps need to be clearly identified for implementation for this Proof of Regulatory Concept Program to be effective in driving a competitive landscape for energy storage in the state, and that a clear plan be in place to help determine next steps, once the results of the pilot are assessed.

ESA submitted the following proposed timeline for the work group's consideration:

1. Within 60 days of the launch of the program, the compliant entities should institutionalize a working group of key stakeholders who will review project proposals, standard contracts and solicitation materials.
    a. The working group should begin developing a standard contract as well as review request for offers (RFO) materials so that utilities are able to secure resources in a timely manner once the Commission has approved proposed projects.
2. Within 180 days of program launch, the utilities must propose projects to the Commission. Project proposals should be filed within the designated docket.
    a. Projects should be presented to the stakeholder group before being submitted to the Commission.
3. The Commission should approve, reject, or request modification of the proposed projects within 90 days of submission.
4. Depending on the project selection, the utilities must take action within 30 days of Commission approval of projects to secure projects. For scenarios that have been determined to require a competitive solicitation the utilities would release a RFO or other mechanism deemed appropriate by the Commission for the projects described in the application.
5. Utilities should finalize contracts for the projects within 120 days of launch of RFO or other solicitation mechanism deemed appropriate by the Commission.
6. Pilot program data collection will run twelve months from the date that projects are operational.
    a. Data collection requirements should be identified in the working group.
7. At the end of the twelve month period, the Commission will evaluate the efficacy and appropriateness of the regulatory and commercial structures tested in this program and – if deemed effective – consider broader adoption of these mechanisms.
8. At the end of the twelve month period, cost recovery method should be evaluated for the Commission to determine if the mechanism is appropriate for the duration of the contract life or if another cost recovery option is preferred.

The Joint Utilities also support the idea of submitting a proposed timeline, but take the position that the timeline could be much simpler, offering dates and time periods for key events such as utility proposal submission, a Commission decision on the submitted proposals, the issuance of any RFO or solicitation mechanism, and project completion.

In addition to further discussing these and other potential concerns, the workgroup will need to address several additional outstanding items of what a potential pilot program might look like, including: (1) which entities are required to comply with the program; (2) finalizing what regulatory applications/mechanisms the program aims to test (including what type of cost recovery mechanisms will be offered in this program and any related steps needed to implement those cost recovery mechanisms); (3) what data will be collected as part of the pilot program and how will it be made public; and (4) metrics to evaluate efficacy and appropriateness of these regulatory concepts at the end of the program period.