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Wednesday, July 29, 2020

Joel H. Peck, Clerk
c/o Document Control Center
State Corporation Commission
1300 E. Main Street
Richmond, Va. 23219

Re: In the matter of establishing rules and regulations pursuant to § 56-585.5 E 5 of the Code of Virginia related to the deployment of energy storage Case No. Pur-2020-00120

Dear Mr. Peck,

Please accept the attached letter as the Comments of Virginia Advanced Energy Economy regarding the rules and regulations governing the deployment of energy storage pursuant to § 56-585.5 E 5 of the Code of Virginia. Virginia Advanced Energy Economy (Va. AEE) is a coalition of businesses that seek to make the Commonwealth's energy more secure, clean, and affordable, bolstering Virginia's economy. The comments expressed herein represent the position of Va. AEE as a coalition but may not represent the view of any particular member.

On behalf of Virginia's advanced energy industry, I appreciate the opportunity to share our perspective and stand ready to address any questions the Commission or its staff may have.

Sincerely,

A handwritten signature in black ink, appearing to read "Harrison Godfrey", is written over a white rectangular background.

Harrison Godfrey
Executive Director

**COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION**

In the matter of establishing rules and regulations pursuant to § 56-585.5 E 5 of the Code of Virginia related to the deployment of energy storage

CASE NO. PUR-2020-00120

July 29, 2020

COMMENTS OF VIRGINIA ADVANCED ENERGY ECONOMY

I. Overview

Virginia Advanced Energy Economy (Va. AEE) is a coalition of businesses that seek to make the Commonwealth's energy more secure, clean, and affordable, bolstering Virginia's economy. Virginia AEE aims to drive the development of advanced energy by identifying growth opportunities, removing policy barriers, encouraging market-based policies, establishing partnerships, and serving as the voice of innovative companies in the advanced energy sector. Our membership includes companies that manufacture, develop, and operate energy storage throughout the United States and around the world. We applaud the Commonwealth's support for energy storage, as expressed through the targets in the "Virginia Clean Economy Act" (VCEA) and appreciate the opportunity to comment upon regulations designed to implement and enforce such targets.

In order to spur the development of a competitive, cost-effective market for energy storage in Virginia, it is essential that the Commission establish proximate interim targets for Dominion and APCo. as detailed in our responses to Questions 1 and 2 below. In the absence of such targets, the storage industry is likely to focus elsewhere, resulting in lackluster market participation and higher costs to consumers.

The multifaceted services energy storage can provide make it a unique advanced energy resource. Storage can operate both behind the meter (BTM) and in front of it, serve as a "non-wires alternative" (NWA) to distribution, transmission, and other grid investments, substitute for conventional peaking resources, and enhance energy resilience. Given the diverse array of potential benefits, we encourage the Commission to require that the utilities update their planning and procurement processes to ensure storage is fully and fairly considered as a grid

resource, as detailed in Questions 3, 4, and 5. The Commission should build from the competitive procurement practices required by the VCEA, laying out regulations to ensure this cost-effective resource can fully participate in Virginia's energy landscape.

Changing economics have made energy storage, particularly battery storage, an increasingly cost-competitive resource in recent years. As a result, Dominion and APCo. may not be familiar with the diverse value streams storage can provide, nor fully adept integrating storage into their grid operations. We urge the Commission to establish rules and regulations governing these storage targets that drive the utilities to explore and embrace the diverse benefits storage can provide, both in front of and behind the meter, as a substitute to distribution, transmission, and peak capacity needs, and as a source of additional grid services. Our responses to Questions 6, 7 and 8 detail the incentives, programs, and targets the Commission and utilities should consider in order to realize the services storage can provide and build a diverse, competitive marketplace.

To further ensure that a robust and competitive energy storage market arises from these targets, we encourage the Commission to judiciously enforce the capacity size limitations and third-party ownership requirements specified in VCEA. As detailed in our responses to Questions 9, 12, and 13, such provisions are intended to maximize competition and produce cost-savings for ratepayers. At the same time, we encourage the Commission to be expansive in its regulations around the technologies and parties that may participate in Virginia's storage market – as discussed in Questions 9, 10, and 14 – further enhancing the strength and competition in Virginia's energy storage market.

Ultimately, a robust and competitive storage market should grow the Commonwealth's advanced energy economy, enhance resilience, address a variety of needs in a cost-effective manner, and help to save ratepayers money while facilitating the transition towards a 100% clean grid.

II. Answers to Specific Questions

1. What interim targets should be established for meeting the targets set forth in Code § 56-585.5 E 1 for APCo?

Va. AEE strongly supports the Commission establishing interim targets to ensure Appalachian Power Company (“APCo.”) is making consistent and measurable progress towards the statutory cumulative storage targets established in the VCEA. As enacted, the VCEA established a cumulative, 400 MW storage target for APCo. in 2035. Interim targets are essential to creating near-term certainty for the storage industry and a stable marketplace for storage projects and the grid services they can provide. In the absence of such interim targets, we fear the utilities may lag in procurement, causing the storage industry to focus on states with more proximate targets and programs.

Va. AEE recommends that such interim targets represent total storage capacity, which the utility either owns, operates or with which it has a contractual relationship, placed in service by the end of that calendar year. As these targets are focused on the deployment of new storage resources, only storage placed in service after the start of this program should count towards the targets. We recommend the Commission set the first interim targets soon enough as to create market certainty, but not so soon as to prevent a thorough cycle of procurement, permitting, interconnection, and construction. We would encourage the Commission to establish a consistent cadence to these interim targets, so procurement and development can occur in a predictable manner. An interim target schedule that loosely follows the utility’s triennial IRP process would have such a cadence and take advantage of the planning updates proposed in our response to Question 3 below. Finally, we would discourage the Commission from setting interim targets all the way to 2035, but instead establish the first two to three targets, allowing for a point in the latter part of the decade to review progress to date and set appropriate future targets.

Based upon the above criteria, we would propose the following set of three, initial, interim targets for APCo.:

- 2022: 100 megawatts (MWs)
- 2025: 200 MWs

- 2028: 300 MWs

Under this schedule, the Commission would review APCo's storage targets in 2028 and consider setting new interim targets through 2035.

As stated previously, these targets should be a measure of total installed storage capacity by the end of the target year. As such, installed storage capacity used to meet one target would be eligible to meet subsequent targets as well, assuming it was still in operation.

2. What interim targets should be established for meeting the targets set forth in Code § 56-585.5 E 2 for Dominion?

Va. AEE likewise strongly supports the Commission establishing interim targets for Dominion. We recommend that the Commission apply same criteria here that we proposed for APCo's interim targets. In this case, there are two relevant differences between the two utilities: (1) the size of Dominion's cumulative storage target (2,700 MWs) and (2) the schedule of Dominion's IRP process. We would encourage the Commission to keep these differences in mind as they develop the utility's interim targets. Based upon the aforementioned criteria, Dominion's cumulative target, and its' IRP schedule, we present the following set of three interim targets.:

- 2023: 400 MWs
- 2026: 900 MWs
- 2029: 1,500 MWs

Under this schedule, the Commission would review Dominion's storage targets in 2029 and consider setting new interim targets through 2035.

3. What updates to existing utility planning should be adopted to facilitate the achievement of the Energy Storage Targets?

Energy storage has the potential to markedly transform how we generate, transmit, save, and consume electricity. As such, it is essential that APCo. and Dominion thoroughly incorporate storage into their planning processes. At a minimum, we recommend that the utilities be required to factor the interim and cumulative storage targets into future IRPs, with pathways to cost-effectively meet these targets.

We urge the Commission to go further, however, and adopt a set of reforms to utility planning processes that should ensure the value of storage is fully realized, current and future costs are accurately modeled, and this resource is able to fully participate in utility planning. Below we have laid out updates to current planning processes that we believe will allow Dominion and APCo. to fully realize the value and diverse capabilities of energy storage:

- **Sub-Hourly Modeling:** Conventional IRP modeling often fails to fully capture the diverse services that storage can provide. For instance, energy storage can serve as a regulation reserve, spinning reserve, and / or provide load-following services, all of which can occur on an intra-hour basis and are thus lost in modeling grounded in hourly intervals. Thus, we strongly urge the Commission to require APCo. and Dominion to update their IRP modeling processes to sub-hourly intervals. Implementation of this reform should be expedited so that sub-hourly modeling is captured in the utility's 2022 and 2023 IRPs.
- **All-Source Planning & Procurement:** Storage can serve as a substitute to generation, transmission, and distribution. Recognizing this, we urge the Commission to require that, in their IRP, distribution and transmission planning processes APCo. and Dominion demonstrate that they have identified all potential scenarios in which storage could serve as a substitute for conventional infrastructure and have analyzed these scenarios in their planning processes to identify cost-effective opportunities for deployment. We do not expect the utilities to be omniscient when it comes to all the services storage can provide, nor where it can be as a cost-effective substitute to conventional solutions. So, as detailed in our response to Question 4 below, we strongly urge the Commission to require the utilities to conduct all-source RFPs for generation, distribution, and transmission needs. Information drawn from these RFPs should be incorporated into future IRPs and distribution and transmission planning processes in an iterative process that expands and refines where storage is modeled as a substitute resource. Ideally, these distinct planning processes can be consolidated, so that the full value of storage can be realized in planning processes. Our current, siloed processes

limit the ability for utilities to fully realize how storage can address multiple, overlapping needs.

- **Accuracy in Pricing:** Given the sharp cost declines we have witnessed in the storage industry in recent years – particularly for lithium-ion based storage – out-of-date pricing and inaccurate projections regarding storage costs can result in underutilization of this resource. We would urge the Commission, at a minimum, to require that the pricing data Dominion and APCo. use in their IRPs have been published no more than 12 months prior to completion of the plan. We would strongly prefer that the Commission require the utilities use pricing data drawn directly from their most recent all-source RFPs (as discussed above), to maximize the accuracy of such data. If such data is available at that time, the utilities should be required to use it in their 2022 and 2023 IRPs. Otherwise, the 12-month threshold should serve as the fallback option.
 - **Capacity Modeling:** Conventional IRP planning processes embed behind-the-meter (BTM) resources, including customer-sited storage, into their load forecasts, rendering them essentially invisible in the larger planning process. But advanced communications and control technology can allow grid operators to dispatch BTM storage as they would a generation unit or demand-response resource. As such, we would encourage the Commission to update Dominion and APCo.'s planning processes to model BTM storage as a separate capacity resource, rather than factoring it into load forecasts.
 - **Renewables Integration:** Virginia is poised to see significant growth in renewable generation in the decades ahead. Over time, this may result in periods of significant ramping and / or overgeneration. While this is not a near-term issue, we would encourage the Commission to update utility planning processes to capture such possibilities and model the value of storage in addressing them. Such planning will allow for the integration of greater levels of renewable generation on the grid.
4. **What updates to existing utility procurement rules should be adopted to facilitate the achievement of the Energy Storage Targets?**

The VCEA as enacted establishes specific criteria for the procurement of advanced energy resources. Section 56-585.5 E 2 states:

“All energy storage projects procured pursuant to this subsection shall meet the competitive procurement protocols established in subdivision D 3.”

Subdivision D 3, in turn, requires that APCo. and Dominion conduct, at a minimum, an annualized RFP process for the procurement of resources, adhering to specific criteria to ensure market participants have sufficient time and information to respond, and that such proposals are given full and fair consideration. We support the RFP process established in subdivision D 3 and would encourage the Commission to ensure that the utilities fully adhere to it.

While laudable, these RFP rules are only the beginning baseline from which utility procurement of storage resources should evolve. As noted previously, energy storage can serve as a substitute and complement to a wide variety of generation, distribution, transmission, and other grid investments. As storage technology continues to fall in price, and utilities gain a steadily greater understanding of its usefulness, storage should be permitted to participate in a wide array of procurements, rather than be siloed. The ideal method for permitting storage to participate in a wide array of procurements, and breaking down silos, is via all-source procurement.

Fundamentally, all-source procurement shifts the paradigm from a focus on inputs to outcomes. For instance, rather than soliciting bids for upgrades to a specific substation that is struggling to deal with load growth while maintaining system reliability, an all-source RFP would describe the problem – load growth and reliability on the distribution grid – and location, then permit bidders to propose a diverse array of solutions. We recommend utility then conduct a “net-cost analysis” (detailed below) to fully account for the costs and benefits of each proposed solution to identify the most cost-effective bid that effectively meets the identified need.

Energy storage provides a range of flexibility benefits, from reducing operating reserve requirements and renewables curtailment to improving the heat-rate of thermal generation and more. These benefits layer on top of the capacity value of storage resources but are often

considered avoided costs. Net-cost analysis captures this full range of benefits – both capacity values and avoided costs – to provide grid planners with a more complete picture of the net-cost of storage to the grid. This is a marked improvement from the levelized cost of energy (LCOE), a more traditional means of comparing costs between generation resources. We recommend that the Commission require Dominion and APCo. to conduct net-cost analyses of various potential resources when evaluating bids during the procurement process, whether all-source or otherwise.

All-source procurement has an array of benefits, but we focus on three that are particularly salient in this context. First, all-source procurement allows the utility to escape technological lock-in. Rather than pre-determining what technology should be used to solve a specific problem, the utility is presented with a variety of options from which they may choose. This is especially important for technologies, such as battery storage, with which the utility may have limited experience and might not otherwise consider. Second, on a similar note, all-source procurement allows technologies with multifaceted applications, such as storage, to participate in procurements from which they might otherwise be excluded. Third, such procurement practices can help allow for greater price revelation by routinely and repeatedly soliciting up-to-date and competitive market pricing. As noted above, such up-to-date information is vital to ensuring utilities fully consider storage in their planning processes.

Ideally, all-source procurement can cut across multiple silos, as resources serving load can also address transmission, distribution, or other grid needs. This is certainly true of storage resources, which, for example, can at once address capacity needs, complement the distribution grid, and provide ancillary services. We recognize utilities may need time to fully recognize the diverse services that storage can provide and integrate them into resource plans and grid operations. As such, we would urge the Commission to establish a schedule of pilots and procurement targets (detailed in our responses to Questions 6 through 8) intended to ensure APCo. and Dominion thoroughly review, deploy, and procure storage projects and services to meet a diversity of needs over the course of the next 3-6 years. Such pilots and targets should loosely track the utilities' evolving planning processes, at once informing future plans and growing out of them. Ultimately, this process should culminate in a transition to robust all-source procurement.

5. What competitive solicitation-related programs and mechanisms to deploy energy storage should be included in the required regulations?

Section 56-585.5 D 3 of Virginia code, as discussed above, establishes a process for annualized procurements that should be transparent and competitive. We therefore reiterate our recommendation that the Commission fully enforce these criteria to ensure full adherence by the utilities. We likewise urge the Commission go further and establish procurement rules that ultimately result in all-source RFPs and net-cost analysis, as discussed in Question 4. We believe transparency and competition will only be enhanced by these updates, resulting in greater value realization for storage resources, more cost-effective deployments, and savings to ratepayers.

Moreover, Va. AEE firmly believes that third-party development and operation of storage resources, wherein the utility contracts with the operator via a Power Purchase Agreement (PPA) or similar agreement, can bring greater competition to both the procurement and operations of storage resources. As such, we strongly support the thirty-five percent third-party threshold established in Section 56-585.1 E 5. Our perspective upon this requirement is further detailed in our response to Question 12 below. We agree with our colleagues from MDV-SEIA, who in their comments encourage the utilities, the Commission staff, and stakeholders to review a pro forma PPA as part of this and future dockets related to energy storage.

Storage can operate both behind the meter (BTM) and in front of it, serve as a “non-wires alternative” (NWA) to distribution, transmission, and other grid investments, and substitute for conventional peaking resources. We strongly support programs and incentives that encourage the growth of storage within all of these sectors of Virginia’s energy ecosystem. In our responses to Questions 6, 7, and 8 below, we detail programs, percentage targets, and incentives that should encourage growth and competition BTM resources, among NWA’s, and address peak demand.

6. What behind-the-meter incentives to deploy energy storage should be included in the required regulations?

BTM energy storage resources are able to provide a wide variety of services to residential, commercial, industrial, and public sector consumers. They can, for instance, provide back-up

generation to critical facilities such as hospitals, supply voltage regulation and ancillary services to data centers, and help homes and businesses reduce energy costs by shifting consumption, shaving peaks, and integrating distributed generation. BTM storage benefits not only the individual consumers who deploy it, but also the ratebase broadly, reducing the need for additional peaking resources, greater grid hardening, or new distribution investments, for example, and society as a whole, by reducing emissions and enhancing the resilience of first responders. Moreover, BTM resources provide these broader benefits while relying in whole, or large part, on private financing. As such, we strongly support the goal laid out in Section 56-585.5 D 4 of Virginia's code that at least 10% of the storage projects deployed to meet APCo. and Dominion's targets are BTM. We would recommend that the Commission apply this 10% threshold to both the interim and cumulative storage targets of each utility, starting immediately.

To spur the deployment of BTM storage, we urge the Commission to require APCo. and Dominion to establish at least one, and preferably multiple, programs and incentives. We have detailed four such options below:

- **Peak Demand Reduction** – Peak demand reduction programs tailored to BTM storage compensate storage resources for performance during peak periods, as signaled by the utility. The “Daily Dispatch” program, operated by Eversource and National Grid in Massachusetts is widely regarded as a well-designed example of such a program. By setting clear compensation standards for BTM storage resources based upon performance and creating revenue certainty through multi-year contracts (e.g. five years) “Daily Dispatch” is accelerating BTM storage deployment.
- **Resilience Rebates** – The ability to maintain operations despite grid failures, aka “energy resilience”, is a valuable service for a range of sectors. Enhancing the site-specific resilience of critical facilities (e.g. hospitals, emergency shelters, or data centers) may also lessen the need for broader resilience investments with limited benefits for the general ratebase. Therefore, we would encourage the Commission to initiate a study of BTM economics and the willingness to pay for “resilience” by specific sectors. Based upon the outcomes of that study, the Commission should then direct APCo. and

Dominion to launch incentive programs that accelerate the deployment of BTM energy storage for resilience. Such a study should complete by mid-2021 so that a program may commence may end of year.

- **BTM Storage Aggregation** – BTM storage, particularly when aggregated, can serve as a peaking capacity resource, a non-wires alternative, and provide a host of grid services. Permitting third parties to aggregate multiple BTM storage resources, and bid them into procurements for generation, distribution, transmission and other grid services can create an additional value stream for such BTM resources and incentivize their deployment. We would encourage the Commission to direct APCo. and Dominion to allow such aggregators to participate in future procurements.
- **Storage-specific Rate Design:** A Storage-specific rate, with TOU pricing, coincident peak demand charges, and tailored peak windows, allows BTM storage owners to maximize the benefits of their facilities. We encourage the Commission to require the utilities to design effective storage-specific rates for customers, particular those in the commercial and industrial space. This rate design should be time to real grid needs, not just the capabilities of storage. Such informed design should strengthen the link between compensation, cost causation, and the benefits provided to the grid. A system deployed under such a rate wouldn't be directly financed by the utility, nor part of a larger contract, there would be a need for EM&V to verify the additional storage capacity created as a direct result of such a rate and thus attributable to the utilities' storage targets.

It is the experience and outlook of Va. AEE that BTM storage can be provided via the competitive marketplace. Indeed, a number of our members companies are already providing BTM storage systems and services to residential, commercial and industrial customers across the United States. Vertically-integrated utilities, such as Dominion and APCo., have a role to play in accelerating the deployment of BTM storage via programs and incentives, like those described above, in order to maximize broader societal benefits. To encourage competition and maximize private investment, however, we would encourage the Commission not to permit the utilities to own and ratebase such assets unless they can identify a clear and discrete market failure. The reliability of third-party owned storage systems, either BTM (as discussed above) or in front of

the meter (FTM) can be maintained via contractual agreements with clear penalties for non-performance. Utility ownership of such assets is not the only way to guarantee reliability.

7. What non-wires alternatives programs to deploy energy storage should be included in the required regulations?

Energy storage, sometimes paired with other distributed energy resources (DERs), can substitute for investments in transmission and distribution infrastructure, providing an alternative to traditional “wires” based approaches. NWAs can reduce the need for costly capital investments, especially in circumstances when load growth is marginal, capacity constraints are transient, the future needs is uncertain, or a particular location is difficult to upgrade. In such situations, NWAs can help to avoid or shrink costs to ratepayers. However, this cost-effectiveness, which makes NWAs appealing to regulators and ratepayers, can also disincentivize traditional IOUs, like APCo. and Dominion, from procuring them. This is especially true when an NWA relies on a third-party owned resource, as payments for the outside resource (an operating expense) would supplant an earnings-generating capital investment for the utility. To address this disincentive, we recommend that the Commission require a percentage of the utilities’ interim and cumulative storage targets be comprised of storage procured to serve as an NWA.

This NWA percentage requirement would be similar to that discussed above for BTM storage resources. In fact, we would advise the Commission to allow projects to fulfill both percentage targets simultaneously, if they meet the relevant criteria. We can readily conceive of a scenario in which a BTM storage project also helps to defray the need for new distribution-level investments, effectively serving as an NWA as well.

Va. AEE acknowledges that it may take time for APCo. and Dominion to grow comfortable with employing storage as a substitute for traditional grid investments. The utilities will need to adjust their planning and procurement processes, as discussed in Questions 3 and 4, to fully recognize and capture the value of storage as an NWA. As such, we would recommend a phased approach that opens up procurement processes and increases the NWA percentage threshold in a stepwise manner. Below is a potential schedule for Dominion’s NWA targets and procurements we encourage the Commission to consider:

- **2021:** The utility identifies a finite set of distribution-level needs that may be addressed with NWAs
- **2022:** The utility issues RFPs to address the above distribution-level, permitting conventional wires-solutions and NWAs to participate, piloting NWA procurement.
- **2023:** For the first interim storage target, there would be no NWA percentage obligation, but updates to the IRP processes, including sub-hourly modeling and up-to-date storage pricing, would more accurately reflect the value of the resource and identify opportunities for procurement. The Commission should plan to open a docket on NWAs no later than this juncture to ensure that procurement processes, evaluation methods, and cost analysis are consistent, balanced, and rigorous. This docket may likewise consider whether the NWA percentage targets for future years should be more or less than those proposed below.
- **2024 & '25:** The utility conducts a robust multisource RFPs for distribution (and, ideally transmission) needs that include NWAs.
- **2026:** Second interim storage target requires 10% of target be met with storage procured to serve as an NWA.
- **2027 & '28:** Transition to all-source RFPs for distribution-level needs. The utility identifies a set of transmission-level needs that may be met with NWAs and issues targeted RFPs for conventional wires-solutions and NWAs to address these identified needs, effectively piloting NWA procurement in transmission.
- **2029:** Third interim storage target requires 15% of target be met with storage procured to serve as an NWA.
- **2030 & onwards:** Transition to full all-source RFPs that combine distribution, transmission* and capacity procurements above a certain cost or capacity threshold (to ensure minor and acute distribution needs are hamstrung by an RFP process).
 - *Transmission planning and procurement will need to coincide with PJM's Regional Transmission Expansion Plan (RTEP), which may require adjustment of this schedule. We would encourage the Commission to urge PJM to adopt processes that permit and encourage all-source procurement in planning.

The above schedule is tailored to Dominion’s IRP cycle and the interim targets proposed in Question 2. We would encourage the Commission to establish a similar schedule for APCo., in line with its IRP cycle and interim targets. In addition to the interim targets, we encourage the Commission to set a cumulative target for storage procured as an NWA for each utility.

8. What peak demand reductions programs to deploy energy storage should be included in the required regulations?

The need for peak capacity is a critical driver of costs to ratepayers. According to a study Commissioned by the Massachusetts Department of Energy Resources, the top one percent of hours (i.e. when the demand on the grid is at its’ apex) account for eight percent of system costs, and the top 10 percent of hours contribute a remarkable 40 percent of system costs.¹ Located either in front of the meter (FTM) or behind it, storage resources can be a cost-effective substitute for conventional peaking capacity or can help defray the need for such capacity by reducing demand. As such, we strongly support the establishment of regulations that require and incentivize the deployment of storage resources to address peak demand.

One methodology for driving the utilities towards storage procurements that address peak demand is to require that any utility RFPs for peaking resources allow storage resources to participate in as well. Ultimately, these procurement processes should fold into broader all-source RFPs that encompass the not only generation but also T&D. However, following a schedule similar to that laid out in Question 7, the utility is unlikely to reach full all-source procurements until the latter part of the decade. Regardless, we would urge the Commission to require that any RFP the utilities issue for peaking resources allow storage resources to participate in a full and fair manner. The Commission should require APCo. and Dominion to pilot such RFPs no later than 2022, inclusion storage in all peak resource procurements following the utilities next IRP (i.e. ’23 for APCo., ’24 for Dominion).

¹ “State of Charge: Massachusetts Energy Storage Initiative.” Massachusetts DOER. September, 2016. <https://www.mass.gov/files/2017-07/state-of-charge-report.pdf>

If the Commission would like the utilities to pursue even deeper ratepayer savings, we would encourage them to require Dominion and APCo. not only to include storage in all procurements for new peaking resources, but also to conduct procurements to identify the most cost-effective means to supply current peak capacity. The changing economics of storage can increasingly make new projects more affordable than continuing to run existing peak generation for another 5-10 years. Replacing such costly peaking infrastructure with energy storage can generate ratepayer savings, reduce exposure to fuel price volatility, and cut emissions.

A second, and potentially complementary approach, would be for the Commission to require the utilities to establish tariff-based programs, like the “Daily Dispatch” program discussed Question 6, for FTM resources as well. Such programs have the benefit of circumventing a cumbersome RFP process, accelerating market growth and storage development. To ensure such programs do not procure more peaking capacity than is needed, the utilities could propose megawatt caps for enrollment, informed and updated by their triennial IRPs.

9. Should the regulations mandate or limit the deployment of any particular type of energy storage resource or facility? If so, please explain.

As enacted, the storage targets in the VCEA are technology agnostic. This agnosticism allows a wide array of storage technologies to participate. Moreover, it permits the targets to encompass new storage technologies as they reach maturity. This agnosticism is intended to ensure that no storage technology is excluded from the market for arbitrary, non-economic reasons. Those technologies that capture a significant share of the market should do so based upon their ability to address identified needs in the most cost-effective manner possible, but broadly speaking Virginia’s storage targets should encourage the growth of a diverse and competitive marketplace. To that end, the one limitation that the law does place on storage facilities focuses to their capacity. As Section 56-585.5 E 3 states:

“No single storage project shall exceed 500 megawatts in size, except that a Phase II Utility may procure a single energy storage project up to 800 megawatts.”

This limitation ensures that no one project or deployment swamps the market, discouraging participation and dampening competition. We strongly urge the Commission to ensure the utilities adhere to this component of the law. Furthermore, we would encourage the Commission to consider including a safety valve in the interim targets: Should Dominion or APCo. propose a single storage project or facility that would constitute more than 85% of the next interim target, that target should be increased by an equivalent amount. Ultimately, this size limitation, paired with the programs, incentives, planning processes, and procurement standards described in our responses to Questions 3 through 8, should drive APCo. and Dominion to deploy, acquire and purchase a diverse set of storage resources and services. That should both catalyze Virginia's storage industry and provide the utilities with a greater understanding of the benefits storage can provide, benefiting ratepayers through more cost-effective resource deployments.

10. Should the required regulations apply to non-utility energy storage? For example, should the regulations include a mechanism by which the Commission can issue permits for non-utility-owned storage?

The required regulations are intended to direct and facilitate the utilities' compliance with the storage targets established under the VCEA. As such, these regulations should not apply to storage the utility does not own and is not utilized to comply with the targets. That said, at least 35 percent of the storage capacity employed to meet the targets should not developed or owned by the utility but will be connected to it through contracts or tariffs, such as those proposed throughout these comments. We anticipate that the required regulations will govern to these contracts, if not the underlying, third-party owned storage.

Fundamentally, we would respectfully request that the Commission not erect barriers to the development of storage in the Commonwealth by private market actors. However, where a lack of regulatory clarity hinders development, we welcome Commission engagement. As the storage industry continues to evolve in the Commonwealth, the Commission may be called upon to establish a permitting process for third-party storage projects that serve the wholesale market. At this time, there is not an acute need for such a process, but we look forward to continuing a dialogue with the Commission around potential permitting needs.

11. Code § 56-585.5 E refers to "energy storage," "energy storage resources," "energy storage facilities," "energy storage project," and "energy storage capacity." The statute provides no definition of any of these terms.

a. Should the regulations include a definition for each term? If so, please provide necessary definition(s)

Va. AEE would respectfully propose the following definitions for the Commission consideration to be included in the regulations:

“Energy storage” means any technology that is capable of retaining energy, storing the energy for a period of time and delivering the energy after storage, including, without limitation, by chemical, thermal or mechanical means.

“Energy storage resources”, “energy storage projects” and “energy storage facilities” are synonymous, and mean a project, or collection of projects, that employs energy storage technology.

“Energy storage capacity” is the installed rated power of the energy storage facility.

b. Does each included term require its own set of regulations? Why or why not?

We do not believe that each term requires its own set of regulations. Rather, each term is intended to describe a different facet of the storage landscape and the proposed targets. “Energy storage” is the all-encompassing term for the type of technology under consideration. “Energy storage capacity” – as measured in kilowatts and megawatts – is the metric by which progress towards the interim and cumulative targets is measured. “Energy storage projects”, “energy storage resources”, and “energy storage facilities” all describe deployments of energy storage technology to employed to meet the targets. Together, they form a taxonomy of terms that complement one another within a common regulatory rubric.

12. Code § 56-585.5 E requires Dominion and APCo to "petition the Commission for necessary approvals to construct or acquire new, utility-owned energy storage resources" (emphasis added). Code § 56-585.1 E 5 provides in part that: *After July 1, 2020, at least 35 percent of the energy storage facilities placed into service shall be (i) purchased by the public utility from a party other than the public utility or (ii) owned by a party other than a public utility, with the capacity from such facilities sold to the public utility.*

a. Does the energy storage required by Code § 56-585.5 E count toward the targets set forth in Code § 56-585.5 E 1 and E 2, or is it incremental thereto?

Yes, the energy storage required by Code Section 56.585.5 E should count towards the targets set forth in E 1 and E 2. Put another way, no, it should not be incremental on top of these targets but included within them.

b. Should this requirement be incorporated in some way into the interim targets to be adopted for Dominion and APCo?

It is the position of Virginia AEE that the 35 percent requirement should apply to both the interim and cumulative targets for Dominion and APCo. For example, we propose an interim target in 2023 for Dominion of 400 MWs. Thirty-five percent of that target, or approximately 140 MWs of storage capacity and / or services Dominion procures should either be purchased from a party other than the utility or owned by a third-party, with the capacity sold to the utility. If this requirement is not applied to the interim targets, there is a significant likelihood the utilities will meet the 35 percent threshold in their cumulative targets.

c. Should the regulation contain any limitation on the acquisition of energy storage facilities or purchases of capacity from utility-affiliated interests?

Throughout the VCEA, lawmakers inserted provisions to ensure third-party engagement in the development, operation, and ownership of advanced energy resources. It is our perspective, informed by the legislative record, that these provisions were intended as ratepayer safeguards, ensuring robust competition that would lower prices and benefit consumers. The opportunity for utilities to engage in “self-dealing” by preferencing business with their unregulated affiliates could undermine competition. The 35 percent requirement in Section 56.585.5 E 5 is a necessary safeguard. Permitting the utility to meet this threshold via acquisitions from utility-affiliated interests seems to stray from the intent of the law and risks anti-competitive behavior. Out of an abundance of caution, we would therefore urge the Commission to bar APCo. and Dominion from using such acquisitions to meet this 35 percent requirement.

13. Code § 56-585.5 F permits recovery of costs of, inter alia, "energy storage facilities, that are constructed or acquired by a Phase I or Phase II Utility after July 1, 2020 "2 and costs of "energy storage facilities, purchased by the utility from persons other than the utility through agreements after July 1, 2020[.]" Is there a difference between energy storage facilities that are "acquired" by a utility and those that are "purchased" by a utility that should be addressed by the regulation? Why or why not?

It is the position of Va. AEE that, within the context of § 56-585.5 F, there is a difference between storage facilities that are “acquired” by a utility and those that are “purchased”. Section 56-585.5 F (i) refers to storage resources the utility constructs or acquires, owns, and operates. These resources are capital investments and may be considered part of their rate base. By contrast, 56-585.5 F (ii) refers to grid services, such as capacity, energy, ancillary services, et cetera, purchased by the utility from storage facilities owned by third parties. While the utility may recover the costs of such services, they are not capital investments.

Va. AEE encourages the Commission to provide clarity in its’ regulations between those storage resources constructed or acquired by the utility, and those “purchased” by the utility. Furthermore, under the distinction above, we would support regulations that permit only those storage resources “purchased” by the utility to count towards the 35 percent threshold established in § 56-585.5 E 5. Such regulations would maximize the participation of third-party storage in Virginia’s market, benefiting ratepayers. As was noted above in our response to Question 6, such third-party ownership should not reduce the reliability of energy storage. Reliability can be ensured through contractual relationships and clear penalties for non-performance.

14. What additional provisions should be included in the required regulations?

Va. AEE supports the comments of Highland Electric in this docket, which encourage the Commission to allow a wide variety of energy storage resource to participate in the targets, including the storage capacity and grid services electric vehicles can provide through vehicle-to-grid technology (V2G). Strategic investments in electrified transit and EV infrastructure by third-party developers and the utilities may at once help Dominion and APCo. to meet their storage targets while providing an array of social, economic, and transportation related benefits. We therefore encourage the Commission to explore the synergies between this docket and that

addressing transportation electrification (TE) (PUR-2020-00051). In their exploration, we could encourage the Commission to focus upon two specific topics: (1) the integration of stationary storage into EV charging infrastructure and (2) the circumstances under which TE programs and investments should be permitted to fulfill the utilities' storage targets.