

**HB1112\_PSC\_Energy\_Storage\_Devices\_MLC\_FAV.pdf**

Uploaded by: Cecilia Plante

Position: FAV



**TESTIMONY FOR HB1112**  
**PUBLIC SERVICE COMMISSION – ENERGY STORAGE DEVICES - ACQUISITION**

**Bill Sponsor:** Delegate Charkoudian

**Committee:** Education, Energy, and the Environment

**Organization Submitting:** Maryland Legislative Coalition

**Person Submitting:** Cecilia Plante, co-chair

**Position:** **FAVORABLE WITH AMENDMENTS**

I am submitting this testimony in favor of HB1112 on behalf of the Maryland Legislative Coalition. The Maryland Legislative Coalition is an association of activists - individuals and grassroots groups in every district in the state. We are unpaid citizen lobbyists and our Coalition supports well over 30,000 members.

In our current energy environment, the Public Service Commission will actually pay power plant operators to keep old, coal burning power plants open because closing them will cause too much of a disruption to our energy grid. One would expect the Public Service Commission to have long since tried to find another, cleaner source of power to replace the power that comes from aging, polluting power plants, but so far, that has not happened.

This bill, if enacted, would require the Public Service Commission to start the process of finding a replacement by evaluating whether energy storage devices can serve as a cost-effective alternative to reliability-must-run agreements with power plants and, if they can, to take appropriate actions to facilitate energy storage development. It also requires that whenever any utility-scale energy storage devices or facilities are built, the contractors pay prevailing wages to workers and hire registered apprentices to perform at least 12.5% of the total work hours involved.

We need our Public Service Commission to be forward looking and solution oriented. We support this bill and recommend a **FAVORABLE WITH AMENDMENTS** report in committee.

# **HB1112 in the Senate OPC Testimony.pdf**

Uploaded by: David Lapp

Position: FAV

DAVID S. LAPP  
PEOPLE'S COUNSEL

WILLIAM F. FIELDS  
DEPUTY PEOPLE'S COUNSEL

JULIANA BELL  
DEPUTY PEOPLE'S COUNSEL

————— **OPC** —————  
**OFFICE OF PEOPLE'S COUNSEL**  
**State of Maryland**

6 ST. PAUL STREET, SUITE 2102  
BALTIMORE, MARYLAND 21202  
WWW.OPC.MARYLAND.GOV

BRANDI NIELAND  
DIRECTOR, CONSUMER  
ASSISTANCE UNIT

**BILL NO.:** House Bill 1112 - Public Service Commission – Energy Storage Devices – Acquisition

**COMMITTEE:** Education, Energy, and the Environment Committee

**HEARING DATE:** March 26, 2024

**SPONSOR:** Delegate Charkoudian

**POSITION:** Favorable

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The Office of People’s Counsel (OPC) supports House Bill 1112. This bill would authorize the Public Service Commission to assess whether energy storage devices can mitigate the significant electric bill impacts of power plant retirements on captive utility customers. The bill seeks to address reliability-must-run (RMR) agreements between PJM Interconnection and the power plant owner that cost hundreds of millions of dollars and are passed through to Maryland utility customers. The bill would require the Public Service Commission to evaluate whether energy storage is a viable solution that could mitigate the adverse impacts to customers of RMR contracts.

An RMR agreement is an arrangement intended to delay the retirement of a power plant that PJM Interconnection has said is needed for maintaining reliability until completion of a long-term solution—such as a new transmission line—for the plant’s retirement. RMR agreements provide for an out-of-market compensation rate to the power plant owner that is usually significantly higher than capacity market prices. Customers pay the rate during the period between the plant owner’s intended retirement or deactivation date and the completion of the long-term solution. Such agreements are very costly for utility customers who have no choice but to pay for the costs through their utility bills. Since 2017, RMR agreements have cost, on average, 16 times more than the average cost paid to non-RMR power plants participating in the PJM capacity market.

PJM allocates RMR agreement costs to the electric retail customers located in the areas it says need transmission upgrades to address the retiring power plant. For example, if transmission upgrades are needed for the transmission zone of Baltimore Gas and Electric, BGE's customers will pay the RMR costs in their utility bills. This means those customers will pay the cost of the RMR agreement until the transmission solution is complete in addition to the cost of the transmission solution to address the reliability issues.

Maryland customers are already looking at significant rate impacts from RMR agreements resulting from the recently announced retirements, including NRG's Indian River Unit 4 and Talen's announced intention to retire its Brandon Shores and Wagner coal-fired power plants. For NRG's Indian River Unit 4, as initially proposed the RMR agreement would have cost customers over \$315 million even though the cost of building additional transmission facilities sufficient to maintain reliability is estimated at just \$47 million. OPC is currently litigating the costs of Indian River Unit 4's RMR before the Federal Energy Regulatory Commission, which [found in a May 2022 order](#) that the proposed RMR agreement had not been shown to be just and reasonable. That litigation should reduce the costs of the RMR, but the rate impacts to customers will still be significant.

PJM has identified at least two additional generating stations scheduled for retirement in the BGE zone—Brandon Shores and Wagner—as necessary for reliability and has requested that both facilities remain in service as RMR resources.

The customer impacts of these RMRs are uncertain and will not be known until closer to the proposed retirement dates in 2025, but OPC's analysis based on past RMR agreements indicates that, for Brandon Shores and Wagner, the *annual* RMR cost totals would be around \$296 million for BGE customers. Additional, though lesser, costs will be borne by other Maryland customers. Over the three and one-half year RMR period—assuming timely completion of the transmission lines deemed necessary to alleviate the problems—the total costs of these RMRs are likely to exceed \$1 billion, which would increase BGE residential customers' bills by about \$10 per month.

These RMR costs are not the only costs customers—mostly BGE's—can be expected to shoulder. PJM has estimated at more than \$530 million in capital expenditures for the transmission solution itself. The transmission costs will be paid over many years after the new transmission is built. In addition, because Wagner and Brandon Shores are not likely to participate in the capacity market<sup>1</sup>—reducing the entities

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<sup>1</sup> PJM has indicated that no power plant owners with recent RMR arrangements have participated in the capacity market.

participating in that market and causing price spikes—Maryland customers could have to pay about \$164 million annually in additional capacity market costs to other generators during the term of the RMR.

Currently, PJM does a restricted and time-limited review of alternative solutions to address the reliability issues triggered by a power plant’s proposed retirement. PJM’s current process results in myopic decision-making and solutions that may not be the least cost. HB 1112 will put a spotlight on PJM’s processes and commitment to work with states to develop a more robust planning process that better protects the customers who pay the bills.

Specifically, HB 1112 would help address PJM’s failure to timely and fully consider alternatives by requiring the Commission to evaluate and consider energy storage solutions to avoid or limit the impact of RMR agreements. It directs the Commission to identify generating resources at risk of retirement before a retirement notice is issued. And it requires the Commission to engage with PJM to help ensure the development and implementation of cost-effective solutions to generator deactivations. These measures provide important State policy support that can limit Maryland customers’ exposures to the high costs of generator retirements.

**Recommendation:** OPC urges a favorable Committee report on HB 1112.

# **Testimony HB1112 Public Service Commission - Energ**

Uploaded by: Debbie Cohn

Position: FAV

**Committees:** Education, Energy and the Environment  
**Testimony on:** HB1112 – Public Service Commission – Energy Storage Devices – Acquisition and Deployment  
**Submitting:** Deborah A. Cohn  
**Hearing Date:** March 26, 2024  
**Position:** Favorable

In 2023, [PJM requested FERC’s approval for 25 transmission upgrade projects](#)<sup>1</sup> in its Regional Transmission Expansion Plan (RTEP) in light of the planned closure of the Brandon Shores coal-fired power generation plant. PJM described the upgrades as “immediate-need reliability projects”<sup>2</sup>

Maryland officials opposed the transmission upgrades as costly and reflective of the failure of grid transmission planners to plan for anticipated closures of coal-fired electric power generators throughout the state. While the Federal Energy Regulatory Commission (FERC) concluded that Maryland’s concerns were beyond the scope of FERC’s review of the proposed emergency transmission upgrades, one commissioner [wrote separately](#) and encouraged PJM Interconnection, the grid operator, to “carefully examine potential changes to planning processes so as to better anticipate reliability risks and plan for them in a more proactive manner, such that a full suite of cost-effective solutions can be more carefully considered.”<sup>3</sup>

HB1112 addresses this failure of forward-thinking planning in connection with the anticipated closure of the Brandon Shores generating plant. It directs the Public Service Commission (PSC) to determine whether deployment of energy storage devices could avoid or at least limit “reliability-must-run” agreements with existing energy generating systems, typically older, highly polluting fossil fuel based systems, when closure of such generating systems is anticipated. If the PSC determines that deployment of energy storage devices would be a cost-effective and appropriate solution to avoid or minimize use of reliability-must-run agreements to ensure grid reliability, then HB1112 requires the PSC to issue an order directing investor-owned utilities to obtain energy storage devices, and provides for prioritized expedited reviews of applications for certificates of public convenience and necessity.

In effect, HB1112 attempts to harness the oversight of the PSC to minimize future grid reliability crises and undesirable and perhaps avoidable emergency reliability-must-run agreements. When the PSC is made aware that an energy generating system is likely to be retired at a time that might impair system reliability, the PSC is directed under the bill to prioritize and accelerate review of required investor-owned utility applications for certificates of public convenience and necessity to deploy additional energy storage devices.

The bill also requires the utility company and PJM Interconnection to provide certain relevant information to assist the PSC in its review. This should improve the flow of information

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<sup>1</sup> Note, all links are from article cited in ftn.2

<sup>2</sup> “FERC Approves PJM’s \$796M Transmission Plan, Thwarting Maryland Officials,” Power Grid International, November 13, 2023, [https://www.power-grid.com/td/ferc-approves-pjms-796m-transmission-plan-thwarting-maryland-officials/?utm\\_source=powergrid\\_weekly\\_newsletter&utm\\_medium=email&utm\\_campaign=2023-11-14](https://www.power-grid.com/td/ferc-approves-pjms-796m-transmission-plan-thwarting-maryland-officials/?utm_source=powergrid_weekly_newsletter&utm_medium=email&utm_campaign=2023-11-14)

<sup>3</sup> Ibid.



between the grid operators and the PSC. Increased communication and data flow between the grid operators and the PSC should strengthen the PSC's oversight of utility planning for the anticipated extraordinary growth in electricity demand as a result of decarbonizing economies and the growth of manufacturing and various high energy use facilities.

The underlying premise of HB1112 is that timely deployment of additional energy storage may avoid or reduce the use of future reliability-must-run agreements and thereby reduce overall costs. Since closure of several coal fired generators is anticipated, HB1112 is sorely needed. For that reason, I urge this Committee to issue a **favorable** report on HB1112.

Thank you.

Deborah A. Cohn

**HB1112\_FAV\_RMI.pdf**

Uploaded by: Katie Siegner

Position: FAV



**HB 1112 - SUPPORT**

Katie Siegner

RMI

[ksiegner@rmi.org](mailto:ksiegner@rmi.org)

(301) 943-9389

**HB 1112 SUPPORT**

**Public Service Commission - Energy Storage Devices - Acquisition**

Education, Energy and Environment Committee

March 26th, 2024

Dear Chair Feldman, Vice Chair Kagan, and Members of the Education, Energy and Environment Committee:

RMI supports HB 1112 that would allow for the consideration and deployment of storage as an alternative to reliability-must-run agreements for energy generation facilities in the state. RMI is an independent, nonpartisan non-profit whose mission is to transform the global energy system to secure a clean, prosperous, zero-carbon future for all. We work in the world's most critical geographies to identify and scale interventions that will accelerate a rapid and reliable energy transition. For the past several years, we have been working to advance decarbonization solutions in US regional electricity markets, including the PJM region, which includes Maryland.

This bill would help address a growing challenge with how the energy transition is unfolding in PJM, which is a lack of holistic planning to ensure that generation entry and exit can occur in an efficient, least-cost fashion. Currently, regional rules around generator retirements permit only a limited evaluation of options to mitigate any reliability issues that the retirement might cause, and until that option could be implemented, the retiring generator can enter into a reliability-must-run (RMR) agreement with PJM. These contracts can be costly and endure for years. A better approach would be to evaluate the full range of possible mitigation options, including storage, as this bill would encourage. This would not only lead to cost savings for Maryland ratepayers, but would also represent a more forward-looking investment in a new resource that is aligned with Maryland's energy policy goals, rather than hundreds of millions of dollars spent to prolong the life of an aging, polluting resource.

RMI has conducted independent research and analysis into the opportunity to develop new, clean resources at the sites of existing or retiring generation, which we refer to as "clean repowering." This has the advantage of efficiently re-utilizing existing transmission infrastructure, potentially fostering expedited grid connection of the new resource, as well as leveraging federal support for such projects

**Basalt, CO / Boulder, CO / New York, NY / Oakland, CA / Washington, D.C. / Beijing, China**

**[rmi.org](http://rmi.org) / [303.567.8716](tel:303.567.8716) / [engage@rmi.org](mailto:engage@rmi.org)**



including the energy community tax credit bonus and the Energy Infrastructure Reinvestment program established by the Inflation Reduction Act. Encouraging storage to be built at the site of retiring generation facilities in Maryland would be a promising example of clean repowering in action.

For the reasons shared above, I support the intent of HB 1112 to allow for the possibility of energy storage development to help avoid RMR contracts.

**HB1112 - FAV - Senate.pdf**

Uploaded by: Landon Fahrig

Position: FAV



# Maryland

## Energy Administration

**TO:** Chair Feldman, Vice Chair Kagan, and Members of the Education, Energy, and the Environment Committee

**FROM:** MEA

**SUBJECT:** HB 1112 - Public Service Commission – Energy Storage Devices – Acquisition

**DATE:** March 26, 2024

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### **MEA Position: FAVORABLE**

This bill would require the Maryland Public Service Commission (PSC) to determine whether the deployment of energy storage devices could help to avoid or limit a reliability-must-run (RMR) agreement with an energy generating facility in the state under certain circumstances. The Maryland Energy Administration (MEA) is supportive of this legislation.

RMR agreements are used to keep power plants operating past their planned retirement dates in order to prevent reliability issues. RMR agreements are contracts between a regional transmission organization, or “RTO” (in Maryland’s case, this is PJM Interconnection), and a power plant to continue operations beyond the power plant’s planned retirement date. RMR agreements provide revenue for the power plant owner to recover its costs and earn a certain return as an incentive to continue operating.

RMR agreements are often necessary because of local transmission limitations that result in the need for a generator in a particular area. In other words, because of a transmission bottleneck, a generator from outside the area cannot substitute for the generator in the constrained location, leading to the need for a specific generator. When transmission upgrades or other changes that allow for improved power flows are placed in service, the RMR is no longer needed. In most cases, the generator is then expected to retire.<sup>1</sup> This legislation rightly recognizes the ability for energy storage devices to provide reliability services, as part of an affordable clean energy transition.

Energy storage can help defer or avoid the need to upgrade or replace transmission and distribution components by meeting peak demand with energy stored from lower-demand periods, thereby reducing congestion and improving overall transmission and distribution asset utilization. On January 19, 2017, the Federal Energy Regulatory Commission (FERC) issued a new policy statement entitled “Utilization of Electric Storage Resources for Multiple Services When Receiving Cost-Based Rate Recovery,” which clarifies that electric storage resources may receive cost-based recovery for such services, while also receiving market-based revenues for separate services, such as selling electric energy, capacity, and ancillary services in the organized wholesale markets, so long as adequate protections are in place to address potential abuses such as double recovery of costs from cost-based

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<sup>1</sup> [americaspower.org/wp-content/uploads/2022/10/RMR-Agreements-1.pdf](https://americaspower.org/wp-content/uploads/2022/10/RMR-Agreements-1.pdf)

ratepayers.<sup>2</sup> This bill would allow a form of flexible cost recovery, in which energy storage devices used primarily for grid services may participate in PJM’s wholesale electricity market under certain conditions. MEA is generally supportive of multiple uses and revenue streams for storage resources, provided solutions like crediting market revenues back to customers are in place.

As the generation mix increasingly includes clean energy resources, greater collaboration is needed across states, regions, levels of government, and authorities to establish planning and policy that enables the development of the infrastructure necessary to support a modern power grid. Ensuring alignment and communications between state offices and agencies, as well as with RTOs, is also key.

MEA also notes its support of the House-adopted amendment to change part of the threshold for the PSC’s consideration of alternatives from when a generator notifies PJM it intends to retire an energy generating facility to when PJM identifies a reliability violation, which will avoid needlessly studying deactivations that do not require transmission upgrades.

For these reasons, MEA urges the adoption of the amendments and the issuance of a **favorable report**. For questions or additional information, please contact Landon Fahrig, Legislative Liaison, directly ([landon.fahrig@maryland.gov](mailto:landon.fahrig@maryland.gov), 410.931.1537).

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<sup>2</sup>

[www.federalregister.gov/documents/2017/02/06/2017-02421/utilization-of-electric-storage-resources-for-multiple-services-when-receiving-cost-based-rate](http://www.federalregister.gov/documents/2017/02/06/2017-02421/utilization-of-electric-storage-resources-for-multiple-services-when-receiving-cost-based-rate)

**031924 - MEA Letter to PJM.pdf**

Uploaded by: Lorig Charkoudian

Position: FAV





**Maryland**  
Energy  
Administration

**Wes Moore, Governor**  
**Aruna Miller, Lt. Governor**  
**Paul G. Pinsky, Director**

March 19, 2024

The PJM Board of Managers  
c/o Mark Takahashi, Chair

Manu Asthana, President and CEO  
PJM Interconnection, LLC  
2750 Monroe Boulevard  
Audubon, PA 19043

Re: Cost-Effective Alternatives to Reliability-Must-Run Agreements

Dear Chair Takahashi, Mr. Asthana, and Board Members:

The Maryland Energy Administration (MEA) is responsible for promoting clean, affordable, reliable energy and energy-related greenhouse gas emission reductions to benefit Marylanders in a just and equitable manner. PJM Interconnection plays a pivotal role in the success of this mission, particularly through its responsibilities to plan the regional transmission system and lower barriers to entry of clean energy resources by ensuring a timely interconnection process.

In June 2023, PJM determined that the Brandon Shores generating station owned by Talen Energy in Anne Arundel County, Maryland must continue operating until the end of 2028, when transmission upgrades to better connect the Baltimore area to the rest of the grid can be completed. I urge PJM to facilitate the development of an interim solution as an alternative to a Reliability-Must-Run (RMR) Agreement that supports reliability in the most cost-effective way.

The near-term reliability violations caused by Brandon Shores' deactivation are serious, and I recognize the need for PJM to keep power flowing until the transmission projects can be completed. However, MEA is concerned that continuing to rely on Brandon Shores may not be the most cost-effective interim solution. MEA is encouraged by an analysis of an alternative solution developed by GridLab and Telos Energy,<sup>1</sup> which would rely on a large four-hour battery installed near the Brandon Shores site, as well as reconductoring of several 115 kV transmission lines and acceleration of other voltage support technologies the PJM Board has already approved

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<sup>1</sup> <https://www.sierraclub.org/sites/default/files/2024-02/2024-01-30%20Brandon%20Shores%20Maryland%20Presentation.pdf>

as part of the Regional Transmission Expansion Plan. Their analysis shows that this alternative solution is potentially less costly than payments for RMR energy service at Brandon Shores.

MEA understands that PJM is evaluating this alternative and has not yet completed its review of whether this solution, or some version of it, could adequately support reliability in lieu of Brandon Shores' continued operation. I appreciate PJM's work on this analysis and urge its timely completion. If the alternative proposed is technically viable, then MEA is strongly interested in working with PJM to facilitate its implementation given that this solution would advance Maryland's statutory mandates to reduce greenhouse gas emissions and deploy three gigawatts of energy storage, all while potentially saving Maryland ratepayers millions of dollars.

In conjunction with this technical analysis, MEA supports the development of a procedural structure for PJM to consider and advance alternatives to reliability-must-run agreements. Retirements of existing generators are likely to accelerate in the coming years throughout PJM's service territory, given the acceleration of economic and policy incentives for decarbonization. PJM must have the appropriate tools to support reliability in a cost-effective manner such as procedures to conduct a technology-neutral assessment of the resource capabilities that could support reliability. After this assessment, PJM could provide an opportunity for other resource developers to demonstrate that they have these capabilities and could be built in time to meet or mitigate the reliability need. There are multiple ways that such resources could be compensated, including as transmission assets (the way that RMR resources are currently compensated), or as market participants. PJM could directly procure these resources, or their development could potentially be facilitated through state policy mechanisms. A robust conversation among PJM stakeholders will be needed to consider different approaches and develop an optimal mechanism, but PJM plays an essential role in starting this conversation.

Neighboring regional transmission organizations have pursued consideration of alternatives in reliability-must-run situations. For example, the Midcontinent Independent System Operator (MISO) arrives at systems support resource (SSR) designations that resemble PJM's RMR through its Attachment Y process. MISO studies the reliability impacts of a retiring generation resource as well as possible alternatives to keeping the resource online. MISO's analysis specifically studies demand response and load curtailment among the alternatives to the SSR.

The New York Independent System Operator (NYISO) has a structured process for identifying alternatives to RMRs, which is triggered when a generator submits a deactivation notice at least one year in advance.<sup>2</sup> If NYISO determines that the deactivation will cause reliability issues, it provides eligible parties 60 days to propose alternatives. NYISO then evaluates these alternatives, selects from among the viable and sufficient options based on their net present value, negotiates an agreement with the developer, and files it with the Federal Energy Regulatory Commission (FERC). Under this process, alternatives can be proposed that would be compensated as either transmission or market resources. NYISO also uses a similar solution solicitation to address Short-Term Reliability Process needs that may arise in the near-term.

Robust evaluation of alternatives is vital to any rigorous decision-making process in our region, especially where public health, the economy, and ratepayer impacts are at stake. MEA asks that

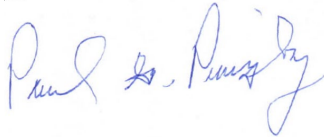
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<sup>2</sup> See New York Independent System Operator, Inc. 161 FERC P 61189 at PP 5-6 (2017).

PJM immediately initiate a process to consider what if any revisions to its tariff are needed to create an RMR alternatives process. It is vital that PJM provide opportunities for robust participation by stakeholders, including its members, consumer advocates, state agencies, and technical experts.

Thank you for your consideration of this request. I look forward to working together to identify opportunities to advance state policy mandates, reduce costs, and make the grid more resilient.

Sincerely,

A handwritten signature in blue ink that reads "Paul G. Pinsky". The signature is fluid and cursive, with the first name "Paul" being the most prominent.

Paul G. Pinsky  
Director

# **2024-03-22 Brandon Shores Presentation\_Condensed.p**

Uploaded by: Lorig Charkoudian

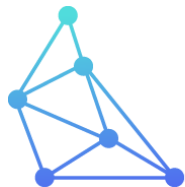
Position: FAV

# Brandon Shores Retirement Analysis

## Condensed Project Summary

March 22, 2024

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T E L O S E N E R G Y

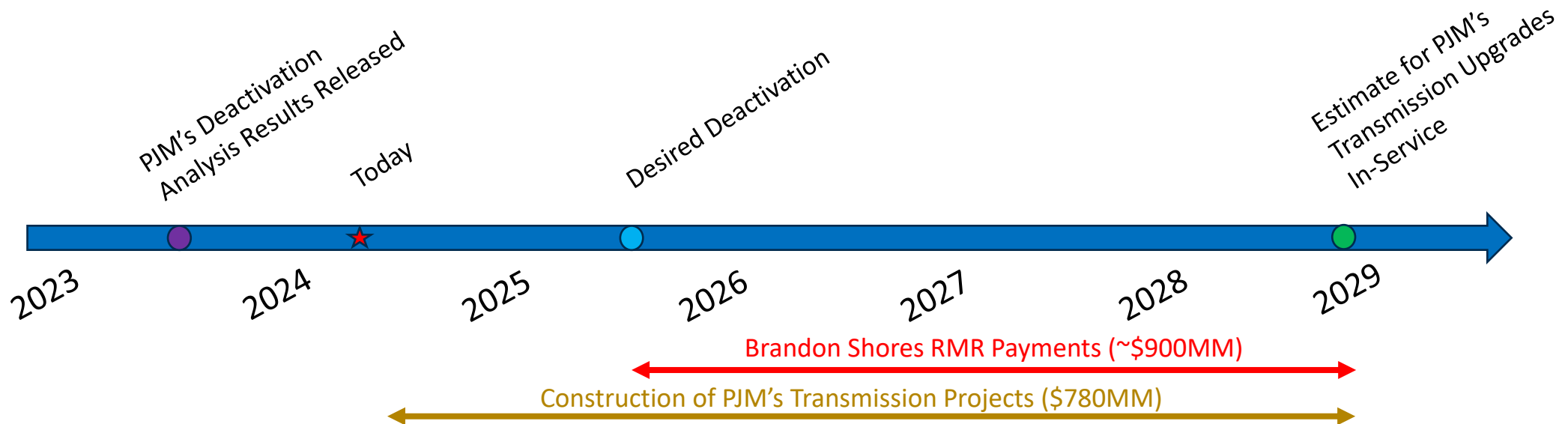
GridLAB

# Objective of Our Analysis

**RMR Payment Estimate**  
RMR for Brandon Shores is not finalized, but is estimated to be ~\$250MM/year (based on similar RMRs from the Independent Market Monitor for PJM)

Identify an alternative portfolio of grid investments that:

- Maintains reliability per PJM's criteria
- Enables Brandon Shores to retire closer to its target date (June 2025), thereby reducing reliability must-run (RMR) payments → Net benefit to Maryland rate-payers



# What Did We Analyze?

Transmission & Economic Analysis Details are on record in MD HB 1112 Hearing

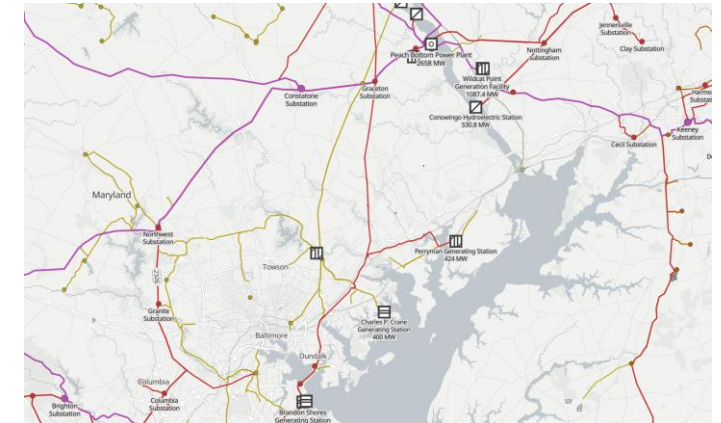
## Transmission Analysis

- Started with grid models provided by PJM; used the same software tools
- Mirrored PJM's Deactivation Analysis; benchmarked against PJM's published results
- Extended the analysis to identify new options

## Economic Analysis

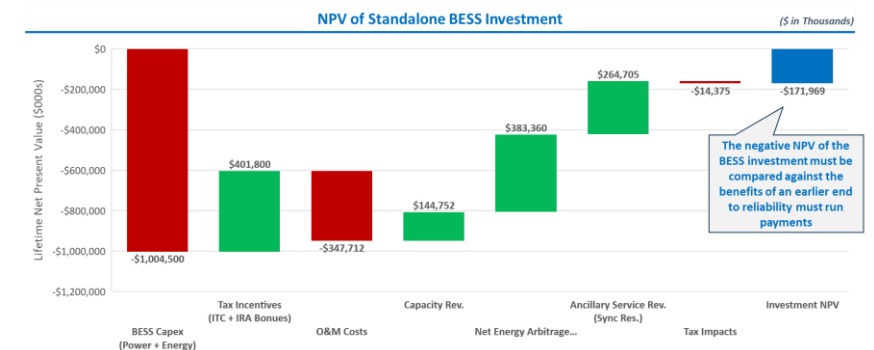
- Estimate the costs and revenues for the battery storage system
- Based on assumptions from NREL's Advanced Technology Baseline and/or PJM's documents
- Considered equipment costs, O&M, ITC subsidy, and an estimate of revenues generated over 20 year

## Regional Transmission Grid



Source: <https://openinframap.org/>

## Battery Economic Waterfall



# Our Alternative Portfolio



## Transmission Reinforcements

Prioritize shorter-lead time transmission projects  
+  
Addition of several smaller transmission upgrades (reconductoring)



## Battery Storage

800MW, 4-hour system at Brandon Shores Interconnection  
20-year operational life



## Dispatchable Power

Retain the nearby Wagner fossil power plant  
Expected to run rarely; only for extreme weather events





# Our Findings

- Resolves transmission reliability issues
- Economic net benefit if RMR can be reduced by one year or more
- Savings grow substantially if major grid upgrades don't come online when expected

## Default Option

RMR of ~\$250MM/yr



## Alternative Portfolio

\$170MM net cost of battery  
+ \$ 30MM of add'l transmission  
= \$200MM cost of portfolio



# **Senate Testimony.HB1112\_Delegate Lorig Charkoudian**

Uploaded by: Lorig Charkoudian

Position: FAV

LORIG CHARKOUDIAN  
Legislative District 20  
Montgomery County

Economic Matters Committee

*Subcommittees*

Public Utilities

Chair, Unemployment Insurance



*Annapolis Office*  
The Maryland House of Delegates  
6 Bladen Street, Room 220  
Annapolis, Maryland 21401  
410-841-3423 · 301-858-3423  
800-492-7122 Ext. 3423  
Lorig.Charkoudian@house.state.md.us

THE MARYLAND HOUSE OF DELEGATES  
ANNAPOLIS, MARYLAND 21401

HB 1112- PUBLIC SERVICE COMMISSION- ENERGY STORAGE DEVICES- ACQUISITION

TESTIMONY OF DELEGATE LORIG CHARKOUDIAN

MARCH 26, 2024

Chair Feldman, Vice Chair Kagan, and Members of the Education, Energy and Environment Committee,

The Brandon Shores Power Plant is a large-capacity coal-burning generation facility located in Anne Arundel County. The owners of the plant have scheduled it for deactivation in 2025. The same owners plan to deactivate the nearby oil-fired Wagner power plant on the same date. The owners have stated that both plants are uneconomic to keep online. The facilities are not making enough money to cover the costs of continued operations.

Before a power plant like Brandon Shores or Wagner shuts down in our state, the plant owner sends a deactivation notice to PJM, the Regional Transmission Organization that operates our transmission grid. PJM conducts a reliability analysis to determine if the closing will have a negative effect on the transmission grid. PJM does not have the authority to prevent plant closures; however, it conducts a reliability analysis to determine if closing the plant will impact the overall reliability of the electricity grid and to plan transmission facility upgrades if so.

Oftentimes, when PJM determines that a plant closure will have a negative effect on the grid, PJM will offer the generation facility a "Reliability-Must-Run" agreement in order to keep the facility running longer. In these agreements, they literally pay the plant owner to keep the plant running after the date it was planned for closure. These agreements can cost our rate-payer hundreds of millions of dollars annually.

Electricity generation is one of the most climate polluting activities in our state with electricity use accounting for the second highest greenhouse gas emissions by sector. Keeping uneconomic fossil fuel plants running longer is not in the best interest of our ratepayers or our climate.

This bill requires the Public Service Commission to facilitate the development of the energy infrastructure needed to transition to clean-generation electricity while maintaining grid reliability.

Specifically, this bill requires the Public Service Commission to evaluate whether energy storage devices can serve as a cost-effective alternative to reliability-must-run agreements and, if they can, to take appropriate actions to facilitate energy storage development.

I respectfully request a favorable report on HB 1112.

# **2024-03-22 Brandon Shores Presentation\_Condensed.p**

Uploaded by: Matthew Richwine

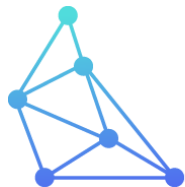
Position: FAV

# Brandon Shores Retirement Analysis

## Condensed Project Summary

March 22, 2024

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T E L O S E N E R G Y

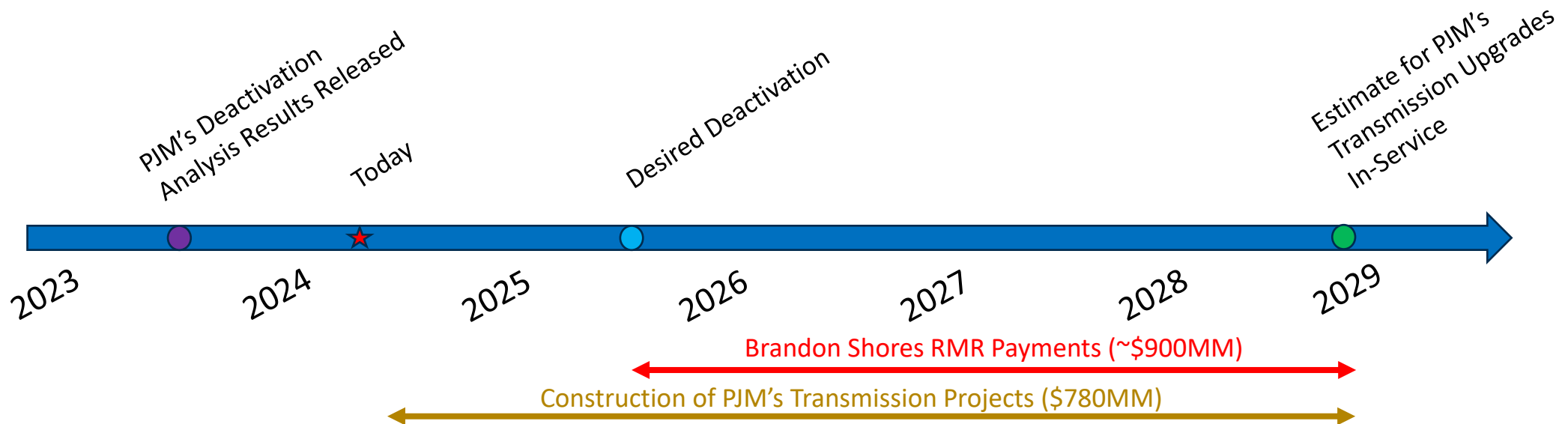
GridLAB

# Objective of Our Analysis

**RMR Payment Estimate**  
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# What Did We Analyze?

Transmission & Economic Analysis Details are on record in MD HB 1112 Hearing

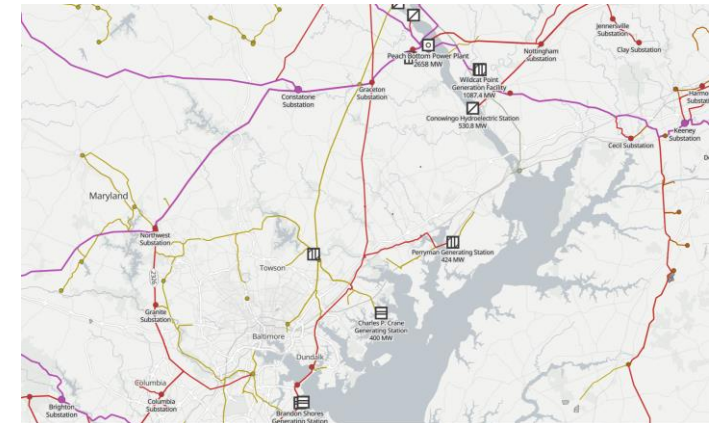
## Transmission Analysis

- Started with grid models provided by PJM; used the same software tools
- Mirrored PJM's Deactivation Analysis; benchmarked against PJM's published results
- Extended the analysis to identify new options

## Economic Analysis

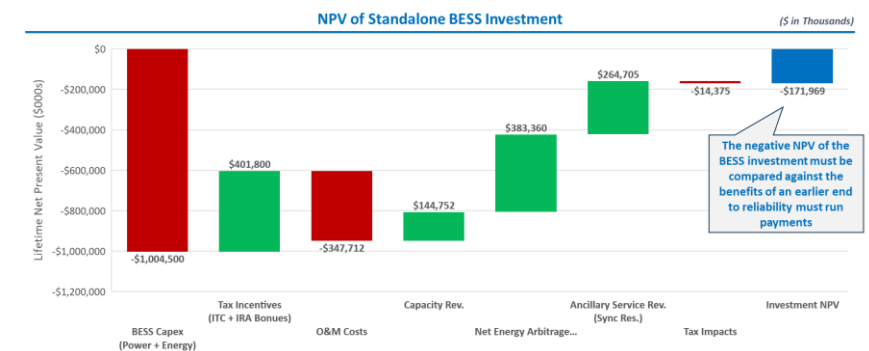
- Estimate the costs and revenues for the battery storage system
- Based on assumptions from NREL's Advanced Technology Baseline and/or PJM's documents
- Considered equipment costs, O&M, ITC subsidy, and an estimate of revenues generated over 20 year

## Regional Transmission Grid



Source: <https://openinframap.org/>

## Battery Economic Waterfall



# Our Alternative Portfolio



## Transmission Reinforcements

Prioritize shorter-lead time transmission projects  
+  
Addition of several smaller transmission upgrades (reconductoring)



## Battery Storage

800MW, 4-hour system at Brandon Shores Interconnection  
20-year operational life



## Dispatchable Power

Retain the nearby Wagner fossil power plant  
Expected to run rarely; only for extreme weather events





# Our Findings

- Resolves transmission reliability issues
- Economic net benefit if RMR can be reduced by one year or more
- Savings grow substantially if major grid upgrades don't come online when expected

## Default Option

RMR of ~\$250MM/yr



## Alternative Portfolio

\$170MM net cost of battery  
+ \$ 30MM of add'l transmission  
= \$200MM cost of portfolio



**HB1112\_FAV\_TelosEnergy\_26Mar.pdf**

Uploaded by: Matthew Richwine

Position: FAV



HB 1112

Matthew Richwine

Telos Energy, Inc.

[matthew.richwine@telos.energy](mailto:matthew.richwine@telos.energy)**HB 1112 – SUPPORT**

Public Service Commission - Energy Storage Devices - Acquisition

Education, Energy and Environment Committee

March 26th, 2024

Dear Chair Feldman, Vice Chair Kagan, and Members of the Education, Energy and Environment Committee:

My name is Matthew Richwine from Telos Energy, and I am providing testimony related to HB 1112 at the invitation of Delegate Charkoudian. I am a power systems engineer and Founding Partner of Telos Energy, a firm that provides engineering and economic analysis of electric power generation and transmission systems across North America.

When a power plant announces its intention to shut down, the system operator, PJM, is required to perform an analysis of the grid to determine the impact of the plant shutdown on the reliability of the grid. After PJM released its deactivation analysis for the Brandon Shores plant, Telos Energy was approached by the GridLab organization to conduct an independent analysis of the reliability impacts of the Brandon Shores deactivation. The objectives of the analysis were to mirror the analysis that PJM performed and to extend it by identifying alternative options to enable Brandon Shores to retire as close to its June 2025 target date as possible while meeting the same reliability criteria that PJM uses.

To conduct the analysis, we first replicated the analysis that PJM performed using the same industry-standard software tools used by PJM and started with the same grid models, which were provided by PJM. The models of the grid are extremely complex, including representation of many thousands of lines, transformers, generators, and other elements of the grid spinning the eastern half of the US. In consultation with the PJM Special Studies team, we benchmarked our results against PJM's and found that our results identified essentially the same risks – or violations of the transmission planning criteria – after the retirement of Brandon Shores and before applying the transmission reinforcements.

Next, our analysis explored other options for reinforcing the grid in the absence of Brandon Shores and identified an alternative portfolio of reinforcements that satisfied the reliability criteria. This alternative portfolio included:

- The same transmission reinforcements that PJM had identified and approved with a prioritization of the reinforcements for voltage support. These reinforcements typically have a

shorter construction timeline than reinforcements like the construction of new 230kV and 500kV transmission lines.

- The additional upgrade of several short 115kV/138kV transmission line sections, a relatively minor set of upgrades from a cost and construction standpoint.
- The addition of a new battery energy storage asset interconnected at Brandon Shores, a 600MW-800MW 4-hour asset with a 20-year design life.
- Retaining two of the four units of the nearby Wagner power plant until all transmission reinforcements recommended by PJM are completed.

Our analysis found that this alternative portfolio is technically feasible in that it meets the reliability criteria set forth by PJM, including consideration of proxy scenarios intended to represent periods of particularly high grid stress like a winter storm event. Our analysis also found that the alternative portfolio provides a net economic benefit relative to the approved portfolio if it advances the shutdown of Brandon Shores, which PJM estimates would be on Dec 31, 2028, by as little as one year, assuming a reliability must-run (RMR) payment of \$250MM/year. Further, the savings from the alternative portfolio grow substantially if the RMR is extended due to unanticipated construction delays of the new, large 230kV and 500kV transmission line projects.

Our analysis shows an alternative portfolio that combines transmission upgrades with the application of new battery energy storage technology is worthy of further consideration. I urge a favorable report on HB 1112.



**HB 1112 ACP FAV EEE.pdf**

Uploaded by: Moira Cyphers

Position: FAV



March 26, 2024

Brian Feldman, Chair  
Maryland Senate Education, Energy, and the Environment Committee  
2 West, Miller Senate Office Building  
11 Bladen St.  
Annapolis, MD 21401

**American Clean Power: HB 1112, FAVORABLE**

Dear Chair Feldman and members of the Senate EEE Committee:

The American Clean Power Association (ACP) is the leading voice of today's multi-tech clean energy industry, representing over 800 energy storage, wind, utility-scale solar, green hydrogen and transmission companies. ACP is committed to meeting America's national security, economic and climate goals with fast-growing, low-cost, and reliable domestic power.

HB 1112 would require the Maryland Public Service Commission to consider cost-effective alternatives to reliability-must-run agreements, which are contracts in which utility resources, typically traditional fossil fuels, are compensated to remain on the grid beyond the date which they are set to retire.

Reliability-must-run agreements, while aiming to ensure reliability as new resources are brought online to replace older, more costly energy generation facilities, are not always the best path forward for ensuring reliability.

Energy storage systems are currently a leading technology of choice across the country for enhancing reliability and keeping costs low. In states like Texas and California, energy storage facilities have helped keep the lights on and have helped to reduce energy prices during extreme weather events.

This bill would ensure that the PSC has the ability to explore other cost-effective options for maintaining reliability besides keeping older facilities online past their retirement date – including the deployment and acquisition of energy storage resources. This bill has the opportunity to help ensure reliability in Maryland with clean, renewable resources leading the way. It will keep costs low for ratepayers and will help ensure that the state delivers on its clean energy goals.

Thank you for the opportunity to provide testimony on HB 1112. **American Clean Power Association appreciates your careful consideration of this legislation and respectfully request a favorable report.**

Moira Cyphers  
Eastern Region State Affairs Director  
American Clean Power Association  
(301) 318-4220  
MCyphers@cleanpower.org

**2024- PHI- HB1112- FWA EEE.pdf**

Uploaded by: Anne Klase

Position: FWA



March 26, 2024

112 West Street  
Annapolis, MD 21401

**Favorable with Amendments: House Bill 1112: Public Service Commission – Energy Storage Devices – Acquisition**

Potomac Electric Power Company (Pepco) and Delmarva Power & Light Company (Delmarva Power) support with amendments **House Bill 1112- Public Service Commission – Energy Storage Devices – Acquisition**. This legislation requires the Maryland Public Service Commission (Commission) to determine whether the deployment of energy storage devices can help to avoid or limit a reliability-must-run (RMR) agreement with an energy generating system or facility in the State under certain circumstances. It requires the Commission to facilitate the acquisition of energy storage devices if they determine that the use of an energy storage device is a cost-effective solution or part of a cost-effective solution to avoid or limit a RMR agreement. Under a RMR scenario, a power plant is often paid a premium to continue operating past their planned retirement dates for reliability reasons.

Pepco and Delmarva Power support the State exploring viable energy solutions, such as battery storage to resolve potential capacity challenges that may occur as we continue to see generator retirements. The retirement of large amounts of coal-fired generating capacity within a short time span, combined with the increasing penetration of renewable power sources, has prompted warnings about shortages of electric generating capacity and other potential reliability problems. Strategic investments today drive incremental progress toward the grid of the future—designed to meet Pepco and Delmarva Powers customers’ needs in an increasingly electrified world.

House Bill 1112 requires the Commission to explore a utility-only model or a third-party cost-effective ownership model to bring more energy storage online. Pepco and Delmarva Power have been participating in the Battery Energy Storage Pilot Program since 2019. That law required all investor-owned utilities to submit at least two energy storage proposals for the Commission’s consideration. Between the two companies, Pepco and Delmarva Power have piloted both a utility-only ownership model and a third-party ownership model. As part of the pilot program, utilities have looked to adopt industry’s evolving best practices for promoting efficiency in developing energy storage projects. This pilot program’s value to both the utility and customers has come primarily from the lessons learned by utilities, stakeholders, and the Commission, which will be relied on in making future investment decisions.



While battery storage has a role to play in Maryland’s energy future, it is premature to draw the conclusion that storage can replace transmission investments—transmission investments are critical because energy storage devices have a shorter life cycle than a transmission system. The transmission system can be utilized for substantially longer periods—for many decades. Pepco and Delmarva Power support utilizing energy storage to complement the transmission system to help shift load by reducing overall peak demand, which in turn reduces constrained areas on the electric grid. As we work to transition to a cleaner grid, all tools in the toolbox should be considered.

Pepco and Delmarva Power are currently working with the bill sponsor and all stakeholders on additional amendments and will continue to keep the Committee updated on our conversations.

Contact:

Anne Klase  
Senior Manager, State Affairs  
240-472-6641  
[Anne.klase@exeloncorp.com](mailto:Anne.klase@exeloncorp.com)

Katie Lanzarotto  
Manager, State Affairs  
410-935-3790  
[Kathryn.lanzarotto@exeloncorp.com](mailto:Kathryn.lanzarotto@exeloncorp.com)

**BGE\_EEE\_SWA\_House Bill 1112- Public Service Commi**

Uploaded by: Dytonia Reed

Position: FWA

Support with Amendment  
Education, Energy, and the  
Environment  
3/26/2024

### **House Bill 1112- Public Service Commission – Energy Storage Devices – Acquisition**

Baltimore Gas and Electric Company (BGE) supports with amendments *House Bill 1112- Public Service Commission – Energy Storage Devices – Acquisition*. *House Bill 1112* requires the Public Service Commission (Commission), within three years of the anticipated deactivation of an energy generator or upon PJM receiving a deactivation notice of an energy generator, to determine whether the deployment of energy storage devices could help to avoid or limit a reliability-must-run agreement (RMR). Under an RMR scenario, a power plant is paid to continue operating past their planned retirement dates for reliability reasons.

Strategic investments today drive incremental progress toward the grid of the future— designed to meet BGE customers’ needs in an increasingly electrified world. BGE supports the State exploring viable energy solutions, such as battery storage devices, to address generator retirements, solve the potential electric capacity problems they create and plan to meet current and future needs of the evolving grid system.

*House Bill 1112* requires the Commission to explore utility-owned or other cost-effective ownership models to bring more energy storage online. BGE supports a utility-owned model and has experience as the owner and operator of the Fairhaven battery storage facility. BGE completed two battery energy storage projects, at Chesapeake Beach (1 MW/2 MWh)<sup>1</sup> and Fairhaven (2.5MW/9.74 MWh), that were developed pursuant to the Maryland Energy Storage Pilot Program Act (signed into law in 2019). The battery storage projects enhance grid reliability in southern Anne Arundel County and parts of Calvert County. These energy storage projects charge at time of low demand and discharges energy back onto the grid when demand is highest—specifically during the colder months. Chesapeake and Fairhaven are small scale energy projects that combined, the two projects combined enhance service reliability for 9,000 customers and helped BGE avoid expensive undergrounding upgrades to miles of electric distribution lines.

BGE’s support of *House Bill 1112* should not be interpreted as prioritizing the deployment of battery storage over investments in transmission infrastructure. While battery storage has a role to play in Maryland’s energy future, it does not increase transmission capacity and still requires

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<sup>1</sup> Ameresco, Inc., a global, independent full-service provider of comprehensive energy services, will own and operate the Chesapeake battery storage facility. When not called upon for capacity by BGE, the facility and vendor Ameresco will participate in the PJM wholesale services markets.

BGE, headquartered in Baltimore, is Maryland’s largest gas and electric utility, delivering power to more than 1.3 million electric customers and more than 700,000 natural gas customers in central Maryland. The company’s approximately 3,400 employees are committed to the safe and reliable delivery of gas and electricity, as well as enhanced energy management, conservation, environmental stewardship and community assistance. BGE is a subsidiary of Exelon Corporation (NYSE: EXC), the nation’s largest energy delivery company.

infrastructure to charge. Deploying battery storage does not replace the need for transmission system investment. Transmission investments are critical to the network linking load with resources like generation and storage. Energy storage devices also have a shorter life cycle than a transmission system. The transmission system can be utilized for substantially longer periods—for many decades. BGE supports utilizing energy storage to complement the transmission system to help shift load by reducing overall peak demand, which in turn reduces constrained areas on the electric grid.

BGE has proposed amendments to the bill sponsor and will continue working to add language that expedites the permitting and siting process for projects that reduce the pendency of a reliability-must-run agreement (RMR), especially the CPCN process. This would speed up the timeline required to complete not only storage projects but transmission projects ( *i.e. Brandon Shores*) that are necessary to ensure reliability and contribute significantly to the state's energy goals. For context, the RMR for the Brandon Shores project is projected to cost as much as \$250 million a year. At that cost, every day of a pending CPCN represents a \$700,000 cost to customers. If implemented in a cost-effective manner, this legislation has the potential to create savings for customers by offsetting the full cost of a reliability-must-run agreement.

BGE will continue to work with the bill sponsor on the aforementioned opportunities, and respectfully asks the Committee to issue a favorable report on *House Bill 1112* with amendments.

**HB 1112\_Fav with Amendments\_PSC.pdf**

Uploaded by: Frederick Hoover

Position: FWA

FREDERICK H. HOOVER, JR.  
CHAIR

MICHAEL T. RICHARD  
ANTHONY J. O'DONNELL  
KUMAR P. BARVE  
BONNIE A. SUCHMAN



## PUBLIC SERVICE COMMISSION

March 25, 2024  
Chair Brian Feldman  
2 West, Miller Senate Office Building  
Annapolis, MD 21401

### **RE: HB 1112 – Favorable with Amendments - Public Service Commission – Energy Storage Devices – Acquisition**

Dear Chair Feldman and Committee Members:

The Public Service Commission (PSC) regularly monitors, advocates at and petitions the Federal Energy Regulatory Commission (FERC) and PJM Interconnection LLC (the multi-state electricity grid operator) on issues related to grid reliability and transmission on behalf of the State of Maryland. In addition, PSC Commissioner Michael Richard serves on the Board of the Organization of PJM States Inc., (OPSI) which works on behalf of States where PJM operates. It is the authority of FERC and PJM to ensure the grid is reliable and power is available to citizens. As such, deactivations of power generators force FERC and PJM to determine how to keep the power flowing with the resources available. HB 1112 creates a process whereby a determination is made on whether the deployment of energy storage devices can provide a viable option in certain deactivation scenarios.

When a power plant is deactivated prematurely to account for grid needs, a plant owner may enter into a reliability must run (RMR) arrangement with PJM to prevent blackouts. The idea of relying on storage to avoid a RMR arrangement is similar to what the PSC filed last year at FERC in protesting the PJM Board-approved transmission-only cost allocation for deactivation of the Brandon Shores power plant located in Maryland. The Commission suggested that energy storage on the distribution system, combined with other transmission system improvements, may possibly contribute to alleviating bulk power reliability concerns in a more cost-effective manner. The Commission's filing also noted that PJM's current rules do not account for the cost of RMR agreements when considering the lowest cost reliability solutions. It is this type of holistic approach to reliability planning that the Commission has been advocating for at PJM through OPSI. This approach has been recently met with great interest by PJM and the PSC has been having positive dialogue. The basic theme of HB1112 aligns with this holistic approach and the PSC is supportive of the concept.

HB 1112 will certainly require the PSC to devote resources to evaluate possible energy storage solutions and their cost-effectiveness, but this effort comes with the prospect of considerable ratepayer cost savings in meeting both short term reliability in the face of our energy transition and long-term benefits in complementing our future energy needs. A decision to move forward with a storage solution will, necessarily, rely on multiple assessments, including regional and distribution system upgrades costs, prospective RMR costs, future wholesale capacity, energy and ancillary services price

projections and project constructability. The Commission will also need to work proactively and cooperatively with PJM to assure timely implementation of any cost effective reliability solutions.

The PSC has been working extensively with the HB1112 House sponsor and stakeholders on further refining bill language that was approved by the House to add further clarity, certainty and necessary ratepayer protections. With these refinements, the PSC urges favorable consideration.

The Public Service Commission appreciates the opportunity to provide this testimony on HB1112, as amended. Please direct any questions you may have to Christina Ochoa, Director of Legislative Affairs, at [christina.ochoa1@maryland.gov](mailto:christina.ochoa1@maryland.gov)  
Sincerely,



Frederick H. Hoover, Chair  
Maryland Public Service Commission

# **ACEEE Support Bill HB 1112 Energy Storage Devices**

Uploaded by: Mark Kresowik

Position: FWA



March 26, 2024

Education, Energy, and the Environment Committee  
2 West  
Miller Senate Office Building  
Annapolis, MD 21401

RE: Testimony on HB 1112 Energy Storage Devices – Acquisition and Deployment

Dear Chair Feldman, Vice Chair Kagan, Members of the Committee,

The American Council for an Energy-Efficient Economy (ACEEE) tremendously appreciates your leadership advancing affordability and growth in Maryland through energy efficiency and clean energy. We respectfully **urge you to lower costs for households and businesses and enhance reliability of the electricity system by amending and passing HB 1112** regarding Energy Storage Devices – Acquisition and Deployment out of your committee.

Energy efficiency and demand flexibility are critical tools to ensure electric system reliability as the grid transitions to clean energy.<sup>1</sup> If there is the possibility that procuring those resources or energy storage could avoid an expensive payment to keep a dirty coal plant operating – even for a short period of time while transmission upgrades are finalized – it is prudent that the Maryland Public Service Commission should have the authority to explore and implement such a solution. Not only could that save money for households and businesses, but it would enable a critical investment for the future. Why pay a dirty coal plant to stick around for a couple of years when you could pay the same amount or less for a reliability asset that will be in place for a decade or more?

Maryland legislators know that PJM has an unfortunate history of failing to support, plan for, or implement clean energy solutions that could lower costs for the state’s businesses and households. The situation with the Brandon Shores complex is simply the latest in a long line of such failures. Even as we write in support of this bill, PJM staff are considering undermining energy efficiency and reliability by changing the rules by which such resources participate in the capacity market, ignoring a vote in their own stakeholder process to maintain the status quo.<sup>2</sup> PJM ranked dead last among grid operators for facilitating entry of new clean energy resources in the first ever Generator Interconnection Scorecard released last month.<sup>3</sup> PJM spent years trying to undermine state clean energy policies and increase costs

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<sup>1</sup> [Energy Efficiency in a High Renewable Energy Future | ACEEE](#)

<sup>2</sup> [20240320-item-03a---1-ee-resource-evaluation-manual-18b-revisions---presentation.ashx \(pjm.com\)](#)

<sup>33</sup> [Advanced Energy United Generator Interconnection Scorecard](#)

for ratepayers through the Minimum Offer Price Rule.<sup>4</sup> Stakeholders have been telling PJM to plan for retirement of dirty facilities like the Brandon Shores facility for more than a decade.<sup>5</sup>

While energy storage is a valuable resource – and a 600 MW battery system is not unprecedented<sup>6</sup> - our request is that procurement of energy efficiency and demand flexibility resources be explored alongside energy storage as a potentially even less expensive and faster means to maintain reliability. We acknowledge that time is of the essence, but many efficiency and demand-side resources can be deployed even faster than energy storage, transmission, or clean energy can be built.

**Regardless, passing this bill is simply common sense, and a prudent action to provide the Public Service Commission with the tools they need to explore and implement investments to maintain reliability and lower costs for Maryland households and businesses.** We thus urge you to amend and pass HB 1112.

Sincerely,

Mark Kresowik  
Senior Policy Director  
American Council for an Energy-Efficient Economy  
mkresowik@aceee.org

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<sup>4</sup> [FERC 'finally' ends PJM MOPR proceeding, paving way for grid operator's next capacity auction | Utility Dive](#)

<sup>5</sup> [Microsoft Word - SynapseReport 2011-06 SierraClub PJM System Planning.doc \(synapse-energy.com\)](#)

<sup>66</sup> “The battery storage facility owned by Vistra and located at Moss Landing in California is currently the largest in operation in the country, with 750 megawatts (MW)” [U.S. battery storage capacity expected to nearly double in 2024 - U.S. Energy Information Administration \(EIA\)](#)