Committee: **Education, Energy, and the Environment**
Testimony on: **SB908 "Public Utilities – Electric Distribution System Plans – Establishment (Affordable Grid Act)"**
Position: **Favorable**
Hearing Date: **March 6, 2025**

The Chesapeake Chapter of Physicians for Social Responsibility (CPSR) submits this testimony in support of SB908, which provides clear and specific requirements for the plans needed to modernize the state's electricity utilities' distribution systems and meet our clean energy and greenhouse gas reduction goals.

Since 2021, CPSR has been an active member of the Public Service Commission (PSC) Work Group on Distribution System Planning. We entered that role in part because since 2015 we had been active members of the PSC Work Group that developed the regulations and monitored implementation of the state's Community Solar Pilot Program. That program brought into sharp focus the limitations of the existing distribution system: many projects found that potentially suitable sites did not have the grid capacity to connect. As the program expanded, distribution grid capacity, along with siting restrictions, became the major limiting factors.

The need to confront climate disruption by moving from fossil fuel-generated electricity to clean renewable energy has paralleled the need for increasing electrification of transportation, homes, and businesses. This has made the limitations of our distribution grid increasingly obvious.

The basic structure of our existing grid was established almost 100 years ago – it's designed to move electricity in one direction, from a small number of large power plants to homes and business customers. Large scale bulk power is carried through high voltage transmission lines. The distribution system is where that power begins to be distributed - the substations and the lines and poles and transformers that we see connecting to our homes and businesses.

The distribution system we have can't support the modern electricity system we are trying to build. It was not designed to –

- Support the extra demand from things like electric vehicles (EVs) and building electrification,
- Allow community or rooftop solar, or EVs, or batteries, to put substantial amounts of power back onto the system, or
- Manage the complex interaction of customer offtake of electricity and the production of electricity by Distributed Energy Resources (DERs) like solar, batteries, and EV-to-grid.

To meet these requirements, a 21st century grid needs to be "smart." It will –

- Use technologies like sensors, smart meters, and two-way communication to monitor and manage electricity flow in real-time;
- Optimize efficiency and reliability by adapting to changing energy demands and integrating multiple renewable sources seamlessly;
- Manage increasing or shifting peak demand without adding costly infrastructure; and,
- Provide the capacity and technology to allow all customers to connect clean and cost-saving technologies like EVs, heat pumps, batteries, and rooftop solar to the grid.
    - Doing this will mean the end of customers' inability to add such technologies because the circuits in their neighborhood are already saturated.

A 21st century grid will offer substantial benefits to our electricity system. Combining expansion of Distributed Energy Resources (DERS) like solar and batteries with modern distribution grid planning and technologies actually strengthens and enhances the system in many ways, including[1] –

[1] U.S. Department of Energy, National Energy Technology Laboratory; *Modern Grid Benefits*

- Improved reliability - Reducing outage duration and frequency through communication and control elements that sense circuit status, isolate faults, and restore service, including by employing DERs.
- Improved security and safety - Reducing vulnerability to terrorist attack and natural disasters through intelligent networking of DERs like solar and batteries, and data acquisition capacity to detect security challenges and initiate corrective steps.
- Improved economics – Through market efficiencies (buy low, store, sell high), reducing the cost of energy and capacity to ratepayers.
- Improved efficiency - Incorporating Demand Response and technologies like DER Management Systems for more efficient operation and improved grid management at lower cost.
- New options for market participation – Opening up more robust electricity markets that will create new options and revenue opportunities and enable new load management, distributed generation, energy storage, and demand response options.
    - Allowing owners of batteries, EVs, and small solar to put power back onto the grid allows them to gain compensation through aggregation under FERC Order 2222 or participation in a Virtual Power Plant, lowering their own energy cost and overall supply cost.

Good Distribution System planning will save money and lower costs. Modernizing the grid will have payoffs, but also cost – good planning will minimize the costs and maximize the benefits.

- It will minimize the costs by –
    - Requiring plans to include cost-effectiveness and cost-benefit analysis;
    - Using modern forecasting tools to plan for increases in load and new distributed generation.
    - Using technologies that increase capacity and reliability without investing in expensive infrastructure, like using battery storage instead of building a new substation.
- It will maximize grid benefits by –
    - Increasing reliability and reducing outages through modern system control and communication technologies.
    - Identifying locations where investment in capacity for increased solar or battery storage will add greatest value.
    - Determining where system constraints are limiting uptake of things like EVs.
    - Helping energy developers identify the best places to connect to the grid.
    - Allowing the expanded clean renewable energy that's consistent with our goals.
- Distribution System modernization will also have direct payoffs for customers, by –
    - Allowing more homes and businesses to have their own solar, which saves them money.
    - Allowing more families who can't have solar to get Community Solar, which costs less than standard utility service.
    - Allowing more rooftop solar, battery owners, and EV owners to put power back onto the grid, reducing their cost.
    - Allowing large numbers of households to participate in the energy economy by participating in a Virtual Power Plant or aggregated marketing.

How Good Distribution System Planning and Modernization Pay Off –

Reducing cost to ratepayers – Vermont's Green Mountain Power Virtual Power Plant (VPP) integrates distributed energy storage with advanced distribution grid management.[2] Over 2,500 customers lease or buy Tesla Powerwalls, storing power when prices or demand are low and using or selling it when high. With 50 MW capacity, the program saves about $3 million annually, benefiting all 275,000 ratepayers. Its distributed design improves reliability in a tree-heavy state prone to outages, and helps balance renewable energy variability. Reduced reliance on fossil-fuel peaker plants contributes to Green Mountain getting 78% of its electricity from renewables and being 100% carbon-free annually.

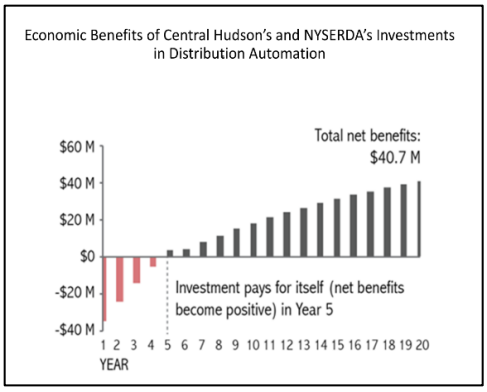
[2] Green Mountain Power, *GMP's Energy Storage Programs Deliver $3 Million In Savings for All Customers During 2020 Energy Peaks*; 29 September 2020. https://greenmountainpower.com/news/gmps-energy-storage-programs-deliver-3-million-in-savings/

Avoiding or deferring costly infrastructure investments – The Brooklyn-Queens Demand Management (BQDM) program,[3] launched by Con Edison in 2014, used non-wires alternatives (NWAs) to defer a $1 billion substation. It reduced peak demand to achieve 52 MW of load relief by 2018. Customer-side measures – energy efficiency, demand management, and distributed generation – provided 41 MW. Utility-side solutions, including voltage optimization and battery storage, added 11 MW. This deferred substation construction until 2026, with significant savings to ratepayers.

Investing in modernization instead of traditional infrastructure – With catalytic grant support from New York's State Energy Research and Development Authority (SERDA) program, Central Hudson Gas and Electric invested in a grid modernization program[4] that included:

- automated transmission and distribution management systems;
- superconducting fault current limiters, which prevent problems associated with faults in power lines by detecting and rerouting power flow around the fault; and,
- sensors, smart inverters and other monitoring and power controls to efficiently integrate renewable energy resources into the grid.

The program is projected over 20 years to produce net economic cost savings of $40.7 million, reliability benefits of $7.3 million, and environmental benefits of $28.0 million. At the projected rate of savings, the program's net economic benefits exceeded costs by year 5.



The planning process being proposed by the PSC won't get us the 21st century distribution system we require. The need to remodel the grid to achieve such benefits was first identified by the PSC nine years ago in its 2016 Public Conference 44 (PC44) on "*Transforming Maryland's Electric Distribution Systems*." PC44 identified many of the areas where modern improvements were required, including expanding solar and other Distributed Energy Resources, Energy Storage, improved connection to the grid, better planning of grid investments, and considering impact on limited-income households.

The Maryland utilities were part of PC44; in fact, it was part of the Exelon-Pepco merger approval. However, in the intervening almost 9 years, the utilities have participated in PSC Work Groups and hearings… but have made very little progress in actual grid modernization.

In 2021 the PSC launched a Distribution System Planning (DSP) Work Group to develop regulations for utilities' distribution system planning processes. The state's major electricity utilities and electricity cooperatives have been constant participants, along with a limited number of non-utility stakeholders including the Office of People's Counsel.

Using a state DS planning framework developed (with Maryland PSC input) by a national body of regulatory agencies,[5] the DSP Work Group has:

- Spent almost three years of biweekly meetings having in-depth technical discussions of key elements of modern distribution system planning;
- Had a Commission-organized DS Planning Technical Conference in January of 2024, with participation of state-of-the-art technical experts from organizations including Lawrence Berkeley Laboratory; and,
- Received a consultant firm's detailed analysis of DSP Best Practices being implemented by other states, for each of the plan components under consideration.

The Work Group facilitator filed a "Final Report" on April 30, 2024. However, in response (Order 91256, July 30, 2024) the Commission noted that there were many key areas where "consensus" had not been reached, and directed the Work Group to continue deliberations. In that Order, the Commission did acknowledge that

[3] Utility Dive, *BQDM program demonstrates benefits of non-traditional utility investments*; March 11, 2019 https://www.utilitydive.com/news/bqdm-program-demonstrates-benefits-of-non-traditional-utility-investments/550110/

[4] NYSERDA Smart Grid Evaluation Case Study: *Central Hudson's Grid Modernization Investments*; 8 July 2020 file:///C:/Users/Alfre/Downloads/NYSERDA-GridModernization-CentralHudson-EvaluationCaseStudyReport-July2020.pdf

[5] National Association of Regulatory Utility Commissioners/National Association of State Energy Officials (NARUC-NASEO), Task Force on Comprehensive Electricity Planning; *Blueprint for State Action*; February, 2021

"*Those areas followed a pattern: Non-utility stakeholders pressed for more utility DSP process and technical capability improvements in addition to enhanced metrics reporting and transparency. The utilities, in many cases, opposed or desired to slow or modify these proposals*…" After five more months of deliberation, the Work Group filed a supplementary report containing some additional areas of consensus, but with many remaining non-consensus areas.

In response, the Commission issued an Order (Order 91490) and draft regulations. However, both the Order and the draft regulations are quite general in their requirements. They essentially reflect only the level and content of requirement on which there was "consensus" – meaning only those requirements to which all participants – *including the utilities* – agreed. They do not reflect the level of detail that the Work Group reached in its deliberations, nor the Best Practices that had been presented to it. *This is a shortcoming of the consensus-based process, because the regulated entities actually determine the rate and content of the regulations that govern them*.

These draft regulations will not provide the structure that we need to develop a modern distribution system and realize the advancements and benefits it would provide.

And they do not require the actual review and approval of utilities' plans – utilities would develop plans with stakeholder "input," but then simply present and then implement those plans, just saying whether or not they had included that input. There would be no "teeth" – no accountability – in the DS plan process.

SB908 provides the requirements needed to plan and develop a 21st century distribution system. It uses the same NARUC-NASEO framework that the state has identified for distribution system planning. Within that framework, it provides clear specifications for key components of that planning, drawing on state-of-the-art experience and Best Practices, including –

- Detailed forecasting of rapidly evolving load requirements;
- Detailed forecasting of EVs, building electrification, battery storage, and distributed generation;
- Expanding "hosting capacity" to connect new distributed energy sources and provide information to help developers plan their investments;
- Cost-effectiveness analysis to identify effective grid improvements that use technology and "non-wires" investments instead of more expensive infrastructure or equipment;
- Coordination of gas and electric system planning to avoid duplicative investment in energy capacity; and,
- Use of defined metrics to monitor, evaluate, and report on progress.
- Robust requirements for transparency and for active participation and input by non-utility stakeholders.

Most importantly, SB908 requires actual review and approval of distribution system plans by the PSC and establishes criteria for such approval. Approval plus required reporting will assure accountability of the grid modernization process as it is implemented.

SB908 is consistent with grid modernization requirements in other progressive states.[6]

- Hawaii, New York, Colorado, Minnesota, Nevada, and Vermont require forecasts to include new load from building electrification and EV charging; Vermont includes new load from heat pumps and other "fuel-switching technologies."
- Hawaii, Colorado, California, Nevada and Vermont require system forecasting for demand response, energy storage, distributed generation, demand flexibility (CO), and/or managed EV charging.
- The District of Columbia and 16 states include analysis of non-capital ("non-wires") investments in plan requirements.
- California, Hawaii, Massachusetts, Minnesota, New York, and Michigan require their Public Utility Commissions to approve electric utilities' distribution system plans.

In summary, we need SB908 to move forward. Setting out with a weaker set of regulations will only cost us more time than we have already lost since 2016. Through actions like the Climate Solutions Now Act and the

[6] L. Schwartz et al, State Requirements for Electric Distribution System Planning; Berkeley Lab and Pacific Northwest National Laboratory, December 2024

2024 DRIVE the legislature has proven that it can help focus regulatory action. We need to do that now to plan the system that will speed our movement toward the clean energy future we've envisioned.

We therefore respectfully request a favorable report on SB908.

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