

Maryland Public Service Commission

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Presentation to Maryland Greenhouse Gas
Mitigation Working Group (MWG)

July 17, 2024

Commissioners



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Utility Regulation

- The mission of the Public Service Commission (PSC) is to ensure safe, reliable, and economic public utility and transportation service to the citizens of Maryland.
- The Public Utilities Article (PUA), Annotated Code of Maryland, PUA § 2–113 states, “In supervising and regulating public service companies, the Commission shall consider the public safety, the economy of the State, the conservation of natural resources, and the preservation of environmental quality.”
- The Commission follows the requirements directed by the legislature through the PUA.
- This presentation includes a high level overview of the PSC's electrification study completed in 2023 and other work at the PSC that connects with climate policy.

PSC Electrification Study

The electrification study was performed in compliance with Sect. 10 of the Climate Solutions Now Act of 2022 (CSNA), which required the PSC to assess the capacity of each gas and electric company's **distribution systems** to successfully serve customers under a managed transition to a highly electrified building sector. In addition, the CSNA set the following requirements for this study:

- *use a projection of average growth in system peak demand between 2021 and 2031 to assess the overall impact on each gas and electric distribution system*
- *compare future electric distribution system peak and energy demand load growth to historic rates*
- *consider the impacts of energy efficiency and conservation and electric load flexibility*
- *consider the capacity of the existing distribution systems and projected electric distribution system improvements and expansions to serve existing electric loads and projected electric load growth*
- *assess the effects of shifts in seasonal system gas and electric loads*

Several "what-if" scenarios were studied to accelerate different types of heat pump adoption, additional load flexibility and energy efficiency measures while achieving building electrification consistent with the the Maryland Climate Pathways study that would reduce GHG emissions by 30% between 2022 and 2031.

PSC Electrification Study - Scenarios

INTRODUCTION

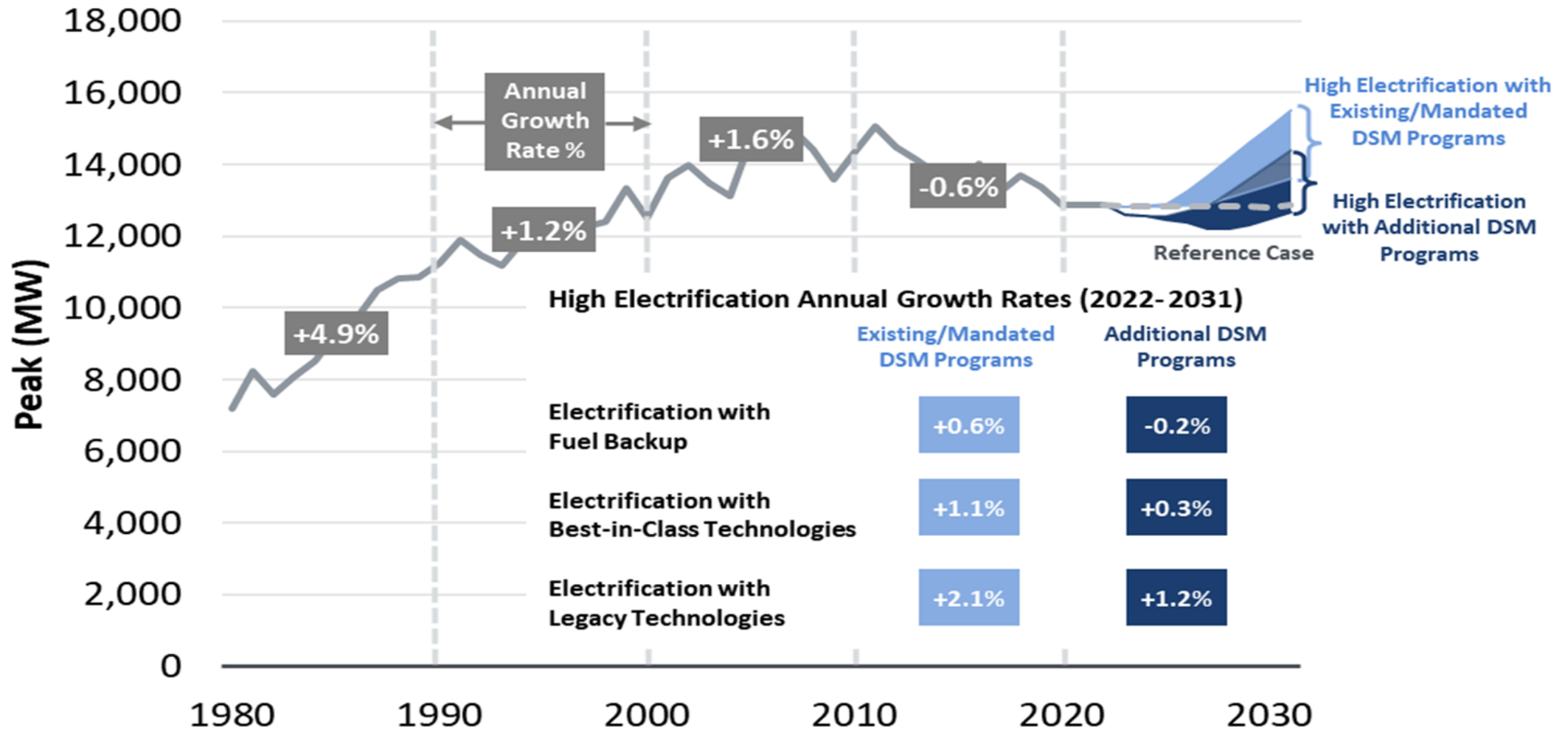
Scenario Matrix

Focus Of This Presentation

	Decarbonization Policy Goals not Pursued		Pursuit of Policy Goals through Hybrid Solutions		Pursuit of Policy Goals through Zero Direct Emissions Solutions	
	Reference	Low Electrification	Mid Electrification	High Electrification with Fuel Backup	High Electrification with Best-in-Class Technologies	High Electrification with Legacy Technologies
Description	“Reference” for load impacts of other scenarios. Defined as the state of the world as implied by each utility’s load forecast.	Limited incremental electrification. Assumes policy goals are not met.	Mix of electrification and continued use of fuels.	High electrification with retention of existing fossil fuel equipment for backup.	Fossil fuel equipment is phased out through policy. Customers quickly adopt more advanced, efficient electric technologies.	Fossil fuel equipment is phased out through policy. Customers are slower to adopt more advanced, efficient electric technologies.
Buildings	Fuel mix held flat from 2022.	Limited incremental electrification (majority of existing gas and fossil customers do not adopt heat pumps by 2031).	Fossil fuel equipment sales continue beyond 2030 ; some customers switch to heat pumps.	By 2030, all new equipment sales are HPs. Almost all existing fossil fueled customers retain their equipment as backup.	By 2030, all new equipment sales are HPs ¹ . Most HPs are highly efficient ccASHPs.	By 2030, all new equipment sales are HPs ¹ . Most HPs are less efficient ASHP+resistance backup.
DERs	Distributed Energy Resources (DER) growth in line with RPS mandate.					
Transportation	Based on EIA projections.	3-year delay relative to ACC II and ACT.	Achievement of Advanced Clean Cars II (ACC II) and Advanced Clean Trucks (ACT) regulations.			
Demand Side Management (DSM)	For each scenario, we run two DSM cases with a range of Energy Efficiency (EE) and Load Flexibility programs: 1) Existing/Mandated DSM Programs Only 2) Additional DSM Programs (i.e., new programs and growth of existing programs)					

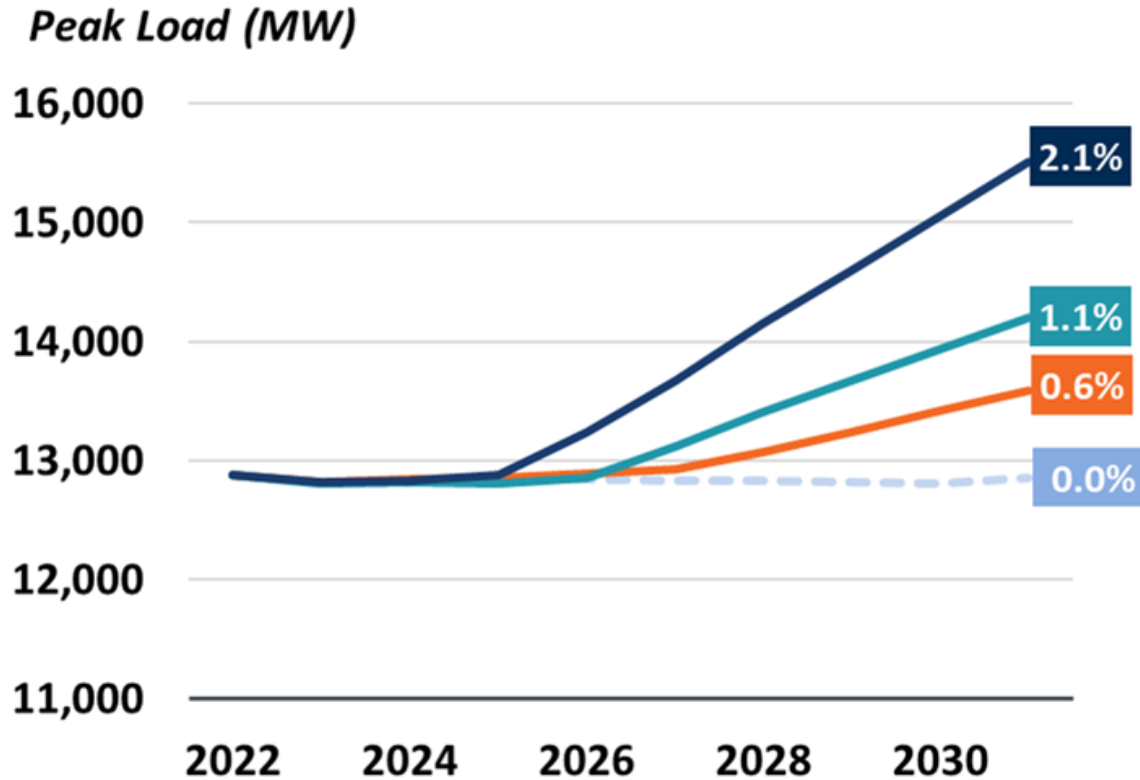
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PSC Electrification Study - Results

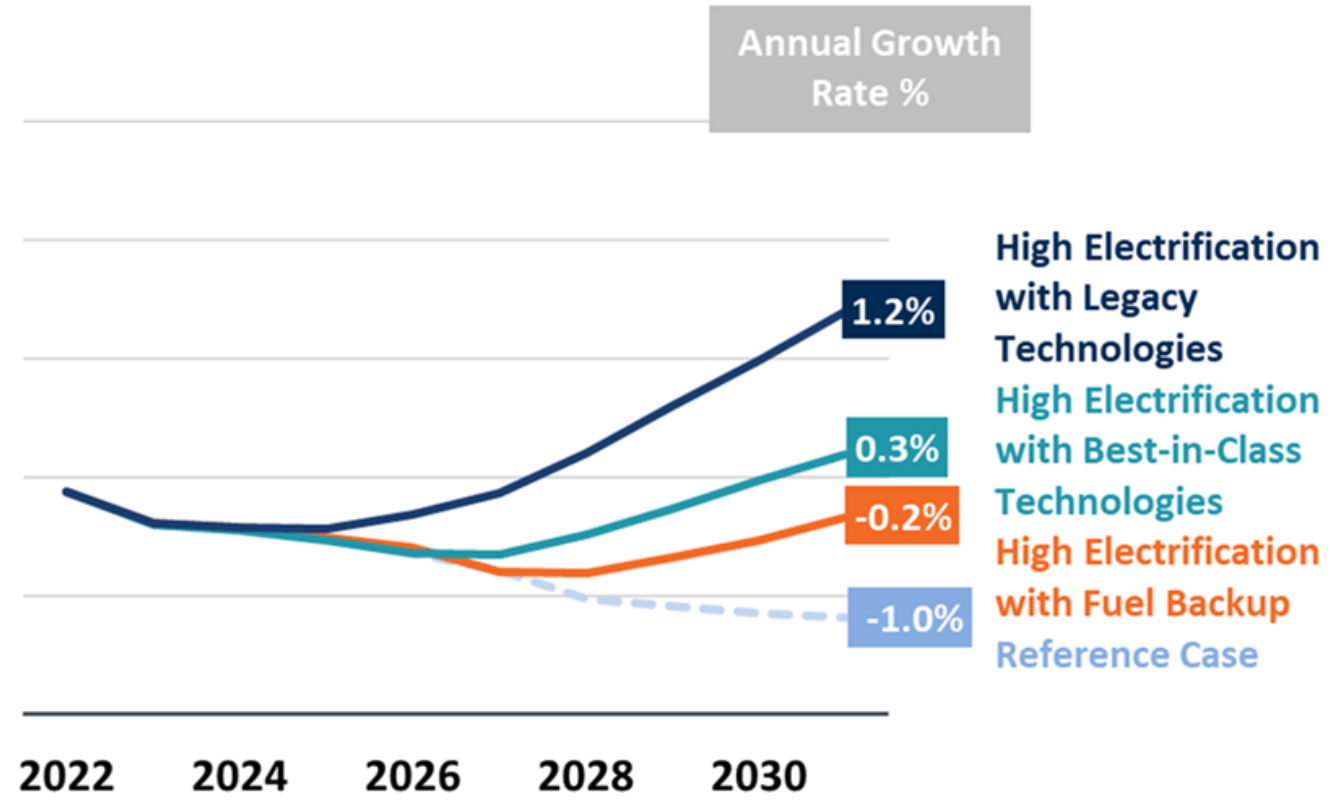


PSC Electrification Study - Results

With Existing/Mandated DSM



With Additional DSM



PSC Electrification Study (2023) - Summary

In high electrification scenarios:

- The Maryland **building sector can decarbonize at a pace consistent with meeting the economy-wide goals of 60% GHG reduction by 2031**
- **Building sector gas consumption is projected to fall by 31-32%**
- **Projected electric load growth is comparable or less than historical growth rates, which were as high as 4.9% in the 1980s**
- The Maryland electric system, which is currently summer-peaking, would **switch to winter-peaking around 2026-2027**
- The aggregate **Maryland electric system would see 0.6%-2.1% annual load growth**
 - Highest growth rate of **2.1% would occur in the scenario with inefficient air source heat pumps**
 - Growth would be mitigated to **1.2% in a scenario with more efficient cold climate heat pumps**
 - Growth would be further mitigated to **0.6% in a scenario where existing fossil fueled equipment is maintained as backup**
- Increasing the deployment of **DSM could reduce the range of annual load growth to -0.2%-1.2%**
- Load declines from 2010-2020 suggest that on average, **there may be capacity headroom on distribution systems** to handle some load growth before upgrades are required. The study was conducted at the utility system level and is **not a substitute for locational distribution system planning studies.**

Proceedings and Work Groups at the Commission that may touch on Climate Policy

- Distribution System Planning (Case & WG)
- Energy Storage (2 Cases & WG)
- DRIVE Act
- Interconnection Work Group
- EmPOWER (Case and Several WGs)
- Electric Vehicles (3 Cases and WG)
- Net Energy Metering and Community Solar (WG)
- Geothermal Pilot

DSP Work Group (Case No. 9665)

- On June 23, 2021, the Commission initiated the Distribution System Planning (DSP) WG.
- In 2022 the CSNA directed the Commission to adopt regulations or issue orders to implement the following 12 State policy goals under PUA § 7–802.
- On February 6, 2023, the DSP WG filed its Initial Report. On August 24, 2023, the Commission issued an Order on this Initial Report directing a Final Report by April 30, 2024.
- During its 2024 session, the Maryland General Assembly enacted House Bill 1393, the Electric System Planning - Scope and Funding Act.
 - Submit a report to the General Assembly with information regarding the current status of projects designed and information on DSP to promote state policy goals identified in PUA § 7-802, on or before December 1, 2024, and each December 1 thereafter.
 - Requires the Commission to adopt regulations or issue orders to implement specific policies for ***electric system planning*** [not just DSP] requiring consideration of cost-effective demand-side methods, including VPPs and other improvements to promote the State’s policy goals. These regulations are required on or before December 1, 2025.
- An Order on the DSP Work Group Final Report Final Report recommendations and HB 1393 implementation is currently pending and expected in July.

Maryland Energy Storage Program (Case No. 9619 and 9715)

- Energy Storage Pilot Program (SB573, 2019)
 - 8 projects testing different ownership and use cases
 - 5.5 MW and 11.8 MWh online (5 projects across 4 utilities)
 - 2.98 MW and 11.69 MWh anticipated (3 projects across 3 utilities)
- 3000 MW Energy Storage Program (HB910, 2023)
 - Commission to establish a program to procure 3000 MWs of cost effective energy storage on a set trajectory through 2033.
 - Implemented July 1, 2025.
 - A final workgroup to report with recommendations to implement the MESP is due October 1, 2024.

DRIVE Act (Senate Bill 959) - 2024

- **What it does:**
 - Time-of-use rates (TOU) and vehicle-to-grid (V2G) pilots including virtual power plant (VPP) pilot programs for competitive third parties to participate and drive innovation on the electric grid through distributed energy resources that can be aggregated to provide grid services.
- **How this is accomplished:**
 - Investor-owned electric companies to implement certain pilots or temporary tariffs for TOU, V2G, and VPP pilot programs by July 1, 2025.
 - Commission, in coordination with MEA, to approve or require an investor-owned electric company to offer up-front incentives or rebates to customers enrolled in one of these pilots or tariffs to acquire and install renewable on-site generating systems.
 - The Commission issued Order No. 91218 on July 11, 2024 on DRIVE Act implementation.

PC44 Interconnection Workgroup

The PC44 Interconnection Workgroup has completed 5 Phases since 2017 and is currently in Phase VI. Work completed to date includes regulations for:

- Energy Storage Integration (Phase I, Phase II)
- Pre-Application, Application, Fees & Interconnection Queues (Phase I)
- Interconnection Jurisdiction (Phase I - IV)
- Cost Allocation of Upgrades (MCAM) (Phase II - V)
- Flexible Interconnection Options (Phase II, Phase V)
- Hosting Capacity (Phase II, Phase III, Phase V)
- Smart Inverters (Phase I - IV)
- Utility Monitoring & Control (Phase I - IV)
- Meter Collar Adapters (Phase V)
- Analysis of Interconnection Requests (Phase I and Phase V)
- Dispute Resolution (Phase V)

Phase VI is currently focused on Technical Interconnection Requirements (TIRs) & implementation of FERC Order 2222 by February 2026 and the DRIVE Act.

Phase VI target completion is Q1, 2025

EmPOWER

- Energy Efficiency, Demand Response, and Beneficial Electrification Program
 - Electric and gas utilities provide incentives and messaging to customers to conserve energy or electrify appliances (new)
- Utilities have stated goals
 - Previously was energy reduction goals now have GHG reduction goals
- Hearing to transition programs to GHG reduction goals this fall
- Several active work groups

Electric Vehicles

- Utility Pilot Programs
 - Provide customers incentives to assist with installing charging equipment or load management (TOU/smart charging)
 - Permitted utilities to install and own some publicly available charging stations
 - Have reliability standards for charging stations
 - Active Work Group
- EV Bus Pilot
 - CSNA permitted utilities to provide incentives to school districts to electrify school buses, includes a vehicle-to-grid component
 - BGE and PE submitted program plans which are under consideration at the Commission.

Net Metering (NEM) and Community Solar (CSEG)

- 3000 MW NEM & CSEG Cap
 - ~1,300 MW as of now
- NEM Allows customers to install certain renewable energy onsite to reduce their load (and thus lower utility bill)
- CSEGs allow customers who cannot otherwise build solar at home to participate in a similar financial arrangement as NEM
- CSEG Program was originally a pilot and the permanent program will begin January 1, 2025.
- Active WG for both NEM and CSEGs

Appendix

Maryland Energy Storage Program (Case No. 9619 and 9715)

- §7-216 of the Public Utilities Article (PUA), *Annotated Code of Maryland* requires the Commission to establish the Maryland Energy Storage Pilot Program. The Pilot Program ends in December 2026, unless extended by the Commission.
 - BGE - 2.5 MW/ 4 MWh Utility Owned and Operated Fairhaven Substation Project & 1.0 MW/ 2 MWh 3rd Party Owned and Utility Operated Chesapeake Substation Project
 - Potomac Edison - 0.5 MW/ 1.3 MWh 3rd Party Owned & Operated Myersville EV Charging Station Project & 1.75 MW/ 8.4 MWh Utility Owned & Operated Town Hill Substation Project (Q4 2024)
 - Pepco - 1.0 MW/ 3.0 MWh 3rd Party Owned & Operated Brookville Bus Depot Project and 0.23 MW/ 0.29 MWh Utility Owned & Operated Fairmont Heights Microgrid (Q1 2025)
 - Delmarva Power - 0.5 MW/ 1.5 MWh Third Party Owned & Operated Elk Neck VPP Project and 1.0 MW/ 3.0 MWh Utility Owned & Operated Ocean City Substation Project (Q4 2024)
- §7-216 of the PUA requires the Commission to establish the Maryland Energy Storage Program (MESP) with a goal of achieving:
 - (i) 750 megawatts of cumulative energy storage capacity by 2027; and
 - (ii) 1,500 megawatts of cumulative energy storage capacity by 2030; and
 - (iii) 3,000 megawatts of cumulative energy storage capacity by 2033

The Program shall be implemented July 1, 2025. A workgroup Final Report with recommendations to implement the MESP is due October 1, 2024.