

The Maryland General Assembly's landmark environmental legislation, the Climate Solutions Now Act of 2022 (CSNA), targets net-zero greenhouse gas (GHG) emissions by 2045. BGE supports this ambitious goal and has a history of investing in and planning for a cleaner and more sustainable future for Maryland, including our own [Path to Clean](#) roadmap to net-zero operational GHG emissions.

BGE is eager to partner with State leadership, our customers and communities, and engaged stakeholders toward our clean energy future, and commits to help achieve Maryland's goals using an optimal pathway that fosters greater affordability, equity, reliability and resilience.

Under the CSNA, the Maryland Department of Environment (MDE) is required to adopt a plan to reach net-zero goals with input from the Public Service Commission (PSC), other state agencies and stakeholders by December 2023. BGE commits to working with MDE and all key stakeholders to select and implement the optimal pathway to the State's GHG reduction goals while continuing to provide safe, reliable and affordable energy.

Evaluating Pathways to Achieve CSNA Goals

BGE engaged Energy + Environmental Economics (E3) to analyze viable pathways that achieve the State's net zero goals and identify potential implications for BGE's customers and service area. E3 analyzed three key decarbonization scenario pathways that built on prior work E3 performed for the State: 1) Limited Gas; 2) Hybrid; and 3) Diverse. As Figure 1 shows, the three pathways each achieve Maryland's net-zero GHG emission targets and all require significant electrification – including building and transportation electrification. This analysis is the first decarbonization study released since the CSNA's enactment.

The most important finding by E3 is that the Hybrid and Diverse pathways, both of which leverage the combined capabilities of electric and gas delivery systems, achieve Maryland's goals at lower cost and less risk for customers and the State's economy.

These Integrated Energy System (IES) pathways also deliver greater resiliency, fuel diversity, more realistic constructability and less disruption to customers and the State's economy.

The Limited Gas pathway, which relies almost exclusively on electrification, will result in a significantly higher cost, more economic and energy system disruption, and a less diverse/resilient system compared to IES scenarios. Preliminary analysis conducted in parallel with the E3 work indicates that BGE's required electric grid capacity could grow by a factor of 2.5 times current levels, which would require approximately 200 new and expanded substations and over 1,500 new electrical feeders. This infrastructure will require an enormous financial investment, threatening affordability for customers, and poses an incredible siting and permitting challenge in central Maryland's heavily developed regions.

Scenario	1. Limited Gas	Integrated Energy System Scenarios	
		2. Hybrid	3. Diverse
Description	High-electrification and shift away from delivered gas	Leverage an increasingly clean system, electrification, and gas network	
Buildings	Electrification	Electrification with gas/electric hybrid heating	Adds gas heat pumps and network geothermal
Industry	Electrification	Electrification and alternative fuels	
Transportation	Light duty vehicle electrification with alternative fuels for medium and heavy-duty vehicles		
Electricity	Zero-carbon electricity by 2045		
Other Sectors	66% reduction by 2045		
Net Incremental Cost 2020-2045 (Net of IRA Funds)	\$36 Billion	\$21 Billion	\$22 Billion
Overall Risk Level	Highest	Moderate	Moderate to High

Figure 1. Incremental costs include renewable energy capacity and energy, clean gaseous fuels, customer equipment conversions, transmission & distribution infrastructure, and net of savings from avoided gasoline and fossil fuel usage.

BGE's Vision For A Cleaner Future

BGE supports pathways that leverage an integrated systems approach. We will partner with our customers and key stakeholders, with critical support from our regulators and legislators, and develop and implement programs and initiatives needed to reduce GHG emissions in central Maryland in support of the State's goal. This will require policy and regulatory changes, and we will work with the PSC and the Legislature on these transitions and reforms.

Our vision includes the following foundational elements:

➤ **Continued Grid Modernization:**

This is required to support Maryland's transition to additional renewable and carbon-free generation sources and enable the growth of Distributed Energy Resources and two-way power flows. To expand grid capacity, advanced forecasting tools, integrated electric and gas planning processes, and new operations platforms including an Advanced Distribution Management System (ADMS) and Distributed Energy Management System (DERMS) will be implemented in the next few years.

➤ **Building Decarbonization/Electrification:**

Develop new programs that incentivize customers to adopt electric heat pumps and water heaters, while retaining existing gas furnaces to provide resilient heating. Gas will shift to a back-up heating resource on the coldest days of the year when electric heat pumps are not efficient and will remain available for cooking and other household and business applications. However, gas delivery rates will increase as gas customers and usage decreases over time, requiring innovative regulatory solutions to support affordability, particularly for low- and moderate-income customers. Leveraging the existing capacity of our gas delivery system allows us to mitigate the amount of new electric grid capacity that will be required and as result, achieve the state's GHG reduction goals at a far lower cost to customers.

➤ **Transportation Electrification:**

Build on our successful EVsmart program to continue advocating for policies that enhance the State's transportation electrification goals, and introduce new proposals to rapidly accelerate EV adoption, including fleet charging, electrified school and transit buses, and investments to support EV charging across the service territory. We will seek to leverage federal funds programs to offset customer costs where feasible and will implement rate incentives and managed charging solutions to mitigate peak demand impacts and augment the benefits of EVs.

➤ **Energy Efficiency and Demand Response:**

Offer new programs and innovations to meet EmPOWER Maryland's increasingly challenging energy efficiency goals that builds on our nationally recognized leadership and success in energy efficiency and demand response. We will offer programs for both new construction and deep retrofits of existing building stock and continue to innovate in our behavioral based initiatives.

➤ **Grid Resiliency and Expansion:**

Continue performing in-depth capacity planning analyses to identify and implement system upgrades to meet the growing demands of building and transportation electrification. Even under the IES pathways modeled by E3, we anticipate peak demand growing by approximately 75% to 100% (to ~12,000 MW) by 2045. We will also design new resiliency initiatives to support the increasing reliance on electricity across all sectors of the economy.

➤ **Clean Fuels Transition/Emerging Technologies:**

Conduct pilot projects with emerging clean, carbon-neutral technologies such as Renewable Natural Gas (RNG) and hydrogen. As examples, we are launching a hydrogen lab at our Spring Gardens gas headquarters facility and interconnected the State's first biomass RNG supply facility in Howard County to our gas infrastructure in 2022. We will also continue researching clean energy solutions and emerging technologies such as networked geothermal heating, gas heat pumps, carbon capture and storage, and more.

➤ **Policy:**

Work with the PSC and the legislature, customers and key stakeholders to identify needed policy and regulatory changes in the areas of rate design, ratemaking, electric planning and interconnection, and permitting and siting. Maryland's net-zero GHG emissions goal puts significant cost pressures on Marylanders, even under optimal pathways, requiring new solutions that support both affordability and equity. A commitment to workforce development will also be a key prerequisite to achieving our energy system transformation.

Maryland's goal of net-zero GHG emissions can only be achieved through a coordinated effort involving all segments of the State's society. BGE is always focused on the safe and reliable delivery of affordable energy to our customers; we are now excited to work with all stakeholders on creating a cleaner and brighter future for all of Maryland.