Testimony of Jordan Graham on Behalf of Tesla
HB 0839
Investor-Owned Electric Companies - Clean Energy Homes Pilot Programs

My name is Jordan Graham, and I am a Senior Energy Policy Advisor at Tesla. Tesla is an original equipment manufacturer and installer of solar and battery energy storage systems (BESS), including our lithium-ion battery stationary home energy storage product, Powerwall. To date, Tesla has completed over 16.6 gigawatt-hours of battery deployments.

I am writing to support HB 0839, which through the creation of residential battery incentives and the allowance for customer-owned meter collar adapter devices, will facilitate greater deployment of battery storage at an increased pace of installation. Additionally, if implemented properly, the creation of a load management program will harness latent value in customer-sited BESS to alleviate stress on the grid during times of high demand – creating a more efficient and modern grid capable of supporting higher amounts of renewable energy generation, to the benefit of all Maryland residents and ratepayers. Cumulatively, these policies present no-cost and relatively low-cost options to bring more batteries onto the grid, which will be necessary as Maryland moves toward its target of 50% renewable energy by 2030.

Meter Collars

HB 0839 will help make the installation of storage faster and less expensive by requiring utilities to approve meter collar adapters that meet certain national standards. Meter collars adapters are devices installed between the utility meter and the meter socket, which facilitate the installation of various clean energy technologies. Due to the advantageous location of where meter collars are installed on a home, the devices can allow for battery storage and solar to be installed more than 10-times faster, with significantly less rewiring, and can help avoid the need for panel upgrades. These materials and labor savings often are passed onto customers, effectively cutting the price of residential battery storage or solar by hundreds to thousands of dollars.

There are a variety of meter collar adapters in the market and in development, which serve various functions. Those functions from interconnecting solar and, in the case of the Tesla Backup Switch and other meter collar adapters serving the same function, simplifying the provision of whole-home battery backup.

Tesla's Backup Switch leverages the customer's meter socket to provide a disconnection point that enables the home to be safely and effectively isolated from the grid during an outage. This

isolation is critical to ensure that the battery system does not backfeed onto the grid while it is providing power to the home during an outage. The Backup Switch also ensures that once grid power is restored, the home loads are reconnected to the grid. Providing this disconnection point without a meter collar adapter can require substantial rewiring or even replacing a customer's electrical panel at great expense to the customer. As a result of using the Backup Switch, a Tesla install crew can deploy multiple battery storage systems in a single day instead of just one. Similar time and materials savings exist for meter collars that facilitate other clean energy technologies.

Meter collars have been proven to be safe. HB 0839 requires that that meter collar adapters used in Maryland be "approved or listed by a National Recognized Testing Laboratory." In order to be certified and listed, meter collar adapters are subject to a battery of tests by Nationally Recognized Testing Laboratories that have themselves been certified by the Occupational Safety and Health Administration to conduct these tests and to determine whether or not a device should be listed as safe. Tesla's Backup Switch has been installed over 6,000 times nationally and is certified to several relevant UL standards, including the same standards that apply to the customer meter socket, the utility meter, and to energy management systems.

Requiring approval of meter collars is a no-cost way that states and utilities can allow for faster and cheaper installation of solar and battery storage. Dozens of utilities around the U.S. have approved meter collars for use in their territory. All investor-owned utilities in Arizona, Colorado and Utah are required to assess and approve the devices. All three California investor-owned utilities currently are piloting metering collars pursuant to a regulatory order to test and approve such devices. And legislation introduced in New Jersey and Illinois also would require utilities to assess and approve meter collars. In short, meter collars are likely to be a common feature of clean energy deployments over the next decade. Reducing the complexity of installations and costs is critically important for the adoption of battery storage and solar, and to meeting state-level clean energy targets.

Load Management Program

HB 0839 has the potential to incentivize battery deployment and simultaneously improve the stability of Maryland's grid via its proposed load management program. One reason that it is essential to incentivize broader adoption of residential battery storage systems is because distributed battery storage has been proven to provide immense value to the grid, to ratepayers, and to the environment via the implementation of load reduction programs. Load reduction programs work by compensating customers for charging their batteries during times of lower electricity demand and discharging the batteries during times of higher electricity demand when the grid faces additional stress.

The grid and regional electricity markets are designed to support electricity provision during times of peak demand – often on hot summer evenings when everyone returns home from work to run their air conditioners. In these hours and others, distributed battery systems can provide immense value by contributing extremely targeted discharges that relieve stress on grid infrastructure and can alleviate the need to dispatch expensive "peaker" power plants, which are often the dirtiest and most carbon-intensive forms of electricity generation. When properly

incentivized and harnessed, individual residential home batteries are just as capable as conventional generation resources to provide energy, capacity, and other services to keep the grid reliable. While no single device or utility customer can make a meaningful impact, when batteries are aggregated and coordinated through modern communication and technology, the contribution can be immense.

As Maryland and other states deploy higher amounts of renewable generation, the deployment of distributed battery systems will be increasingly important to allow power generated during the day via solar energy to be used in the evening, when demand is highest. And as states move to electrify everything – including installing electric vehicle chargers, heat pumps, induction stoves, and other devices – it will significantly increase the demand for electricity at a scale that could be a challenge for grid operators to integrate. This looming shift makes it increasingly important that aggregated battery systems be leveraged to provide targeted relieve to grid stress.

Other states already have implemented successful load reduction programs that have leveraged customer-sited battery storage systems to provide value to the grid, while compensating customers for the value provided. The states of Massachusetts, Connecticut, New Hampshire, and Rhode Island all use the ConnectedSolutions program, which compensates customers for voluntarily dispatching their batteries during 30 to 60 summer events, with customer compensation based on their level of dispatch across those events. In Vermont, a Tesla-operated aggregation of residential batteries in Green Mountain Power helped the utility's customers save $1.2 million in summer 2022 – and at least $3 million in 2020 – by reducing the amount of power the utility purchased from wholesale markets during peak times.[1] And in California in 2022, the Emergency Load Reduction Program (ELRP) helped the state to avoid blackouts by paying customers to discharge their batteries during a late August and early September heat wave that threatened to cause significant load shedding events. During California's ELRP events, Tesla aggregated batteries from more than 4,500 customers to provide up to 30 megawatts of reliable capacity.

In these successful load reduction program, customers are compensated for providing value to the grid by helping to avoid blackouts, avoid the dispatch of dirty and expensive forms of generation, and avoid unnecessary stress on grid infrastructure. As such, customer compensation under load reduction programs is an exceptionally low-cost option to incentivize battery deployment because it simply compensates customers for money that might have been spent elsewhere.

By providing incentives for battery that participate in a load management program, HB 0839 lays the groundwork for Maryland to initiate its own such program and to compensate customers for participation. However, it is important that such a program should follow best practices that have proven to provide beneficial results in other states: allowing for third parties to control customer dispatch rather than allowing for direct utility control, compensating customers for the energy they provide while not penalizing them for nonperformance, and providing sufficient compensation to customers to incentivize the desired level of participation.

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[1] "GMP Nearly Doubling Energy Storage Through Innovative Agreements to Boost Savings for Customers While Transforming Grid." *Green Mountain Power,* 27 Sept. 2022, https://greenmountainpower.com/news/gmp-nearly-doubling-energy-storage-through-innovative-agreements-to-boost-savings-for-customers/

Conclusion

Passage of HB 0839 would help increase deployment of residential battery storage systems in Maryland by providing incentives and removing barriers. Thank you for the opportunity to provide testimony on this bill.

Sincerely,

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