DTE

Written Comments:

House Bill 4477

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DTE

Good morning Chairman Bellino, Vice Chair Wendzel, Vice Chair Lasinski, and members of the House Energy Committee. My name is Marco Bruzzano and I am the Vice President of Distribution Operations for DTE. Thank you for providing me with the opportunity to come share our perspectives on House Bill 4477.

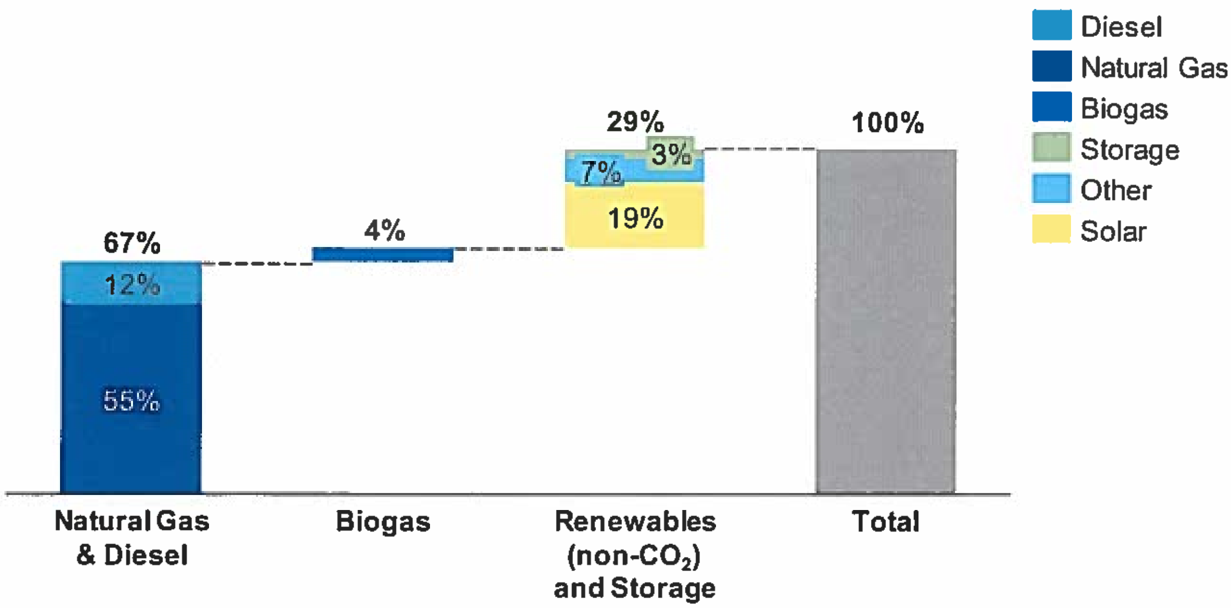
DTE strongly supports the goal of ensuring reliability and resiliency for all customers, and particularly for ones that operate critical infrastructure. Today I am testifying in opposition to House Bill 4477 because it is not necessary to meet this goal. In my remarks, I will focus on four broad areas:

1. First, customers who wish to build a microgrid can do so today. There are no laws or regulations prohibiting their construction – the main reason customers choose not to do so is because microgrids are expensive.
2. Second, critical infrastructure customers already have a significant level of resiliency.
3. Third, the legislation would allow microgrid owners to be subsidized by other customers.
4. And fourth, the language in the bill is ambiguous and therefore could be difficult to implement and administer.

A microgrid is defined as a group of interconnected loads (such as commercial buildings, homes, industrial sites) and distributed energy resources with clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. It can connect and disconnect from the grid to enable it to operate in both grid-connected or island mode. When it is not connected to the grid (island mode), a microgrid can be thought of as a mini-utility, especially if it were built to serve more than one customer.

Microgrids come in many different configurations and are highly customized based on both their specific application and on the objectives of their owners and operators. Existing microgrids include a host of different technologies, including diesel generation, gas turbines, solar and battery storage. When a microgrid is designed to provide power for more than just a few hours, it invariably includes some form of non-renewable generation. As seen in Figure 1 of my testimony, independent data show that currently nearly 70% of microgrid generation capacity in the United States is powered by natural gas and diesel.

Figure 1. 2018 Microgrid Operational and Planned Capacity



Source: ICF Microgrid Technology Trends 2019

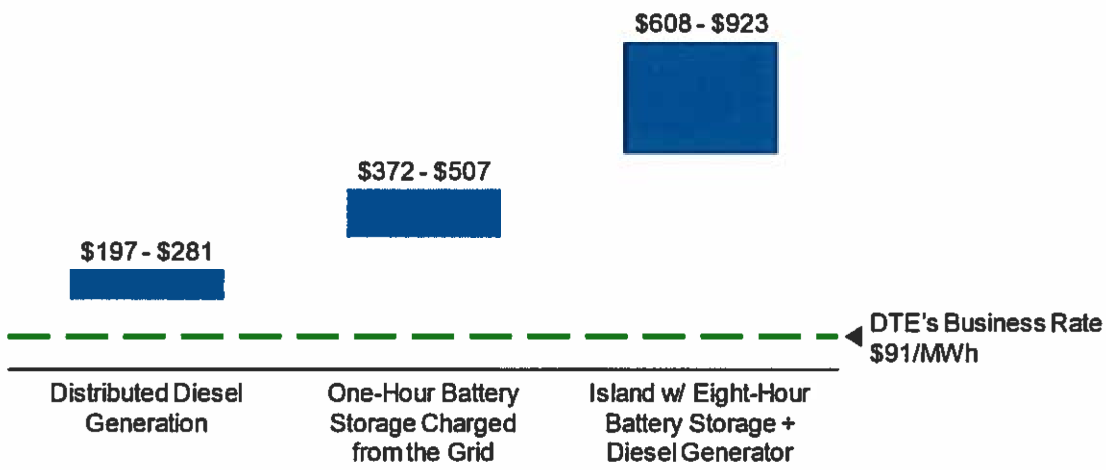
Current Michigan regulations allow any customer that wishes to build a microgrid on their premise to do so. There are well established national electric standards that govern how microgrids are interconnected to the broader grid to guarantee safety, reliability and power quality for all customers. Although customers in Michigan can build a microgrid today, very few have chosen to do so, and only two commercial customers are currently operating small microgrids for research and testing purposes, while DTE operates one microgrid in the Thumb.

At a national level, microgrids represent about 0.6% of US generation capacity. This is because microgrids are more expensive than other well established options for improving system resiliency. I have included in my testimony independent data on the cost of three different sources of backup power.

- Distributed diesel generation, which is simply a backup generator at a customer's facility.
- Battery storage that is charged from the grid and can deliver one hour of supply in the event the grid loses power.
- A microgrid designed to disconnect from the grid and provide backup generation by using eight hours of battery storage and a diesel generator.

As can be seen in Figure 2, a microgrid that functions completely independently from the grid (in island mode) is the most expensive option by a wide margin, especially when compared to traditional diesel backup generation. And all options are well above the cost of service provided to business customers (commercial and industrial) by DTE today.

Figure 2. Cost of Back-up Generation ($/MWh)



Source: Lazard Levelized Cost of Storage 2016, Lazard Levelized Cost of Energy 2017, EIA

I do not wish to convey that a microgrid may not be an appropriate solution in any situation. In hard to reach areas for which providing redundant power and for which restoration of service during an outage could take a significant amount of time, a microgrid could indeed be an appropriate, though still costly, solution. For example, San Diego Gas & Electric built a microgrid to Borrego Springs, California, an isolated community in a desert state park, next to the Santa Rosa Mountains Wilderness.

- The Borrego Springs community has approximately 3,000 residents and lies at the far end of a transmission line. The area experiences severe weather, including flash floods, lightening and high winds, leading to frequent power outages.
- After a fire burned down the transmission line, the utility built a 4MW microgrid to provide resiliency.
- The primary generation source for the microgrid is diesel generation. The microgrid also includes a battery and rooftop solar installations.
- The project was heavily subsidized by the Department of Energy which funded more than half of the costs.
- The utility operates and maintains the microgrid.

To give a further example, DTE has also considered microgrids to serve customers in hard to reach areas. Harsens Island, which is a small island community with 2,000 residents on the delta of the St. Clair river, is served by a single underwater cable. The cable had to be replaced to ensure continued reliable service to the island and the cost was estimated at $7 million. DTE evaluated whether it might be more cost effective to install a microgrid that could serve all the island's power needs. With the help of an outside engineering firm, several options were evaluated. The cost of a microgrid large enough to serve the island was $29-34 million, more than four times the cost of replacing the cable.

One of the most important ways to provide resiliency is to design it in from the start, and this is often accomplished by having two or more independent and fully redundant electrical feeds. Another common approach is to build backup diesel generation that can be quickly turned on in the event of a power outage. For many critical customers, such as hospitals and water treatment facilities, the level of resiliency required is specified by regulations.

When it comes to some of the critical infrastructure in DTE's service territory, we know that: 100% of Level 1 Trauma Centers have redundant electrical feeds and 97% of the Great Lakes Water Authority's critical sites, which include water pumping stations and water treatment facilities, also have multiple feeds.

For an illustration of the resiliency that is already in place for critical infrastructure, we can look to the March 2017 wind storm, the largest storm event in DTE's history. Michigan experienced near hurricane-force winds for many hours, causing 800,000 customers, which is a third of our customer base, to lose power. During the storm, all major hospitals and Great Lakes Water Authority facilities continued to operate.

The most significant change introduced by this legislation is that it prohibits "electric utilities from charging standby rates to microgrids owned by a person other than the electric utility." This is a fundamental change to existing energy legislation. When a customer is connected to the grid, even if they have their own source of generation, DTE must have sufficient power to support them at any time – we refer to this as standby service.

The amount of generation DTE is required to have available to serve its customers is clearly specified by regulations that are designed to protect the stability of the entire grid. Standby service means that if a customer's generation is not producing power for any reason, DTE's generation will be available to support them any time it is called upon.

If a customer wishes to disconnect completely from the grid and only utilize their own microgrid, they can do so today. In that case, they would not be charged a standby rate. But if a customer remains connected to the grid, DTE must plan for, build and maintain the generation required to supply them. There is a cost for doing so, which we recover through the standby rate.

DTE must incur costs for all customers that are connected to the grid, whether they utilize this capacity every day or only occasionally. We view the elimination of the standby rate as a clear subsidy for microgrids built by private entities. Eliminating the standby rate would be equivalent to wanting insurance coverage but asking to not pay the monthly premiums. Insurance only works because everyone that may one day need it pays into the system.

Lastly, the language in the bill is ambiguous and therefore could be difficult to implement and administer. The legislation mandates that a utility establish a microgrid for any facility deemed critical, "unless a person other than that electric utility … establish the microgrid." The definition of critical facilities contained in the legislation is extremely broad, and could number in the hundreds or even the thousands, meaning that an outcome of the legislation could be to require the state's utilities to build hundreds or thousands of individual microgrids.

Furthermore, the legislation is ambiguous in its wording around who would be responsible for paying for the operations and maintenance of the microgrid. One interpretation of the legislation could be that it would both require the utility to establish microgrids and pay for their operations and maintenance costs without having the ability to recover these costs.

In the case in which a private entity establishes a microgrid to serve non-critical facilities, the legislation effectively allows for the creation of "mini-utilities". This introduces questions around how these new utilities would be regulated, how rates for customers inside the microgrid boundaries would be set, and how private entities operating a microgrid would ensure safety and reliability for all customers inside the microgrid, along with the cybersecurity of the microgrid and of the grid itself. Other complex questions that would need to be addressed include what might happen if a microgrid operator serving non-critical customers elects to cease operations or if a customer served by the microgrid wishes to return to utility service.

In closing, Chairman Bellino and members of the Committee, I want to thank you for the opportunity to come before you today. At DTE, we believe it is important to continue having thoughtful discussions on the transformation of the grid and the technologies that will be a part of Michigan's energy infrastructure. Grounding energy policy in the principles of fairness and equity for all customers will support the state's transition to a cleaner energy future while ensuring safe, reliable and affordable power for everyone.