



Slide 1: Greetings. This is the fourth in our series of Developing Town Center Microgrid webinars. All the webinars, the report, and accompanying Fact Sheets can be found at www.microgrids.io.

Today, public policy challenges have the potential to impact the technical and economic feasibility of Town Center Microgrids. While several of them affect TC microgrids directly, we will find that many of them broadly affect many microgrids and distributed energy resource projects. Let's take a look.



Slide 2: Over the last several years, the original town center microgrid goals of resilience and reliability have been supplemented by increased societal and political attention to climate change. This has resulted in sustainability and decarbonization goals being added to TC microgrid considerations.

These goals have resulted in discussion about how to balance the competing objectives. This includes placing non-carbon fuel supply technology in a TC project against the reality of when that supply will be sufficiently developed or comparable to the cost, resilience, and reliability attributes of carbon sources.



Slide 3: This current mismatch of energy supply cost, evolving technology, and advocacy of decarbonization policies presents a policy conundrum when considering microgrids.

For example, traditional microgrid industry practices and investments rely on natural gas as fuel for electric supply generation sources such as CHP and fuel cells. This reliance is becoming undermined as being inconsistent with decarbonization policies.

CLIMATE CHANGE AND DECARBONIZATION

LESS SHORT-TERM RESILIENCE
MORE SHORT-TERM CARBON REDUCTION
TRADE-OFF
MORE SHORT-TERM RESILIENCE
LESS SHORT-TERM CARBON REDUCTION



Slide 4: At the same time, decarbonization concerns are aligned with adverse climate change weather events. TC microgrids are a response to that concern. This implies that some microgrid projects may need to address the risk of local climate change and decarbonization by trading off short-to-medium term localized resilience in exchange for the longer-term benefits of CO2 reduction.

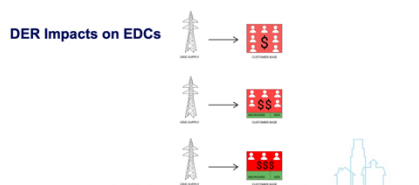
In other words, a cause of the adverse-weather conditions, natural gas-generated greenhouse gases in the atmosphere, is harnessed to address the outcome of those same adverse weather events that can knock out the local EDC grid.

If a carbon source is used as microgrid fuel over the short-to-medium term, it is hoped that the costs of non-carbon supply will come down enough to supplant gas. At present, our study shows that if carbon-based fuel supply is excluded from a TC microgrid, that project may be financially unsound. And that adds to the financial risks we discussed in the last webinar.

Does this circumstance warrant a trade-off of more stable, longer-term resilience in exchange for a smaller amount of carbon reduction? Policymakers, regulators, and local officials need to engage in serious, multi-faceted discussions on how to address the question.

This also emphasizes the need for what we discussed earlier: due diligence, careful analysis, and understanding of proposals that are essential for decision-makers.

DER PROLIFERATION and ITS IMPACT ON EDCs



Slide 5: This leads us to another policy challenge.

The economics of microgrids generally incentivize distributed energy resource investments by those who can economically or environmentally benefit in replacing their grid-based supply. When a new TC microgrid or DER-driven facility leaves the grid as a primary customer, the EDC

loses rate-based customer payments used to support grid-regulated operations. As microgrids and DER become more affordable and accessible to more customers, their value is amplified and EDC customer losses increase.

Because these microgrids can lower a facility owner's costs, we now have a growing market of investors that see reliable, if not lucrative TC and other microgrid investment opportunities.

That said, it is important to highlight that, in some circumstances, DER departures can reduce grid congestion and supply issues to the benefit of the EDC. Microgrid-based DER can, under controlled circumstances, support the grid by providing added capacity and ancillary services such as voltage support. On the other hand, managing multiple sources of DER when a usually off-grid microgrid requires grid supply presents technical challenges to the EDC grid operators.

When these actions move beyond their control, EDCs may not be able to respond with competitive tariff-based solutions. Ultimately, the loss of former-customers-now-DER-users' revenue affects EDC profitability and returns to their investors, and that can lead to higher rates or reduce services to those remaining on the grid.



Slide 6: Taken together these circumstances present that policy conundrum I referred to earlier. Unless carefully managed through the regulatory process, expanded microgrid and DER resources can have the economically and societally perverse effect of spreading fixed grid costs over a reduced rate-payer base and contributing to higher consumer rates. In a worse-case scenario, this can contribute to the so-called regulated utility "death-spiral," with its own highly complicated societal and financial market impacts.

There are potential regulatory solutions to some of these challenges. These include exit fees, blue sky access or intermittent connection fees, specialized DER or critical facility microgrid tariffs, charges for developing behind-the-meter supply, or even EDC authority to develop or maintain their own DER. They also include payment structures to facilitate microgrid development that can enhance grid operation or otherwise make valued cost-effective services available to the grid.

POTENTIAL POLICY SOLUTIONS

Failure to Impose Fees/Develop Policies:

- Shift the burden of grid costs/impose stranded investment costs;
- Create inequitable disadvantages
- Deprive microgrids of needed compensation
- Weaken financial capacity of EDCs



Slide 7: Now, on the other hand, failing to develop informed policies, regulations, and fee structures can:

- Shift the burden of grid costs and impose stranded investment fees on those remaining in the EDC system;
- Create inequitable disadvantages to those without the financial capacity to lower their energy costs;
- Deprive microgrids of the compensation needed to incentivize their contributions to the grid; or
- Weaken the financial capacity of EDCs to meet their societal obligations.

If microgrids are to proliferate, an informed regulatory regime and/or grid policy guardrails are prerequisites. Grids must also be able to develop the managerial, financial, and technological capacity to address these risks.

At present, these challenges have few if any ready responses; afterall, the industry is in the middle of a disruption. The next step, already started in some states, like California, Hawaii, and New Jersey, should be deeper research and pilot programs that consider how these issues are addressed.

