



# Maryland Interconnection Standards

## Small Generator Interconnection Standards

CHP systems and other distributed generation may be interconnected to the grid because they are sized to meet only a portion of a site's electric demand and power from the grid is needed to provide the remaining demand. In the state of Maryland, grid electrical interconnection is covered under the Code of Maryland Regulations, often referred to as COMAR, which is the official compilation of all administrative regulations issued by agencies of the state of Maryland. While the Legislature enacts statutes, administrative agencies adopt, amend, and repeal regulations under the authority granted to them by statutes. Unless the Legislature has created an exemption, agencies must follow the procedures in the Administrative Procedure Act when adopting, amending, or repealing regulations. "COMAR Title 20. Public Service Commission Chapter 20.50.09" covers Small Generator Interconnection Standards and was last updated in 2018. Specific language that covers technical reviews (conducted by utilities) of small generator facilities, or multiple small generator facilities interconnecting at a single point, is as follows:



**7.9 MW combustion turbine generator at Aberdeen Proving Ground**

<b>Level 1 procedure:</b>	The facility has a nameplate capacity up to 20 kW.
	The interconnection equipment is laboratory-certified.
	There is no charge for Level 1 applications.
<b>Level 2 procedure:</b>	The facility has a nameplate capacity rating of 2 MW or less.
	Interconnection equipment is laboratory-certified or field-approved.
	Interconnection is to a radial distribution circuit or a spot network serving one customer.
	Level 1 review not approved, and a new interconnection request has been submitted for consideration.
<b>Level 3 procedure:</b>	The application cost is \$50 plus \$1 per kilowatt of rated generating facility output.
	An interconnection request is sent to area networks and radial distribution circuits when electric power is not exported to the electric distribution system.
	The charge for this procedure is \$100 plus \$2 per kilowatt of rated generating facility output.
<b>Level 3 a:</b>	The request is evaluated based on the criteria below (Level 3 a and Level 3 b).
	The load side of an area network has a nameplate capacity less than or equal to 50 kW.
	The proposed small generator facility utilizes a laboratory-certified inverter-based equipment package.
	The facility uses reverse power relays to prevent the export of power into the area network.
	Aggregate of all generation on the area network does not exceed the smaller of 5 percent of an area network's maximum load or 50 kW.
<b>Level 3 b:</b>	Construction of facilities by the electric distribution company is not required to accommodate the small generator facility.
	The facility has a nameplate capacity up to 10 MW.
	The facility uses reverse power relays that prevent the export of power into the electric distribution system.
	The aggregate of all the generators on the circuit is 10 MW or less.
	The generator is not served by a shared transformer.
<b>Level 4 procedure:</b>	Construction of facilities by the electric distribution company is not required to accommodate the small generator facility.
	The interconnection request cannot be approved under a Level 1, Level 2, or Level 3 review.
	The charge for this procedure is \$100 plus \$2 per kilowatt of rated generating facility output.

On September 26, 2016, the Public Service Commission (PSC) initiated Public Conference 44 for the purpose of “commencing a targeted review to ensure that electric distribution systems in Maryland are customer-centered, affordable, reliable and environmentally sustainable.” The Commission established five working groups, one of which was the Interconnection Process Working Group (WG). The WG held numerous meetings and discussed various customer protection options. This process culminated in the filing of a request to initiate a rulemaking on November 21, 2017, in which the PSC WG lead submitted several recommended COMAR revisions concerning generators. On January 23, 2018, the Commission held a rulemaking session to consider the proposed draft regulations. On March 16, 2018, the PSC WG lead submitted modified versions of the proposed COMAR revisions. The revised COMAR regulations were published in the July 20, 2018, Maryland Register, and the Commission adopted the revised regulations as final on September 5, 2018.

## Summary of Policy Results and Outcomes

The principle issue with revised interconnection standards affecting combined heat and power (CHP) in Maryland involved utility communication and direct transfer trip (DTT). DTT communicates a trip signal to the CHP plant (e.g., if a substation relay detects fault on the feeder, a trip signal is communicated to the CHP plant and trips the CHP breaker). The advantage of a DTT is a positive avoidance of long-duration islanding. The disadvantages are that DTT has been traditionally viewed as costly, is complicated to implement where feeders can be reconfigured, and generally does not avoid short-duration islanding. IEEE 1547<sup>1</sup> covers DTT communication media that can incorporate leased telephone lines, dedicated fiber cable, or radio transceivers. Two utilities in Maryland typically require fiber optic cable for DTT communications, and this cable is very expensive. Under the new interconnection rules, the Commission could also require CHP systems 2 MW and below to install fiber optic cable for DTT. This was not a requirement under the previous standards and could be cost-prohibitive for small CHP systems in the future. The new standard states:

- Monitoring and control<sup>2</sup> for a small generator facility under 2 MW, utility monitoring or control is not permitted unless:*
- The Commission approves a utility monitoring or control plan addressing such facilities in the aggregate; or*
  - The customer consents to utility monitoring or control.*

## Lessons to Share

- Statewide policy changes that are controlled by large stakeholder groups can be complex and time-consuming.
- Interconnection issues are largely influenced by the incumbent utilities.
- In Maryland, stakeholders representing inverter-based generating technologies (solar and wind) were well-represented in the WG and had a major impact on the interconnection discussion.
- Battery storage systems are a growing voice in interconnection discussions.
- To ensure issues affecting CHP are carefully considered, CHP stakeholders should participate in stakeholder discussions and working groups.

### Resources:

- *Maryland Interconnection Standard<sup>3</sup>*
- *Transforming Maryland's Electric Grid (PC44)<sup>4</sup>*
- *PC44 Interconnection Work Group<sup>5</sup>*

## For More Information

**U.S. DOE MID-ATLANTIC CHP TECHNICAL ASSISTANCE PARTNERSHIP (CHP TAP)**

[www.machptap.org](http://www.machptap.org)

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<sup>1</sup> IEEE 1547-2018 is the Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

<sup>2</sup> DTT communication falls under small generator monitoring and control.

<sup>3</sup> <http://mdrules.elaws.us/comar/20.50.09>

<sup>4</sup> <https://www.psc.state.md.us/transforming-marylands-electric-grid-pc44/>

<sup>5</sup> <https://www.psc.state.md.us/search-results/?q=rm61&x.x=0&x.y=0&search=all&search=rulemaking>