Connecticut Distributed Generated Interconnection Working Group Meeting Summary

State of Connecticut Public Utilities Regulatory Authority
Office of Education, Outreach & Enforcement

July 23, 2024

Overview of Meeting Topics:

- Proposed interconnection fee cost adder for 2025 calendar year
  - See PURA's December 20, 2023 Decision in Docket No. 22-06-29, *PURA investigation into DER interconnection cost allocation*
  - https://www.dpuc.state.ct.us/FINALDEC.NSF/811195c865ca31ba852588e2005e7a7d/6a7fe4ea734c739b85258a8b006da08d/$FILE/220629-122023.pdf
- Review of energy storage interconnection practices in other jurisdictions, intended to ensure distribution system reliability while minimizing necessary interconnection/grid upgrade costs
  - See PURA's November 29, 2023 Decision in Docket No. 23-08-05, *Annual energy storage solutions program review—Year 3*
  - https://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/d7b4cb81bf3765ea85258a7600551890/$FILE/230805-112923.pdf

Topic 1: 2025 interconnection fee cost adder

Brian Rice (Eversource) expressed that the initial $25 fee for project upgrades was a reasonable starting point, and more data is necessary before the EDCs feel comfortable proposing any changes to that number; data remains limited, given that the fee was implemented only recently. To date, Eversource has collected <$30k from 1,500 fees, and only 100 out of 3,700 applications have required upgrades. Of these, only 13 upgrades remain incomplete.

Eversource suggests that at least six months of data should be collected before considering adjustments. Data including the percent of projects that required upgrades (over a longer period of time), the average cost of upgrades (including the range of those costs), when the upgrades occur, etc. would all be helpful.

No parties expressed concern about Eversource's response.

Topic 2: Jurisdictional overview of energy storage interconnection practices

1. Order 28 from PURA's November 29, 2023 Decision in Docket No. 23-08-05, *Annual energy storage solutions program review—Year 3* directs EDCs to explore energy storage interconnection practices in other jurisdictions, "specifically in cases where other utilities have adopted storage interconnection requirements intended to both ensure distribution reliability and minimize unnecessary interconnection and grid upgrade costs (i.e., smart interconnection requirements, discharge limiting schedules for energy storage interconnections, etc.)."
    a. EDCs directed to compare their energy storage interconnection proposal from the prior year to these practices to determine if their proposal requires revision and must present their proposal and their jurisdictional overview to the IX WG.
2. EDCs used IREC's BATRIES toolkit as a methodology basis for their jurisdictional assessment. Evaluated practices in MA, NH, NY, Maine, and CA, as well as IREC's 2023 model interconnection practices.
3. IREC's BATRIES toolkit broken up into eight chapters (Chapters II–IX). EDCs' analysis is summarized in accordance with those sections.

EDCs' jurisdictional overview, broken up into chapters in alignment with IREC's BATRIES Toolkit

Chapter II: Updating IX procedures to be inclusive of storage

1. EDCs' guidelines sometimes use generic terminology—this chapter recommends that terminology be highly specific and clearly defined
2. CT currently has a glossary—EDCs recommend updating the glossary, defining all terms that need to be used
3. **EDCs' recommendation:** Update language to be more specific/modern
    a. Update terms for consistency with IREC
    b. Need to ensure that guidelines language is inclusive of energy storage

Chapter III: Requirements for Limited and Non-Export Controls

1. CT guidelines are silent on limited export, but has always allowed export
    a. Guidelines lack specific track or screen for export. Have traditionally asked developers to decide how they want to handle export.
2. *Val Stori, GPI:* Is Eversource proposing or limiting any power control technologies, or is Eversource technology-neutral so long as the technology meets specs?
    a. Joe Debs, Eversource: The technology must meet specific IEEE standards, but beyond that generally try to be technology-neutral.
3. *Sergio Carillo, CTGB:* Seeking clarification—Eversource has always allowed exports if it is requested, but not by default.
    a. *Joe Debs, Eversource:* Yes, and bulk of storage IX projects are standalone projects. Will discuss this in greater detail in next section.

b. *Sergio Carillo, CTGB:* What would be the consequences of letting export be the default?
    i. *Joe Debs, Eversource:* Depends on a number of factors. (e.g., for a project with hosting capacity of 1 MW that chooses to export <1MW, it's possible that there won't be upgrades. But if you choose to export above 1MW, upgrades are possible.)

4. **EDC recommendations:**
    a. Need to expand language while remaining technology-neutral, allowing any viable technology that meets requirements.
    b. Emphasis on standard compliance and certification.
    c. Expand non-export and limited-export provisions to include Power Control Systems (PCS) and certification requirements.
    d. Add language for limiting power plant production (e.g., inverter derating).

Chapter IV: Evaluation of Non-Export and Limited-Export Systems During the Screening or Study Process

1. Evaluation of non- and limited-export systems often based on unrealistic assumptions, leading to overestimated grid impacts.
    a. Some utilities use full nameplate rating (assuming full export), resulting in high upgrade costs.
    b. Eversource asks that applicants specify how they plan to operate their systems to ensure accurate assessments.
        i. In CT, developers are encouraged to submit operational requirements, including maximum export.
        ii. Impact studies are based on these operational requirements; without specifics, the system is studied based on full export, regardless of whether this is the developer's planned operational scheme.
2. *Jamie Spannhake, EOE:* If someone provides this information, are they required to stick to it? Can it be changed later?
    a. *Joe Debs, Eversource:* Once an impact study is completed it becomes difficult to change without reducing size, changing to more favorable hours, etc. Can potentially change before impact study, but not after.
    b. *Katie Guerry, Covergent Energy and Power:* We build and operate distributed storage, with interconnection applications across multiple jurisdictions. We want to have the charging schedules as part of our assumptions. The notion that they would always be exporting is not realistic. Want to provide as much information as possible to ensure an accurate study.
3. *Val Stori, GPI:* How does it impact timelines and queues if these operational parameters are not included in the initial IA?
    a. *Joe Debs, Eversource:* Between signing the IA, performing study, submitting result, could be approx. 60-70 business days.
4. **EDCs' recommendations:**
    a. Clarify language regarding operational requirements—have applicants specify how they plan to operate their systems to enable more accurate assessments

b. Consider increasing residential Level 1 track from 25kw to 50kw with export limited at 25kw

Chapter V: Defining How to Address Inadvertent Export

1. Most utilities do not address inadvertent export
2. In CT, reverse power relay has commonly been used to prevent or limit export
    a. Recommended minimum set point is 1-10% nameplate rating with a trip time 5-10 sec (IEEE-1547)
3. Have not identified power quality issues in CT related to inadvertent export when using reverse power relay, so EDCs have no recommendations related to this topic

Chapter VI: Improving Grid Transparency

1. Aim to provide as much information as possible in hosting capacity maps
    a. Eversource already provides actual loadflow data on hosting capacity maps in lieu of a 15% screen—the actual data is much better/more useful
    b. This will be integrated into hosting capacity maps once EDCs complete their updates
2. Do not believe a pre-application process is necessary in CT, as the hosting capacity map already provides an upgrade cost estimate, and any information that a pre-application would provide is already available via the Grid Twin tool
3. Flex IX standards for batteries not yet fully developed (MA TSRG group has been discussing this)
4. **Recommendations from EDCs:**
    a. Planned upgrades to hosting capacity maps will help address this
        i. Upgrades to begin in 2025, last ~1 year
5. *Aileen Cole, GPI:* Is there any specific reason why considering a Flex IX pilot isn't a recommendation?
    a. *Joe Debs, Eversource:* Not really, other than that it is very far off. Because Eversource works in MA, there's a possibility that Eversource in CT would follow MA's steps, if that pilot goes well.

Chapter VII: Pathways to Allow for System Design Changes During the Interconnection Review Process to Mitigate the Need for Upgrades

1. Some generation systems are too large or upgrades are cost-prohibitive, requiring size or operation adjustments to reduce distribution system impact.
    a. In CT, Guidelines Sections 3.3 (Customer Meeting) and 3.4 (Supplemental Review) address concerns when a DER fails the screening process
        i. Allows developers to reduce system size to lower upgrade costs
    b. CT guidelines more flexible than those in other states
2. **EDC Recommendations:**
    a. Clarify that system modifications are allowed during the IX process to avoid upgrades.
    b. Consider adding a "System Modification Process" section in the guidelines.

3. *Aileen Cole, GPI:* These recommended changes (if implemented) are going to be happening in the guidelines—is there any improvement that can be made outside of the guidelines (and included in your proposal) to improve accessibility of that info?
    a. *EDC response:* Yes, could add this into a Q&A document or similar to make it easier to find

Chapter VIII: Incorporating Updated Interconnection Standards Into Interconnection Procedures

1. CT guidelines require compliance with latest prevailing IX standards (e.g., IEEE), including a defined Point of Common Coupling
    a. Until the standards are upgraded/changed, there is no need to recommend revisions related to this chapter. Eversource has complied with IEEE standard since 2003 and has always adopted changes as they've occurred.

Chapter IX: Defining Rules and Processes for the Evaluation of Operating Schedules

1. Current CT status:
    a. IX guidelines include schedule, used for impact study (typically use this because developers typically do not provide operating schedules)
    b. Eversource plans on using a Real Time Automation Controller as a means to ensure safe reliable utilization of the operational schedule
2. *Aileen Cole, GPI:* Could you clarify the difference between RTAC and DERMS for Flex IX?
    a. *Answer from Eversource:* RTEC is on a defined schedule, DERMS is totally flexible. RTEC will be an important interface to DERMS in the future
3. Because the IX WG met and developed revised guidelines in Dec 2023, EDCs do not recommend updating at this point.

Discussion and Q&A

1. *Val Stori, GPI:* Could you summarize how the recommendations would meet the requests in Order 28?
    a. *Answer, Eversource:* Recommendations would clarify IX guidelines and establish a more realistic approach to the guidelines, enabling more realistic expectations. Also, hosting capacity map updates (automated) will significant improve timelines. Additionally, clarity improvements are necessary and beneficial. (reminder: they're guidelines)
2. *Sara Pyne, CTGB:* Is Eversource seeing a lot of applications that would benefit from an increase from 25kW to 50kW?
    a. *Answer, Eversource:* Residential track is currently limited to 25kW. But a 20kW battery with a 10kW PV array would push it to Level 2. So this approach could address that.
3. *Val Stori, GPI:* Did you give any consideration to fast-tracking other non-export or export-limited system.
    a. *Answer, Eversource:* Any project >1MW requires ISO review, which makes it tough to fast-track. But do have a fast-track for gen-only <2MW. Automation implementation will help this.

4. *Dana Glubiak, Scale Microgrids:* Looking at entirely behind-the-meter storage projects, but they are being grouped in with larger front-of-meter projects. There is a significant volume of small projects that would equal one front-of-meter project. Dedicated storage resources at the EDC would be helpful. Seems like even some interconnection managers lack important electrical information. This occurs for projects of a range of sizes, including <1MW. However, it does seem like the hosting capacity map updates will be useful.
5. *Sara Pyne, CTGB:* Would a pre-application allow developers to work with utilities ahead of time to identify if projects would be likely to move forward?
    a. *Answer, Eversource*: Pre-application is focused on distribution side, not service side. Pre-application would focus on what substation is being fed from, max/min load, how much generation is on a line, etc. Would not address service configuration. It would mostly accomplish what the updated hosting capacity maps will accomplish, and what EV's existing free tool does.