

TSRG SIMPLIFIED PROCESS *DPU Proposal*

**The Massachusetts
Technical Standards
Review Group**



GROUP NAME Sub-Group Update

Mission Statement:

Update the Simplified Process to: (1) make it more efficient, less costly; (2) build on the consensus updated in DPU 19-55 regarding energy storage and limited export capacity; (3) provide for periodic EDC studies of circuits with lots of small PV interconnections; (4) use a shared system modification fee to support shared secondary system upgrades without additional expense or time delays for applicant,

Expected Group Output:

Updated Simplified Interconnection process: thresholds, screens, reviews, timelines. Identification of new consensus language from DPU 19-55 required to enable new process and thresholds. Agreement to allow EDCs to study circuits after xxx kW of small PV interconnections if no projects have required a study of the circuit during the period. Agreement to pursue higher interconnection application fee to offset shared secondary upgrade costs.

Team			
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Andrew	Schwartz	Tesla	Industry
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Mark	Durenberger	New England Clean	Industry
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Milestone Summary

Completed Activities:

2019 - 2020	EDCs and Industry identified issues with Simplified Process during DPU 19-55 review
Q1 2020	EDCs & Industry updated Simplified Screens per DPU 19-55 Energy Storage Consensus
6/24/2020	EDCs presented to TSRG proposed update to Simplified Screens / process

Upcoming Milestones & Activities:

06/01/2021	Milestone #1
07/01/2021	Milestone #2

Joint Industry and EDC Team Agreed to Updated Simplified Process in 2021. Then the Team Disbanded. No Action Taken.

- Shortcomings of current process became explicitly apparent in DG Interconnection Standards Tariff review performed in DPU 19-55 regarding how to update the Tariff for ESS Interconnections.
- Industry also requested increase to 25 kW AC for single-phase considering the increased residential loads that would be caused by Commonwealth's electrification goals (heating, EVs).
- Utilities wanted to prevent lapse in circuit studies that might occur due to primarily Simplified interconnections—but a large amount cumulatively that might trigger need for upgrades.
- Industry wanted to avoid free-rider issue where only one DG project in a neighborhood (on a shared secondary) would be obliged to pay for a transformer upgrade. A common system modification fee offers a more equitable approach to shared secondary upgrades.
- Through DPU 19-55, consensus was reached to focus on Export Capacity and the capabilities of certified Power Control Systems for Simplified Systems. Consensus was reached on key enabling language to be included in an updated DG Interconnections Standards Tariff. But the updates were never incorporated due to lack of progress / disagreements regarding the Standard ESS process.
- Since the Updated Simplified Process was dependent on DPU 19-55 enabling language, the team awaited the DPU to open an ESS Interconnection Docket before advancing the new process and circuit study proposals. Three years later, the DPU has opted not to address ESS Interconnections. It is time to advance Simplified.

Current Process Outdated, And Often Not Followed.

Screen 2: Applied when convenient. Intended to estimate DG penetration relative to minimum load. Use to justify use of Expedited process when Transformer upgrades required.

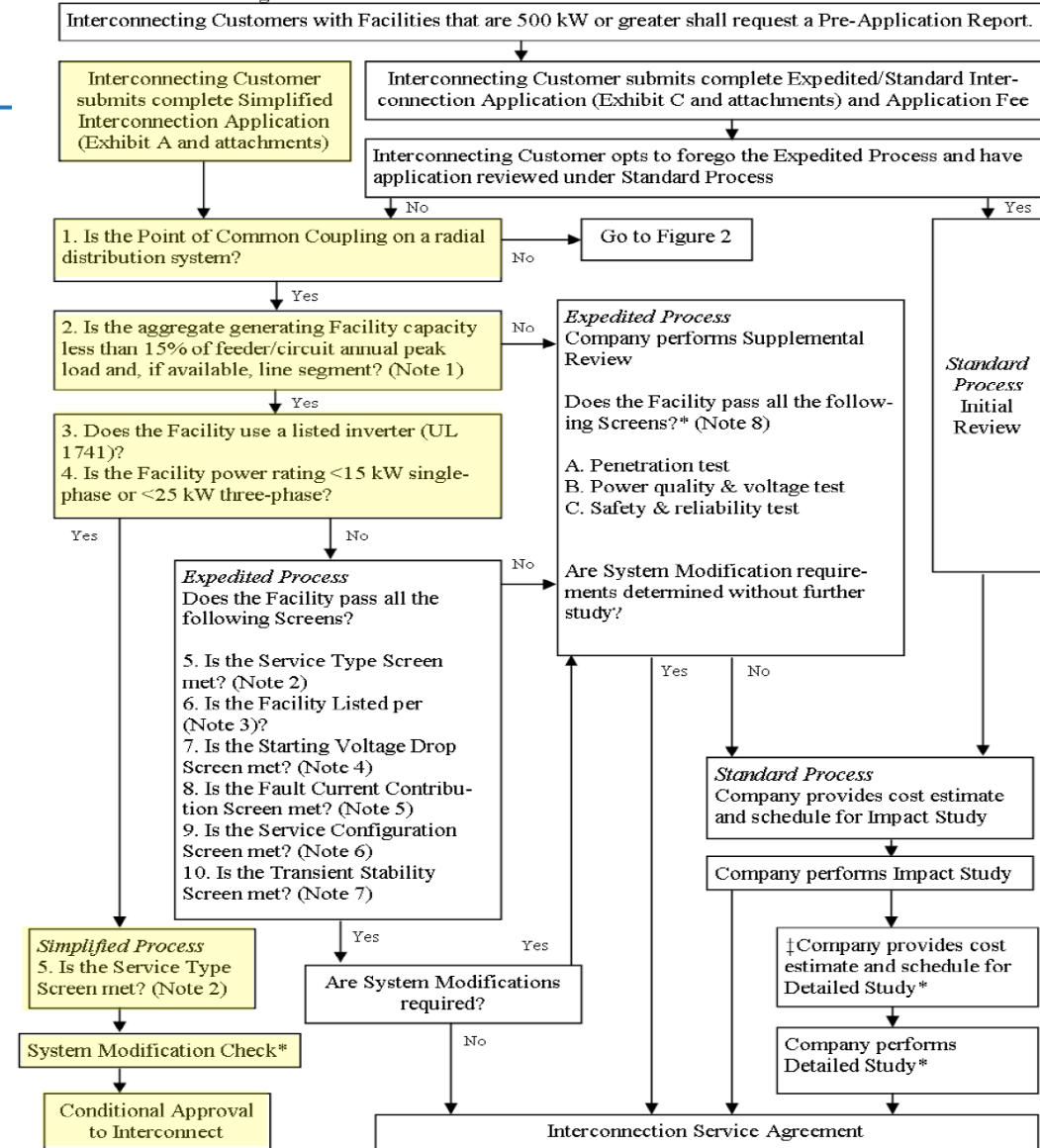
Screen 4: Single-phase 15 kW AC size limit no longer reflects residential capacity required for self-generation and ability to achieve net-zero. Does not consider new inverter, battery and transfer switch capabilities.

Screen 5: Sometimes referenced as review allowing for secondary transformer upgrades...but that is not how it's defined in the Tariff. Modifications often require re-applying under Expedited Process.

Existing Simplified Process

STANDARDS FOR INTERCONNECTION OF DISTRIBUTED GENERATION

Figure 1 – Schematic of Massachusetts DG Interconnection Process



*Only if required

†If a Detailed Study is required, the Interconnecting Customer may request an Interconnection Service Agreement before the Detailed Study is completed. Refer to Section 3.4.

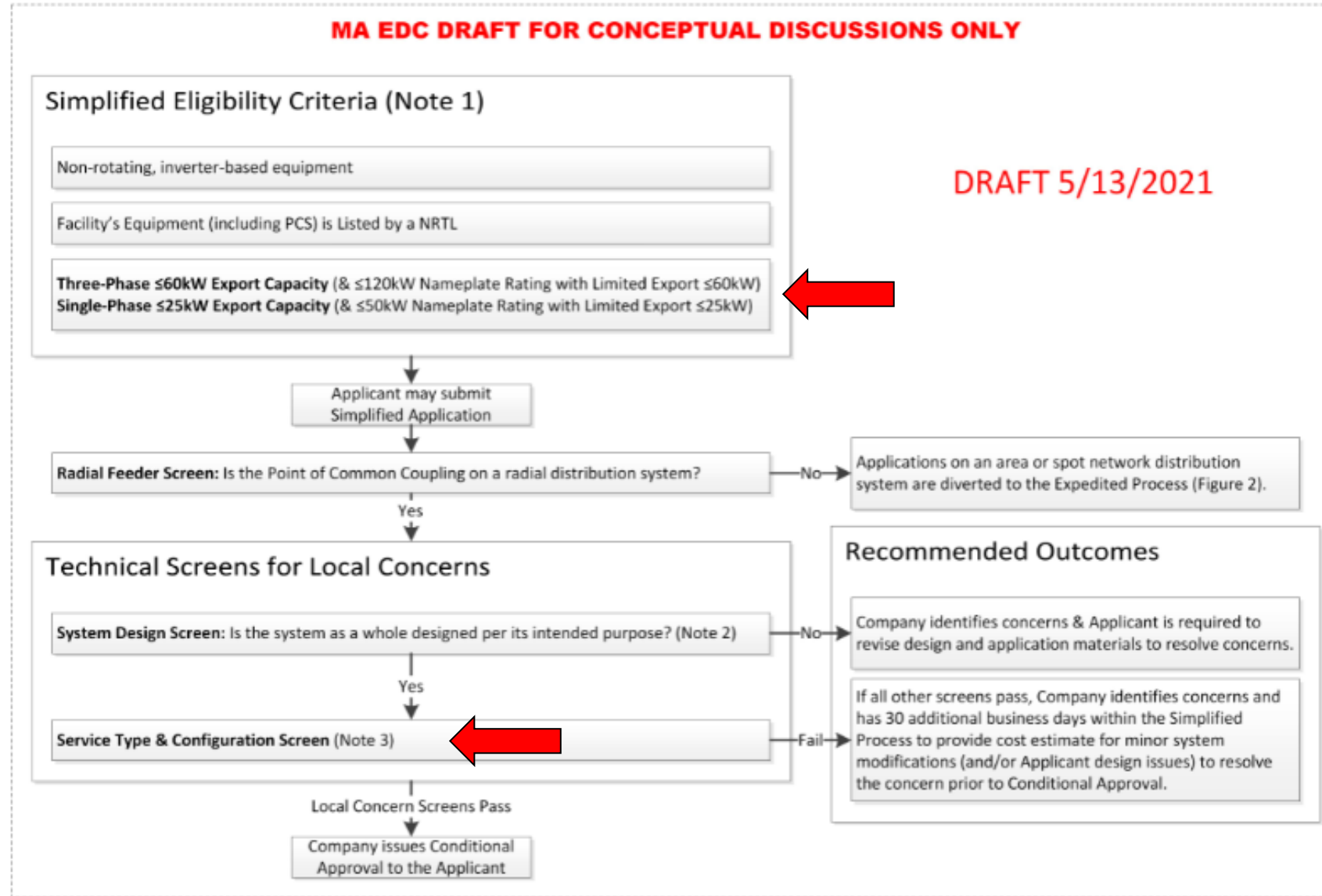
Faster, Broader, More Equitable Approach

Recognizing new inverter and PCS capabilities, allows for:
25 kW AC Single-phase “Export Capacity” and 50 kW AC “Nameplate Capacity”
60 kW AC Three-phase “Export Capacity” and 120 kW AC “Nameplate Capacity”

Individual applicant not required to pay for Shared Secondary Upgrades. Such upgrades may delay interconnection, but does not require re-applying as Expedited

Proposed Simplified Process

Figure 1: Simplified Eligibility and Screening Process



New Screens Explicitly Include Shared Transformer Limits and Other Potential Service Quality Concerns

Figure 1 Note 3 – Service Type & Configuration Screen:

Mismatching Configurations: This screen includes a review of the type of electrical service provided to the Interconnecting Customer, including the service transformer configuration and service type to limit the potential for creating unacceptable voltage imbalance, over-voltage or under-voltage conditions, or service equipment overloads on the Company EPS due to a mismatch between the size and phasing of the energy source, the service loads fed from the service transformer(s), and the service equipment ratings.

Primary Distribution Line Type	Type of Interconnection to Primary Distribution Line	Screen Result
Three-phase, three-wire	Three-phase, phase-to-phase	Pass
	Single-phase, phase-to-phase	Pass
	Other configurations	Fail
Three-phase, four-wire	Effectively-grounded three-phase	Pass
	single-phase, line-to-neutral	Pass
	Other configurations	Fail

New Screens Explicitly Include Shared Transformer Limits and Other Potential Service Quality Concerns

Note 3 (Cont.)

Secondary Voltage-Rise: The purpose of this screen is to maintain the +/-5% voltage boundaries for the nominal service voltage at the Point of Common Coupling for all customers (including other customers in the general vicinity of the proposed Facility).

Shared Overhead: If the Facility is to be interconnected on a single-phase overhead transformer that includes at least some portion of shared secondary conductor, the aggregate Export Capacity on the shared secondary, including the Facility's Export Capacity, will not exceed: (a) 25 kilovolt-ampere ("kVA"); (b) the kVA nameplate rating of the service transformer; or (c) a KVA threshold that in combination with the secondary conductor will be likely to cause the voltage on the secondary conductor to be greater than 5 % nominal service voltage.

Shared Underground: If the Facility is to be interconnected on a single-phase underground transformer that includes at least some portion of shared secondary conductor, the Facility shall fail this screen and require additional review unless the Company has sufficient information readily available at the time of the screening review to make a determination that voltage-rise concerns are unlikely once the Facility is operational.

Dedicated Overhead or Underground: If the Facility is to be interconnected via a dedicated single-phase transformer (and/or on a dedicated service drop or underground service conductor) that does not include any shared-secondary conductor, the aggregate Export Capacity on the dedicated secondary, including the Facility's Export Capacity, will not exceed (a) 25 kilovolt-ampere ("kVA") or (b) the kVA nameplate rating of the service transformer.

Other Considerations: For overhead service transformers (regardless of whether the Facility is to be connected via a shared or dedicated configuration), if the Facility is to be interconnected on an existing single-phase service drop consisting (at least in part) of #4 size conductor, the Company may determine that the Facility fails this screen and requires additional review. For any other conductor sizes or service configurations that are not explicitly listed in this screen but are likely to cause voltage-rise concerns once the Facility is operational (based on the information that is readily available to the Company at the time of the screening review), the Company may determine the Facility fails this screen and requires additional review. If the Company identifies additional common scenarios that lead to voltage-rise concerns for Facilities that would otherwise have passed this screen based on the aggregate Export Capacity threshold, it will post examples or descriptions of those scenarios on its website and/or in its technical standards.

Note 3 (Cont.)

Center Tap Neutral: If the Facility is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, it will be evaluated under the Expedited screening process (see Figure 2). Additionally, regardless of Nameplate Rating or Export Capacity of the Facility, the applicant must provide an electrical one-line diagram with a P.E. stamp from an electrical engineer certified in Massachusetts, and the label "Center Tap Neutral Configuration" must be prominently displayed on the diagram.

Industry Agrees with the EDCs that a Circuit Planning Solution Is Also Required to Prevent Circuits Saturated by Simplified ISAs

DER Planning Analysis Screens

(Aggregate DER on Circuit/Substation)

Distribution Planning Analysis for Aggregations of Simplified Applications (Note 4)

Power Flow Screen: Is the aggregate Export Capacity on the circuit less than 67% of circuit minimum load (and, if available, line segment minimum load)?

Substation Saturation Screen: Is the aggregate Export Capacity at the substation less than 67% of the minimum load on the substation bus when any individual circuit is taken out of service?

Simplified Aggregation Screen: Is the aggregate Nameplate Rating of Simplified Applications of the circuit less than 250kW since the last engineering analysis was performed on the circuit?

Any
No →

Recommended Outcomes

At the discretion of the Company, if any Distribution Planning Analysis screen fails, an internal process occurs at the Company to evaluate whether further action is required. **Individual applications are not delayed.**

Given Uncertainty About DPU Action on ESS Interconnection Proceeding, and Recent Legislative Action, Industry Requests EDC Collaboration to Petition the DPU to Update Simplified

- Legislature recently increased threshold for full net metering for single-phase to 25 kW AC. The proposed Simplified thresholds will align the net metering threshold, reducing persistent confusion and frustration for residential (and small commercial) installers and customers. It also aligns with DOER's definition of "Small" solar in their incentive programs.
- Given the time required to update the Distributed Generation Interconnection Standards Tariff, there is no longer time to wait if we want to stay in step with the updated Net Metering thresholds.
- Given the "bandwidth" issue at the DPU and the many competing, urgent issues that the DPU must address, it is not likely that the DPU will open an ESS Interconnection Standards Tariff upon their own volition in the next few months. The ESIRG continues to work on ESS issues that will hopefully make that proceeding easier, but the ESIRG has also not formulated an updated tariff proposal for the Standard ESS Interconnection process...nor one for Expedited ESS.
- Besides recent changes to the Massachusetts Fire Code, the update to the Simplified process is the #1 regulatory/policy priority for residential and small installers in Massachusetts. The wait is over. It is time to act. Industry requests EDC collaboration to make the process fast and easy.