

RE Growth Updates: Interconnection Issues, Tax Policy and RES/NEPOOL Registration

Rhode Island Distributed Generation Board Meeting
June 15, 2015



Agenda

- Existing Interconnection Replacement System Requirements
- Anti-islanding and Direct Transfer Trip (DTT)
- Alternatives to DTT
- ISO-NE Operating Procedure 14
- RE Growth Tax Policy
- Secure Submittal of Data
- RES/RPS and NEPOOL assignment and REC creation

Interconnection Needs for Replacement Systems

- If the customer changes the DG system --
 - If it is an identical device (same size, vendor, and model), we simply require a new witness test to assure the replacement system will operate as the original machine did
 - If it is not identical (different vendor and model), then the interconnection needs to be re-studied
 - It is re-studied at today's requirements not the requirements when the original device was installed
 - Electrical code works the same way

Interconnection Needs for Replacement Systems

- If the customer changes the DG control systems (relays), the interconnection needs to be re-studied
 - It is re-studied at today's requirements not the requirements when the original machine was installed
 - Electrical code works the same way
- Come to our next DG seminar scheduled for July 15th at our Lincoln office to learn more about interconnection of DG

Risk of Islanding Studies

■ Background:

- In the course of conducting interconnection studies, the Company looks at the risk of the proposed DG creating an 'island'
- When there is a fault on the electric distribution system, protective devices (fuses, reclosers, breakers, etc.) open up to protect the public from possibly energized lines from whatever caused the fault (car accident, tree limb, animal contact, etc.)
- An 'island' occurs if DG continues to operate and serve area load after the protective device had opened up



Risk of Islanding Studies

- A risk of islanding (ROI) study is needed whenever the load on the feeder can match the output of the proposed DG
 - This can occur when the DG ramps up or down or when it is operating at steady state
- If the study shows it is needed:
 - Customer needs to install an 'always-on' communication line from the DG breaker to the feeder breaker, also known as Direct Transfer Trip (DTT)
 - When the feeder breaker opens for any reason, it automatically opens up DG breaker to prevent possibility of an 'island' being created

More Recent Developments for risk-of-islanding

- National Grid is researching and implementing new solutions to interconnect DG at lower cost and manage it once operating
 - Analytical tool for in-house risk-of-islanding studies
 - Power Line Carrier (PLC) Pulse, wireless fault protection schemes, automated voltage management, etc.

Results to Date for risk-of-islanding

- An analytical tool methodology has been developed and moving toward implementation phase
- National Grid is performing pilots for alternatives to direct transfer trip (DTT) that involve PLC and wireless protection schemes -
 - A PLC pulse-based system has been fully operational since December 2013 and with DG customers interconnected as of March 2014. The project is still in the trial period.
 - A radio communication controlled DTT system has been fully operational since December 2013.
 - Another PLC type scheme is under investigation.

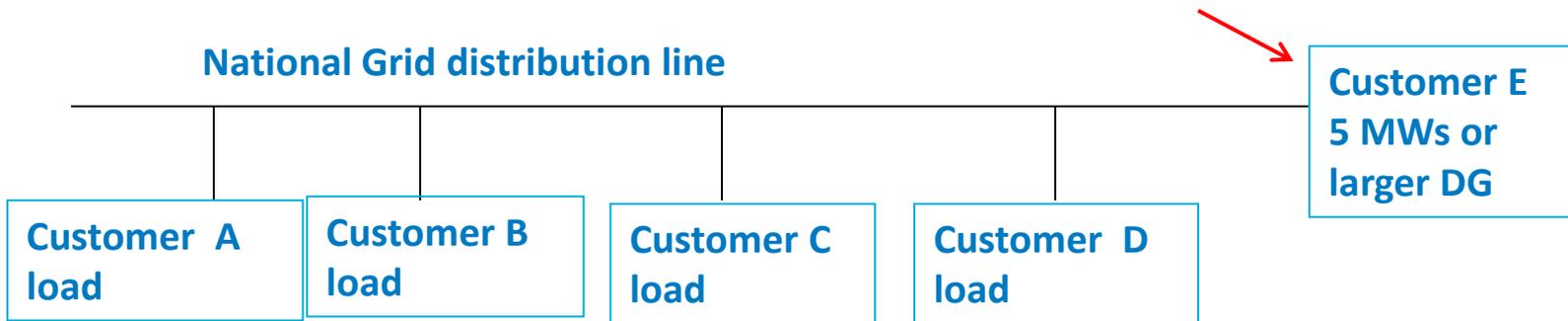
- Customers, under the tariffs, are obligated to reduce costs of net metering, DG contract, and new Renewable Energy Growth programs to all other customers
 - Company does this by setting up wholesale assets at the ISO-NE and uses wholesale revenues received to offset payment to DG customers – this is regulated by the ISO-NE’s Operating Procedure number 14 (OP14)
 - Example: if net metered customers receive credits of 16c per kWh, and the Company receives wholesale revenues of 6c per kWh, then all other customers only have to pay the above market costs of 10c per kWh, not the full 16c.
 - Projects < 5 MWs can be set up as settlement only generators (SOGs) as most are currently with National Grid as the lead market participant (LMP) with no further requirements
 - All projects > 60 kW, in RI are set up as SOGs currently. There are currently no projects > 5 MWs of aggregate DG.

ISO-NE OP14

- For a single project of 5 MWs or greater, or the aggregate DG on a common line with no other distribution customers separating them is 5 MWs or greater, then OP14 requires the DG (or multiple DGs) to be set up as a ‘modeled generator’.
 - This requires the LMP to be able to dispatch the DG(s) upon ISO-NE command in the event of a system problem (i.e., over-voltage conditions, other emergency events, etc.)
 - As National Grid is not the owner or operator of the DG(s), it cannot be the LMP and the customer(s) would have to take on this role
 - In this case, the DG(s) would have to be the LMP
 - Requires a designated entity (DE) the ISO-NE can call 24/7/365 to render dispatch instructions.
 - Requires real-time telemetry from the project to the ISO-NE

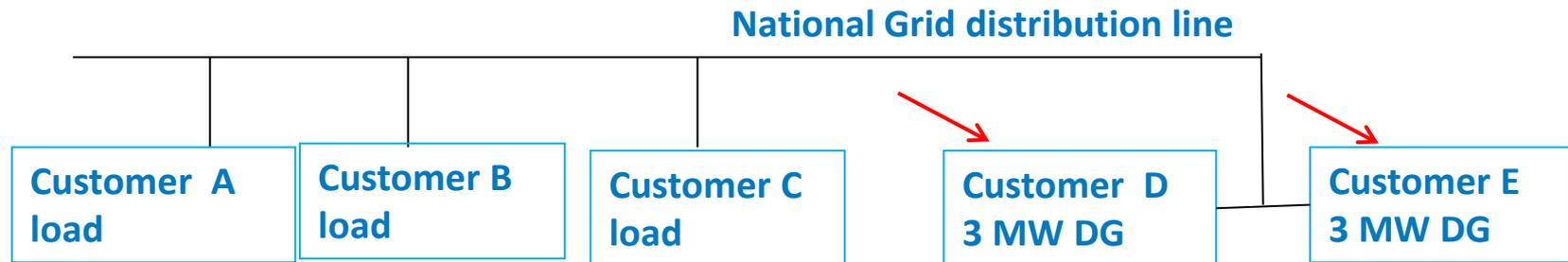
ISO-NE OP14 – example diagrams

Example 1 – single project 5 MWs or larger, customer E would need to comply with the modeled generator requirements of OP14



ISO-NE OP14 – example diagrams

Example 2 – two projects where the aggregate is 5 MWs or larger on a common line, customers D and E would need to comply with the modeled generator requirements of OP14



RE Growth Tax Policy

- RE Growth creates payments for commodities to customers, which results in income reporting responsibilities for National Grid
- Applicants will need to provide us a W-9, and should expect to receive a 1099 from us for all PBI payments
- Bill credits provided to non-residential customers will also be considered payments for the commodities being purchased, and would be reported on a 1099 for those customers
- Residential customers receiving only bill credits will not need to provide W-9s and will not receive 1099s –they do not sell us energy, and there is no transaction to tax
- See Tax Policy Statement handout

Submittal and Egress Switch

- Our Digital Risk & Security group recommends that W-9s and bank account information be submitted by mail at present – we do not have a secure upload site/capability today
- Aiming to have an app based secure email capability in place by end of summer called Egress Switch
- Egress Switch allows the sender to establish easy, secure communication and data exchange with a responder
- Requires responder to install a client application on laptop or mobile device, then they can reply with attachments securely to the sender
- National Grid IT will be packaging this for rollout to users as needed

Customer would receive this

Subject: Test



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RES Approval and NEPOOL Assignment Process

- Customers in the Small Solar Program will be able to satisfy their RES approval requirement by completing the REC Assignment and Aggregation form
- This will: 1) assign the RECs to National Grid for NEPOOL account purposes, 2) allow us to be the aggregator for RES/RIPUC purposes, and 3) allow us to be the aggregator for MA DOER RPS purposes
- National Grid is filing shortly for aggregator status with the RIPUC
- Output from all RE Growth Small Solar systems will then be reported together for creation of RECs as required by NEPOOL
- RECs will flow directly into National Grid account for sale and cost recovery