On-Site Generation Economic DR settlements

DRS

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Classification of Generator output

- BTMG – output used to net load and therefore operates to reduce electricity cost. Does not participate in wholesale market
- On-Site Generator – output used to reduce load that only operates to participate in the wholesale market (Economic or/and Emergency/Pre-Emergency DR). If generator will operate on their own then it is BTMG and not DR
- Generator (Capacity and/or Energy Resource) – interconnected through the PJM queue and participates in the wholesale market

1 MW of output from generator may only be in 1 of 3 categories

On-Site Generator eligible energy settlements

- Generator without injection rights – marginal cost > retail cost, only reason generator operates is because of wholesale market energy revenue, otherwise it is cheaper to buy power at retail
  - Retail cost includes supply and delivery rate charges
- Generator with injection rights (WMPA, ISA) – Typically, only eligible for Economic DR energy revenue in hours when generator does not inject power unless:
  - PJM and CSP finalize below before PJM will consider Economic DR settlements in same hour as injection,
  - Cost (Total Gen output * marginal cost) > Benefit {gen export revenue (Gen export output * LMP) + implied retail savings (Gen load reduction MWs * retail rate}
    - If Generator is also a Capacity Resource ("front of the meter") for injection and is dispatched by PJM then Economic DR is not eligible for same interval

Example

regID	date	HE	Gen Output MW	Cost to run CHP with heat/steam recovery for other purposes	Cost to run CHP without heat/steam recovery	Retail rate*	Load	Meter read (Net Load)	CBL	Load reduction	Eligible for Economic DR settlement?
123456	8/1/2018	1	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	2	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	3	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	4	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	5	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	6	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	7	3	$ 30.00	$ 65.00	$ 60.00	10	7	7	0	yes
123456	8/1/2018	8	4	$ 30.00	$ 65.00	$ 60.00	10	6	7	1	yes
123456	8/1/2018	9	5	$ 30.00	$ 65.00	$ 60.00	10	5	7	2	yes
123456	8/1/2018	10	5	$ 30.00	$ 65.00	$ 80.00	10	5	7	2	no
123456	8/1/2018	11	5	$ 30.00	$ 65.00	$ 80.00	10	5	7	2	no
123456	8/1/2018	12	5	$ 30.00	$ 65.00	$ 80.00	10	5	7	2	no
123456	8/1/2018	13	5	$ 30.00	$ 65.00	$ 80.00	10	5	7	2	no
123456	8/1/2018	14	5	$ 30.00	$ 65.00	$ 80.00	10	5	7	2	no
123456	8/1/2018	15	4	$ 30.00	$ 65.00	$ 80.00	10	6	7	1	no
123456	8/1/2018	16	3	$ 30.00	$ 65.00	$ 80.00	10	7	7	0	no
123456	8/1/2018	17	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	18	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	19	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	20	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	21	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	22	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	23	3	$ 30.00	$ 65.00	$ 60.00					
123456	8/1/2018	24	3	$ 30.00	$ 65.00	$ 60.00					

Generator Marginal Cost > Retail Cost, only generate power to receive wholesale revenue. Otherwise, would buy power at retail for lower cost than producing power

Generator Marginal Cost < Retail Cost, cheaper to generate power than buy retail power and therefore part of normal operations

Frequently Asked Questions (FAQs)

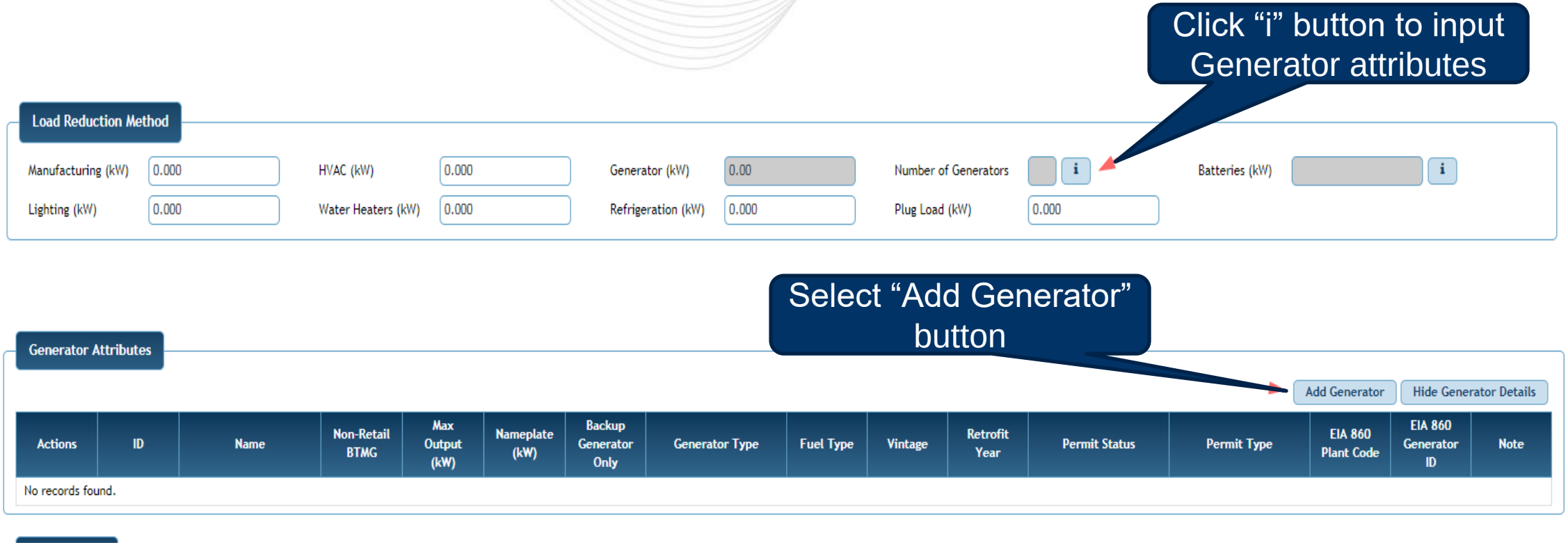
- Q: Why do we need to deal with marginal cost? Should the CBL already reflect expected net load?
  - A: Generator output that impacts net load can change sporadically when it is used to reduce retail electricity cost. The CBL may or may not capture these sporadic changes and therefore may not accurately predict future net load. If generator operates frequently only when marginal cost are less than the retail rate, then CBL may work to quantify the load reductions.
- Q: If location will only participate in Load Management (Emergency/Pre-Emergency DR) do I need to do anything?
  - Yes, please input all the Generator information at the location level but you do not need to do anything additional when you register (you do not need to provide historic output and cost information and can use the standard CBL)
- Q: If location will only participate as Economic DR in the Ancillary Service markets and will not participate in the energy markets do I need to do anything?
  - Yes, please input all the Generator information at the location level. Select the max base load CBL and request PJM to review the CBL. Include note that this registration will only participate in Ancillary Service markets
- Q: Is a battery considered a generator?
  - A: yes, all same rules apply

Process to administer On-Site Generator participation as Economic DR

- DR Hub | Location
  - For all generators that will be used in Economic DR program select Backup Only = No in DR Hub;
- DR Hub | Registration
  - CSP to Select CBL and conduct RRMSE test
  - CSP must Submit CBL review (even if CBL passes RRMSE test)
    - Select "Other" for reason and include comment "On-Site Generator review"
    - CSP should email dsr_ops@pjm.com 1 summer of historic generator output, marginal costs to run generator and retail rate
    - If multiple generators, we will need to discuss best way to provide the historic data
  - PJM will review the registration and approve if incremental load reductions can be quantified, otherwise registration will be denied or possibly participate with max base load CBL

Please email dsr_ops@pjm.com if you have questions or would like to discuss associated details

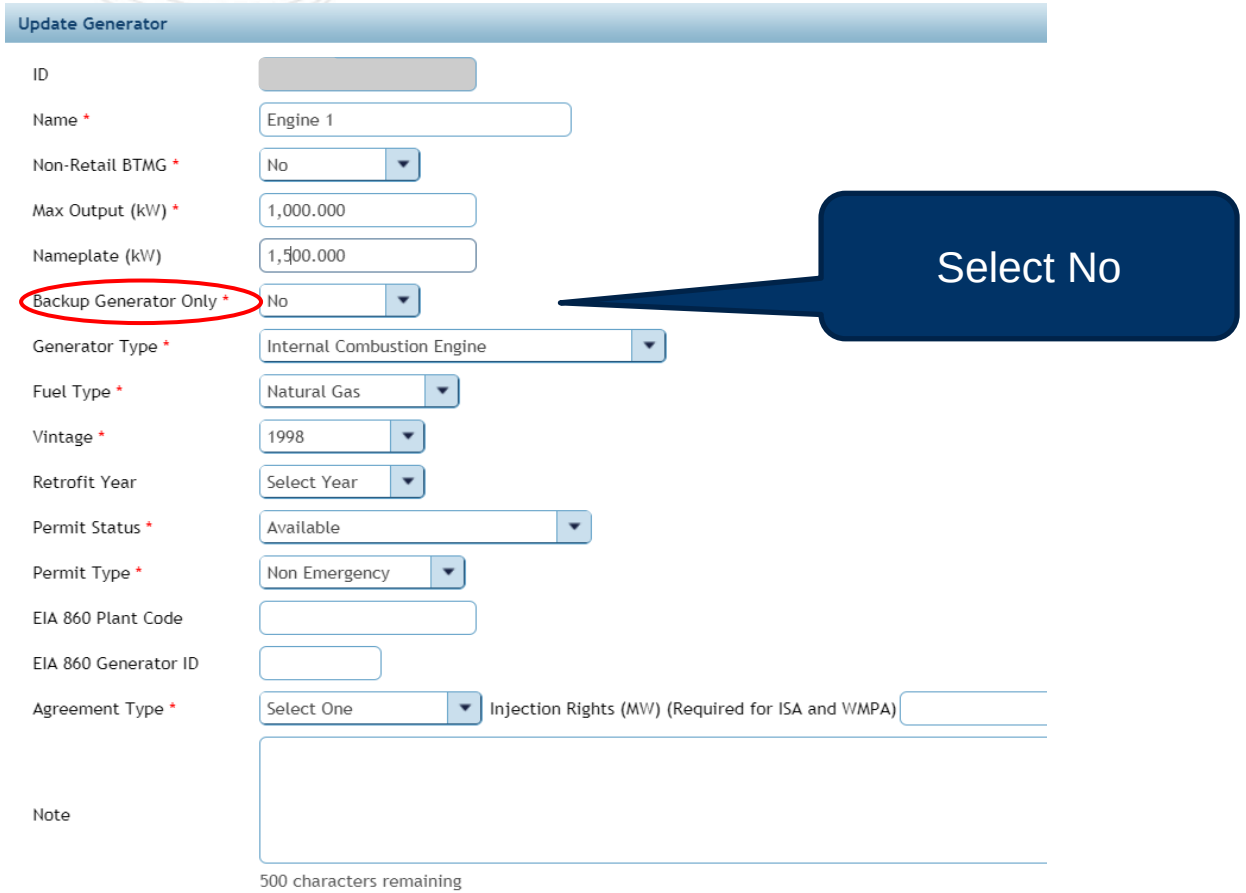
Process to administer On-Site Generator



Process to administer On-Site Generator cont'd

Fill out Generator attribute box

For 'Backup Generator Only', select: 'No' if participates in Economic DR Program.

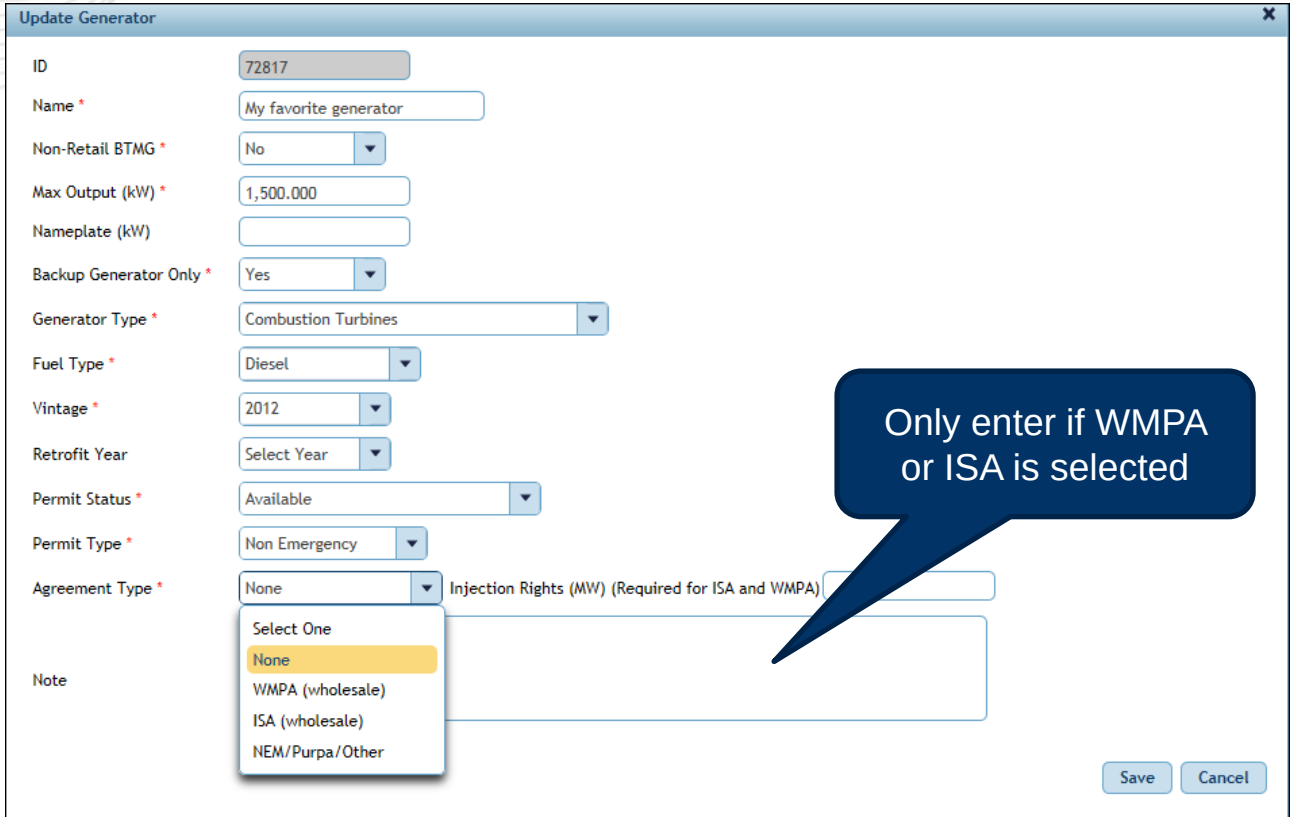


Process to administer On-Site Generator (continued)

For Agreement Type select:

- "None" if generator is not capable to inject
- WMPA (wholesale)*
- ISA (wholesale)*
- NEM/Purpa/Other" if generator is interconnected

**Injection Rights (MW) required if Agreement Type is WMPA or ISA*



Next Steps

- PJM will reach out to CSP's with Economic DR On-Site Generators in the energy market for necessary changes
- PJM will modify DR Hub to make settlement process more effective (less manual)
- CSP's with On-Site Generators that will participate as Economic DR in the energy market should understand the process before they are dispatched.
  - This will avoid any confusion during the settlement process

PJM will work with CSPs with impacted resources and plans to have process in place by the end of summer '21.

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