



Gen Model 2020 Update – Frequently Asked Questions

PJM Interconnection
System Planning Modeling and
Support Department
May 19th, 2020

- What's changed in Gen Model from last year?
- Administrative Issues
 - Access
 - Change of ownership
- Technical Issues
 - Most common questions
- Useful References
- Further Questions?

- Dynamics Data Requirements and Guidelines, Dynamics data is to be submitted via Gen Model in Siemens PTI PSS/E Dynamics Model Raw Data File (.dyr) format.
 - Any changes year to year would require an update uploaded via Gen Model.
 - If a change from previously provided .dyr data is submitted, additional justification must be provided in the form of Excel, Word or Portable Document Format (.pdf) documents.
 - PJM follows NERC's Acceptable Models List available on the [NERC SAMS website](#) in the Reference Materials section.



What's Changed in Gen Model for 2020?

- The PRC-024 Relay Information Fields under the “Circuit Breakers and Relays” Form have been updated.
- Last year, there was a drop-down box asking if you were required to submit relay information for PRC-024. If you selected yes, you were asked to either fill in a text box with the relay settings or upload a file with the relay settings.
- This year we’re asking if voltage or frequency protection is installed and if so, to provide the applicable settings.

Is Underfrequency (UF) protection installed? *	<input type="radio"/> Yes	<input type="radio"/> No
Is Overfrequency (OF) protection installed? *	<input type="radio"/> Yes	<input type="radio"/> No
Is Undervoltage (UV) protection installed? *	<input type="radio"/> Yes	<input type="radio"/> No
Is Overvoltage (OV) protection installed? *	<input type="radio"/> Yes	<input type="radio"/> No



What's Changed in Gen Model for 2020?

- The Generator Owner will need to review and provide Summer and Winter output values using the below seasonal assumptions.
 - Not all these assumptions may apply to your particular unit.
 - E.g., Wind Farms would not need to consider cooling water temperature when determining their generator output.

Table 1 - Seasonal Assumptions for Gen Model

<u>Types</u>	<u>Summer</u>	<u>Winter</u>	<u>Notes</u>
Time Period	6/1 to 9/1	12/1 to 3/1	
Time of Day	16:00	07:00 or 19:00	Select the time of day when the generator output would be highest.
Cooling Water Temp (Degrees F)	80	35	Applicable if this particular item impacts your MW output. Cooling Water Temperature refers to "Intake Water"
Ambient Relative Humidity (%)	45	40	Applicable if this particular item impacts your MW output
Ambient Air Temp (Degrees F)	92	20	

- Access to the Planning Center Gen Model tool is controlled by your company's "Company Account Manager" or CAM.
- Password reset requests go to your company's CAM.
- The Gen Model User Guide has detailed information on how to gain access to Gen Model.
 - Located on Section 1 (Page 3) of the "User Guide" document.

- Accidental and extraneous entries in Gen Model
 - If you accidentally create an extra entry, ***there is no need to delete it.*** Only PJM administrators have permission to delete entries. Deletion is not necessary because we only consider submitted entries as official data
- “In Review” status prior years’ submissions
 - If your prior years’ submission is “In Review”, we are working to release it back to you to pre-populate your 2020 submission. Expect to have those submissions available for pre-populating 2020 submissions by Wednesday, 5/20/2020

- “Why am I not able to edit any data on my submission?”
 - Previously submitted data cannot be edited (past years). A new entry must be started using the “Begin 2020 Submission” button, which will bring up the option to pre-populate the forms with previously submitted data.
 - Gen Model User Guide is available to walk through this process step by step.

Begin 2020 Submission

- Regarding Previously uploaded files and attachments:
 - All previously uploaded files and attachments will carry forward into a newly created Gen Model entry unless the total size of all attachments exceeds 100 MB
 - If the prior year's attachments exceed 100 MB, you may refer to your previous submission in the final comments, but required attachments (such as dynamic models) must be reattached for 2020.
 - We apologize for the inconvenience, and we're working to improve the attachment size restriction for next year's submission window!

Will PJM consider any extensions on the MOD-032 submittal date due to COVID-19?

- MOD-032 is a NERC standard that requires annual data submission. No notice has been given to PJM as of the date of this FAQ from NERC that changes this requirement.
- PJM is not responsible for auditing NERC compliance, so compliance waivers should be sought from NERC, not PJM if the deadline is unable to be met.

Question 1

Which generators must submit data to Gen Model?

Answer 1 (Part 1 of 2)

- MOD-032 Requirements and PJM's GO data submittal requirements apply to all in-service generators (new or existing) with either:
 - Capacity rights in PJM's markets **OR**
 - Individual generators greater than or equal to a 20 MW nameplate value
- This is explained further in Section 1.5.1 of the PJM MOD-032 Model Data Requirements and Procedures document.

Answer 1 continued (Part 2 of 2)

- Behind the Meter Generators should coordinate with the Transmission Owner with which they interconnect for data requirements
- Pseudo-tied generators must submit data to the Transmission Planner or Planning Coordinator with which they interconnect.
 - Pseudo-ties importing into PJM, do NOT submit data to PJM
 - Pseudo-ties exporting out of PJM that interconnect with PJM, must submit data to PJM

Question 2

Is the requirement to provide updated or new modeling information only applicable if a GO has “new or updated” modeling info or if there is no new modeling info, what needs to be done by the GO?

Answer 2

- If there are no changes, the previously submitted data can be used to populate a 2020 submission. However, the data must be verified and checked for errors before being submitted for 2020.

Question 3

PJM requests that single line drawings are uploaded to the Gen Model tool. How is PJM maintaining this information as CEII?

Answer 3

- Generating station single-line drawings are not considered CEII.
- Do not upload a transmission system diagram to Gen Model which would be considered CEII.



Question 4

My previously submitted data is not visible in Gen Model, where did it go?

Answer 4

- If a change of ownership occurred or your Company name changed, the previously submitted data will need to be transferred to your current Company.
- Log into accountmanager.pjm.com to see what Company (Employer) name your account is under. If your previous Gen Model submissions need to be moved send screenshot like below to MOD-032@pjm.com.

The screenshot shows a 'User Profile' page with two tabs: 'Profile Information' and 'Account Access'. Under 'Profile Information', there is a 'Contact Information' section. It contains two input fields: 'First Name' with the value 'Kyle' and 'Employer' with the value 'PJM Interconnection'. The 'Employer' field is circled in red.

Question 5

Is it possible to see prior year submittals?

Answer 5

- All previously submitted data is viewable within Gen Model as long as the **Company name of your login** matches the **Company name of the previous submission**.
 - PJM MOD-032 support (MOD-032@pjm.com) can update the Company name of past submissions if there has been a change to your Company name or if ownership recently transferred.
 - Your 2020 submission can be pre-populated with previously submitted data.

Question 6

Does PJM have an excel or word version of the survey that I can send to my plant managers to have them fill out, or should I perhaps provide screenshots of the required information from Market Gateway?

Answer 6

- There is not an excel or word version of the requested data at this time. However, there are no issues with taking screenshots to send to your plant operations teams.

Question 7

- What values for summer and winter output need to be submitted? Generators can typically perform at 2 or more different power levels at a specific condition.
 - For e.g. given the summer assumptions you provided (Ambient Air= 92 F, Humidity= 45%, etc.) a generator can perform at 100 MW or 110 MW consistently.
 - A gas turbine can use various techniques to achieve this. (Peak fire, fogging, etc.). This number can also be higher than the ICAP value. Please provide guidance.

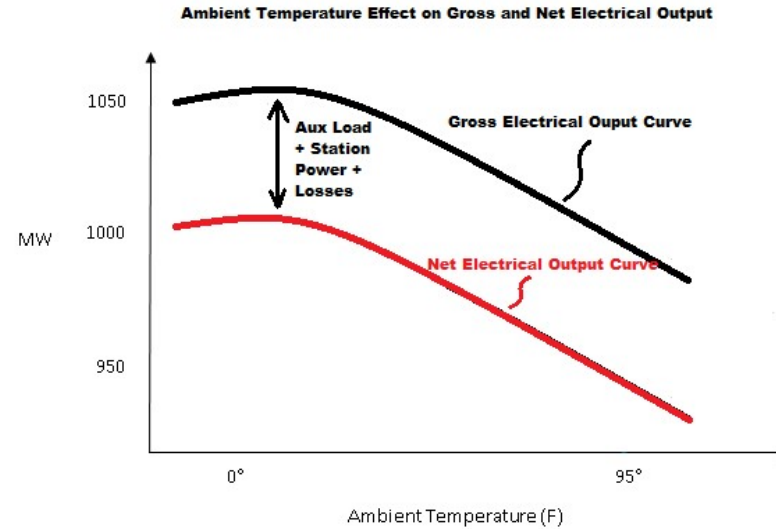
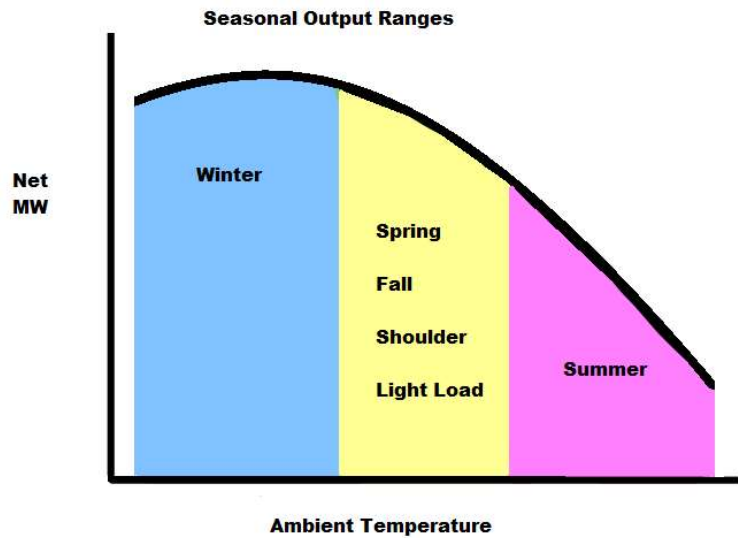
Answer 7 (Part 1 of 3)

- The GO should provide the maximum output the facility can produce trying to maximize profit while assuming an extremely high value per MW under those seasonal considerations (Refer to the Slide 5 Table).
- Therefore, the output value used for Gen Model, should be the power level (e.g., Emergency Max) that provides the maximum money making configuration on a high demand, high MW value day at the assumed environmental conditions.
- In the example, the 110 MW would be the maximum output value.

Answer 7 Continued (Part 2 of 3)

- Determining these values should be consistent with the way that a GO operates to fulfill their ICAP obligation.
- If the GO normally employs capability enhancing measures such as, but not limited to, compressor inlet cooling, wet compression, peak firing, or boiler overpressure, to meet their ICAP obligation, this should also be assumed when providing output values for the MOD-032 submission.
- Those same assumptions mentioned above should be used consistently when determining the values of Auxiliary loads, Start Up Units, Station Service loads, etc. that may impact the net output of the generator.

- **Answer 7 Continued (Part 3 of 3)**

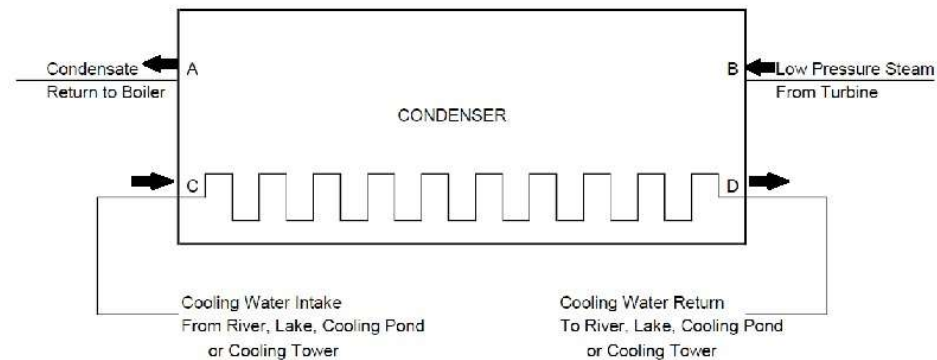


Question 8

Can you please clarify what you mean by “Cooling Water Temperature” (Based on the Table in Slide 5)?

Answer 8

- For MOD-032 purposes, “Cooling Water Temperature” should be interpreted as “intake water temperature”, assuming maximum output and efficiency at the Cooling Towers, and/or expected water temperatures from the cooling body on high demand days.



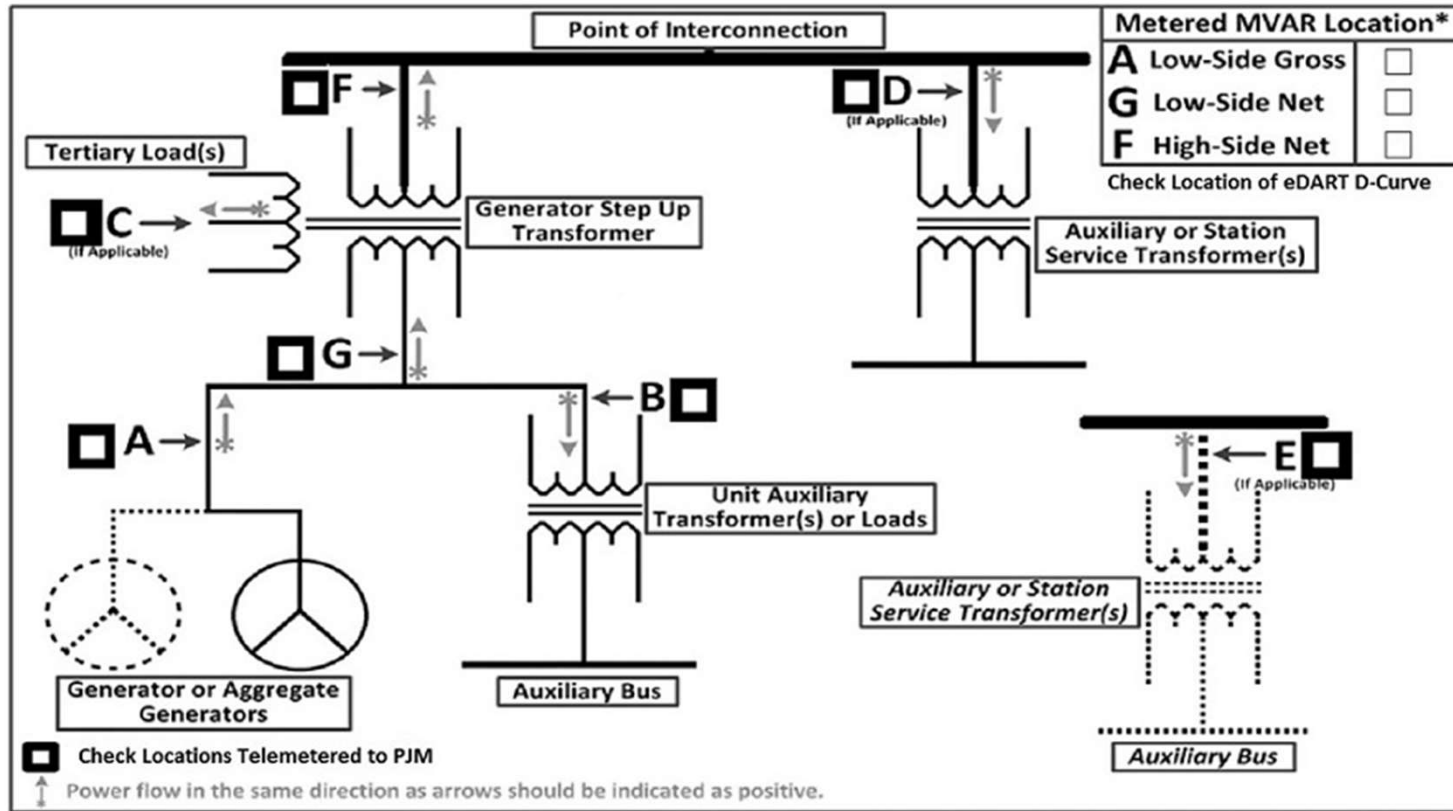
Question 9

For “Total Plant Generation Capability” for Total Gross Energy, Aux Load (MW and MVAR), Station Service Load (MW and MVAR) and Total Reactive Power Capability at Max Gross Energy Output – Leading and Lagging (MVAR) fields:

Please provide clarification on methodology to use to provide these values. Are we aggregating respective values for each plant based on Gen Model User Guide Figure 11 drawing?

Answer 9

- These values are expected to be the total summation for the plant. The individual generator values are collected on the individual generator forms.



If the facility sufficiently comparable to this simplified diagram or provided points please attach an addendum to this form with the requisite material.

Question 10

Regarding Attachment Line Data Form - This form is required, but my generating plant does not own an attachment line, it is directly connected to a substation owned by another entity, what should I do?

Answer 10

- Attachment Line data is only required for lines over 0.2 miles; Check 'no' if the attachment line is not owned by the generator owner.

Question 11

The Attachment Line Data has been modified to only request information for line lengths greater than 0.2 miles. What is the basis for the 0.2 miles?

Answer 11

- Engineering judgement was used to come up with a 1000 ft (0.2 mile) cut-off point. Typical transmission line spans are between 500-1000 ft. long. The impedance for generator lead lines only 2-3 spans long is negligible.
- For those who wish to still submit “Attachment lead line information” even though they have less than 0.2 miles of attachment line are welcome to do so by selecting “Yes” and filling out as normal.

Question 12

Regarding Transformer Ratings - My transformer ratings sheet provides the same cooling class designation at 2 different temperatures, which should I use?

Answer 12

- Use the temperature that is consistent with your transformer ratings methodology under FAC-008.

Question 13

Is it necessary to also create and submit .dyr files with the changes already being made in the Gen Model portal itself?

Answer 13

- Yes.
 - **The GO can however request from PJM the latest .dyr files that we have for the applicable units for the submitter to perform a comparison to our data:**
 - These requests should be made using the PJM Planning Community for all MOD-026 and MOD-027 activity via requirement 1 (R1):
<https://pjm.force.com/planning/s/mod-026-and-mod-027-request>
 - If you are not already registered, you'll need to [register](#) for the Planning Community. There is a [user guide](#) available for the Planning Community.

Question 14

What is each required Stability Model field requesting?

Answer 14

- “Generator Models”:
 - For synchronous machines, a generator model (such as GENTPJU1).
 - For generators where a traditional generator model is not applicable, a model that describes the dynamic behavior of the generator such as REGCAU1.
- “Excitation System Models”: Exciter model (such as AC8B)
- “Prime Mover & Governor Models”: Governor model (such as GGOV1)
- PJM follows NERC’s Acceptable Models List available on the [NERC SAMS website](#) in the Reference Materials section

Question 15

What if my generator does not have that type of dynamic model (i.e. no governor installed)?

Answer 15

- Upload a document explaining the dynamic behavior of the generator and why the required model type is not applicable.
 - For example, if the generator is not responsive to frequency deviation because a governor is either not installed or disabled provide that explanation in a document and upload the document to Gen Model.

Question 16

Regarding relay settings, is PJM interested only in devices on the generator bus and HV span, or are over/under-voltage trips on plant MV and LV systems wanted also (13.8, 7.2, 4.16 and 0.48 kV)?

Answer 16

- We do not model the plant MV and LV systems, so only the generator terminal and HV settings are needed.

Question 17

Are “N/A” inputs OK for voltage and frequency relays that do not have instantaneous settings? If not, should we use dummy inputs, e.g. 1 Hz for 81U relays and 99 Hz for 81O?

Answer 17

- Gen Model won't take “N/A” or 0 or 99.
- To work around this, if you don't have instantaneous UF settings, put in a value greater than 60 and conversely, if you don't have instantaneous OF settings, put in a value less than 60.

Question 18

How should we identify “short-term delayed,” and, “longer-term delayed,” settings for relays with an inverse-time characteristic? Is it OK if we select the appropriate benchmarks, (e.g. 0.5 sec and 2 sec respectively in one case, and 10 and 100 sec in another)?

Answer 18

- Selecting appropriate points along the inverse time characteristic curve is acceptable.

Question 19

Are V/Hz relays to be included under both the frequency and voltage categories, assuming 60 Hz for the voltage settings and the rated voltage for frequency settings?

Answer 19

- We're not requesting V/Hz relays as part of Gen Model at this time.

Question 20

If a facility has protection relays monitoring electrical quantities but they do not trip a BES breaker and, hence, are not included in PRC-005, should they be included in PJM's Gen Model entries?

Answer 20

- The intent is to capture PRC-024 related information about the most restrictive relay that could take the generator offline due to voltage or frequency deviation from nominal.

- Planning Center Gen Model tool: <https://www.pjm.com/markets-and-operations/etools/planning-center.aspx>
- Gen Model User Guide: <http://www.pjm.com/~media/etools/planning-center/gen-model-user-guide.ashx>
- PJM's MOD-032 web page: <https://www.pjm.com/planning/services-requests/planning-modeling-submission-mod-032.aspx>
- PJM's MOD-032 Requirements and Procedures document: <https://www.pjm.com/-/media/planning/rtep-dev/powerflow-cases/20150630-mod-032-ss-dynamics-sc-data-requirements-reporting-procedures-v1.ashx?la=en>



Further Questions

- The intent of this presentation is to cover the most frequently asked questions that our members are facing with respect to MOD-032 submittals and using Gen Model.
- For those with additional questions, continue to contact us at MOD-032@pjm.com.