Guidance for ICs Submitting Technical Data

Below is a list of <u>frequently found</u> deficiencies in technical data that is submitted with modification requests, but is not all-inclusive. This list is provided to assist Interconnection Customers in preparing the technical data packages required for modification requests.

General Items
- Attachment A to Appendix 1 is not the latest IR. The Attachment A is on the CAISO website at: http://www.caiso.com/PublishedDocuments/GeneratingFacilityData-AttachmentAtoAppendix1.xlsm
- All sections of Appendix 1 and Attachment A must be filled. If a section is not applicable, please mark it as N/A

When IC makes a change to technical data, it should be reflected in all documents where that resides. Usually includes, Appendix 1, Attachment A, SLD, .epc, .dyd

IC name inconsistent (does/does not include comma) between:
- State Incorporation documentation,
- Instructions tab of Attachment A to Appendix 1
- Appendix 1

IC should enter their dynamic and power flow models into the tabs in the Attachment A to catch common errors
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Specific Items
1. Dynamic data does not use the GE PSLF v21.0 WECC approved dynamic models
    a. If you require assistance in developing the models, we suggest you contact General Electric. Accurate models are important to obtain accurate results. Costs associated with any changes in facility requirements that are due to differences between model data provided by the generation developer and the actual generator test data, may be the responsibility of the generation developer.
2. Inconsistent values between Attachment A Section 10 and dynamic data
3. Project is required to meet 0.95 lead/lag at the high-side of the generator substation as per its Phase I or Phase II study results
4. There are inconsistent values between attachment A and Load Flow and Dynamic Models:
    a. Attachment A Section 4c vs dynamic data
    b. Attachment A Section 10 and EPC files
    c. The epc for 500 kV interconnection is not set up properly, PSLF uses 500 kV as voltage base, but the POI voltage should be set higher (depending on the POI substation voltage schedule) by changing the schedule voltage (1.05 p.u. at least)
    d. The IC should test their project in the simplified epc/model provided by following the CAISO white paper on power factor testing
5. Failure to model aux load in EPC files
6. Project has two different kinds of inverters, but the model of the plant includes only one aggregated unit

7. Updated single-line diagram was not provided, or did not contain enough detail.
    a. Single-line diagram showing applicable equipment such as generating units, step-up transformers, auxiliary transformers, switches/disconnects of the proposed interconnection, including the required protection devices and circuit breakers. For wind and photovoltaic generator plants, the one line diagram should include the distribution lines connecting the various groups of generating units, the generator capacitor banks, the step up transformers, the distribution lines, and the substation transformers and capacitor banks at the Point of Interconnection with the CAISO Controlled Grid.
    b. Parameters shown on the one-line diagram do not match data in other sections of Attachment A to Appendix 1, e.g. different transformer impedances and MVA bases.
    c. Single-line diagrams to not include enough detail to confirm the quantity of each type of technology on each feeder. This information is required to complete the Appendix C information.
8. Since information on the short circuit data table is not yet being widely used, ICs should continue to submit data related to the duty contribution of their projects. ICs should submit data that bees explains and justifies the value(s) being provided.

Appendix 1
- Should not select Off-Peak Deliverability if not Wind or Solar
- The Generator Limiting Scheme should be descriptive of the scheme and mention the MW limit at POI

Attachment A to Appendix 1
- Selections need to be made for each item in Supporting Documents (Yes, No, N/A)

Site Map/.kmz
- Should include
    - tag with project location, GPS coordinates and address (if available)
    - Boundary of the project location
    - Gen-tie from project location to POI, with length
    - POI name, voltage level and MW at POI

Single Line Diagram
- Should be electrical SLD not conceptual
    - Includes metering location, transformers connections, breakers
- Winding connections do not match with Attachment A
- Collector system should be shown
- Shunt devices should be included

.epc
- R/X/B values for lines don't match Attachment A
- Use of correct plant controller for project configuration (repc_b for hybrid)
- Voltage control devices cannot control same bus
- Generator should not be controlling POI or GSU high side buses
- Shunt devices should control shunt bus
- Q_{max} and Q_{min} do not match with IR

- Baseload flag does not match frequency response