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From: Monasmith, Mike@Energy
Sent: Wednesday, May 04, 2016 1:35 PM
To: Ng, Laiping@Energy
Cc: Hesters, Mark@Energy
Subject: FW: TSE
Attachments: MR-GEN-DE-E1-0002.pdf; MR-GEN-DE-E1-0002 SHEET 2.pdf

Additional Clarifications from CH2 on Transmission System Design data adequacy....fyi.

Thanks!

From: Doug.Urry@CH2M.com [mailto:Doug.Urry@CH2M.com]
Sent: Wednesday, May 04, 2016 12:48 PM
To: Monasmith, Mike@Energy
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Subject: RE: TSE

Mike,
Per our telephone discussion with LaiPing yesterday, we are providing additional clarification for the TSE Data Adequacy Supplement, to the extent information is currently available.

Figure DA3.0-1 – One-line Diagram

- The bubble areas indicate revisions from a previous version. In the case where the bubbles are empty, equipment was removed that existed in the previous version of the design. As we discussed today, the transmission design continues to be refined and we now have an updated revision of the one-line available. Attached is revision D which is also bubbled to show the differences from what was provided in revision C. In this revision (D), there are more details to the battery system components in sheet 2. The entire sheet 2 is new so it was not bubbled. Generally, the design wasn't changed from rev C.
- There are individual breakers either on the high side or low side of the 230kV transformers for protection, therefore the design no longer includes another breaker for the overall plant. An updated description from AFC Section 3.2.3 is provided below.
- There are two auxiliary transformers and 4 station service transformers for auxiliary load for the gas turbines. There is one station service transformer for the battery system.
- The rating on the last switch is 2000A
- The breakers are rated at 2000A
- Bus ducts are rated at 2000A
- In AFC Appendix 3A, Attachment 1 of the Cluster 7 study report, page 7, shows a one-line from the station to the substation as provided by CAISO. We don't have any further details on the Santa Clara Substation at this point.

Updated AFC Section 3.2.3 Text
"The MREC switchyard will use four 230-kV circuit breakers for the five generating units and batteries, with three generator step-up transformers for the five generators and one step-up transformer for the battery system. The switchyard and all equipment will be designed for an interrupting capacity of at least 50 kiloamperes. The main buses, as well as the bays, will be designed to carry at least 2,000 amperes on a continuous basis.

Startup and standby power for the generators will be supplied through the generator step-up transformers and two auxiliary transformers. Standby and auxiliary power for the battery system will be supplied through the battery system

step-up transformer and one station service transformer. Auxiliary controls and protective relay systems for the MREC switchyard will be located in the 230kV switchyard control building."

CPUC GO 128

I believe this reference had been removed from the AFC because the actual transmission line will not be underground. However it would also apply to underground features on the plant site. We typically include the following row in Table 3.5-1.

TABLE 3.5-1
Design and Construction LORS for the Proposed Transmission Line and Substations

LORS	Applicability
GO-128, CPUC, "Construction or' underground electric supply and communication systems"	Applies to the design and construction of underground transmission lines.

Please let us know if you have any additional questions at this time. We expect additional transmission engineering design detail to be available during the Discovery Phase.

Thank you,
Doug

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From: Monasmith, Mike@Energy [mailto:Mike.Monasmith@energy.ca.gov]
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To: Urry, Doug/SAC <Doug.Urry@CH2M.com>; Davy, Doug/SAC <Doug.Davy@CH2M.com>
Subject: TSE

Hey Guys,

Couple things.

First for Appendisx B (b) (2) (C).....the one line diagram is missing some parts. Do you have some time to do a web ex in the next hour so my analyst can tell you what she needs and you guys can provide?