



California ISO
Shaping a Renewed Future



DATE: January 30, 2015

TO: Bob Easton, PCC Chair
Tracy Rolstad, TSS Chair
Branden Sudduth, PCC Staff Liaison and Director of Planning Services

FROM: Western Planning Regions
ColumbiaGrid
CAISO
NTTG
WestConnect

RE: Request for 10-Year Light Load Power Flow and Dynamic Stability Base Cases

WECC's Planning Services Department works with the Planning Coordination Committee (PCC) and its subcommittees to produce and distribute credible data, information, and analysis that are essential to the reliable planning and operation of the Bulk Electric System in the Western Interconnection. Many entities rely on power flow and dynamic stability information and, as such, developing these base cases is critical to studying the Western Interconnection reliability through the 2026 time frame. The four Western Planning Regions rely on and use WECC's Power Flow and Dynamic Stability Base Cases (base cases) for their studies and certainly, facilitate the Western Planning Regions fulfillment of their FERC Order 1000 requirements.

The Western Planning Regions have collectively identified a critical gap in the longer-term (10-year) base cases that are typically prepared in the PCC Annual Study Program. The 2015 Base Case Compilation Schedule, which was finalized in March 2014, includes five operation cases (near term), two five-year base cases, two ten-year base cases (heavy summer and heavy winter), and two scenario cases – one of which is an undecided TEPPC case and the other is a 2018 Heavy Summer w/ high imports into Southern California. The 2015 Base Case Compilation Schedule does not include a 10-year light load case. The Western Planning Regions feel that there is a significant need for such a case.

Our reasoning is that as more variable generation is added to the system, there is the potential for a number of reliability issues that may only be identified during studies of light load conditions (versus the heavy loading conditions currently planned for in the 2015 Base Case Compilation Schedule). Examples of the challenges that may be associated with a 10-year light loading condition include:

- Generation dispatches that cause flow reversals, which in turn could present significant scheduling/operating challenges;
- Heavy renewable penetration scenarios with significant coal reduction could result in counter clockwise loop flows, with heavier loading from California into Arizona/Nevada;
- Light loads and high output from variable generation resources coupled with low output of thermal generation may cause a shortage of system inertia that may not be observable without dynamic studies;

Light load and heavy load cases within the same time frame could also validate, or refute, concerns about periodic (possibly daily) flow reversals that could present significant scheduling/operating challenges.

- It is likely that the reliability issues associated with these conditions would be most amplified in the 10-year planning horizon when the penetration of variable generation is projected to be higher than it is today. A Light Spring condition case would allow for a more robust and thorough check of potential reliability concerns in the 10-year horizon.

Because of the reasons mentioned above, the four Western Planning Regions jointly and respectfully request WECC and the PCC to include power flow and dynamic base cases for a 2026 Light Load/Spring case in their 2016 study program. If the case is completed by the end of 2015, the Planning Regions will be able to use the case in their respective FERC Order 1000 Regional Planning Processes starting in early 2016. We understand that the PCC, Technical Studies Subcommittee (TSS), and System Review Work Group (SRWG), along with WECC Staff, are limited as to the number of base cases they can build in a single year. Given this limitation, we suggest that the PCC, in coordination with WECC, build the 2026 Light Spring case in lieu of one of the following cases included in the 2015 Case Base Compilation Schedule:

- **2025-2026 HW1** – Prior to the 2013 Study Program, the base case compilation schedule generally included a single ten-year case, which alternated between heavy summer and heavy winter load models. However, starting in 2013, both heavy summer and heavy winter cases have been part of the schedule. One option would be to replace the heavy winter case in the 2015 schedule with a light load case. Planners needing a heavy winter case could update the 2024-2025HW1 case created in 2014, or modify the 2026HS1 case planned for 2015.
- **20XX – TEPPC** – Starting with the 2012 Base Case Compilation Schedule, consideration was given for creation of cases to be used by the Transmission Expansion Planning Policy Committee (TEPPC). As a result, TEPPC “place-holder” cases have been included in the compilation schedules. If PCC sees value in keeping the 2025-2026 HW1 case mentioned above, there may be potential to replace the TEPPC place-holder case with the 2026 Light Load case requested by the Western Planning Regions. TEPPC is often interested in investigating reliability issues associated with higher levels of variable generation. We feel that our proposed case may meet the needs of both the Western

Planning Regions and TEPPC. We plan to reach out to the TEPPC Chair to learn if TEPPC would be interested in accommodating this request.

- **18HS1-S** – Another option would be to replace the single scenario case with the 10-year light load case. In the past, some scenario cases have been created at the discretion of the SRWG rather than through TSS survey responses. In order to pursue this option, TSS and PCC would have to determine how strong the support was for creation of the 18HS1-S case.

We understand that TSS distributes an Annual Survey each winter to collect requests for cases to be constructed during the following year. We regret not having requested a 10-year light load case in the last cycle, as such we would be pleased to work with you to accommodate this request on late notice. Going forward, the Western Planning Regions will submit requests for cases within the TSS Annual Survey process. As a reflection of this, we intend to submit a request for a 2027 Light Load case in the 2016 TSS Annual Survey for inclusion in the 2016 Base Case Compilation Schedule. Requests such as this will prevent future requests to adjusting the base case compilation schedules.

Thank you for considering our request. If you feel this can be accommodated, we can augment the process by providing a Case Description Form with pertinent details of the 10-year light load case model.

Regional Planning Group Contacts:

WestConnect: Ron Belval, Planning Management Comm. Chair (520-745-3420)

Northern Tier Transmission Group: Dave Angell, Planning Comm. Chair (208-388-2701)

ColumbiaGrid: Paul Didsayabutra, Principal Planning Engineer (503-943-4956)

California ISO: Gary DeShazo, Director, Regional Coordination (916-608-5880)