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# Stakeholders Comments on the RTP Scope and Process

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## Luminant

1. What vintage SSWG case set will be used?  I ask since the study takes so long, that using the latest case just prior to starting the study is best.  Also, generation additions should also be updated just prior to starting the study.

ERCOT: October 2014 SSWG dataset (2015 Dataset B) will be used as start case. Generation additions are reviewed and updated throughout the analysis, including just at the beginning of the analysis.

1. In Section 3.1.4 paragraph 2, the second sentence about dynamic ratings should be in its own paragraph, otherwise, it appears to be associated with the Panhandle area.  Also, please make available the weather assumptions that determine the dynamic rating in each weather zone.

ERCOT: RTP Scope document has been updated to reflect above changes. 90th percentile weather assumptions have been included in the RTP scope document as well as the RPG presentation.

1. In Section 3.2.2, you refer to Table 1 (you may want to be more clear and refer to Table 3.1).  I struggle with the concept of the West wind being set at 2%.  With roughly 8,000 MW wind capacity out west placing 160 MW of output seems to be introduce false precision.  It seems more appropriate to keep it at zero similar to recent year studies.

ERCOT: I understand the concern. As discussed early this year, this is based on conservative assumptions looking at 15th percentile output under 90th percentile weather conditions. Also, we do run a wind sensitivity case with all the wind inside the study region unavailable.

1. In Section 3.4, if you need to scale loads outside of the study area, how will it be done?  Uniform scaling of all loads outside of study area?

ERCOT: Yes, it will be done consistent to last year’s methodology, i.e. uniform scaling outside the study area starting with the RTP load level.

1. In Section 4, “Base Case Reliability Analysis”.  The third bullet refers to Contingency Analysis, whereas the first two bullets mention SCOPF.  Will SCOPF be used in all Contingency Analysis?  Comment also applies to 3rd section (Additional Reliability Analysis) bullet 1.

ERCOT: SCOPF will be used only while processing P0, P1, and P7. This will also be used for G-1+N-1 and X-1+N-1 as required by ERCOT Planning Guides (which happen to be some of P3 and P6).

A contingency analysis will be run for all others.

## STEC

1. Will the solar production cost also be $0/MWh

ERCOT: Yes –the scope document has been updated with the change.

1. How does ERCOT plan to get the negative and zero sequence data from the SPWG cases into the SSWG/RTP cases? There are also different generator parameters in the SSWG cases than the SPWG cases. The generator parameters in SSWG case are intentionally there to be used by DWG as opposed to SPWG short circuit analysis. It seems more logical, productive, and accurate for ERCOT to produce this output from the SPWG cases with the new projects added instead of SSWG cases.

ERCOT: ERCOT is still working on developing the short circuit analysis process to be used in the RTP; ERCOT will consider these comments in that process.

1. Can the economic analysis be made more granular? Instead of just putting out one $ number for all ERCOT STEC suggests that all economic results be listed by load zone. The initial study dollars for each load zone can be compared to the dollars for each economic project to help clarify to the market where the economic benefits will be realized for each proposed project.

ERCOT: ERCOT will look into this request. Need to understand it more, though.

## LCRA

1. Consider using an ERCOT 95th percentile coincident peak load forecast for weather zones outside the study region as the basis for this load adjustment…in reference to “Load outside the study region may be reduced until the load and reserve requirements are met.”

ERCOT: ERCOT declines to make this change for the 2015 RTP study. ERCOT will begin the reliability analysis for the study this month, but discussions in the stakeholder process regarding this issue are still ongoing. ERCOT may revisit this issue in future RTP studies based on the results of those discussions.

1. Define long lead time. Possibilities include: 6 Months to be consistent with the outages, assumptions, Longer than one year, Let each TSP define long-lead.

ERCOT: TPL-001-4 R2.1.5 defines the equipment to be studied in this analysis as having a lead time of one year or longer.

1. What consideration should be given to spare equipment when responding to this request?

ERCOT: ERCOT’s current understanding is that TPs will provide generic equipment type with long lead time requirements. It is not expected that specific elements in the model be identified by the TPs.

1. Add “Project concepts identified in the LTSA will be reviewed an aid to identifying project recommendations that will provide long-term benefits either as part of a long-term plan for the development of the system or as an alternative to recommending a series of smaller incremental projects over time.” To section on LTSA Alignment

ERCOT: Document has been updated with this change.

1. Add “The maximum level of generation and spare autotransformers shall be placed on-line within these cases in order to ascertain the worst-case short circuit current levels. Sub-transient generator impedances and a pre-fault voltage of 1.0 shall be utilized in the study.” To the Short circuit analysis section.

ERCOT: ERCOT is still working on developing the short circuit analysis process to be used in the RTP; ERCOT will consider these comments in that process.

1. This effort is duplicative of activities already performed by LCRA TSC in its role as a Transmission Planner. Should ERCOT decide to keep this as part of the RTP, the following should be considered:
	1. Incorporate factors that lead to a worst-case short circuit level (i.e. max gen on-line, and spare autotransformers placed into service).
	2. Use SPWG cases modified to conform with RTP case topology.
	3. Review the generator impedance values and specify use of sub-transient impedances.
	4. Use a pre-fault voltage of 1.0 per unit.
	5. Specify the tool to be used (PSSE, ASPEN, Powerworld, ….)

ERCOT: ERCOT is still working on developing the short circuit analysis process to be used in the RTP; ERCOT will consider these comments in that process.

## NRG

1. Under section 3.1.2 Transmission and Generation Outages, : “The list of generator outages will include the mothballed units as documented in the current Capacity, Demands, and Reserves report, unless the mothballed units are required in the RTP study cases as described in Section 3.4, Managing Imbalance in Cases.

ERCOT: Per TPL-001-4 R1, 1.1.2 the system models shall represent Known outage(s) of generation or Transmission Facility(ies) with a duration of at least six months”. As a result, ERCOT intends to not put mothballed units back in services (inside or outside the study region)

1. Under 3.2.1 Generation Additions and Retirements : Add “If there are not sufficient generation resources to meet the load, loss, and reserve requirements described herein, then future generation will be added to the RTP study cases as described in Section 3.4, Managing Imbalance in Cases”

ERCOT: ERCOT declines to make this change for the 2015 RTP study. ERCOT will begin the reliability analysis for the study this month, but discussions in the stakeholder process regarding this issue are still ongoing. ERCOT may revisit this issue in future RTP studies based on the results of those discussions.

1. Under section 3.2.4 DC Ties: “All of the existing DC ties (including those connecting to the Comisión Federal de Electricidad (CFE)) will be set based on the review of historical DC tie import/export information when ERCOT load is higher than the 90th percentile.”

ERCOT: SCOPE document has been updated with this feedback

1. Under section 3.2.5 Reserve Requirement : Update “The reliability and economic analysis will be performed based on the minimum planning reserve margin established by nodal protocol Section 3.2.6.1, Minimum ERCOT Planning Reserve Margin Criterion. After accounting for unit average forced outage rates, as described in Section 3.2.7, the operating reserve requirement shall never be less than 2800 MW.

ERCOT: The planning reserve margin mentioned in the nodal protocols is developed using the 50th percentile load assumptions. Applying the same margin for scenario with 90th percentile load assumption will not be appropriate. The current operating reserve of 2800 MW is included to address the P3-1 contingency event under the TPL-001-4

1. Add a section to model forced outage rates 3.2.7 Modeled forced outage rates “The RTP study cases will utilize the average forced outage rates by technology type (nuclear, coal, lignite, combined cycle, simple cycle, etc.) for the past 3 years during the summer season. Each generator type in the study case will be derated by the amount of these forced outage percentages.”

ERCOT: Modeling forced outage rates will result in more generation units being out of service (not derated). ERCOT believes more stakeholder discussion is warranted to develop another criterion to propose transmission projects to resolve constraints resulting from forced outage rates.

1. Under demand section 3.3: “The RTP cases will utilize the ERCOT 90th percentile weather zone load forecast”

ERCOT: As mentioned in previous discussions, ERCOT’s RTP study is a system wide analysis. ERCOT employs the higher-of (SSWG and 90th percentile ERCOT forecast) methodology to ensure that system is planned for critical system condition. This methodology helps account for uncertainty in economic growth in a region since the TSPs have local knowledge of planned industrial and commercial load additions that may not be captured in ERCOT's models.

1. Under demand section 3.3; Add, “80% of the Load Resources counted as Responsive Reserves in the CDR shall be subtracted from the appropriate weather zone load forecasts. 50% of the Emergency Response Service (10- and 30-min ramp products) counted in the CDR shall be subtracted from the appropriate weather zone load forecasts. The total load in the RTP cases shall be no more than 3% higher than the total coincident peak load forecasted by ERCOT in the most recent Long-Term Demand and Energy Forecasts (LTDEF). If the total load in the RTP case is greater than 3% higher than the LTDEF coincident peak load forecast, then ERCOT shall reduce each weather zone load equally until the 3% threshold is met.”

ERCOT: The responsive reserves and emergency response service numbers reported in the CDR are system wide numbers applicable when whole of ERCOT is at peak. The RTP cases are developed to represent conditions when certain regions of the ERCOT system are at their peaks, which is not coincident with ERCOT system peak.

1. Under section 3.4 manage imbalance in cases add “

If there are not sufficient generation resources, as adjusted for the average forced outage rates described in section 3.2.7, Modeled Forced Outage Rates, to meet the load, loss, and reserves described in section 3.2.5, Reserve Requirements, the following methods may be used.

1. The base case may be split into multiple study regions, but in no case shall the number of study regions be less than four. A study region may be a combination of multiple weather zones, such that the load inside the study region remains at the level determined as per the guidelines above in Section 3.3, Demand.

ERCOT: basecase is currently being split into 4 regions because of the amount of imbalance in the case; ERCOT would like to retain the ability to split into fewer cases if at all feasible. In either case, this can be debated at the RPG meetings. For the 2015 RTP, the cases will be split in to 4 study regions.

1. Load outside the study region may be reduced until the load, loss, and reserve requirements are met. The load reductions outside the study region shall not be greater than the percentage of the zone’s non-coincident peak when the study region is at its peak based on a running 5-year average of percentages. The table below provides sample percentages to illustrate the amount of scaling that may be allowed when performing a study of the coastal weather zone.

ERCOT: ERCOT declines to make this change for the 2015 RTP study. ERCOT will begin the reliability analysis for the study this month, but discussions in the stakeholder process regarding this issue are still ongoing. ERCOT may revisit this issue in future RTP studies based on the results of those discussions.

Table 3.2: Sample Load Scaling Percentages

|  |
| --- |
| EXAMPLE IF COASTAL ZONE BEING STUDIEDAverage % of peak load of each weather zone during the top hour peak load condition at the Coast Weather Zone(SAMPLES ONLY – PERCENTAGES NOT VERIFIED) |
|  | East | South | South Central | Far West | West | North | North Central |
| 2010 | 95.9% | 97.3% | 97.5% | 95.2% | 95.9% | 89.6% | 91.4% |
| 2011 | 97.6% | 95.3% | 96.7% | 91.2% | 92.0% | 88.3% | 95.5% |
| 2012 | 97.6% | 98.7% | 97.9% | 95.1% | 97.7% | 90.3% | 94.6% |
| 2013 | 92.7% | 98.1% | 98.1% | 98.6% | 95.2% | 87.1% | 90.2% |
| 2014 | 93.8% | 97.1% | 96.3% | 93.2% | 93.9% | 88.9% | 87.9% |
| avg. | 95.5% | 97.3% | 97.3% | 94.7% | 94.9% | 88.8% | 91.9% |

1. If after scaling there is still not enough generation to meet the load, loss, and reserve requirements, the following resources shall be added to the cases until the reserves are met:
	* DC Ties dispatched to their full capacity to increase energy transfers into ERCOT,
	* Increase NOIE generation with the NOIE’s prior consent,
	* Add mothballed units that have not yet announced their return to service during the study period,
	* Dispatch units that are solely contracted for Black Start Service,
	* Add resources with interconnection agreements and air permits but have not yet met financial security requirements.
	* Add resources units with interconnection agreements but have not yet received air permits and have yet to acquire water rights.

ERCOT: ERCOT declines to make this change for the 2015 RTP study. ERCOT will begin the reliability analysis for the study this month, but discussions in the stakeholder process regarding this issue are still ongoing. ERCOT may revisit this issue in future RTP studies based on the results of those discussions.

## AEP

1. AEP would like to suggest using MOD to update and store the zero sequence data as is being done by other RTO's in the region. This would allow for consistency and alignment of updates between the cases used for steady state and short circuit analysis.

ERCOT: Thank you for the comment; this should be discussed with SPWG and SSWG.

1. The 2015 RTP scope and process does not mention a process for covering R2 Part 2.4 regarding Near - Term Stability analysis as part of the annual Near - Term planning assessment. Please could ERCOT provide further information on how this requirement will be addressed?

ERCOT: The 2015 RTP will be used to cover the steady state portion of the NERC standards. All stability related requirements will be addressed in a different study.

## Oncor

1. How were the air temperatures in your spreadsheet developed?  How were the ratings in your spreadsheet developed?

ERCOT: The air temperatures are based on the historical data from ERCOT databases. Temperature data from various weather zones was compiled. A weighted (note that the weather station weights are the same as are used in load forecasting) average of the annual maximum temperatures recorded at individual weather stations within a weather zone was calculated to determine the Maximum annual temperature by weather zone. This data was calculated for each year from 1974 to 2013. A 90th percentile temperature was then calculated based on this information. This methodology is used to determine the 90th percentile temperatures and does not apply to the temperatures used in the calculation of the 90th percentile load data.

1. We believe an alternative to inputting new ratings into the base cases should be considered.  Having RTP reliability base cases with ratings different from the SSWG base cases and the RTP economic base cases will become a source of confusion for people who do not understand the differences between the base cases.  We propose selecting a percentage of the existing SSWG ratings that would be used to identify potential overloads such as 97% of the SSWG rating.  For loadings that exceed the agreed upon percentage, ERCOT could ask the affected TSP to review the rating that would be appropriate for the condition modeled.  This approach should prevent confusion caused by having different ratings in the base cases.

ERCOT: Thank you for the comment. ERCOT will improve any documentation related to the basecases used in each analysis. I believe it is clear that the SSWG cases are just used as a starting point, and are further updated per the RTP scope assumptions.

## ERCOT

1. Add post contingency voltage deviation limit as one of the planning criteria
2. Add multiple element contingency and cascade analysis procedure language to the RTP Scope/process document.
3. Add details about short circuit analysis
4. Add details about sensitivity cases per the TPL standards.