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| Key Topic Concept (KTC) Number | 10 | KTC Title | ESR - Study & Capacity Assumptions |
| Date Posted | | January 29, 2020 | |
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| Executive Summary | | This KTC recommends how Energy Storage Resources (ESRs) shall be treated in Reliability Unit Commitment (RUC) studies and other capacity assumptions.  This KTC recommends a process to appropriately include ESR capacity in operations and planning studies, including the ERCOT Capacity, Demand and Reserves (CDR) Report and other resource adequacy reports. | |
| Recommendation Description | | ESRs shall be treated similar to other short lead-time Resources. The RUC engine shall evaluate ESRs based on the values provided in their Current Operating Plan (COP) that reflect their expected available capacity.  ERCOT together with stakeholders participating in the Supply Analysis Working Group (SAWG) will develop a threshold above which ESRs will be included in the CDR report, as well as a methodology for calculating the appropriate percentage of total ESR capacity to include in the CDR as ESRs’ Peak Average Capacity Contribution.  This KTC also proposes near- and longer-term methodologies for considering ESR capacity in Outage coordination studies, operations studies other than Reliability Unit Commitment (RUC), and transmission planning studies. | |
| BESTF Discussion | | On 10/18/19, ERCOT staff presented material related to RUC studies and processes.  On 11/4/19, the BESTF reached consensus on KTC 10 item 3.  On 11/15/2019, ERCOT presented a proposal related to ESR Peak Average Capacity Contribution for the CDR report.  On 12/6/2019, the BESTF discussed and made revisions. The plan was to post the revised version for further review and comments.  On 1/17/2020, BESTF reached consensus on KTC 10, items 1, 2, 4 and 5. | |
| TAC Action Requested | |  | |
| TAC Action Summary | | On 11/20/19, TAC approved KTC 10, item 3.  On 1/29/20, TAC approved KTC 10, items 1, 2, 4 and 5. | |

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| Proposed KTC Recommendation Language |

# *Key Topic/Concept recommendation Language for TAC Approval*

None.

# *Key Topic/Concept recommendation Language Previously Approved by tac*

11/20/19 TAC Meeting (Consensus from 11/4/19 BESTF meeting):

1. The existing processes that are currently in place for other short-lead time Resources will also be applied to Energy Storage Resources (ESRs). In the near-term, system changes will not be made to the RUC engine. However, because of the very short lead-times, commitment recommendations for ESRs will be deferred in the RUC process by the ERCOT Operator.
2. In the near-term, the RUC engine will not be changed to consider an ESR’s state-of-charge. Instead, QSEs representing ESRs will be required to reflect duration limitations for their Resources in the COP High Sustained Limits (HSLs) for their Resources. Applicable Business Practice Manuals will be updated, but the following high-level expectations will apply:
   1. For ESRs providing Ancillary Service (AS), COP HSLs must be greater than or equal to the combined amount of AS being provided by the ESR.
   2. For ESRs that have additional energy that is not reserved for AS and is expected to be available for economic dispatch in Real-Time, the incremental HSL values above the combined amount of AS responsibility are expected to reflect duration limitations of the ESR.
   3. For ESRs not providing AS, the full HSL values are expected to reflect duration limitations of the ESR.
3. In the longer term, the RUC engine will be enhanced to recognize ESRs and consider state-of-charge when determining projected dispatch for the RUC study period.

1/29/20 TAC Meeting (Consensus from 1/17/20 BESTF meeting):

1. (Item 1) Define “Storage Peak Average Capacity Percentage” to be used in CDR for various batteries:

ERCOT together with the Supply Analysis Working Group (SAWG) will develop a methodology for ESR capacity to be accounted for in resource adequacy reports.

1. (Item 2) Outage Coordination Studies:

Item 2 does not require Protocol language revisions; however, below is a summary of near and longer term assumptions;

* 1. ESRs will continue to be excluded from Outage coordination studies. Exceptions to the exclusions will be considered based on study criteria and best engineering practices.
  2. ERCOT will work with stakeholders to develop appropriate outage coordination study assumptions.

1. (Item 4) Operations Studies (other than RUC):

* Generic Transmission Limit study for the Day-Ahead Market: this is a two-day ahead study to determine transfer limits on all existing Generic Transmission Constraints (GTCs), including the North to Houston Interconnection Reliability Operating Limit (IROL).
* Next Day study: this study evaluates the forecasted peak of the next Operating Day to ensure ERCOT has both sufficient generation to serve the load and mitigation plans on all issues that may come up. The generation input for this study is the result of the DRUC study.
* Gap Study: this study is a supplement of the Next Day study, using up to date information. The generation input for this study is the result of the most recent HRUC study.

Item 4 does not require Protocol language revisions, however below is a summary of near and longer term assumptions:

* 1. ESRs will continue to be considered "offline” in operations studies and ERCOT will issue guidance on ESR COP submittal expectations. Exceptions to the exclusions will be considered based on study criteria and best engineering practices.
  2. ERCOT will work with stakeholders to develop appropriate operational studies assumptions.

1. (Item 5) Transmission Planning Studies:

* Quarterly Stability Assessment: stability study, conducted every three months to assess newly planned generation, with the purpose of identifying any stability operating limits and to establish Generic Transmission Constraints (GTC) and Generic Transmission Limits (GTL) if needed.
* Regional Transmission Planning study: yearly planning study that focuses on meeting system needs within a six-year planning horizon.
* Long-Term System Assessment: biennial planning study, providing a scenario-based view of long-term needs (10-15 years into the future). The LTSA identifies upgrades that provide benefits across a range of possible future scenarios and provides a longer-term view that can inform and improve the shorter-term Regional Transmission Plan
* Regional Planning Group Studies: studies for proposed transmission improvement projects with estimated costs above $15 million.
* Other select dynamic studies; for example, Dynamic Stability Assessment of High Penetration of Renewable Generation in the ERCOT Grid, carried out in spring 2018.

Item 5 does not require Protocol language revisions, however below is a summary of near and longer term assumptions:

* 1. ESRs will continue to be considered “offline” in transmission planning studies. Exceptions to the exclusions will be considered based on study criteria and best engineering practices.
  2. ERCOT will work with stakeholders to develop appropriate transmission planning study assumptions.

# *Key Topic/Concept recommendation Language IN DISCUSSION AT BESTF*

None.

# *Future Decision Points and Issues for Developing Key topic/Concept recommendation Language*

None.

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| Applicable Protocol Section(s) |  |
| Impacted System(s) / Application(s) |  |