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| Key Topic Concept (KTC) Number | 10 | KTC Title | ESR - Study & Capacity Assumptions |
| Date Posted | December 03, 2019 |
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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 also recommends a process to appropriately include ESRs in the ERCOT Capacity, Demand and Reserves (CDR) Report. |
| 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. |
| 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. |
| TAC Action Requested | BESTF plans to request a vote to approve KTC 10 Item 3 at the 11/20/19 TAC meeting.BESTF plans to request a vote to approve this KTC 10 Item 1 at a future TAC meeting. |
| TAC Action Summary |   |

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| Proposed KTC Recommendation Language |

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

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.

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

None.

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

1. ERCOT together with the Supply Analysis Working Group (SAWG) will develop a threshold of X MW capacity of operational ESRs available for a 4-hour-duration. Once this threshold is met, ESRs will be accounted for in the Capacity, Demand and Reserves (CDR) Report with a non-zero Peak Average Capacity Contribution. For example, if the threshold is set at 200 MW, it will be reached once 800 MWh of ESRs become operational.

Similar to how other types of generation are accounted for in the CDR, ERCOT will include only ESRs that are registered with ERCOT.

A percentage of total ESR capacity representing the Peak Average Capacity Contribution for ESRs will be developed at SAWG and implemented by ERCOT once the operational ESR threshold is reached.

Information about an ESR’s Maximum State of Charge — a MWh value — for planned and existing resources will be requested via the Resource Integration and OnGoing Operations - Interconnection Services (RIOO-IS).

1. (Item 2) Outage Coordination Studies does not need protocol language, however below is a summary of the near and longer term assumptions;
	1. In the near term, ESRs will continue to be excluded from outage coordination studies.
	2. In the longer term, ERCOT will monitor ESR project growth to determine if changes to this approach are needed and work with stakeholders to develop appropriate outage coordination study assumptions.
2. (Item 4) Operational Studies does not need protocol language, however below is a summary of the near and longer term assumptions;
	1. In the near term, ESRs will continue to be considered "offline” in operations studies and ERCOT will issue guidance on ESR COP submittal expectations.
	2. In the longer term, ERCOT will moniter ESR project growth and COP submittals and work with stakeholders to determine if operations studies should use COP information.
3. (Item 5) Transmission Planning Studies does not need protocol language, however below is a summary of the near and longer term assumptions;
	1. In the near term, ESRs will continue to be considered “offline” in transmission planning studies.
	2. In the longer term, ERCOT will monitor ESR project growth to determine if changes to this approach are needed  and work with stakeholders to develop appropriate transmission planning study assumptions.

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

 1) Item 6 Reliability Unit Commitment Studies (Scheduled for 12-6-19 BESTF Meeting).

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