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| SCR Number | [800](http://www.ercot.com/mktrules/issues/SCR800) | SCR Title | Addition of DC Tie Ramp to GTBD Calculation |
| Date of Decision | | December 10, 2019 | |
| Action | | Approved | |
| Timeline | | Normal | |
| Effective Date | | Upon system implementation | |
| Priority and Rank Assigned | | Priority – 2020; Rank – 2910 | |
| Supporting Protocol or Guide Sections/Related Documents | | Protocol Section 6.5.7.3, Security Constrained Economic Dispatch | |
| System Change Description | | This System Change Request (SCR) incorporates Direct Current Tie (DC Tie) scheduled ramp into Security-Constrained Economic Dispatch (SCED) by updating the formula used by the Resource Limit Calculator to calculate the Generation To Be Dispatched (GTBD) value to include the addition of a scheduled five-minute DC Tie ramp rate (DCTRR). This DCTRR will be calculated from the scheduled system-wide DC Tie ramp times five and a configurable factor to capture the scheduled five-minute DC Tie ramp. | |
| Reason for Revision | | Addresses current operational issues.  Meets Strategic goals (tied to the [ERCOT Strategic Plan](http://www.ercot.com/content/news/presentations/2013/ERCOT%20Strat%20Plan%20FINAL%20112213.pdf) or directed by the ERCOT Board).  Market efficiencies or enhancements  Administrative  Regulatory requirements  Other: (explain)  *(please select all that apply)* | |
| Business Case | | In Real-Time, DC Tie scheduled ramp is currently only considered in ERCOT’s Real-Time Dispatch Indicative Locational Marginal Prices (LMPs) and not in SCED. As such, SCED GTBD does not account for DC Tie scheduled ramp. This SCR would help SCED take into account the scheduled five-minute DC Tie ramp in its five-minute Base Points and would take the burden off of control room operators from entering manual offsets and Regulation Service. There have been a number of instances when the scheduled change in DC Tie imports or exports has caused a delay in the recovery of system frequency following a Frequency Measurable Event (FME).  Although there may be inherent schedule error in the DC Tie ramp, this change will give a better indication to SCED via GTBD of the change in DC Tie imports and exports in the next five minutes, as compared to the current assumption that the DC Tie imports and exports will persist at the same level as at the beginning of the five-minute interval.  This SCR will improve the dispatch of Base Points to Resources to account for the scheduled ramping of DC Ties, will reduce the amount of Regulation Service deployed, and will aid in reducing frequency recovery duration following events that occur at times with significant DC Tie scheduled ramps. | |
| PRS Decision | | On 5/9/19, PRS voted unanimously to table SCR800 and refer the issue to ROS. All Market Segments were present for the vote.  On 9/12/19, PRS voted unanimously to recommend approval of SCR800 as submitted. All Market Segments were present for the vote.  On 10/10/19, PRS voted unanimously to endorse and forward to TAC the 9/12/19 PRS Report and Impact Analysis for SCR800 with a recommended priority of 2020 and a rank of 2910. All Market Segments were present for the vote. | |
| Summary of PRS Discussion | | On 5/9/19, participants discussed that SCR800 is needed and would reduce the deployment of Regulation Service and improve frequency recovery. Participants requested additional review by the Performance, Disturbance, Compliance Working Group (PDCWG).  On 9/12/19, there was no discussion.  On 10/10/19, ERCOT Staff noted that SCR800 has an impact to the Market Management System (MMS) which, due to technology upgrade efforts, may affect the final implementation date of SCR800. | |
| TAC Decision | | On 10/23/19, TAC voted unanimously to recommend approval of SCR800 as recommended by PRS in the 10/10/19 PRS Report. All Market Segments were present for the vote. | |
| Summary of TAC Discussion | | On 10/23/19, there was no discussion. | |
| ERCOT Opinion | | ERCOT supports approval of SCR800. | |
| Board Decision | | On 12/10/19, the ERCOT Board approved SCR800 as recommended by TAC in the 10/23/19 TAC Report. | |

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| Market Segment | Not Applicable |

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| **Comments Received** | |
| Comment Author | **Comment Summary** |
| ROS 071119 | Requested continued tabling of SCR800 for review by the Performance, Disturbance, Compliance Working Group (PDCWG) |
| ROS 090919 | Endorsed SCR800 as submitted |

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| Market Rules Notes |

None

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| Proposed System Change |

**Issue:**

ERCOT’s current Generation To Be Dispatched (GTBD) calculation does not effectively account for the ramping of Direct Current Ties (DC Ties). This 5 minute ramp schedule in GTBD would help Security-Constrained Economic Dispatch (SCED) better issue Base Points to Generation Resources to account for the ramping of DC Ties in the next 5 minutes. It will also help reduce the amount of Regulation used to cover the 5 minute increase or decrease in DC Tie scheduled ramp.

**Resolution:**

The following modifications are needed:

1. Add a K7 configurable factor together with the DC Tie Ramp Rate (DCTRR) calculated in the Energy Management System (EMS) using approved DC Tie Electronic Tags (e-Tags).
2. The GTBD equation should be as follows:

Generation To Be Dispatched = Total Gen + K1\*10\*System Load Frequency Bias + K2\*[(net non-conforming Load) – (net filtered non-conforming Load)] + K3\*5\*PLDRR + K4\*Regulation Deployed + K5\*ACE Integral – K6\*5\*PWRR + K7\*5\*DCTRR

DCTRR = DC Tie Ramp Rate where a positive value indicates increasing export and a negative value indicates increasing import