

August 2023 ERCOT Monthly Operations Report

Reliability and Operations Subcommittee Meeting

October 05, 2023

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# Report Highlights

* The unofficial ERCOT peak demand was 85,464 MW for the month of August on 8/10/2023 HE 18:00; this was 6,959 MW more than the previous August record of 78,505 MW set on 08/02/2022 HE 17:00, and 2,525 MW greater than the previous all-time record of 82,939 MW set on 7/31/2023 HE 17:00.
* A PVGR Generation Record of 13,735 MW was set on 08/16/2023 at 12:28.
* There were 5 frequency events**.**
* There were 6 Watch’s due to projected reserve capacity shortage with no market solution.
* There were 4 Transmission Watch’s due to the south of San Antonio constraint.
* There were 2 Watch’s issued for HRUC failure.
* There was 1 Advisory due to PRC falling below 3000 MW’s.
* There was 1 Advisory due to Geomagnetic Disturbance K-7 of higher.
* There were 8 Media Appeal’s through public news media.
* There was 1 instance where ERS 30/10/Weather Sensitive was Deployed.
* There was 1 instance where Distribution voltage reduction was requested.
* There were 18 instances where ERCOT Contingency Reserve Service was released.
* There was 1 OCN’s issued due to Tropical Storm Harold and 5 OCN’s due to extreme hot weather forecasted in North Central and South Central weather zones.
* There were 2 Watch issued for HRUC failure.
* There were 8 HRUC commitments.
* There were 24 days of congestion on the North Edinburg to Lobo GTC, 15 days on the Nelson Sharpe to Rio Hondo GTC, 7 days on the West Texas Export GTC, 15 days on the Valley Export GTC, 7 days on the North to Houston GTC, 1 day on the Williamson to Burnet GTC, and 1 day on the Panhandle GTC. There was no activity on the remaining GTCs during the month.

# Frequency Control

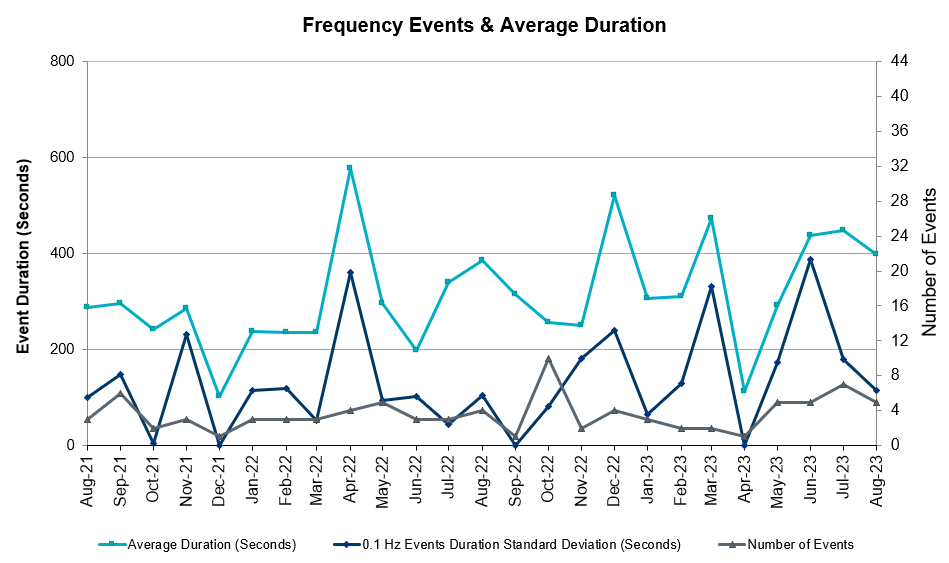
## Frequency Events

The ERCOT Interconnection experienced 5 frequency events, which resulted from units tripping. The shortest event duration was 04:33 and the longest was 09:18.

A summary of the frequency events is provided below. The reported frequency events meet one of the following criteria: Delta Frequency is 60 mHz or greater; the MW loss is 350 MW or greater; resource trip event triggered ECRS deployment. Frequency events that have been identified as Frequency Measurable Events (FME) for purposes of BAL-001-TRE-2 analysis are highlighted in blue. When analyzing frequency events, ERCOT evaluates PMU data according to industry standards. Events with an oscillating frequency of less than 1 Hz are inter-area, while higher frequencies indicate local events. Industry standards specify that damping ratio for inter-area oscillations should be 3.0% or greater. For the frequency events listed below, the ERCOT system met these standards and transitioned well after each disturbance. In the case of negative delta frequency, the MW Loss column could refer to load loss.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Date and Time** | **Delta Frequency** | **Max/Min Frequency** | **Duration of Event** | **PMU Data** | | **MW Loss** | **Load** | **IRR** | **Inertia** |
| **(Hz)** | **(Hz)** | **Oscillation Mode (Hz)** | **Damping Ratio** | **(MW)** | **%** | **(GW-s)** |
| 8/2/2023 21:55:48 | 0.064 | 59.952 | 00:09:18 | 0.56 | 14% | 452 | 73,637 | 21% | 366,602 |
| 8/4/2023 21:01:56 | 0.059 | 59.911 | 00:07:12 | 0.57 | 13% | 552 | 75,832 | 16% | 388,030 |
| 8/8/2023 19:26:17 | 0.098 | 59.918 | 00:04:33 | 0.55 | 14% | 687 | 80,192 | 20% | 385,012 |
| 8/22/2023 1:27:29 | 0.072 | 59.901 | 00:07:06 | 0.64 | 13% | 604 | 60,786 | 18% | 345,430 |
| 8/24/2023 5:04:09 | 0.062 | 59.927 | 00:05:01 | 0.6 | 16% | 493 | 53,397 | 10% | 350,562 |

(Note: All data on this graph encompasses frequency event analysis based on BAL-001-TRE-2.)



## ERCOT Contingency Reserve Events

There were 18 events where ERCOT Contingency Reserve MWs were released to SCED. The events highlighted in blue were related to frequency events reported in Section 2.1 above.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Date and Time Released to SCED | Date and Time Recalled | Duration of Event | | Maximum MWs Released | | Comments |
| 8/4/2023 17:03 | 8/4/2023 18:14 | 1:10:48 | | 800 | | Insufficient capability for forecasted 10min Ahead Net Load |
| 8/4/2023 18:52 | 8/4/2023 20:41 | 1:49:12 | | 2472 | | Insufficient capability for forecasted 10min Ahead Net Load |
| 8/6/2023 19:46 | 8/6/2023 20:26 | 0:39:20 | | 1500 | | Insufficient capability for forecasted 10min Ahead Net Load |
| 8/7/2023 16:42 | 8/7/2023 18:06 | 1:24:32 | | 500 | | Insufficient capability for forecasted 10min Ahead Net Load |
| 8/7/2023 18:57 | 8/7/2023 20:16 | 1:19:36 | | 1500 | | Insufficient capability for forecasted 10min Ahead Net Load |
| 8/8/2023 19:31 | 8/8/2023 20:27 | 0:56:16 | | 1500 | | Insufficient capability for forecasted 10min Ahead Net Load |
| 8/10/2023 15:29 | 8/10/2023 20:18 | 4:08:24 | 1500 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/11/2023 18:31 | 8/11/2023 20:06 | 1:34:56 | 1750 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/12/2023 19:37 | 8/12/2023 20:12 | 0:34:40 | 500 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/15/2023 19:25 | 8/15/2023 20:31 | 1:05:44 | 500 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/17/2023 14:41 | 8/17/2023 20:46 | 6:04:40 | 2620 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/20/2023 19:11 | 8/20/2023 21:11 | 1:59:44 | 2000 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/22/2023 1:27 | 8/22/2023 1:35 | 0:07:44 | 674 | | Unit Trip | |
| 8/24/2023 15:55 | 8/24/2023 20:41 | 4:45:48 | 2342 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/25/2023 18:21 | 8/25/2023 20:44 | 2:23:04 | 2579 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/26/2023 19:38 | 8/26/2023 20:46 | 1:07:56 | 500 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/29/2023 19:26 | 8/29/2023 20:01 | 0:35:08 | 700 | | Insufficient capability for forecasted 10min Ahead Net Load | |
| 8/30/2023 18:27 | 8/30/2023 20:41 | 2:13:32 | 2749 | | Insufficient capability for forecasted 10min Ahead Net Load | |

## Responsive Reserve Events

There were 3 events where Responsive Reserve MWs were released to SCED.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date and Time Released to SCED | Date and Time Recalled | Duration of Event | Maximum MWs Released | Comments |
| 8/17/2023 19:09 | 8/17/2023 20:06 | 0:57:00 | 893 | Released for Capacity |
| 8/25/2023 19:21 | 8/25/2023 20:11 | 0:50:00 | 1000 | Released for Capacity |
| 8/30/2023 19:25 | 8/30/2023 20:24 | 0:59:00 | 700 | Released for Capacity |

## Load Resource Events

None.

# Reliability Unit Commitment

ERCOT reports on Reliability Unit Commitments (RUC) monthly. Commitments are reported grouped by operating day and weather zone. The total number of hours committed is the sum of the hours for all the units in the specified region. Additional information on RUC commitments can be found on the MIS secure site at Grid 🡪 Generation 🡪 Reliability Unit Commitment.

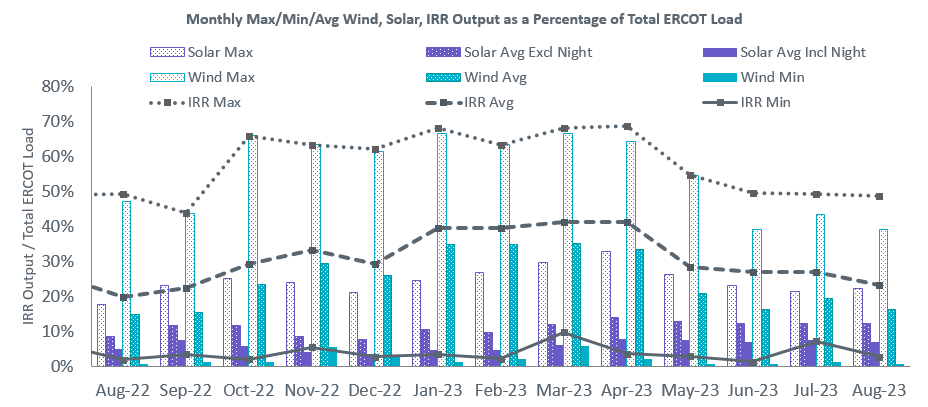
There were no DRUC commitments.

There were 8 HRUC commitments.

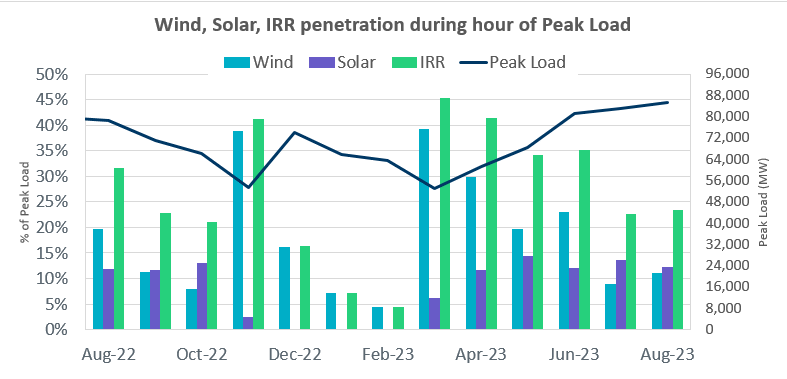
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Resource Location** | **# of Resources** | **Operating Day** | **Total # of Hours Committed** | **Total MWhs** | **Reason for Commitment** |
| SOUTH\_CENTRAL | 4 | 08/07/2023 | 7 | 364.3 | Transmission Constraints |
| NORTH\_CENTRAL | 1 | 08/15/2023 | 1 | 35.0 | System Capacity |
| NORTH\_CENTRAL | 1 | 08/16/2023 | 1 | 72.0 | System Capacity |
| NORTH\_CENTRAL, SOUTH\_CENTRAL | 2 | 08/22/2023 | 4 | 1,225.6 | Transmission Constraints |

# IRR, Wind, and Solar Generation as a Percent of Load

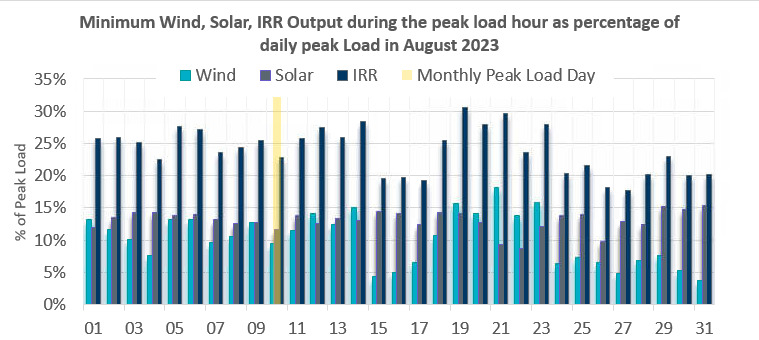
The graph below shows the maximum, minimum and average aggregate solar, wind and IRR output as a percentage of total ERCOT load when evaluated as 10-minute averaged intervals, over the past 13 months. Current wind and solar generation and penetration records are listed in the footnote below[[1]](#footnote-2). Maximum IRR penetration for the month was 48.80% on 08/13/2023 interval ending 09:20 and minimum IRR penetration for the month was 2.81% on 08/29/2023 interval ending 07:00.



During the hour of peak load for the month, hourly integrated wind generation was 9,554 MW and solar generation was 10,433 MW. The graph below shows the wind and solar penetration percentage during the hour of the peak load in the last 13 months.



Lastly, the graph below shows the minimum wind, solar and IRR output during the peak load hour as a percentage of the daily peak load for every day in the month.



# Largest Net-Load Ramps

The net-load ramp is defined as the change in net-load (load minus wind and PVGR generation) during the defined time horizon. Such a variation in net-load needs to be accommodated in grid operations to ensure that the reliability of the grid is satisfactorily maintained. The largest net-load ramp during 5-min,

10-min, 15-min, 30-min and 60-min in August 2023 was 1,230 MW, 1,793 MW, 2,519 MW, 4,733 MW, and 8,650 MW, respectively. The comparison with respect to the historical values is given in the table below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Month and Year** | **5 min** | **10 min** | **15 min** | **30 min** | **60 min** |
| August 2014 | 674 MW | 1,169 MW | 1,589 MW | 2,854 MW | 5,201 MW |
| August 2015 | 776 MW | 1,231 MW | 1,754 MW | 3,303 MW | 6,260 MW |
| August 2016 | 834 MW | 1,350 MW | 1,881 MW | 3,230 MW | 6,319 MW |
| August 2017 | 797 MW | 1,421 MW | 1,953 MW | 3,167 MW | 5,798 MW |
| August 2018 | 1,333 MW | 1,854 MW | 2,780 MW | 3,205 MW | 6,604 MW |
| August 2019 | 830 MW | 1,460 MW | 2,084 MW | 3,795 MW | 7,375 MW |
| August 2020 | 954 MW | 1,536 MW | 2,221 MW | 4,101 MW | 7,690 MW |
| August 2021 | 1,323 MW | 1,596 MW | 2,081 MW | 3,614 MW | 6,761 MW |
| August 2022 | 977 MW | 1,837 MW | 2,664 MW | 4,529 MW | 7,716 MW |
| August 2023 | 1,230 MW  8/16/23  (IE 11:56) | 1,793 MW  8/11/23  (IE 11:12) | 2,519 MW  8/11/23  IE 11:17) | 4,733 MW  8/4/23  (IE 12:07) | 8,650 MW  8/13/23  (IE 12:39) |
| All months in 2014-2023 | 1,647 MW  05/25/2022  (IE 17:06) | 2,506 MW  1/12/2023  (IE 17:16) | 3,583 MW  04/29/2023  (IE 19:19) | 6,640 MW  04/29/2023  (IE 19:34) | 12,352 MW  04/29/2023  (IE 19:50) |

# Congestion Analysis

## Notable Constraints

Nodal protocol section 3.20 specifies that ERCOT shall identify transmission constraints that are binding in Real-Time three or more Operating Days within a calendar month. As part of this process, ERCOT reports congestion that meets this criterion to ROS. In addition, ERCOT also highlights notable constraints that have an estimated congestion rent exceeding $1,000,000 for a calendar month. These constraints are detailed in the table below, including approved transmission upgrades from TPIT that may provide some congestion relief based on ERCOT’s engineering judgement. Rows highlighted in blue indicate the congestion was affected by one or more outages. For a list of all constraints activated in SCED, please see Appendix A at the end of this report.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Contingency Name** | **Overloaded Element** | **# of Days Constraint Binding** | **Congestion Rent** | **Transmission Project** |
|
| Elmcreek-Sanmigl 345kV | Pawnee Switching Station - Calaveras 345kV | 21 | $96,954,641.76 |  |
| TWR(345) WAP-WLF64 & WAP-WLY72 | South Texas Project - Wa Parish 345kV | 14 | $64,632,655.68 |  |
| Rattlesnake Rd Switch to LAKE CREEK SES LIN \_A | St Johns Switch - Jewett 345kV | 24 | $38,803,474.57 |  |
| TWR(345) WAP-WLF64 & CCK-WLY72 | South Texas Project - Wa Parish 345kV | 4 | $33,122,201.62 |  |
| BEVO to BEVO LIN 1 | Hamilton Road - Maverick 138kV | 20 | $22,138,951.23 | Escondido to Hamilton Road 138 kV Line Rebuild Project (22RPG044 ) |
| SALSW - HUTTO 345KV | Bell County - Salado Switch 138kV | 17 | $17,690,846.46 |  |
| CENTERVILLE to MCCREE LIN 1 | Shiloh - Mccree 138kV | 16 | $17,120,874.85 |  |
| RNDRK-CHIEBR & SPANOA 138kV | Round Rock Northeast - Hutto Switch 138kV | 8 | $16,822,375.97 |  |
| MGSES TO CCRSW 345 AND BTRCK TO MGSES 345 DBLCKT | Tonkawa Switch - Morgan Creek Ses 345kV | 18 | $14,907,314.16 |  |
| VENSW TO LIGSW 345 TRPLCKT 1 OF 3 | Cedar Hill Switch - Webb Sub 345kV | 2 | $14,415,697.27 |  |
| Austro-Daffin&Dunlap-Decker 138kV | Sim Gideon - Bastrop City 138kV | 13 | $13,841,664.66 |  |
| WA PARISH to OBRIEN LIN A | Wa Parish - Obrien 345kV | 4 | $12,207,494.56 |  |
| COLETO CREEK to Euler LIN 1 | Coleto Creek - Rosata Tap 138kV | 17 | $11,791,988.55 | AEP\_TCC\_UpgradeColetoCreek-Rosata (50870) |
| HICKS SWITCH to HICKS SWITCH LIN \_A | Hicks Switch - Alliance 345kV | 8 | $11,620,053.10 | Oncor\_MW\_RoanokeAreaProjects (21RPG008, 70900) |
| Basecase | NE\_LOB GTC | 23 | $9,268,271.35 |  |
| DMTSW TO SCOSW 345 DBLCKT | Knapp - Scurry Chevron 138kV | 23 | $8,694,475.18 |  |
| MEADOW to OASIS LIN A | Monsan Cogen - Petson 138kV | 19 | $8,129,557.66 | CNP\_22TPIT64941\_Ckt04\_Petson\_Monsan\_Upgrades (64941) |
| Emses-Pkrsw & Hcksw-Rnksw 345kV | Richland Hills - Haltom 138kV | 6 | $7,964,495.12 |  |
| FOWLERTON to FOWLERTON LIN 1 | Laredo Vft North - Las Cruces 138kV | 21 | $7,719,473.76 | AEP\_TCC\_Laredo VFT North - Las Cruces 138 kV Line Rebuild (58008) |
| Lytton - Slaughtr & Turner 138 kV | Lytton Springs - Pilot Knob 138kV | 2 | $5,469,463.81 | AEN\_26TPIT71408\_PMCR\_LY\_PK\_CKT943\_Recond\_3000A (7140) |
| DUPONT SWITCH - INGLESIDE to DUPONT SWITCH - INGLESIDE LIN 1 | Dupont Switch - Ingleside - Lge 138kV | 24 | $5,397,907.63 |  |
| ALLIANCE to ALLIANCE LIN \_B | Roanoke Switch - Hicks Switch 345kV | 1 | $5,273,823.94 | Oncor\_MW\_RoanokeAreaProjects (21RPG008, 70900) |
| TMPSW TO KNBSW 345 AND TMPSW TO BELCNTY 138 DBLCKT | Round Rock Northeast - Hutto Switch 138kV | 5 | $4,399,660.81 |  |
| South Texas # 1 & # 2 | Blessing - Lolita 138kV | 9 | $4,131,398.07 |  |
| NUECES BAY - LON HILL 138 & GILA - TORTUGA 138 | Champlin - Weil Tract 138kV | 7 | $3,702,106.16 | ETT\_TCC\_Champlin-WeilTractRebuild (57912) |
| TWR(345) HLJ-WLF64 & CCK-WLY72 | South Texas Project - Wa Parish 345kV | 1 | $3,594,587.38 |  |
| COMFORT to CYPRESS CREEK LIN 1 | Raymond F Barker - Comfort 138kV | 6 | $3,567,254.97 |  |
| Loss of NEDIN train | Burns Sub - Rio Hondo 138kV | 10 | $3,294,456.20 | STEC\_71930\_RioHondo\_Burns\_Upgrade (71930) |
| PALODURO SUB to PEARSALL SWITCHING STATION LIN 1 | Pearsall Switching Station 138kV | 24 | $3,129,736.51 | STEC\_76790\_upgradePearsallAuto (76790) |
| SOUTH MCALLEN to BENTSEN LIN 1 | Railroad - South Mission 138kV | 2 | $2,961,504.88 |  |
| FORT LANCASTER to FORT LANCASTER LIN 1 | Palouse - Wolfcamp 138kV | 6 | $2,634,055.46 |  |
| COLETO CREEK to COLETO CREEK LIN 1 | Pawnee Switching Station - Tango 345kV | 12 | $2,583,614.93 |  |
| TVWSW TO CDHSW 345 AND CDHSW TO VENSW 345 DBLCKT | Park Row - Sherry Switch 138kV | 3 | $2,395,851.48 |  |
| Beasley to ORCHARD LIN 1 | Peters - Twinwood Mobile 138kV | 3 | $2,338,154.85 |  |
| Koch Upriver - Tortuga & Lon Hill - Nueces Bay 138KV | Champlin - Weil Tract 138kV | 13 | $2,318,262.36 | ETT\_TCC\_Champlin-WeilTractRebuild (57912) |
| BLACKWATER DRAW SWITCH to DOUBLE MOUNTAIN SWITCH LIN 1 | Mackenzie Substation - Northeast Substation 115kV | 13 | $2,269,690.07 |  |
| Basecase | WILBRN GTC | 1 | $2,086,419.38 |  |
| MANUAL PRSSW-HWKSW 138 DBLCKT | Rivercrest Ses - Deport Rea 138kV | 5 | $1,980,619.53 |  |
| ROUND ROCK NORTHEAST to ROUND ROCK NORTHEAST LIN \_B | Round Rock Northeast - Hutto Switch 138kV | 1 | $1,968,901.96 |  |
| AUSTROP to DAFFIN GIN LIN 1 | Decker Power Plant - Aen Dunlap 138kV | 1 | $1,930,834.98 |  |
| EMSES TO PKRSW 345 AND EMSES TO HCKSW 345 DBLCKT | Richland Hills - Haltom 138kV | 1 | $1,829,327.56 |  |
| Elmcreek-Sanmigl 345kV | Magruder - Victoria 138kV | 3 | $1,779,485.57 |  |
| MANUAL PRSSW-HWKSW 138 DBLCKT | Tenaska (Txu) - Toco Switch 138kV | 5 | $1,699,220.77 |  |
| LON\_HILL - BUNSEN & WEIL\_TRC 138 KV | Champlin - Weil Tract 138kV | 1 | $1,566,048.14 | ETT\_TCC\_Champlin-WeilTractRebuild (57912) |
| WESTSIDE - MCKENZIE (138) & LON\_HILL - NUECES\_B (138) | Champlin - Weil Tract 138kV | 1 | $1,538,534.27 | ETT\_TCC\_Champlin-WeilTractRebuild (57912) |
| CALAVERAS to CALAVERAS LIN 1 | Coleto Creek - Rosata Tap 138kV | 3 | $1,461,148.66 | AEP\_TCC\_UpgradeColetoCreek-Rosata (50870) |
| Euler to Euler LIN 1 | Coleto Creek - Rosata Tap 138kV | 2 | $1,379,314.11 | AEP\_TCC\_UpgradeColetoCreek-Rosata (50870) |
| Basecase | WESTEX GTC | 4 | $1,369,079.02 |  |
| Lon\_Hill - Nueces & Equistar 138 kV | Champlin - Weil Tract 138kV | 1 | $1,219,015.64 | ETT\_TCC\_Champlin-WeilTractRebuild (57912) |
| White Point to Angstrom & Lon Hill 345KV DOUBLE | Pawnee Switching Station - Tango 345kV | 7 | $1,201,769.61 |  |
| DOW CHEMICAL TO OASIS 345KV | Monsan Cogen - Petson 138kV | 3 | $1,198,212.59 | CNP\_22TPIT64941\_Ckt04\_Petson\_Monsan\_Upgrades (64941) |
| PARIS SWITCH to VALLEY SES Valley South | Rivercrest Ses - Deport Rea 138kV | 5 | $1,120,053.45 |  |
| Mccala-Henne & Zorn 138kV | Crosswinds - Turnersville 138kV | 2 | $1,116,123.65 |  |
| ZORN - HAYSEN 345KV | Bergheim 138kV | 7 | $1,112,084.49 |  |
| Manual dbl ckt for NEDIN-BONILLA 345kV & RIOH-PRIM138kV | Burns Sub - Rio Hondo 138kV | 16 | $1,098,270.35 | STEC\_71930\_RioHondo\_Burns\_Upgrade (71930) |
| LON HILL to NELSON SHARPE LIN 1 | Nelson Sharpe 345kV | 12 | $1,025,304.85 |  |
| OKLAUNION TRX 1382 345/138 | Paint Creek - Munday East 138kV | 2 | $1,018,464.09 |  |
| BAKERSFIELD SWITCHYARD to Big HiLL LIN 1 | Palouse - Wolfcamp 138kV | 8 | $963,887.09 |  |
| FOWLERTON to FOWLERTON LIN 1 | Falfurrias - Premont 69kV | 11 | $863,615.77 |  |
| BBSES TO RCHBR 345 DBLCKT | Pin Oak Switch - Fairfield Bepc 138kV | 5 | $838,784.94 | Oncor\_SE\_62327\_Fairfield West - Big Brown Tap 138 kV Line (62327) |
| Manual Single ANGSTROM to WHITEPOINT 345 kV | Pawnee Switching Station - Tango 345kV | 5 | $792,334.33 |  |
| FOWLERTON to FOWLERTON LIN 1 | Asherton - Catarina 138kV | 5 | $783,963.69 | AEP\_TCC\_AshertontoPiloncillo138kVLine\_rebuild (73100) |
| Manual for I\_DUPS - RESNIK & MCCAMPBE 2 138KV | Whitepoint - Rincon 138kV | 8 | $752,262.94 |  |
| SWESW TO BTRCK AND SWESW TO CCRSW 345 DBLCKT | Tonkawa Switch - Morgan Creek Ses 345kV | 3 | $744,145.41 |  |
| VICTORIA to MAGRUDER LIN 1 | Magruder 138kV | 3 | $729,433.55 |  |
| LAQUINTA to LOBO LIN 1 | Falfurrias - Premont 69kV | 21 | $679,799.03 |  |
| ST. LAWRENCE to EINSTEIN LIN 1 | Carterville - Einstein 138kV | 13 | $660,088.08 |  |
| LAS PULGAS to RAYMONDVILLE 2 LIN 1 | Haine Drive - La Palma 138kV | 7 | $550,121.30 |  |
| LAQUINTA to LOBO LIN 1 | Bruni Sub 138kV | 19 | $421,428.41 |  |
| KING RANCH GAS PLANT to FALFURRIAS LIN 1 | Falfurrias - Premont 69kV | 11 | $408,539.75 |  |
| PANCAKE to PANCAKE LIN 1 | Gustine - Hasse 69kV | 19 | $377,428.71 | BEPC\_TPIT1205\_HASSE\_GUSTINE (1205) |
| Basecase | VALEXP GTC | 8 | $370,245.63 |  |
| Basecase | NELRIO GTC | 11 | $345,268.12 |  |
| Bighil-Kendal 345kV | Yellow Jacket - Treadwell 138kV | 8 | $338,926.19 |  |
| LON HILL to NELSON SHARPE LIN 1 | Holly - Southside 138kV | 9 | $321,537.81 | AEP\_TCC\_RebuildHolly-Southside (45566) |
| CCRSW TO SWESW 345 AND BTRCK TO MGSES 345 DBLCKT | Tonkawa Switch - Morgan Creek Ses 345kV | 6 | $314,598.56 |  |
| SWESW TO MULBERRY AND SWESW TO LNCRK 345 DBLCKT | Bluff Creek - Abilene Mulberry Creek 345kV | 3 | $293,917.29 |  |
| Goddard to TANGO LIN 1 | Orange Grove Switching Station - Lon Hill 138kV | 3 | $243,408.25 |  |
| AJO to AJO LIN 1 | Las Pulgas - Raymondville 2 138kV | 15 | $242,988.61 |  |
| FIREROCK TO BRNWD 138 AND FIREROCK TO BANGS 69 DBLCKT | Olney 138kV | 3 | $231,737.72 |  |
| COLETO CREEK to COLETO CREEK LIN 1 | Coleto Creek - Rosata Tap 138kV | 3 | $224,544.87 | AEP\_TCC\_UpgradeColetoCreek-Rosata (50870) |
| ALICE to ALICE LIN 1 | Falfurrias - Premont 69kV | 7 | $223,816.78 |  |
| Manual White Point to Angstrom & Lon Hill 345KV DOUBLE | Pawnee Switching Station - Tango 345kV | 6 | $207,358.85 |  |
| CARTERVILLE to EINSTEIN LIN 1 | Rocky Road - Stiles 138kV | 4 | $184,030.18 | Oncor\_FW\_NOTPIT\_Stiles Ranch Substation (73230) |
| COLETO CREEK to COLETO CREEK LIN 1 | Katoen - Lon Hill 345kV | 4 | $178,946.55 |  |
| Ferguson-Sherwood Shores & Ferguson-Granite Mountain 138kV | Ctec Buchanan - Sandstone Mountain 69kV | 5 | $158,233.30 |  |
| COLETO CREEK to COLETO CREEK LIN 1 | Goddard - Katoen 345kV | 3 | $153,844.18 |  |
| COLETO CREEK to VICTORIA LIN 1 | Coleto Creek - Victoria 138kV | 6 | $129,108.10 |  |
| ODLAW SWITCH to ASPHALT MINES LIN 1 | Hamilton Road - Maverick 138kV | 7 | $106,070.66 | Escondido to Hamilton Road 138 kV Line Rebuild Project (22RPG044 ) |
| TANGO to PAWNEE SWITCHING STATION LIN 1 | Orange Grove Switching Station - Lon Hill 138kV | 3 | $105,952.43 |  |
| Manual dbl ckt for NEDIN-BONILLA 345kV & RIOH-PRIM138kV | Haine Drive - La Palma 138kV | 10 | $104,360.15 |  |
| MAN\_DBL\_'CONSW-MGSES\_and\_CONSW-LNGSW\_345kV\_DBLCKT | Morgan Creek Ses - Navigation Sub 138kV | 3 | $90,655.44 | Oncor\_FW\_5436 Morgan Creek\_McDonald Rd 138 kV Line (5436) |
| AJO to AJO LIN 1 | Falfurrias - Premont 69kV | 4 | $82,437.18 |  |
| KLEBERG AEP to KLEBERG AEP LIN 1 | Loyola Sub 138kV | 5 | $58,083.68 | STEC\_76816\_upgradeLoyolaAuto (76816) |
| Carver to Carver LIN 1 | Atlantic Sonora - Sonora 69kV | 4 | $48,470.10 |  |
| Loss of NEDIN train | Asherton - Catarina 138kV | 3 | $46,402.87 | AEP\_TCC\_AshertontoPiloncillo138kVLine\_rebuild (73100) |
| MOLINA - LOBO 138 & LOBO - CENIZO 345 | Pawnee Switching Station - Tango 345kV | 6 | $41,326.09 |  |
| FOWLERTON to FOWLERTON LIN 1 | Bruni Sub 138kV | 3 | $25,885.59 |  |
| Basecase | N\_TO\_H GTC | 3 | $9,119.56 |  |
| Rns-Rtw & Sng-Tb 345kV | Th Wharton - Zenith 345kV | 3 | $5,449.43 |  |
| BRACKETTVILLE to BRACKETTVILLE LIN 1 | Hamilton Road - Maverick 138kV | 5 | $3,774.11 | Escondido to Hamilton Road 138 kV Line Rebuild Project (22RPG044 ) |
| FORT LANCASTER to FORT LANCASTER LIN 1 | Hamilton Road - Maxwell 138kV | 3 | $2,165.90 | Hamilton Road to Maxwell 138 kV Line Rebuild Project (20RPG022) |

## Generic Transmission Constraint Congestion

There were 24 days congestion on the North Edinburg to Lobo GTC, 15 days on the Nelson Sharpe to Rio Hondo GTC, 7 days on the West Texas Export GTC, 15 days on the Valley Export GTC, 7 days on the North to Houston GTC, 1 day on the Williamson to Burnet GTC, and 1 day on the Panhandle GTC. There was no activity on the remaining GTCs during the month.

Note: This is how many times a constraint has been activated to avoid exceeding a GTC limit, it does not imply an exceedance of the GTC occurred or that the GTC was binding.

## Manual Overrides

On 8/10/2023 15:40, ERCOT issued manual HDL override for congestion management and the override

was removed on 8/10/2023 20:19.

On 8/11/2023 17:59, ERCOT issued manual HDL override for congestion management and the override was removed on 8/11/2023 20:02.

On 8/17/2023 19:00, ERCOT issued manual HDL override for congestion management and the override was removed on 8/17/2023 20:35.

## Congestion Costs for Calendar Year 2023

The following table represents the top twenty active constraints for the calendar year based on the estimated congestion rent attributed to the congestion. ERCOT updates this list on a monthly basis.

|  |  |  |  |
| --- | --- | --- | --- |
| **Contingency** | **Overloaded Element** | **# of 5-min SCED** | **Estimated Congestion Rent (2023)** |
| Elmcreek-Sanmigl 345kV | Pawnee Switching Station – Calaveras 345kV | 9508 | 142569855.6 |
| TWR(345) WAP-WLF64 & WAP-WLY72 | South Texas Project – Wa Parish 345kV | 5053 | 89547800.9 |
| MAN\_DBL\_MDSSW-ODEHB\_and\_CONSW-QALSW\_345kV\_DBLCKT | Midessa South Sw 138kV | 11605 | 79014288.16 |
| Basecase | NE\_LOB GTC | 30935 | 54205750.59 |
| Basecase | WESTEX GTC | 14709 | 51514925.5 |
| BEVO to BEVO LIN 1 | Hamilton Road – Maverick 138kV | 6701 | 50669131.84 |
| SKYWEST to SKYWEST LIN 1 | Consavvy Switch – Cottonfield Sub 138kV | 2909 | 45341291.63 |
| Rattlesnake Rd Switch to LAKE CREEK SES LIN \_A | St Johns Switch – Jewett 345kV | 4450 | 44334743.14 |
| SKYWEST to SKYWEST LIN 1 | South Midland – Consavvy Switch 138kV | 10282 | 41928489.3 |
| TWR(345) WAP-WLF64 & CCK-WLY72 | South Texas Project – Wa Parish 345kV | 3915 | 34465421.37 |
| MGSES TO CCRSW 345 AND BTRCK TO MGSES 345 DBLCKT | Tonkawa Switch – Morgan Creek Ses 345kV | 5569 | 29934880.85 |
| BLACKWATER DRAW SWITCH to DOUBLE MOUNTAIN SWITCH LIN 1 | Mackenzie Substation – Northeast Substation 115kV | 8572 | 29153025.77 |
| SALSW – HUTTO 345KV | Bell County – Salado Switch 138kV | 3424 | 28823224.72 |
| Manual\_SGL\_CONSW-MDSSW\_345kV\_SglCkt | Quail Switch – Odessa Ehv Switch 345kV | 3594 | 26545479.5 |
| HICKS SWITCH to HICKS SWITCH LIN \_A | Hicks Switch – Alliance 345kV | 2256 | 24717911.56 |
| Basecase | PNHNDL GTC | 7972 | 24476704.55 |
| DMTSW TO SCOSW 345 DBLCKT | Knapp – Scurry Chevron 138kV | 8445 | 22145306.26 |
| FOWLERTON to FOWLERTON LIN 1 | Laredo Vft North – Las Cruces 138kV | 12061 | 21722227.02 |
| MAN\_DBL\_CONSW-MDSSW\_and\_CONSW-QALSW\_345kV\_DBLCKT | Morgan Creek Ses – Forest Creek And Sand Bluff Wind Farms 138kV | 2616 | 21174926.89 |
| Manual dbl ckt for NEDIN-BONILLA 345kV & RIOH-PRIM138kV | Burns Sub – Rio Hondo 138kV | 9590 | 19975744.02 |

# System Events

## ERCOT Peak Load

The unofficial ERCOT peak load for the month was 85,464 MW and occurred on 8/10/2023, during hour ending 18:00.

## Load Shed Events

None.

## Stability Events

None.

## Notable PMU Events

ERCOT analyzes PMU data for any significant system disturbances that do not fall into the Frequency Events category reported in section 2.1. The results are summarized in this section once the analysis has been completed.

There were no PMU events outside of those reported in section 2.1.

## DC Tie Curtailment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Date** | **DC Tie** | **Curtailing Period** | **# of Tags Curtailed** | **Initiating Event** | **Curtailment Reason[[2]](#footnote-3),[[3]](#footnote-4)** |
| 8/2/2023 | DC\_R | 20:23 – 23:55 | 14 | Forced Outage | Planned or Unplanned Outage |
| 8/10/2023 | DC\_L | 8/10 17:36- 8/11 17:00 | 7 | Forced Outage | Planned or Unplanned Outage |
| 8/30/2023 | DC\_L | 21:26 – 22:35 | 9 | Actual or Anticipated Emergency | Actual or Anticipated Emergency in its Control Area |

## TRE/DOE Reportable Events

* LCRA Submitted a DOE-417 on 08/03/2023 for System Report – Unexpected Transmission loss within its area, contrary to design, of three or more Bulk Electric System
* ERCOT submitted a DOE-417 on 08/17/2023 for Media Appeal
* Oncor Submitted a EOP-004-4 on 08/18/2023 for Damage or destruction to it Facility.
* Oncor Submitted a DOE-417 for 08/18/2023 for Damage or destruction to it Facility.
* ERCOT submitted a DOE-417 on 08/20/2023 for Media Appeal
* ERCOT submitted a DOE-417 on 08/24/2023 for Media Appeal
* CenterPoint Submitted a DOE-417 for Loss of 50,000 customers.
* ERCOT submitted a DOE-417 on 08/25/2023 for Media Appeal
* ERCOT submitted a DOE-417 on 08/26/2023 for Media Appeal
* ERCOT submitted a DOE-417 on 08/27/2023 for Media Appeal
* ERCOT submitted a DOE-417 on 08/29/2023 for Media Appeal
* ERCOT submitted a DOE-417 on 08/30/2023 for Media Appeal

## New/Updated Constraint Management Plans

There was 1 new CMP: MP\_2023\_11

## New/Modified/Removed RAS

None.

## New Procedures/Forms/Operating Bulletins

|  |  |  |
| --- | --- | --- |
| **Date** | **Subject** | **Bulletin No.** |
| 08/31/2023 | Resource Desk V1 Rev 76 | 1097 |
| 08/31/2023 | Scripts V1 Rev 50 | 1098 |
| 08/31/2023 | Transmission and Security Desk V1 Rev 100 | 1099 |

# Emergency Conditions

## OCNs

|  |  |
| --- | --- |
| **Date and Time** | **Message** |
| Aug 1, 2023 10:00  CPT | ERCOT issued an OCN for the extreme hot weather with forecasted temperatures to be above 103°F in the North Central and South Central weather zones, from Thursday, August 03, 2023 until Monday, August 07, 2023. |
| Aug 4, 2023 10:00  CPT | ERCOT issued an OCN for the extreme hot weather with forecasted temperatures to be above 103°F in the North Central and South Central weather zones, from Tuesday, August 08, 2023 until Friday, August 11, 2023. |
| Aug 11, 2023 10:00  CPT | ERCOT issued an OCN for the extreme hot weather with forecasted temperatures to be above 103°F in the North Central and South Central weather zones, from Saturday, August 12, 2023 until Friday, August 18, 2023. |
| Aug 18, 2023 10:00  CPT | ERCOT issued an OCN for the extreme hot weather with forecasted temperatures to be above 103°F in the North Central and South Central weather zones, from Saturday, August 19, 2023 until Tuesday, August 22, 2023. |
| Aug 21, 2023 13:00  CPT | ERCOT issued an OCN for the extreme hot weather with forecasted temperatures to be above 103°F in the North Central and South Central weather zones, from Wednesday, August 23, 2023 until Sunday, August 27, 2023. |
| Aug 22, 2023 7:00  CPT | ERCOT issued an OCN for Tropical Storm Harold due to a probability of making landfall in the ERCOT Region, from August 22, 2023, thru August 23, 2023. |

## Advisories

|  |  |
| --- | --- |
| **Date and Time** | **Message** |
| Aug 05, 2023 01:22  CPT | Advisory issued for a K-7 geomagnetic disturbance. |
| Aug 17, 2023 19:22  CPT | ERCOT issued an Advisory due to Physical Responsive Capability being below 3000 MW. |

## Watches

|  |  |
| --- | --- |
| **Date and Time** | **Message** |
| Aug 4, 2023 17:33  CPT | ERCOT issued a Transmission Watch due to post-contingency overload constraint for South of San Antonio. Ercot took manual actions to mitigate post contingency overloads. |
| Aug 9, 2023 21:50  CPT | ERCOT issued a Watch due to HRUC not completing for HE23 due to failure. |
| Aug 10, 2023 15:43  CPT | ERCOT issued a Transmission Watch due to the post-contingency overload for South of San Antonio. ERCOT took manual action to mitigate the post contingency overloads. |
| Aug 11, 2023 18:01  CPT | ERCOT issued a Transmission Watch due to the post-contingency overload constraint for South of San Antonio. ERCOT took manual action to mitigate the post contingency overloads. |
| Aug 17, 2023 18:55  CPT | ERCOT issued a Transmission Watch due to the post-contingency overload constraint for South of San Antonio. ERCOT took manual action to mitigate the post contingency overloads. |
| Aug 23, 2023 22:00  CPT | ERCOT issued a Watch for a projected reserve capacity shortage with no market solution available for Thursday, August 24, 2023 HE 19:00 – 21:00, which causes a risk for an EEA event. |
| Aug 25, 2023 10:00  CPT | ERCOT issued a Watch for a projected reserve capacity shortage with no market solution available for Friday, August 25, 2023, HE 20:00 – 21:00, which causes a risk for an EEA event. |
| Aug 26, 2023 9:30  CPT | ERCOT issued a Watch for a projected reserve capacity shortage with no market solution available for Saturday, August 26, 2023, HE 18:00 – 21:00, which causes a risk for an EEA event. |
| Aug 27, 2023 8:59  CPT | ERCOT issued a Watch for a projected reserve capacity shortage with no market solution available for Sunday, August 27, 2023, HE 19:00 – 21:00, which causes a risk for an EEA event. |
| Aug 29, 2023 10:00  CPT | ERCOT issued a Watch for a projected reserve capacity shortage with no market solution available for Tuesday, August 29, 2023, HE 19:00 – 21:00, which causes a risk for an EEA event. |
| Aug 30, 2023 9:30  CPT | ERCOT issued a Watch for a projected reserve capacity shortage with no market solution available for Wednesday, August 30, 2023, HE 19:00 – 21:00, which causes a risk for an EEA event |
| Aug 30, 2023 10:51  CPT | ERCOT issued a Watch due to HRUC not completing for HE 12 due to HRUC failure. |

## Emergency Notices

None.

# Application Performance

## TSAT/VSAT Performance Issues

None

## Communication Issues

None.

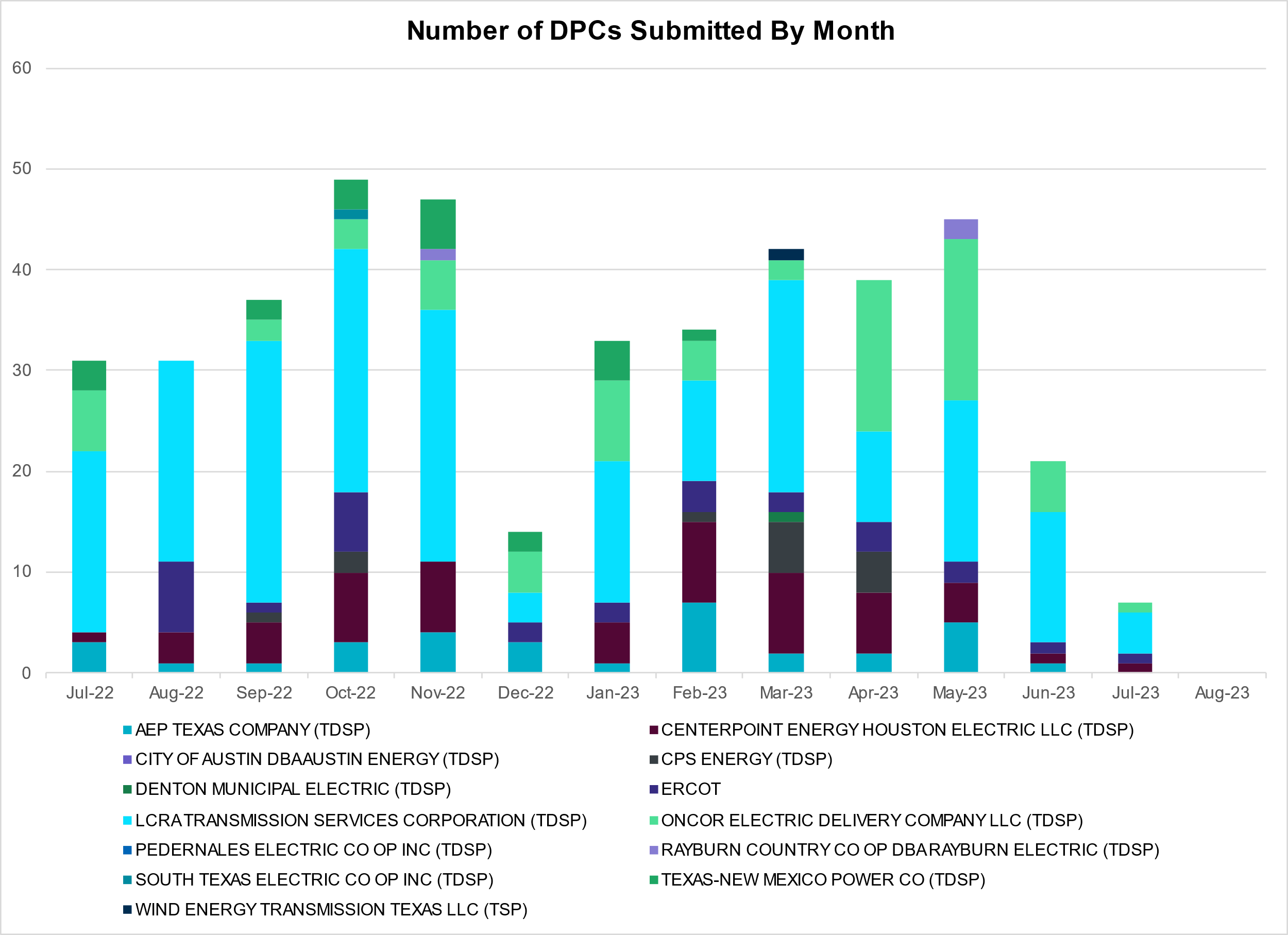
## Market System Issues

None.

# Model Updates

The Downstream Production Change (DPC) process allows ERCOT to make changes in the on-line Network Operations Model without loading a completely new model. The purpose of this process is to allow for reliable grid operations as system conditions change between designated Network Operations Model database loads. The DPC process is limited in scope to just those items listed below, with equipment ratings updates being the most common. ERCOT has seen a rise in the use of the DPC process to make on-line updates to the Network Operations Model in recent years, instead of through the standard Network Operations Model Change Request process.

* Static Line ratings (Interim Update)
* Dynamic Line ratings (non-Interim Update)
* Autotransformer ratings (non-Interim Update)
* Breaker and Switch Normal status (Interim Update)
* Contingency Definitions (Interim Update)
* RAP and RAS changes or additions (Interim Update)
* Net Dependable and Reactive Capability (NDCRC) values (Interim Update)
* Impedance Updates (non-Interim)



|  |  |
| --- | --- |
| **Transmission Operator** | **Number of DPCs** |
| AEP TEXAS COMPANY (TDSP) | 0 |
| BRAZOS ELECTRIC POWER CO OP INC (TDSP) | 0 |
| BROWNSVILLE PUBLIC UTILITIES BOARD (TDSP) | 0 |
| BRYAN TEXAS UTILITIES (TDSP) | 0 |
| CENTERPOINT ENERGY HOUSTON ELECTRIC LLC (TDSP) | 0 |
| CITY OF AUSTIN DBA AUSTIN ENERGY (TDSP) | 0 |
| CITY OF COLLEGE STATION (TDSP) | 0 |
| CITY OF GARLAND (TDSP) | 0 |
| CPS ENERGY (TDSP) | 0 |
| DENTON MUNICIPAL ELECTRIC (TDSP) | 0 |
| ELECTRIC TRANSMISSION TEXAS LLC (TDSP) | 0 |
| ERCOT | 0 |
| LCRA TRANSMISSION SERVICES CORPORATION (TDSP) | 0 |
| LONE STAR TRANSMISSION LLC (TSP) | 0 |
| ONCOR ELECTRIC DELIVERY COMPANY LLC (TDSP) | 0 |
| PEDERNALES ELECTRIC CO OP INC (TDSP) | 0 |
| RAYBURN COUNTRY CO OP DBA RAYBURN ELECTRIC (TDSP) | 0 |
| SHARYLAND UTILITIES LP (TDSP) | 0 |
| SOUTH TEXAS ELECTRIC CO OP INC (TDSP) | 0 |
| TEXAS MUNICIPAL POWER AGENCY (TDSP) | 0 |
| TEXAS-NEW MEXICO POWER CO (TDSP) | 0 |
| WIND ENERGY TRANSMISSION TEXAS LLC (TSP) | 0 |

# Appendix A: Real-Time Constraints

The following is a complete list of constraints activated in SCED. Full contingency descriptions can be found in the Standard Contingencies List located on the MIS secure site at Grid 🡪 Generation 🡪 Reliability Unit Commitment.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | Month of the Year | Contingency Name | Overloaded Element | From Station | To Station | Count of Days |
| 2023 | 8 | SBATPEA8 | PEARSALL\_69\_4 | PEARSALL | PEARSALL | 28 |
| 2023 | 8 | SLGEI\_D8 | I\_DUPS\_LGE1\_1 | LGE | I\_DUPSW | 25 |
| 2023 | 8 | SRRDLCS5 | 235\_\_A | SJNSW | JEWET | 25 |
| 2023 | 8 | DMTSCOS5 | 6437\_\_F | SCRCV | KNAPP | 24 |
| 2023 | 8 | SPOTPAN9 | GUS\_HAS\_1 | GUSTINE | HAS | 24 |
| 2023 | 8 | SSTLEIN8 | CRTVLE\_EINSTEN\_1 | EINSTEIN | CRTRVLLE | 24 |
| 2023 | 8 | SPOTPAN9 | GUS\_HAS\_1 | HAS | GUSTINE | 24 |
| 2023 | 8 | SDIMBEV8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 23 |
| 2023 | 8 | BASE CASE | NE\_LOB | n/a | n/a | 23 |
| 2023 | 8 | SLOBSA25 | LARDVN\_LASCRU1\_1 | LARDVNTH | LASCRUCE | 23 |
| 2023 | 8 | DMGSBTR5 | 6036\_\_A | TKWSW | MGSES | 22 |
| 2023 | 8 | DELMSAN5 | PAWNEE\_SPRUCE\_1 | PAWNEE | CALAVERS | 22 |
| 2023 | 8 | SLAQLOB8 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 22 |
| 2023 | 8 | SLAQLOB8 | BRUNI\_69\_1 | BRUNI | BRUNI | 21 |
| 2023 | 8 | SCO2EUL8 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 21 |
| 2023 | 8 | SMDOOAS5 | MSNPET04\_A | PET | MSN | 19 |
| 2023 | 8 | DMGSBIT5 | 6036\_\_A | TKWSW | MGSES | 17 |
| 2023 | 8 | DSALHUT5 | 1710\_\_C | BELCNTY | SALSW | 17 |
| 2023 | 8 | SBWDDBM5 | LPLMK\_LPLNE\_1 | LPLMK | LPLNE | 17 |
| 2023 | 8 | SGRICOL5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 16 |
| 2023 | 8 | SGARBAT8 | RKYROAD\_STILES\_1 | RCKYROAD | STILES | 16 |
| 2023 | 8 | DWPWFCK5 | STPWAP39\_1 | STP | WAP | 16 |
| 2023 | 8 | SCENMCC8 | SHIL\_MCC\_1 | MCCREE | SHILOH | 16 |
| 2023 | 8 | MHARNED5 | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 16 |
| 2023 | 8 | DWPWFWP5 | STPWAP39\_1 | STP | WAP | 16 |
| 2023 | 8 | SN\_SAJO5 | LASPUL\_RAYMND1\_1 | LASPULGA | RAYMND2 | 15 |
| 2023 | 8 | BASE CASE | NELRIO | n/a | n/a | 15 |
| 2023 | 8 | DAUSDUN8 | 608T608\_1 | GIDEON | BASTCI | 15 |
| 2023 | 8 | SN\_SLON5 | N\_SHARPE\_XF1 | N\_SHARPE | N\_SHARPE | 14 |
| 2023 | 8 | DKOCNUE8 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 14 |
| 2023 | 8 | BASE CASE | VALEXP | n/a | n/a | 14 |
| 2023 | 8 | DROUCHI8 | 1660\_\_C | HUTTO | RRNES | 13 |
| 2023 | 8 | DMOLLO58 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 13 |
| 2023 | 8 | SLOBSA25 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 13 |
| 2023 | 8 | DCC3\_NED | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 12 |
| 2023 | 8 | SKINFAL8 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 12 |
| 2023 | 8 | DSWECCR5 | 6036\_\_A | TKWSW | MGSES | 11 |
| 2023 | 8 | MHARNED5 | HAINE\_\_LA\_PAL1\_1 | LA\_PALMA | HAINE\_DR | 11 |
| 2023 | 8 | SN\_SLON5 | HOLLY4\_SOUTH\_1\_1 | HOLLY4 | SOUTH\_SI | 11 |
| 2023 | 8 | DBIGKEN5 | TREADW\_YELWJC1\_1 | TREADWEL | YELWJCKT | 11 |
| 2023 | 8 | DSTEXP12 | BLESSI\_LOLITA1\_1 | LOLITA | BLESSING | 11 |
| 2023 | 8 | DWHILON5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 10 |
| 2023 | 8 | MRESMCM8 | RINCON\_WHITE\_2\_1 | RINCON | WHITE\_PT | 10 |
| 2023 | 8 | SSTLEST8 | CRTVLE\_EINSTEN\_1 | EINSTEIN | CRTRVLLE | 10 |
| 2023 | 8 | SALIKIN8 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 10 |
| 2023 | 8 | SFTLMES8 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 10 |
| 2023 | 8 | DNUEGIL8 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 10 |
| 2023 | 8 | SHCKRNK5 | 106\_\_A | HCKSW | ALLNC | 10 |
| 2023 | 8 | DZORHAY5 | BERGHE\_AT1L | BERGHE | BERGHE | 9 |
| 2023 | 8 | DCOLFA59 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 9 |
| 2023 | 8 | SVEAW\_L5 | 6217\_\_A | WLVSW | GAILS | 9 |
| 2023 | 8 | DFERGRM8 | 34T267\_1 | SANDMO | CTECBU | 9 |
| 2023 | 8 | SBENS\_M8 | BENTS\_FRTER\_1C\_1 | S\_MISSIN | RAILROAD | 9 |
| 2023 | 8 | SKLELOY8 | LOYOLA\_69\_1 | LOYOLA | LOYOLA | 9 |
| 2023 | 8 | SCOMCYP8 | 122T122\_1 | COMFOR | RAYBAR | 9 |
| 2023 | 8 | SBEAOR8 | PT\_TWM25\_A | PT | TWM | 9 |
| 2023 | 8 | SBIGSCH5 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 8 |
| 2023 | 8 | SBONNED5 | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 8 |
| 2023 | 8 | SBRAUVA8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 8 |
| 2023 | 8 | SVICCO28 | COLETO\_VICTOR2\_1 | COLETO | VICTORIA | 8 |
| 2023 | 8 | SN\_SAJO5 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 8 |
| 2023 | 8 | DBBSRCH5 | 1240\_\_J | POKSW | FFD | 7 |
| 2023 | 8 | MCONLNG5 | 6471\_\_C | MGSES | NAVIG | 7 |
| 2023 | 8 | DCOMKER8 | 77T121\_1 | COMFOR | CYPRCR | 7 |
| 2023 | 8 | MHARNED5 | LASPUL\_RAYMND1\_1 | LASPULGA | RAYMND2 | 7 |
| 2023 | 8 | BASE CASE | WESTEX | n/a | n/a | 7 |
| 2023 | 8 | SMADSAP8 | MADDUX\_SAPOWE2\_1 | MADDUX | SAPOWER | 7 |
| 2023 | 8 | DTMPBE58 | 1660\_\_C | HUTTO | RRNES | 7 |
| 2023 | 8 | SRAYRI38 | HAINE\_\_LA\_PAL1\_1 | LA\_PALMA | HAINE\_DR | 7 |
| 2023 | 8 | BASE CASE | N\_TO\_H | n/a | n/a | 7 |
| 2023 | 8 | SLOBSA25 | BRUNI\_69\_1 | BRUNI | BRUNI | 7 |
| 2023 | 8 | DEMSPKR5 | 6400\_\_A | RCHHL | HLTOM | 6 |
| 2023 | 8 | SI\_DWH38 | I\_DUPS\_RESNIK2\_2 | I\_DUPSW | RESNIK | 6 |
| 2023 | 8 | MMGSCON5 | 6471\_\_C | MGSES | NAVIG | 6 |
| 2023 | 8 | SEULTUL8 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 6 |
| 2023 | 8 | DELMSAN5 | MAGRUD\_VICTOR2\_1 | VICTORIA | MAGRUDER | 6 |
| 2023 | 8 | MWHILON5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 6 |
| 2023 | 8 | MPRSHWK8 | 1561\_\_A | DPREA | RCSES | 6 |
| 2023 | 8 | MPRSHWK8 | 1561\_\_A | RCSES | DPREA | 6 |
| 2023 | 8 | SGRICOL5 | KATOEN\_LON\_HI1\_1 | LON\_HILL | KATOEN | 6 |
| 2023 | 8 | MANGWHI5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 6 |
| 2023 | 8 | SALLHCK5 | 107\_\_A | HCKSW | RNKSW | 6 |
| 2023 | 8 | SLOBSA25 | CATARI\_PILONC1\_1 | CATARINA | PILONCIL | 6 |
| 2023 | 8 | SCARFRI8 | ATSO\_SONR1\_1 | SONR | ATSO | 6 |
| 2023 | 8 | SLOBSA25 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 6 |
| 2023 | 8 | SESTRCK8 | CRTVLE\_EINSTEN\_1 | EINSTEIN | CRTRVLLE | 6 |
| 2023 | 8 | SCENLOB5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 6 |
| 2023 | 8 | DCDHTVW5 | 6200\_\_D | SHRSW | PRKRW | 5 |
| 2023 | 8 | SN\_SLON5 | HOLLY4\_SERDEV1\_1 | HOLLY4 | HOLLY4 | 5 |
| 2023 | 8 | SOBWAP5 | OB\_WAP98\_A | WAP | OB | 5 |
| 2023 | 8 | DCENRI35 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 5 |
| 2023 | 8 | DPRSVLS5 | 1561\_\_A | DPREA | RCSES | 5 |
| 2023 | 8 | SN\_SLON5 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 5 |
| 2023 | 8 | BASE CASE | RANDAD\_ZAPATA1\_1 | RANDADO | ZAPATA | 5 |
| 2023 | 8 | MPRSHWK8 | 1535\_\_B | TNSKA | TCOSW | 5 |
| 2023 | 8 | SBENRAI8 | BENTS\_FRTER\_1C\_1 | S\_MISSIN | RAILROAD | 5 |
| 2023 | 8 | SODLBRA8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 5 |
| 2023 | 8 | SLOBSA25 | LASCRU\_MILO1\_1 | LASCRUCE | MILO | 5 |
| 2023 | 8 | DVICEDN8 | LOOP\_VICTORIA\_1 | VICTORIA | L\_463S | 5 |
| 2023 | 8 | SWEILON8 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 5 |
| 2023 | 8 | SBRAUVA8 | ESCOND\_GANSO1\_1 | GANSO | ESCONDID | 5 |
| 2023 | 8 | STANPAW5 | LON\_HI\_ORNGRO1\_1 | LON\_HILL | ORNGROV | 5 |
| 2023 | 8 | SLOBSA25 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 5 |
| 2023 | 8 | SGRICOL5 | GODDAR\_KATOEN1\_1 | KATOEN | GODDARD | 5 |
| 2023 | 8 | SPAWCAL5 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 5 |
| 2023 | 8 | SKOCBUZ8 | 6217\_\_A | WLVSW | GAILS | 4 |
| 2023 | 8 | SCOLPAW5 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 4 |
| 2023 | 8 | DSTPANS5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 4 |
| 2023 | 8 | DVICEDN8 | RAY\_L\_46\_1 | L\_463S | RAYBURN | 4 |
| 2023 | 8 | DSALKLN5 | 630\_\_B | KLNSW | HHSTH | 4 |
| 2023 | 8 | SDIMBEV8 | ESCOND\_GANSO1\_1 | GANSO | ESCONDID | 4 |
| 2023 | 8 | SSANFOW5 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 4 |
| 2023 | 8 | DMCOPHA8 | AZTECA\_HEC1\_1 | HEC | AZTECA | 4 |
| 2023 | 8 | MWHILON5 | BLESSI\_LOLITA1\_1 | LOLITA | BLESSING | 4 |
| 2023 | 8 | DLYTTUR8 | CKT\_943\_1 | LYTTON\_S | PILOT | 4 |
| 2023 | 8 | DGRMGRS8 | OLN\_FMR2 | OLN | OLN | 4 |
| 2023 | 8 | SRRNHU48 | 1660\_\_C | HUTTO | RRNES | 4 |
| 2023 | 8 | DCC3\_NED | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 4 |
| 2023 | 8 | DVICEDN8 | RAY\_L\_46\_1 | RAYBURN | L\_463S | 4 |
| 2023 | 8 | SCOMKEN8 | 115T123\_1 | KENDAL | KERRST | 4 |
| 2023 | 8 | DWHILON5 | BLESSI\_LOLITA1\_1 | LOLITA | BLESSING | 4 |
| 2023 | 8 | DLONWEI8 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 4 |
| 2023 | 8 | XHIW89 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 4 |
| 2023 | 8 | SSWDMGS8 | 6940\_\_D | CLCTY | PLOWB | 4 |
| 2023 | 8 | DELMSAN5 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 4 |
| 2023 | 8 | DCC1DUKE | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 3 |
| 2023 | 8 | DRNS\_TB5 | THWZEN71\_A | ZEN | THW | 3 |
| 2023 | 8 | DBIGKEN5 | MADDUX\_TREADW1\_1 | MADDUX | TREADWEL | 3 |
| 2023 | 8 | SMAGVIC8 | MAGRUDER\_MA1 | MAGRUDER | MAGRUDER | 3 |
| 2023 | 8 | SPAWCAL5 | MAGRUD\_VICTOR2\_1 | VICTORIA | MAGRUDER | 3 |
| 2023 | 8 | SFTLMES8 | SANTAR\_WOLFCA1\_1 | WOLFCAMP | SANTARIT | 3 |
| 2023 | 8 | DKENNO89 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 3 |
| 2023 | 8 | SVICCOL8 | COLETO\_VICTOR1\_1 | COLETO | VICTORIA | 3 |
| 2023 | 8 | SILLFTL8 | HAMILT\_MAXWEL1\_1 | MAXWELL | HAMILTON | 3 |
| 2023 | 8 | MANGWHI5 | BLESSI\_LOLITA1\_1 | LOLITA | BLESSING | 3 |
| 2023 | 8 | DSWELNC5 | BLUF\_C\_MULBER1\_1 | BLUF\_CRK | MULBERRY | 3 |
| 2023 | 8 | DDOWOAS5 | MSNPET04\_A | PET | MSN | 3 |
| 2023 | 8 | DWESNUE8 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 3 |
| 2023 | 8 | SCASPIT8 | FRPHIL\_MASN1\_1 | FRPHILLT | MASN | 3 |
| 2023 | 8 | SMDOPHR5 | G138\_10B\_1 | SEMINOLE | MAGNO\_TN | 3 |
| 2023 | 8 | SACHMV8 | MSNPET04\_A | PET | MSN | 3 |
| 2023 | 8 | DHJWFCK5 | STPWAP39\_1 | STP | WAP | 3 |
| 2023 | 8 | SW\_GODE5 | 15060\_\_B | VEALMOOR | KOCHTAP | 3 |
| 2023 | 8 | DVENLIG5 | 530\_\_A | WEBBS | CDHSW | 3 |
| 2023 | 8 | SHAYZO25 | 6T227\_1 | HAYSEN | ZORN | 3 |
| 2023 | 8 | XOK2L58 | EASTMU\_PAINTC1\_1 | PAINTCRE | EASTMUND | 3 |
| 2023 | 8 | DTRIASH8 | 211T147\_1 | GILLCR | MCNEIL\_ | 3 |
| 2023 | 8 | DLEGOUT5 | 235\_\_A | SJNSW | JEWET | 3 |
| 2023 | 8 | DVICVI89 | COLETO\_VICTOR2\_1 | COLETO | VICTORIA | 3 |
| 2023 | 8 | SCASPIT8 | FRPHIL\_MASN1\_1 | MASN | FRPHILLT | 3 |
| 2023 | 8 | SGANVIC8 | LOOP\_VICTORIA\_1 | VICTORIA | L\_463S | 3 |
| 2023 | 8 | XVIC89 | MAGRUDER\_MA1 | MAGRUDER | MAGRUDER | 3 |
| 2023 | 8 | DCENREV5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 3 |
| 2023 | 8 | SDAFAUS8 | CKT\_1027\_1 | DUNLAP | DECKER | 3 |
| 2023 | 8 | XALI89 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 3 |
| 2023 | 8 | SBTPBNT8 | MYRA\_VAL\_1 | MYRA | VALYVIEW | 3 |
| 2023 | 8 | SGODTAN5 | LON\_HI\_ORNGRO1\_1 | LON\_HILL | ORNGROV | 3 |
| 2023 | 8 | SCRDLOF9 | 6626\_\_F | BTTSW | HENWE | 2 |
| 2023 | 8 | SBE2ASH8 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 2 |
| 2023 | 8 | SBGLTWI8 | CONCHO\_SANW0\_1 | CONCHO | SANW | 2 |
| 2023 | 8 | MLONOR58 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 2 |
| 2023 | 8 | SCOMHA38 | HAMILT\_MAXWEL1\_1 | MAXWELL | HAMILTON | 2 |
| 2023 | 8 | SLP2LPL9 | LPLER\_LPLMK\_1 | LPLMK | LPLER | 2 |
| 2023 | 8 | DHENZOR8 | 261T272\_1 | TURNER | CROSSWI | 2 |
| 2023 | 8 | DBERNAR8 | 353T353\_1 | LEANDE | SEWAJU | 2 |
| 2023 | 8 | SVEAW\_L5 | 6217\_\_B | GAILS | KEYSB | 2 |
| 2023 | 8 | DMTSCOS5 | 6437\_\_A | KNAPP | BCKSW | 2 |
| 2023 | 8 | SJOHBO29 | 6626\_\_F | BTTSW | HENWE | 2 |
| 2023 | 8 | DCENRO58 | 904T485\_1 | FRONTERA | GOODWIN | 2 |
| 2023 | 8 | SEBHUG8 | DA\_WC\_89\_A | WC | DA | 2 |
| 2023 | 8 | SBRAHAM8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 2 |
| 2023 | 8 | DMOLLO58 | LON\_HI\_ORNGRO1\_1 | LON\_HILL | ORNGROV | 2 |
| 2023 | 8 | MPEAMOO8 | UVALDE\_W\_BATE1\_1 | W\_BATESV | UVALDE | 2 |
| 2023 | 8 | DCAGCO58 | 388T388\_1 | HAYSEN | ZORN | 2 |
| 2023 | 8 | DGRMGRS8 | 6830\_\_B | CRDSW | OLNEY | 2 |
| 2023 | 8 | STULKEN8 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 2 |
| 2023 | 8 | SBATPEA8 | FRI\_PEAR\_1 | PEARSALL | FRIOTOS | 2 |
| 2023 | 8 | DBIGKEN5 | HAMILT\_MAXWEL1\_1 | MAXWELL | HAMILTON | 2 |
| 2023 | 8 | MCONLNG5 | RKYROAD\_STILES\_1 | RCKYROAD | STILES | 2 |
| 2023 | 8 | DWLV89N8 | 3410\_\_A | ELVSW | REGST | 2 |
| 2023 | 8 | STANPAW5 | CALLIC\_LON\_HI1\_1 | LON\_HILL | CALLICOA | 2 |
| 2023 | 8 | DVICCO89 | COLETO\_VICTOR1\_1 | COLETO | VICTORIA | 2 |
| 2023 | 8 | SWRDYN8 | DA\_WC\_89\_A | WC | DA | 2 |
| 2023 | 8 | SCOLPAW5 | MAGRUD\_VICTOR2\_1 | VICTORIA | MAGRUDER | 2 |
| 2023 | 8 | DAE\_AE\_8 | MSNPET04\_A | PET | MSN | 2 |
| 2023 | 8 | SCRMSAR8 | ORNT\_REDCRE1\_1 | REDCREEK | ORNT | 2 |
| 2023 | 8 | MSTPANG5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 2 |
| 2023 | 8 | MSTPANS5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 2 |
| 2023 | 8 | SBIGSCH5 | SANTAR\_WOLFCA1\_1 | WOLFCAMP | SANTARIT | 2 |
| 2023 | 8 | DEMSHCK5 | 6400\_\_A | RCHHL | HLTOM | 2 |
| 2023 | 8 | DCC1DUKE | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 2 |
| 2023 | 8 | SLARDUS8 | BRUNI\_69\_1 | BRUNI | BRUNI | 2 |
| 2023 | 8 | DBIGKEN5 | FRPHIL\_MASN1\_1 | MASN | FRPHILLT | 2 |
| 2023 | 8 | DCENRI35 | KATOEN\_LON\_HI1\_1 | LON\_HILL | KATOEN | 2 |
| 2023 | 8 | MWHILON5 | MELONC\_SEADRF1\_1 | MELONCRE | SEADRFTC | 2 |
| 2023 | 8 | SDBLBN28 | MIL\_PALPNTO\_1 | MIL | PLPTP | 2 |
| 2023 | 8 | XCDH58 | 6200\_\_D | SHRSW | PRKRW | 2 |
| 2023 | 8 | SCMNCPS5 | 651\_\_B | CMNSW | CMNTP | 2 |
| 2023 | 8 | DBIGSCH5 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 2 |
| 2023 | 8 | DFERWIR8 | 34T267\_1 | SANDMO | CTECBU | 2 |
| 2023 | 8 | SWALWLN8 | 568\_\_A | RYSSW | NEVADA | 2 |
| 2023 | 8 | SPEBTRU8 | 940\_\_C | ENWSW | WXHCH | 2 |
| 2023 | 8 | SGODKAT5 | LON\_HI\_ORNGRO1\_1 | LON\_HILL | ORNGROV | 2 |
| 2023 | 8 | SCHOPAW8 | LOOP\_VICTORIA\_1 | VICTORIA | L\_463S | 2 |
| 2023 | 8 | DWHILON5 | MELONC\_SEADRF1\_1 | MELONCRE | SEADRFTC | 2 |
| 2023 | 8 | DKRACMV8 | MSNPET04\_A | PET | MSN | 2 |
| 2023 | 8 | SHAYZOR5 | 388T388\_1 | HAYSEN | ZORN | 2 |
| 2023 | 8 | DCMNCMN8 | 660\_\_B | MGPSW | ZEPHYR | 2 |
| 2023 | 8 | SCHOPAW8 | ALO\_WAR\_1 | WARBURTN | ALOES | 2 |
| 2023 | 8 | DCC3\_NED | CATARI\_PILONC1\_1 | CATARINA | PILONCIL | 2 |
| 2023 | 8 | SCOLPAW5 | LOOP\_VICTORIA\_1 | VICTORIA | L\_463S | 2 |
| 2023 | 8 | SCASPIT8 | FRPHIL\_GILLES1\_1 | GILLES | FRPHILLT | 1 |
| 2023 | 8 | SRAYRI28 | HAINE\_\_LA\_PAL1\_1 | LA\_PALMA | HAINE\_DR | 1 |
| 2023 | 8 | SNOECED5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 1 |
| 2023 | 8 | SSCHNOE5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 1 |
| 2023 | 8 | DYELHE89 | KATEMC\_MASN1\_1 | MASN | KATEMCY | 1 |
| 2023 | 8 | MWHILON5 | KATOEN\_LON\_HI1\_1 | LON\_HILL | KATOEN | 1 |
| 2023 | 8 | MWHILON5 | MELONC\_RINCON1\_1 | RINCON | MELONCRE | 1 |
| 2023 | 8 | SBATPEA8 | MOO\_PEAR\_1 | PEARSALL | MOORES | 1 |
| 2023 | 8 | SCRDJON5 | HOOD\_DECRDVA\_1 | DCDAM | HOD | 1 |
| 2023 | 8 | DMOLLO58 | KATOEN\_LON\_HI1\_1 | LON\_HILL | KATOEN | 1 |
| 2023 | 8 | SLOLBLE8 | LOOP\_VICTORIA\_1 | VICTORIA | L\_463S | 1 |
| 2023 | 8 | DWISALV8 | MYRA\_VAL\_1 | MYRA | VALYVIEW | 1 |
| 2023 | 8 | SGEOORN8 | ORNGROV\_69\_1 | ORNGROV | ORNGROV | 1 |
| 2023 | 8 | STI2WES8 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 1 |
| 2023 | 8 | SREAUVA8 | UVALDE\_W\_BATE1\_1 | W\_BATESV | UVALDE | 1 |
| 2023 | 8 | SWHILON5 | WHITE\_PT\_XFH1 | WHITE\_PT | WHITE\_PT | 1 |
| 2023 | 8 | DROUCHI8 | 1680\_\_A | RRWES | GEORSO | 1 |
| 2023 | 8 | SBREHIG8 | 276T350\_1 | GAYHIL | SANDHI | 1 |
| 2023 | 8 | DGRSPKR5 | 6377\_\_A | BRTSW | ORANS | 1 |
| 2023 | 8 | SJOHBO29 | 6626\_\_E | HENWE | LNMTP | 1 |
| 2023 | 8 | BASE CASE | AM\_AM\_26\_1 | AM | AM | 1 |
| 2023 | 8 | STRIDEC8 | CKT\_1027\_1 | DUNLAP | DECKER | 1 |
| 2023 | 8 | DNOECED5 | CONCHO\_SANW0\_1 | CONCHO | SANW | 1 |
| 2023 | 8 | SBAKCED5 | CROSSO\_PALOUS1\_1 | PALOUSE | CROSSOVE | 1 |
| 2023 | 8 | SCENLOB5 | KATOEN\_LON\_HI1\_1 | LON\_HILL | KATOEN | 1 |
| 2023 | 8 | SCENLOB5 | LON\_HI\_ORNGRO1\_1 | LON\_HILL | ORNGROV | 1 |
| 2023 | 8 | SFOUDES8 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 1 |
| 2023 | 8 | SMCAMC28 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 1 |
| 2023 | 8 | DTRSENT5 | 1255\_\_B | SCSES | STCKY | 1 |
| 2023 | 8 | DTMPBE58 | 1680\_\_A | RRWES | GEORSO | 1 |
| 2023 | 8 | DCAGCI58 | 460T460\_1 | MEDILA | W1 | 1 |
| 2023 | 8 | DDMTBCK8 | 6474\_\_A | MGSES | SUNSW | 1 |
| 2023 | 8 | SBRNCMN8 | 660\_\_B | MGPSW | ZEPHYR | 1 |
| 2023 | 8 | DBIGKEN5 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 1 |
| 2023 | 8 | DNOECED5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 1 |
| 2023 | 8 | SBAKCED5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 1 |
| 2023 | 8 | SFORYEL8 | HEXT\_MASONS1\_1 | MASONSW | HEXT | 1 |
| 2023 | 8 | SKBBI8 | HOCKB\_90\_A | HOC | KB | 1 |
| 2023 | 8 | XVIC89 | MAGRUD\_VICTOR2\_1 | VICTORIA | MAGRUDER | 1 |
| 2023 | 8 | BASE CASE | PNHNDL | n/a | n/a | 1 |
| 2023 | 8 | SCOLPAW5 | RAY\_L\_46\_1 | L\_463S | RAYBURN | 1 |
| 2023 | 8 | DBIGSCH5 | SANTAR\_WOLFCA1\_1 | WOLFCAMP | SANTARIT | 1 |
| 2023 | 8 | BASE CASE | WILBRN | n/a | n/a | 1 |
| 2023 | 8 | DCAGCO58 | 122T122\_1 | COMFOR | RAYBAR | 1 |
| 2023 | 8 | SCHIRND8 | 1660\_\_C | HUTTO | RRNES | 1 |
| 2023 | 8 | DWWEELM8 | 1890\_\_A | WEAST | BAYTP | 1 |
| 2023 | 8 | DCAGCI58 | 255T279\_1 | PIPECR | MEDILA | 1 |
| 2023 | 8 | MCONLNG5 | 6095\_\_D | LMESA | JPPOI | 1 |
| 2023 | 8 | DEVRHLS8 | 6400\_\_A | RCHHL | HLTOM | 1 |
| 2023 | 8 | DBIGKEN5 | BONDRO\_SONR1\_1 | SONR | BONDROAD | 1 |
| 2023 | 8 | XCAG158 | CAGNON\_MR4H | CAGNON | CAGNON | 1 |
| 2023 | 8 | DLONEQU8 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 1 |
| 2023 | 8 | SKINKLE8 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 1 |
| 2023 | 8 | SBRAUVA8 | GANSO\_MAVERI1\_1 | MAVERICK | GANSO | 1 |
| 2023 | 8 | SDIMBEV8 | GANSO\_MAVERI1\_1 | MAVERICK | GANSO | 1 |
| 2023 | 8 | DFRIILL8 | HAMILT\_MAXWEL1\_1 | MAXWELL | HAMILTON | 1 |
| 2023 | 8 | SMDOOAS5 | HUDMSN04\_A | MSN | HUD | 1 |
| 2023 | 8 | MANGWHI5 | KATOEN\_LON\_HI1\_1 | LON\_HILL | KATOEN | 1 |
| 2023 | 8 | SDBMFID5 | LPLHY\_LPLDB\_1 | LPLDB | LPLHY | 1 |
| 2023 | 8 | SMV\_MV78 | RIOHND\_ERIOHND\_1 | MV\_RIOHO | RIOHONDO | 1 |
| 2023 | 8 | SDESMEV8 | SANTAR\_WOLFCA1\_1 | WOLFCAMP | SANTARIT | 1 |
| 2023 | 8 | DBNBMBD5 | 161\_\_A | CMBSW | TVWSW | 1 |
| 2023 | 8 | SFIRWY28 | 1620\_\_A | PWEST | RSPCK | 1 |
| 2023 | 8 | DMTSCOS5 | 6438\_\_A | GLDSW | SUNSW | 1 |
| 2023 | 8 | DMBDRKC5 | 651\_\_B | CMNSW | CMNTP | 1 |
| 2023 | 8 | DRILKRW5 | 6626\_\_F | BTTSW | HENWE | 1 |
| 2023 | 8 | DZORHAY5 | BERGHE\_AT1H | BERGHE | BERGHE | 1 |
| 2023 | 8 | DCOLFA59 | CALLIC\_LON\_HI1\_1 | LON\_HILL | CALLICOA | 1 |
| 2023 | 8 | SGRICOL5 | CALLIC\_LON\_HI1\_1 | LON\_HILL | CALLICOA | 1 |
| 2023 | 8 | DCC1DUKE | CATARI\_PILONC1\_1 | CATARINA | PILONCIL | 1 |
| 2023 | 8 | DGARHIC8 | CKT\_1027\_1 | DUNLAP | DECKER | 1 |
| 2023 | 8 | DTWIBGL8 | CONCHO\_SANW0\_1 | CONCHO | SANW | 1 |
| 2023 | 8 | STRSSCS5 | 1255\_\_B | SCSES | STCKY | 1 |
| 2023 | 8 | MCONLNG5 | 14040\_\_A | PCTSW | DEWTP | 1 |
| 2023 | 8 | SBCESND5 | 421\_\_A | BCESW | SNDSW | 1 |
| 2023 | 8 | DCAGCO58 | 583T583\_1 | BANDER | MASOCR | 1 |
| 2023 | 8 | DMTSCOS5 | 6426\_\_A | DMTSW | ECRSW | 1 |
| 2023 | 8 | DCREALN5 | 715\_\_A | CRLNW | CRLJL | 1 |
| 2023 | 8 | SHENCO28 | 97T205\_1 | ZORN | MCCALA | 1 |
| 2023 | 8 | SBAKCED5 | CONCHO\_SANW0\_1 | CONCHO | SANW | 1 |
| 2023 | 8 | MNEDLON5 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 1 |
| 2023 | 8 | SSTRBES8 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 1 |
| 2023 | 8 | SPITFOR8 | FRPHIL\_MASN1\_1 | MASN | FRPHILLT | 1 |
| 2023 | 8 | SEULTUL8 | KENEDS\_ROSATA1\_1 | ROSATA | KENEDSW | 1 |
| 2023 | 8 | DWHILON5 | MELONC\_RINCON1\_1 | RINCON | MELONCRE | 1 |
| 2023 | 8 | SGRICOL5 | MELONC\_SEADRF1\_1 | MELONCRE | SEADRFTC | 1 |
| 2023 | 8 | DHIWARC8 | MORRIS\_WESTSI1\_1 | MORRIS | WESTSIDE | 1 |
| 2023 | 8 | DBFPSN\_8 | MSNPET04\_A | PET | MSN | 1 |
| 2023 | 8 | SMVAV8 | MSNPET04\_A | PET | MSN | 1 |
| 2023 | 8 | DFRIILL8 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 1 |
| 2023 | 8 | MQALCON5 | 6054\_\_A | ODEHV | MDSSW | 1 |
| 2023 | 8 | DCAGCO58 | 6T227\_1 | HAYSEN | ZORN | 1 |
| 2023 | 8 | SENWSHK8 | 941\_\_C | ENWSW | ENSSO | 1 |
| 2023 | 8 | DVICEDN8 | ALO\_WAR\_1 | WARBURTN | ALOES | 1 |
| 2023 | 8 | SBESLON8 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 1 |
| 2023 | 8 | MANGWHI5 | GODDAR\_KATOEN1\_1 | KATOEN | GODDARD | 1 |
| 2023 | 8 | DLONWAR5 | KATOEN\_LON\_HI1\_1 | LON\_HILL | KATOEN | 1 |
| 2023 | 8 | SOBWA2P5 | OB\_WAP99\_A | WAP | OB | 1 |
| 2023 | 8 | DLONWAR5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 1 |
| 2023 | 8 | SMV\_PAR8 | RIOHND\_ERIOHND\_1 | MV\_RIOHO | RIOHONDO | 1 |
| 2023 | 8 | SSTILOM8 | SCARBI\_TITAN\_1\_1 | SCARBIDE | TITAN\_SU | 1 |
| 2023 | 8 | SHAYZO25 | 493T493\_1 | BERGHE | ANTLER | 1 |
| 2023 | 8 | SMGPBRN8 | 650\_\_A | CMNSW | PNKNY | 1 |
| 2023 | 8 | DCPSST58 | 651\_\_B | CMNSW | CMNTP | 1 |
| 2023 | 8 | DSTPANS5 | BLESSI\_LOLITA1\_1 | LOLITA | BLESSING | 1 |
| 2023 | 8 | XCA2G58 | CAGNON\_MR3H | CAGNON | CAGNON | 1 |
| 2023 | 8 | SSANFOW5 | CATARI\_PILONC1\_1 | CATARINA | PILONCIL | 1 |
| 2023 | 8 | SMIDLO28 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 1 |
| 2023 | 8 | SCARFRI8 | FDR\_OZNC\_1 | FRIEND\_R | OZNC | 1 |
| 2023 | 8 | DMOLLO58 | GODDAR\_KATOEN1\_1 | KATOEN | GODDARD | 1 |
| 2023 | 8 | BASE CASE | LOOP\_VICTORIA\_1 | VICTORIA | L\_463S | 1 |
| 2023 | 8 | SCRMSAR8 | ORNT\_TENNYS1\_1 | ORNT | TENNYSON | 1 |
| 2023 | 8 | SDESMEV8 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 1 |
| 2023 | 8 | DBWNAMO5 | SAPOWE\_SAST1\_1 | SAPOWER | SAST | 1 |
| 2023 | 8 | SNEWMIL8 | SHIL\_MCC\_1 | MCCREE | SHILOH | 1 |
| 2023 | 8 | SDESRDO8 | TRU\_UAT1 | TRU | TRU | 1 |
| 2023 | 8 | DELMSAN5 | UVALDE\_W\_BATE1\_1 | W\_BATESV | UVALDE | 1 |
| 2023 | 8 | SFTLMES8 | WESTYA\_FMR1 | WESTYA | WESTYA | 1 |
| 2023 | 8 | SHCKRNK5 | 106\_\_B | ALLNC | RNKSW | 1 |
| 2023 | 8 | DENTSCS5 | 1170\_\_B | NCDSE | REDSW | 1 |
| 2023 | 8 | DBBSJEW5 | 1240\_\_J | POKSW | FFD | 1 |
| 2023 | 8 | SRRNHU48 | 1680\_\_A | RRWES | GEORSO | 1 |
| 2023 | 8 | DCAGCI58 | 388T388\_1 | HAYSEN | ZORN | 1 |
| 2023 | 8 | DKENCA58 | 460T460\_1 | MEDILA | W1 | 1 |
| 2023 | 8 | DMTSCOS5 | 6240\_\_C | SACRC | DPCRK | 1 |
| 2023 | 8 | SBOMJC25 | 6626\_\_F | BTTSW | HENWE | 1 |
| 2023 | 8 | SLKAWFS8 | 6626\_\_F | BTTSW | HENWE | 1 |
| 2023 | 8 | SECRDMT8 | 6695\_\_A | CGRSW | AMOTP | 1 |
| 2023 | 8 | BASE CASE | AM\_TAP26\_1 | AM | AM | 1 |
| 2023 | 8 | DCAGCO58 | BERGHE\_AT1H | BERGHE | BERGHE | 1 |
| 2023 | 8 | DCAGTA58 | BERGHE\_AT1H | BERGHE | BERGHE | 1 |
| 2023 | 8 | DCAGCO58 | BERGHE\_AT1L | BERGHE | BERGHE | 1 |
| 2023 | 8 | SHAYZO25 | BERGHE\_AT1L | BERGHE | BERGHE | 1 |
| 2023 | 8 | SBIGSCH5 | CROSSO\_NORTMC1\_1 | NORTMC | CROSSOVE | 1 |
| 2023 | 8 | SMDKSBY8 | DRIVER\_SKYWEST\_1 | SKYWES | DRIVER | 1 |
| 2023 | 8 | SLAQLOB8 | FRE\_BRUN\_1 | BRUNI | FREERS | 1 |

1. Current Wind Generation Record: 27,044 MW on 05/29/2022 at 22:36 | Current Wind Penetration Record: 69.15% on 04/10/2022 at 01:43

   Current Solar Generation Record: 13,735 MW on 08/16/2023 at 12:28 | Current Solar Penetration Record: 32.93% on 04/30/2023 at 09:24 [↑](#footnote-ref-2)
2. All DC Tie Curtailments are posted publicly on the ERCOT Market Information System. See that posting for additional details for the event(s) in question. [↑](#footnote-ref-3)
3. See DC Tie Operating Procedure (<http://www.ercot.com/mktrules/guides/procedures>) for more details. [↑](#footnote-ref-4)