

July 2024 ERCOT Monthly Operations Report

Reliability and Operations Subcommittee Meeting

September 09, 2024

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# Report Highlights

* The unofficial ERCOT peak demand was 81,010 MW for the month of July on 7/1/2024 HE 18:00; this is 1,954 MW less than the July 2023 peak demand of 82,964 MW on 7/31/2023 HE 17:00.
* A Solar Generation Record of 20,484 MW was set on 7/31/2024 at interval ending 14:31.
* There were 2 frequency events.
* There was 1 ERCOT Contingency Reserve Service (ECRS) event.
* There were no Responsive Reserve Service (RRS) events.
* There was 1 DC Tie Curtailment.
* There were 3 HRUC commitments.
* There was 1 OCN issued for Hurricane Beryl due to a possibility of making landfall or impacting the ERCOT Region.
* There was 1 Advisory issued for Hurricane Beryl due to a possibility of making landfall or impacting the ERCOT Region.
* There was 1 Watch issued for Tropical Storm Beryl in the Gulf of Mexico which was expected to intensify into a Hurricane and have an adverse impact or make landfall within the ERCOT Region.
* There was 1 Emergency Notice issued due to Hurricane Beryl having an adverse impact on the ERCOT transmission system.
* The following GTCs saw congestion in July:

|  |  |
| --- | --- |
| GTC | Days Congestion |
| Zapata Starr | 20 |
| North Edinburg to Lobo | 14 |
| Panhandle GTC | 13 |
| Nelson Sharpe to Rio Hondo | 11 |
| West Texas Export | 9 |
| E\_PASP | 8 |
| E\_PATA | 7 |
| I\_KALO | 2 |
| North to Houston | 2 |
| Valley Export | 2 |
| Wharton County GTC | 1 |

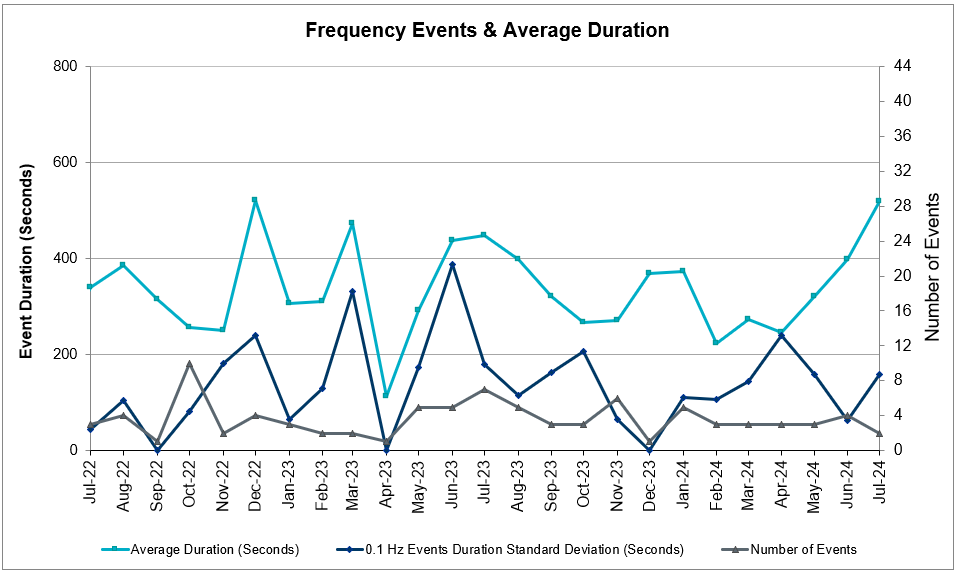
# Frequency Control

## Frequency Events

The ERCOT Interconnection experienced 2 frequency events, which resulted from units tripping. The average event duration was 00:08:39.

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)** | **%** | **(MW-s)** |
| 7/23/2024 5:26:53 | 0.070 | 59.946 | 00:10:31 | 0.77 | 10% | 461 | 48,931 | 4% | 317,935 |
| 7/24/2024 7:02:45 | 0.137 | 59.871 | 00:06:47 | 0.55 | 11% | 1289 | 46,721 | 4% | 318,438 |



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

## ERCOT Contingency Reserve Events

There was 1 event 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 |
| 7/24/2024 7:02 | 7/24/2024 7:08 | 0:05:36 | 883.5609131 | Unit Trip |

## Responsive Reserve Events

There were 0 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** |
| N/A | N/A | N/A | N/A | N/A |

## Load Resource Events

There were no events where Load Resource MWs were released to SCED.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date and Time Released to SCED** | **Date and Time Recalled** | **Duration of Event** | **Maximum MWs Released** | **Comments** |
| N/A | N/A | N/A | N/A | N/A |

# 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.

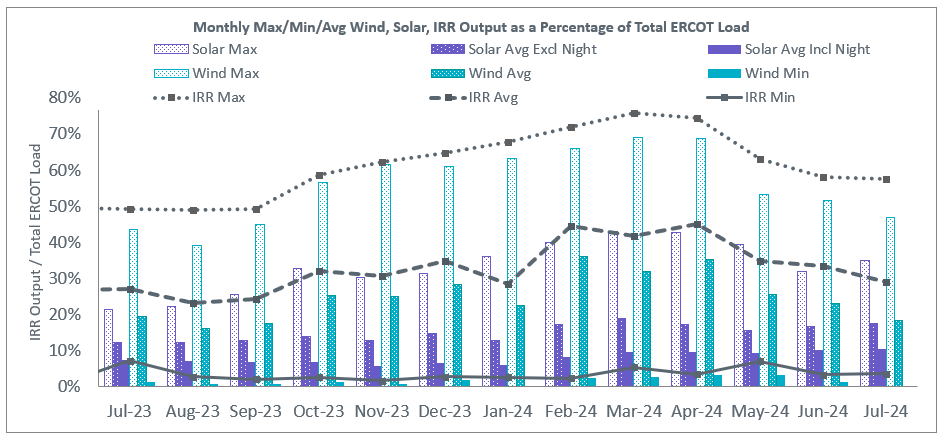
There were no DRUC commitments.

There were 3 HRUC commitments.

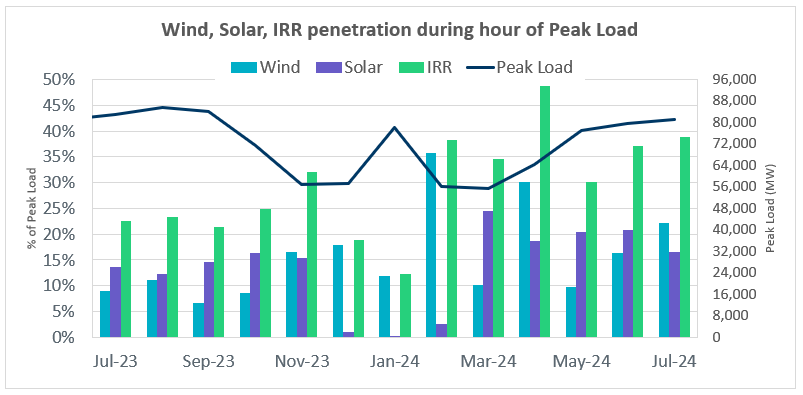
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Resource Location** | **# of Resources** | **Operating Day** | **Total # of Hours Committed** | **Total MWhs** | **Reason for Commitment** |
| NORTH\_CENTRAL | 2 | July 15, 2024 | 14 | 3,314.0 | DCDHMCS8, SVENFTS5 |
| NORTH\_CENTRAL | 1 | July 16, 2024 | 8 | 976.0 | DCDHTVW5 |

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

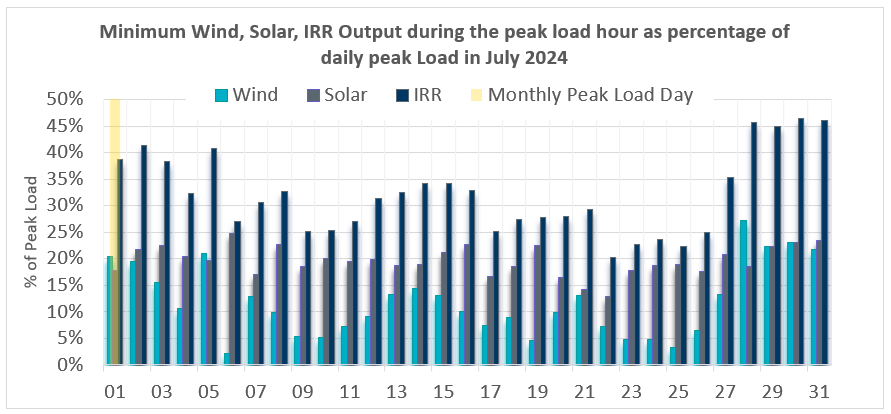
The graph below shows the maximum, minimum and average aggregate solar, wind and IRR output as a percentage of total ERCOT load when evaluated as 10-minute averaged intervals, over the past 13 months. Current wind and solar generation and penetration records are listed in the footnote below[[1]](#footnote-2). Maximum IRR penetration for the month was 57.38% on 07/28/2024 interval ending 12:20 and minimum IRR penetration for the month was 3.19% on 07/23/2024 interval ending 07:00.



During the hour of peak load for the month, hourly integrated wind generation was 18,022 MW and solar generation was 13,456 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 July 2024 was 1,147 MW, 1,718 MW, 2,338 MW, 4,125 MW, and 7,408 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** |
| July 2014 | 1,074 MW | 1,424 MW | 1,713 MW | 2,809 MW | 5,392 MW |
| July 2015 | 905 MW | 1,257 MW | 1,688 MW | 3,075 MW | 5,843 MW |
| July 2016 | 863 MW | 1,660 MW | 1,885 MW | 3,390 MW | 5,900 MW |
| July 2017 | 880 MW | 1,243 MW | 1,756 MW | 3,048 MW | 5,738 MW |
| July 2018 | 1,399 MW | 1,779 MW | 2,202 MW | 3,572 MW | 6,698 MW |
| July 2019 | 1,120 MW | 1,699 MW | 2,291 MW | 3,561 MW | 6,546 MW |
| July 2020 | 1,399 MW | 1,779 MW | 2,291 MW | 3,572 MW | 6,698 MW |
| July 2021 | 859 MW | 1,464 MW | 1,804 MW | 3,352 MW | 6,132 MW |
| July 2022 | 1,284 MW | 1,822 MW | 2,413 MW | 4,376 MW | 7,867 MW |
| July 2023 | 1,111 MW | 1,713 MW | 2,327 MW | 4,379 MW | 8,128 MW |
| July 2024 | 1, 147 MW  07/28/2024  (IE 16:19) | 1,718 MW  07/21/2024  (IE 18:53) | 2,338 MW  07/16/2024  (IE 11:44) | 4,125 MW  07/08/2024  (IE 19:44) | 7,408 MW  07/08/2024  (IE 20:14) |
| All Months in 2014-2024 | 1,978 MW | 3,107 MW | 4,588 MW | 8,901 MW | 16,522 MW |
| 6/1/2024 | 1/29/2024 | 1/29/2024 | 1/29/2024 | 1/29/2024 |
| (IE 10:07) | (IE 17:05) | (IE 17:10) | (IE 17:11) | (IE 17:17) |

# 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** | **Contingency**  **Name** | **Overloaded Element** | **# of Days Constraint Binding** | **Congestion Rent** | **Transmission Project** |
|  |
| DMGSCON5 | 6471\_\_C | MGSES-LNGSW\_and\_MGSES-CONSW\_345\_DBLCKT | Morgan Creek Ses - Navigation Sub 138kV | 16 | $25,629,040.66 | Oncor\_FW\_5436 Morgan Creek\_McDonald Rd 138 kV Line(23RPG011, MOD 5436) |  |
| SHCKRNK5 | 106\_\_A | HICKS SWITCH to HICKS SWITCH LIN \_A | Hicks Switch - Alliance 345kV | 7 | $6,959,690.08 | Oncor\_MW\_RoanokeAreaProjects(21RPG008, MOD 70900) |  |
| BASE CASE | WESTEX | Basecase | WESTEX GTC | 7 | $5,336,677.36 |  |  |
| SWALNAA8 | COLLE\_JUPIT\_1 | NAAMAN to NAAMAN LIN 1 | College - Jupiter 138kV | 8 | $5,328,872.33 |  |  |
| SW\_LVLT5 | 15060\_\_B | wett\_long\_draw to Volta LIN 1 | Koch Tap - Vealmoor 138kV | 14 | $4,893,576.75 |  |  |
| DCONLNG5 | 6471\_\_C | CONSW-MGSES\_and\_CONSW-LNGSW\_345kV\_DBLCKT | Morgan Creek Ses - Navigation Sub 138kV | 19 | $3,878,056.75 | Oncor\_FW\_5436 Morgan Creek\_McDonald Rd 138 kV Line(23RPG011, MOD 5436) |  |
| DCDHTVW5 | 310\_\_A | TVWSW TO CDHSW 345 AND CDHSW TO VENSW 345 DBLCKT | Liggett Switch - Norwood Switch 345kV | 9 | $3,847,617.60 |  |  |
| MLOBFOR5 | LARDVN\_LASCRU1\_1 | manual double Lobo to fowlerton 1&2 345 | Laredo Vft North - Las Cruces 138kV | 11 | $3,347,750.28 | AEP\_TCC\_Laredo VFT North - Las Cruces 138 kV Line Rebuild (58008), AEP\_TCC\_Las Cruces - Milo Rebuild (76076), AEP\_TCC\_Milo - Mines Road Rebuild (76078), AEP\_TCC\_Mines Road - North Laredo SW Rebuild (76080) |  |
| DBIGKEN5 | FORTMA\_YELWJC1\_1 | Bighil-Kendal 345kV | Yellow Jacket - Fort Mason 138kV | 7 | $2,588,453.66 |  |  |
| MWHPLON5 | NCARBI\_SEADRF1\_1 | Manual White Point to Angstrom & Lon Hill 345KV DOUBLE UPDATE | Sea Drift Coke - North Carbide 138kV | 4 | $2,327,000.76 |  |  |
| DSALHUT5 | 1710\_\_C | SALSW - HUTTO 345KV | Bell County - Salado Switch 138kV | 6 | $2,026,691.44 |  |  |
| MANSSTP5 | BLESSING\_1382 | Manual STP to HLJ & Anstrom345 KV DOUBLE | Blessing 345kV | 5 | $2,013,758.82 |  |  |
| DCOLFA59 | VICTO\_WARBU\_1A\_1 | COLETO - GRISSOM (345) & VICTORIA - FANNINS (69) | Warburton Road Switching Station - Victoria 138kV | 4 | $1,973,905.87 |  |  |
| SCRMSAR8 | ORNT\_REDCRE1\_1 | SAN ANGELO RED CREEK to Weiss LIN 1 | Orient - San Angelo Red Creek 138kV | 5 | $1,420,667.85 |  |  |
| DWLFMOS5 | 6520\_\_E | WLFSW-MOSSW 345&WLFSW-ODEHV 345\_\_\_\_TRPLCKT-1of3 | Odessa Ehv Switch - Yarbrough Sub 138kV | 21 | $1,293,196.08 |  |  |
| SOBWAP5 | OB\_WAP98\_A | WA PARISH to OBRIEN LIN A | Wa Parish - Obrien 345kV | 9 | $1,212,062.76 |  |  |
| MLOBFOR5 | ASHERT\_CATARI1\_1 | manual double Lobo to fowlerton 1&2 345 | Asherton - Catarina 138kV | 11 | $1,148,054.29 | AEP\_TCC\_AshertontoPiloncillo138kVLine\_rebuild (73100) |  |
| BASE CASE | PNHNDL | Basecase | PNHNDL GTC | 11 | $1,056,267.62 |  |  |
| SFTWW\_D8 | LOCUST\_NODE\_1 | West Denton to FORT WORTH SUBSATION LIN 1 | Locust Substation - Dme Three Terminal Node For Locust Woodrow Spencer Interchange 138kV | 3 | $810,133.92 |  |  |
| DBIGKEN5 | REDCRE\_WEISS1\_1 | Bighil-Kendal 345kV | San Angelo Red Creek - Weiss 138kV | 3 | $734,474.80 |  |  |
| DBIGKEN5 | TREADW\_YELWJC1\_1 | Bighil-Kendal 345kV | Yellow Jacket - Treadwell 138kV | 8 | $698,806.82 |  |  |
| SGRILON5 | VICTO\_WARBU\_1A\_1 | Grissom to LON HILL LIN 1 | Warburton Road Switching Station - Victoria 138kV | 3 | $685,339.65 |  |  |
| SGIDLIN8 | 215T215\_1 | GIDDINGS to GIDDINGS LIN 1 | Highway 36 - Brenham North 138kV | 3 | $680,720.09 |  |  |
| DWPWFWP5 | STPWAP39\_1 | TWR(345) WAP-WLF64 & WAP-WLY72 | South Texas Project - Wa Parish 345kV | 8 | $679,448.13 |  |  |
| MHARNED5 | BURNS\_RIOHONDO\_1 | Manual dbl ckt for NEDIN-BONILLA 345kV & RIOH-PRIM138kV | Burns Sub - Rio Hondo 138kV | 8 | $668,959.10 | STEC\_71930\_RioHondo\_Burns\_Upgrade (71930), STEC\_71926\_Burns\_Heidelberg\_Upgrade (71926), STEC\_71928\_Heidelberg\_AEPWeslaco\_Upgrade (71928) |  |
| DMTSCOS5 | 6437\_\_F | DMTSW TO SCOSW 345 DBLCKT | Knapp - Scurry Chevron 138kV | 4 | $664,194.13 |  |  |
| DVLSPAC5 | 389\_\_A | VLSES-PACSW 345&PRSSW-VLYSO 345 DBLCKT | Monticello Ses - Woodard Switch 345kV | 15 | $610,488.53 |  |  |
| SBWDDBM5 | LPLMK\_LPLNE\_1 | BLACKWATER DRAW SWITCH to DOUBLE MOUNTAIN SWITCH LIN 1 | Mackenzie Substation - Northeast Substation 115kV | 9 | $555,590.49 |  |  |
| SRRDLCS5 | 245\_\_A | Rattlesnake Rd Switch to LAKE CREEK SES LIN \_A | St Johns Switch - Bale Switch 345kV | 8 | $544,666.63 |  |  |
| SCMNCPS5 | 651\_\_B | COMANCHE SWITCH (Oncor) to COMANCHE PEAK SES LIN \_A | Comanche Tap - Comanche Switch (Oncor) 138kV | 4 | $540,546.00 |  |  |
| MANGWHP5 | BLESSI\_LOLITA1\_1 | Manual from ANGSTROM to WHITE\_PT 345 kv Update | Blessing - Lolita 138kV | 4 | $540,345.39 |  |  |
| BASE CASE | E\_PASP | Basecase | E\_PASP GTC | 6 | $522,808.25 |  |  |
| DCONLNG5 | 14040\_\_A | CONSW-MGSES\_and\_CONSW-LNGSW\_345kV\_DBLCKT | Polecat Creek Switch - Dewey Lake Tap 138kV | 8 | $514,869.76 | Oncor\_FW\_45640\_Spraberry - Polecat Creek 138 kV Line(23RPG009, MOD 45640) |  |
| XDIL89 | DILLEYSW\_69A1 | DILLEY SWITCH AEP TRX 69\_1 138/69 | Dilley Switch Aep 138kV | 7 | $509,634.78 |  |  |
| SRRDLCS5 | 235\_\_B | Rattlesnake Rd Switch to LAKE CREEK SES LIN \_A | Bale Switch - Jewett 345kV | 7 | $390,794.39 |  |  |
| BASE CASE | NE\_LOB | Basecase | NE\_LOB GTC | 8 | $390,300.40 | The Lower Rio Grande Valley (LRGV) System Enhancement Project (21RPG017) will improve the NorthEd\_LoboGTC to support up to 80% of total wind and solar generation capacity in the LRGV area. |  |
| SRAYRI38 | HAINE\_\_LA\_PAL1\_1 | LAS PULGAS to RAYMONDVILLE 2 LIN 1 | Haine Drive - La Palma 138kV | 5 | $390,081.23 |  |  |
| DRESMCM8 | RINCON\_WHITE\_2\_1 | I\_DUPS - RESNIK & MCCAMPBE 2 138KV | Whitepoint - Rincon 138kV | 6 | $381,265.07 | AEP\_TCC\_RinconStation (87019) |  |
| BASE CASE | ZAPSTR | Basecase | ZAPSTR GTC | 17 | $377,185.73 |  |  |
| SVENFTS5 | 35055\_\_A | FORT SMITH SWITCH to FORT SMITH SWITCH LIN \_B | Sam Switch - Venus Switch 345kV | 3 | $350,174.27 |  |  |
| MLOBFOR5 | CATARI\_PILONC1\_1 | manual double Lobo to fowlerton 1&2 345 | Catarina - Piloncillo 138kV | 5 | $342,847.42 | AEP\_TCC\_AshertontoPiloncillo138kVLine\_rebuild (73100) |  |
| BASE CASE | NELRIO | Basecase | NELRIO GTC | 8 | $329,241.63 | The Lower Rio Grande Valley (LRGV) System Enhancement Project (21RPG017) will cause there to be no stability constraint for NelsonSharpe\_RioHondoGTC under normal conditions. |  |
| SBAKCED5 | HARGRO\_TWINBU1\_1 | BAKERSFIELD SWITCHYARD to CEDAR CANYON LIN 1 | Hargrove - Twin Buttes 138kV | 7 | $328,206.09 |  |  |
| DBIGSCH5 | PALOUS\_WOLFCA1\_1 | Big Hill - Schneeman Draw & Big Hill - Schneeman Draw 2 | Palouse - Wolfcamp 138kV | 6 | $291,248.78 |  |  |
| MHARNED5 | HAINE\_\_LA\_PAL1\_1 | Manual dbl ckt for NEDIN-BONILLA 345kV & RIOH-PRIM138kV | Haine Drive - La Palma 138kV | 5 | $266,095.42 |  |  |
| DDILCOT8 | DILLEYSW\_69A1 | Dilleysw-Sanmgsw&Cotulas 138kV | Dilley Switch Aep 138kV | 13 | $246,087.48 |  |  |
| DBAKCED5 | 6056\_\_A | BAKESW-CEDACA 345kV & BAKESW-CEDACA 345kV | Longshore Switch - Consavvy Switch 345kV | 4 | $214,325.51 | Oncor\_FW\_81268\_Longshore – Consavvy 345 kV Double-Circuit Line Rebuild(23RPG029, MOD 81268), Oncor\_FW\_81268\_Cattleman – Longshore 345 kV Double Circuit Line Rebuild(23RPG029, MOD 81236) |  |
| SCOLBAL8 | SANA\_FMR1 | COLEMAN LAKE IVIE TAP to COLEMAN LAKE IVIE TAP LIN 1 | Santa Anna 138kV | 3 | $190,072.89 |  |  |
| BASE CASE | E\_PATA | Basecase | E\_PATA GTC | 7 | $179,034.66 |  |  |
| SEBHUG8 | LANCTY\_LAN\_CT1\_1 | EAST BERNARD to EAST BERNARD LIN A | Lane City Pump - Lane City 138kV | 4 | $168,177.29 |  |  |
| SDBMFID5 | LPLHY\_LPLDB\_1 | DOUBLE MOUNTAIN SWITCH to DOUBLE MOUNTAIN SWITCH LIN 1 | Holly Substation - Dunbar Substation 115kV | 3 | $165,488.18 |  |  |
| DBIGKEN5 | MADDUX\_TREADW1\_1 | Bighil-Kendal 345kV | Maddux - Treadwell 138kV | 5 | $158,368.57 |  |  |
| SBTPBNT8 | MYRA\_VAL\_1 | BENNETT ROAD SWITCH to WISE COUNTY LIN \_B | Myra - Valley View Bepc 138kV | 4 | $126,534.48 | BEPC\_TPIT4645\_MYRA\_SPRING (4645) |  |
| STHSVE65 | 35050\_\_B | SAM SWITCH to VENUS SWITCH LIN \_A | Venus Switch - Fort Smith Switch 345kV | 4 | $124,879.23 |  |  |
| DRAZSA89 | 2585\_1 | Double Circuit RAZORBAC to DRYFRIO 138 kV & UVALDE to SABINAL 69 kV | Moore Switching Station - Downie Switching Station 138kV | 7 | $120,848.08 |  |  |
| SFORYEL8 | HEXT\_MASONS1\_1 | FORT MASON to FORT MASON LIN 1 | Mason Switching Station - Hext Lcra 69kV | 5 | $118,987.86 |  |  |
| DBIGKEN5 | HAMILT\_MAXWEL1\_1 | Bighil-Kendal 345kV | Hamilton Road - Maxwell 138kV | 7 | $108,137.52 | Hamilton Road to Maxwell 138 kV Line Rebuild Project (20RPG022) |  |
| SMADSAP8 | MADDUX\_SAPOWE2\_1 | MADDUX to SAN ANGELO POWER STATION LIN 1 | Maddux - San Angelo Power Station 138kV | 7 | $93,626.25 |  |  |
| SBRAPIN8 | HAMILT\_MAVERI1\_1 | BRACKETTVILLE to BRACKETTVILLE LIN 1 | Hamilton Road - Maverick 138kV | 12 | $91,417.95 | Escondido to Hamilton Road 138 kV Line Rebuild Project (22RPG044) |  |
| SN\_SAJO5 | LASPUL\_RAYMND1\_1 | AJO to AJO LIN 1 | Las Pulgas - Raymondville 2 138kV | 4 | $56,573.55 |  |  |
| SKLELOY8 | LOYOLA\_69\_1 | KLEBERG AEP to KLEBERG AEP LIN 1 | Loyola Sub 138kV | 3 | $42,938.40 | STEC\_76816\_upgradeLoyolaAuto (76816) |  |
| SBENS\_M8 | BENTS\_FRTER\_1B\_1 | SOUTH MCALLEN to BENTSEN LIN 1 | Frontera - South Mission 138kV | 5 | $33,646.04 |  |  |
| DBIGKEN5 | FORTMA\_YELWJC1\_1 | Bighil-Kendal 345kV | Yellow Jacket - Fort Mason 138kV | 7 | $32,393.72 |  |  |
| DRAZSA89 | READIN\_UVALDE1\_1 | Double Circuit RAZORBAC to DRYFRIO 138 kV & UVALDE to SABINAL 69 kV | Uvalde Aep - Reading 138kV | 5 | $19,010.19 |  |  |
| MLOBFOR5 | ASHERT\_CATARI1\_1 | manual double Lobo to fowlerton 1&2 345 | Asherton - Catarina 138kV | 11 | $6,545.77 | AEP\_TCC\_AshertontoPiloncillo138kVLine\_rebuild (73100) |  |
| SFORYEL8 | HEXT\_MASONS1\_1 | FORT MASON to FORT MASON LIN 1 | Mason Switching Station - Hext Lcra 69kV | 5 | $5,563.13 |  |  |
| SPEBTRU8 | 940\_\_A | GAMMA to GAMMA LIN \_D | Ennis West Switch - Templeton 138kV | 4 | $5,467.11 |  |  |
| DRESMCM8 | RINCON\_WHITE\_2\_1 | I\_DUPS - RESNIK & MCCAMPBE 2 138KV | Whitepoint - Rincon 138kV | 6 | $14.87 | AEP\_TCC\_RinconStation (87019) |  |

## Generic Transmission Constraint Congestion

|  |  |
| --- | --- |
| GTC | Days Congestion |
| Zapata Starr | 20 |
| North Edinburg to Lobo | 14 |
| Panhandle GTC | 13 |
| Nelson Sharpe to Rio Hondo | 11 |
| West Texas Export | 9 |
| E\_PASP | 8 |
| E\_PATA | 7 |
| I\_KALO | 2 |
| North to Houston | 2 |
| Valley Export | 2 |
| Wharton County GTC | 1 |

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

None

## Congestion Costs for Calendar Year 2024

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 (2024)** |
| Basecase | WESTEX GTC | 17,889 | $93,168,160.00 |
| MGSES TO CCRSW 345 AND BTRCK TO MGSES 345 DBLCKT | Tonkawa Switch - Morgan Creek Ses 345kV | 7,456 | $87,576,954.87 |
| MGSES-LNGSW\_and\_MGSES-CONSW\_345\_DBLCKT | Morgan Creek Ses - Navigation Sub 138kV | 4,752 | $43,909,299.64 |
| BAKERSFIELD SWITCHYARD to CEDAR CANYON LIN 1 | Hargrove - Twin Buttes 138kV | 5,724 | $38,784,070.74 |
| Basecase | NE\_LOB GTC | 22,514 | $32,309,285.33 |
| SALSW - HUTTO 345KV | Bell County - Salado Switch 138kV | 6,885 | $32,115,088.09 |
| Manual dbl ckt for NEDIN-BONILLA 345kV & RIOH-PRIM138kV | Burns Sub - Rio Hondo 138kV | 13,879 | $31,558,930.98 |
| Basecase | PNHNDL GTC | 20,157 | $24,663,392.17 |
| BLACKWATER DRAW SWITCH to DOUBLE MOUNTAIN SWITCH LIN 1 | Northwest Substation - Mcdonald Substation 115kV | 4,428 | $23,761,397.68 |
| CONSW-MGSES\_and\_CONSW-LNGSW\_345kV\_DBLCKT | Morgan Creek Ses - Navigation Sub 138kV | 5,852 | $17,856,660.58 |
| manual double NEDIN to PALMITO 345 & NEDIN to STEWART 345 | Burns Sub - Rio Hondo 138kV | 1,833 | $15,606,001.64 |
| Basecase | I\_KALO GTC | 1,399 | $14,548,366.61 |
| FOWLERTON TRX FOWLRTON\_AUTO1 345/138 | Laredo Vft North - Las Cruces 138kV | 6,265 | $13,110,290.05 |
| CONSW-MGSES\_and\_CONSW-LNGSW\_345kV\_DBLCKT | Falcon Seaboard - Morgan Creek Ses 345kV | 6,776 | $12,822,323.32 |
| SALSW TO KLNSW 345 DBLCKT | Harker Heights South - Killeen Switch 138kV | 5,004 | $11,899,287.91 |
| EVERMAN SWITCH TRX EVRSW\_4\_1 345/138 | Everman Switch 345kV | 386 | $11,447,643.03 |
| HICKS SWITCH to HICKS SWITCH LIN \_A | Hicks Switch - Alliance 345kV | 2,636 | $10,953,251.59 |
| NAAMAN to NAAMAN LIN 1 | College - Jupiter 138kV | 1,945 | $10,926,069.41 |
| CCRSW TO SWESW 345 AND BTRCK TO MGSES 345 DBLCKT | Tonkawa Switch - Morgan Creek Ses 345kV | 6,265 | $10,452,257.39 |
| manual NORTH EDINBURG to REDTAP LIN 1 | Burns Sub - Rio Hondo 138kV | 937 | $10,333,018.08 |

# System Events

## ERCOT Peak Load

The unofficial ERCOT peak load for the month was 81,010 MW and occurred on 07/01/2024, during hour ending 18:00. Instantaneous peak was 81,838 MW. Actual peak for the same month last year was 82,964 MW.

## 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)** |
| **7/7/2024** | **DC\_L** | **7/6/2024 23:53 – 7/8/2024 16:32** | **4** | **Forced Outage** |  |

## TRE/DOE Reportable Events

Centerpoint Submitted a DOE 417 for 7/08/2024 - Loss of electric service to more than 50,000 customers for 1 hour or more.

TNMP Submitted a DOE 417 for 7/08/2024 - Loss of electric service to more than 50,000 customers for 1 hour or more

Oncor Submitted a EOP-004-4 for 7/15/2024 - Damage or destruction of a Facility

Oncor Submitted a DOE-417 for 7/15/2024 - Damage or destruction of a Facility

CenterPoint Submitted a DOE-417 for 7/24/2024 - complete loss of offsite power (LOOP) affecting a nuclear generating station per NIPR

AEN Submitted a DOE- 417 for 7/24/2024 - Total generation loss, within 1 minute of 1400 MW in the ERCOT Interconnection

NRG Submitted a DOE-417 for 7/24/2024 - complete loss of offsite power (LOOP) affecting a nuclear generating station per NIPR

EDF Submitted a EOP-004-4 for 7/30/2024 - Generator unit was compromised due to a possible cyber-attack

## New/Updated Constraint Management Plans

Updated MPs:

* MP\_2023\_04 REV2, MP\_2023\_11 REV4, MP\_2024\_06 REV1, 2024\_11 REV1

## New/Modified/Removed RAS

None.

## New Procedures/Forms/Operating Bulletins

|  |  |  |
| --- | --- | --- |
| **Date** | **Subject** | **Bulletin No.** |
| 7/31/2024 | Transmission and Security Desk V1 Rev 112 | 1148 |
| 7/31/2024 | Scripts V1 Rev 58 | 1147 |
| 7/31/2024 | Reliability Risk Desk Operating Procedure V1 Rev 35 | 1146 |
| 7/31/2024 | Real Time Desk V1 Rev 97 | 1145 |
| 7/31/2024 | DC Tie V1 Rev 76 | 1144 |

# Emergency Conditions

## OCNs

|  |  |
| --- | --- |
| **Date and Time** | **Message** |
| July 3, 2024 12:00 CST | ERCOT issued an OCN for Hurricane Beryl due to a possibility of making landfall or impacting the ERCOT Region on Sunday July 7, 2024. |

## Advisories

|  |  |
| --- | --- |
| **Date and Time** | **Message** |
| July 05, 2024 10:01 CST | Advisory issued for Hurricane Beryl due to a possibility of making landfall or impacting the ERCOT Region on Sunday July 7, 2024. |

## Watches

|  |  |
| --- | --- |
| **Date and Time** | **Message** |
| July 6, 2024 12:02 CST | ERCOT issued a Watch for Tropical Storm Beryl in the Gulf of Mexico which is expected to intensify into a Hurricane and have an adverse impact or make landfall within the ERCOT Region between Corpus Christi and Galveston on Sunday July 7, 2024. |

## Emergency Notices

|  |  |
| --- | --- |
| **Date and Time** | **Message** |
| July 8, 2024 3:30 CST | At 03:30, ERCOT is issuing an Emergency Notice due to Hurricane Beryl having an adverse impact on the ERCOT transmission system. |

# Application Performance

## TSAT/VSAT Performance Issues

None

## Communication Issues

None.

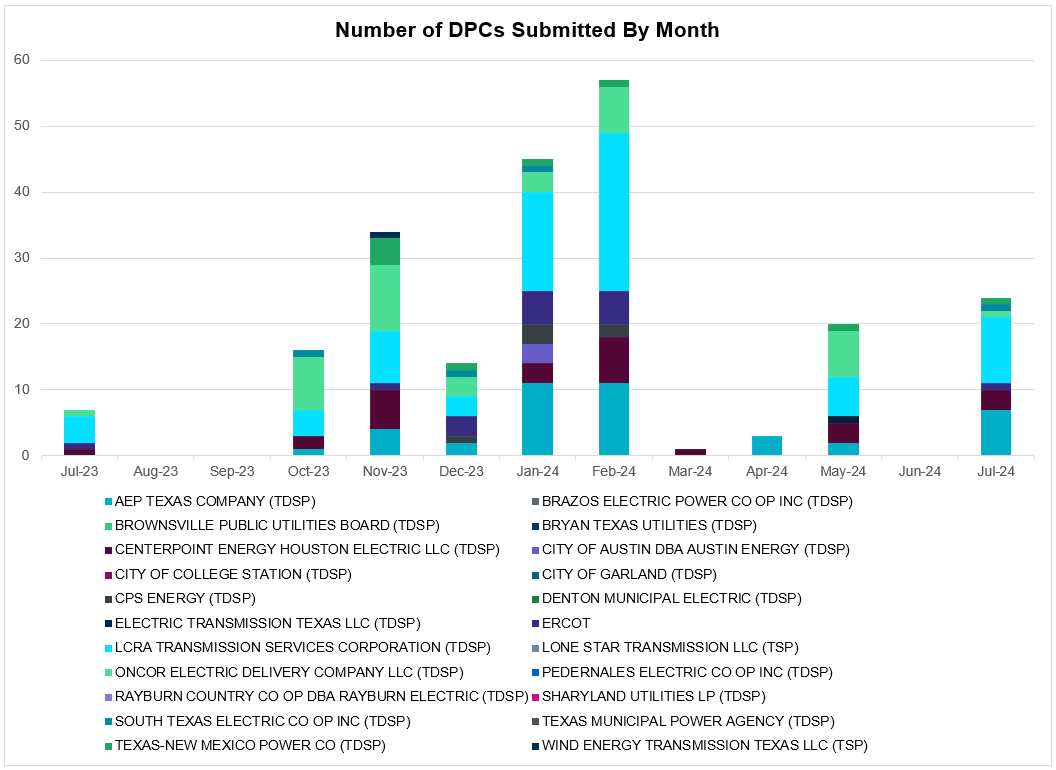
## Market System Issues

None.

# Model Updates

The Downstream Production Change (DPC) process allows ERCOT to make changes in the one-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) | 7 |
| 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) | 3 |
| 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 | 1 |
| LCRA TRANSMISSION SERVICES CORPORATION (TDSP) | 10 |
| LONE STAR TRANSMISSION LLC (TSP) | 0 |
| ONCOR ELECTRIC DELIVERY COMPANY LLC (TDSP) | 1 |
| 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) | 1 |
| TEXAS MUNICIPAL POWER AGENCY (TDSP) | 0 |
| TEXAS-NEW MEXICO POWER CO (TDSP) | 1 |
| 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 | Contingency Name | Overloaded Element | From Station | To Station | Count of Days |
| 2024 | July | DCONLNG5 | 6471\_\_C | MGSES | NAVIG | 25 |
| 2024 | July | SW\_LVLT5 | 15060\_\_B | VEALMOOR | KOCHTAP | 21 |
| 2024 | July | DWLFMOS5 | 6520\_\_E | ODEHV | YARBR | 21 |
| 2024 | July | BASE CASE | ZAPSTR | n/a | n/a | 20 |
| 2024 | July | DMGSCON5 | 6471\_\_C | MGSES | NAVIG | 19 |
| 2024 | July | SBWDDBM5 | LPLMK\_LPLNE\_1 | LPLMK | LPLNE | 18 |
| 2024 | July | DVLSPAC5 | 389\_\_A | WDDSW | MNSES | 18 |
| 2024 | July | SBWDDBM5 | LPLMK\_LPLNE\_1 | LPLNE | LPLMK | 18 |
| 2024 | July | SBENS\_M8 | BENTS\_FRTER\_1B\_1 | FRONTERA | S\_MISSIN | 16 |
| 2024 | July | DCDHTVW5 | 310\_\_A | LIGSW | NORSW | 14 |
| 2024 | July | BASE CASE | NE\_LOB | n/a | n/a | 14 |
| 2024 | July | MLOBFOR5 | ASHERT\_CATARI1\_1 | CATARINA | ASHERTON | 13 |
| 2024 | July | SBRAPIN8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 13 |
| 2024 | July | BASE CASE | PNHNDL | n/a | n/a | 13 |
| 2024 | July | DDILCOT8 | DILLEYSW\_69A1 | DILLEYSW | DILLEYSW | 13 |
| 2024 | July | MLOBFOR5 | LARDVN\_LASCRU1\_1 | LARDVNTH | LASCRUCE | 13 |
| 2024 | July | MLOBFOR5 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 13 |
| 2024 | July | SWALNAA8 | COLLE\_JUPIT\_1 | COLLEGE | JUPITER | 11 |
| 2024 | July | SRRDLCS5 | 235\_\_B | BALSW | JEWET | 11 |
| 2024 | July | DCONLNG5 | 14040\_\_A | PCTSW | DEWTP | 11 |
| 2024 | July | DBIGKEN5 | TREADW\_YELWJC1\_1 | TREADWEL | YELWJCKT | 11 |
| 2024 | July | BASE CASE | NELRIO | n/a | n/a | 11 |
| 2024 | July | SOBWAP5 | OB\_WAP98\_A | WAP | OB | 11 |
| 2024 | July | SRRDLCS5 | 245\_\_A | SJNSW | BALSW | 10 |
| 2024 | July | SFORYEL8 | HEXT\_MASONS1\_1 | HEXT | MASONSW | 10 |
| 2024 | July | SFORYEL8 | HEXT\_MASONS1\_1 | MASONSW | HEXT | 10 |
| 2024 | July | DBIGKEN5 | FORTMA\_YELWJC1\_1 | YELWJCKT | FORTMA | 9 |
| 2024 | July | SDBMFID5 | LPLHY\_LPLDB\_1 | LPLDB | LPLHY | 9 |
| 2024 | July | MHARNED5 | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 9 |
| 2024 | July | DBIGKEN5 | FORTMA\_YELWJC1\_1 | FORTMA | YELWJCKT | 9 |
| 2024 | July | BASE CASE | WESTEX | n/a | n/a | 9 |
| 2024 | July | DSALHUT5 | 1710\_\_C | BELCNTY | SALSW | 9 |
| 2024 | July | SHCKRNK5 | 106\_\_A | HCKSW | ALLNC | 8 |
| 2024 | July | SBAKCED5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 8 |
| 2024 | July | DWPWFWP5 | STPWAP39\_1 | STP | WAP | 8 |
| 2024 | July | BASE CASE | E\_PASP | n/a | n/a | 8 |
| 2024 | July | SBTPBNT8 | MYRA\_VAL\_1 | MYRA | VALYVIEW | 8 |
| 2024 | July | SMADSAP8 | MADDUX\_SAPOWE2\_1 | MADDUX | SAPOWER | 8 |
| 2024 | July | BASE CASE | E\_PATA | n/a | n/a | 7 |
| 2024 | July | DRAZSA89 | 2585\_1 | DOWNIES | MOORE | 7 |
| 2024 | July | DMTSCOS5 | 6437\_\_F | SCRCV | KNAPP | 7 |
| 2024 | July | DBIGKEN5 | HAMILT\_MAXWEL1\_1 | MAXWELL | HAMILTON | 7 |
| 2024 | July | DRESMCM8 | RINCON\_WHITE\_2\_1 | WHITE\_PT | RINCON | 7 |
| 2024 | July | XDIL89 | DILLEYSW\_69A1 | DILLEYSW | DILLEYSW | 7 |
| 2024 | July | XCAG158 | CAGNON\_MR4H | CAGNON | CAGNON | 7 |
| 2024 | July | DRESMCM8 | RINCON\_WHITE\_2\_1 | RINCON | WHITE\_PT | 7 |
| 2024 | July | MANSSTP5 | BLESSING\_1382 | BLESSING | BLESSING | 6 |
| 2024 | July | SPEBTRU8 | 940\_\_A | ENWSW | TMPTN | 6 |
| 2024 | July | STHSVE65 | 35050\_\_B | FTSSW | VENSW | 6 |
| 2024 | July | MLOBFOR5 | CATARI\_PILONC1\_1 | CATARINA | PILONCIL | 6 |
| 2024 | July | DBIGSCH5 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 6 |
| 2024 | July | MLOBFOR5 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 6 |
| 2024 | July | SVENFTS5 | 35055\_\_A | SAMSW | VENSW | 5 |
| 2024 | July | SEBHUG8 | LANCTY\_LAN\_CT1\_1 | LAN\_CTY | LANCTYPM | 5 |
| 2024 | July | SRAYRI38 | HAINE\_\_LA\_PAL1\_1 | LA\_PALMA | HAINE\_DR | 5 |
| 2024 | July | DBAKCED5 | 6056\_\_A | LNGSW | CONSW | 5 |
| 2024 | July | DRAZSA89 | READIN\_UVALDE1\_1 | UVALDE | READING | 5 |
| 2024 | July | XEIN58 | 6471\_\_C | MGSES | NAVIG | 5 |
| 2024 | July | MHARNED5 | HAINE\_\_LA\_PAL1\_1 | LA\_PALMA | HAINE\_DR | 5 |
| 2024 | July | MWHPLON5 | BLESSI\_LOLITA1\_1 | LOLITA | BLESSING | 5 |
| 2024 | July | SN\_SAJO5 | LASPUL\_RAYMND1\_1 | LASPULGA | RAYMND2 | 5 |
| 2024 | July | DBIGKEN5 | MADDUX\_TREADW1\_1 | MADDUX | TREADWEL | 5 |
| 2024 | July | SCRMSAR8 | ORNT\_REDCRE1\_1 | REDCREEK | ORNT | 5 |
| 2024 | July | DCONLNG5 | RKYROAD\_STILES\_1 | RCKYROAD | STILES | 5 |
| 2024 | July | SALLHCK5 | 107\_\_A | HCKSW | RNKSW | 5 |
| 2024 | July | DCAGCI58 | 255T279\_1 | PIPECR | MEDILA | 5 |
| 2024 | July | MANGWHP5 | BLESSI\_LOLITA1\_1 | LOLITA | BLESSING | 5 |
| 2024 | July | MANGSTP5 | BLESSI\_LOLITA1\_1 | LOLITA | BLESSING | 5 |
| 2024 | July | MANGWHP5 | BLESSI\_LOLITA1\_1 | BLESSING | LOLITA | 5 |
| 2024 | July | MWHPLON5 | BLESSI\_LOLITA1\_1 | BLESSING | LOLITA | 5 |
| 2024 | July | MANGSTP5 | BLESSI\_LOLITA1\_1 | BLESSING | LOLITA | 5 |
| 2024 | July | SCOMKEN8 | 115T123\_1 | KENDAL | KERRST | 4 |
| 2024 | July | DCONLNG5 | 6095\_\_G | JPPOI | ALKLK | 4 |
| 2024 | July | SGRICOL5 | VICTO\_WARBU\_1A\_1 | VICTORIA | WARBURTN | 4 |
| 2024 | July | DCOLFA59 | VICTO\_WARBU\_1A\_1 | VICTORIA | WARBURTN | 4 |
| 2024 | July | SCMNCPS5 | 651\_\_B | CMNSW | CMNTP | 4 |
| 2024 | July | SFTWW\_D8 | LOCUST\_NODE\_1 | LOCUST\_D | DMENODE | 4 |
| 2024 | July | SBRAPIN8 | ESCOND\_GANSO1\_1 | GANSO | ESCONDID | 4 |
| 2024 | July | SI\_DWH38 | I\_DUPS\_RESNIK2\_2 | I\_DUPSW | RESNIK | 4 |
| 2024 | July | XEI258 | 6471\_\_C | MGSES | NAVIG | 4 |
| 2024 | July | DHILLAS8 | G2\_M3\_1 | M3 | G2 | 4 |
| 2024 | July | SSTAPYO8 | 138\_IH2\_COT\_1 | IH20 | TNCOLIET | 4 |
| 2024 | July | MWHPLON5 | NCARBI\_SEADRF1\_1 | NCARBIDE | SEADRFTC | 4 |
| 2024 | July | DCC1DUKE | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 4 |
| 2024 | July | SGRILON5 | VICTO\_WARBU\_1A\_1 | VICTORIA | WARBURTN | 4 |
| 2024 | July | SGIDLIN8 | 215T215\_1 | HIGH36 | BRENNO | 3 |
| 2024 | July | DWPWFCK5 | STPWAP39\_1 | STP | WAP | 3 |
| 2024 | July | SKLELOY8 | LOYOLA\_69\_1 | LOYOLA | LOYOLA | 3 |
| 2024 | July | SWHILON5 | WHITE\_PT\_T3L | WHITE\_PT | WHITE\_PT | 3 |
| 2024 | July | BASE CASE | W\_LD\_138\_LDXF | W\_LD\_138 | W\_LD\_138 | 3 |
| 2024 | July | DWAP\_JN5 | BI\_WAP50\_A | WAP | BI | 3 |
| 2024 | July | DHIWARC8 | MORRIS\_WESTSI1\_1 | MORRIS | WESTSIDE | 3 |
| 2024 | July | DBIGKEN5 | REDCRE\_WEISS1\_1 | REDCREEK | WEISS | 3 |
| 2024 | July | SCOLBAL8 | SANA\_FMR1 | SANA | SANA | 3 |
| 2024 | July | DGRMGRS8 | 6830\_\_B | CRDSW | OLNEY | 3 |
| 2024 | July | SCO2EUL8 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 3 |
| 2024 | July | MPEAMOO8 | DILLEYSW\_69A1 | DILLEYSW | DILLEYSW | 3 |
| 2024 | July | SFORYEL8 | MASNPH\_MASN1\_1 | MASN | MASNPHT | 3 |
| 2024 | July | DHILMAR5 | 361T361\_1 | SCHERT | PARKWA | 3 |
| 2024 | July | DELMTEX5 | BLESSING\_1382 | BLESSING | BLESSING | 3 |
| 2024 | July | BASE CASE | RANDAD\_ZAPATA1\_1 | RANDADO | ZAPATA | 3 |
| 2024 | July | SFORYEL8 | HEXT\_YELWJC1\_1 | YELWJCKT | HEXT | 3 |
| 2024 | July | XVIC89 | MAGRUD\_VICTOR2\_1 | VICTORIA | MAGRUDER | 3 |
| 2024 | July | SEL\_ARR8 | MARKHA\_MARKHM1\_1 | MARKHAM | MARKHMTP | 3 |
| 2024 | July | SLANARR8 | MARKHA\_MARKHM1\_1 | MARKHAM | MARKHMTP | 3 |
| 2024 | July | DZORHAY5 | BERGHE\_AT1L | BERGHE | BERGHE | 3 |
| 2024 | July | MWHPLON5 | BLESSING\_1382 | BLESSING | BLESSING | 3 |
| 2024 | July | MANGSTP5 | LANCTY\_LAN\_CT1\_1 | LAN\_CTY | LANCTYPM | 2 |
| 2024 | July | MPEAMOO8 | PALDRO\_DILLEY\_1 | PALODURO | DILLEYSW | 2 |
| 2024 | July | SWALWLN8 | 568\_\_A | RYSSW | NEVADA | 2 |
| 2024 | July | DCONLNG5 | 6046\_\_A | MGSES | FLCNS | 2 |
| 2024 | July | SECRDMT8 | 6215\_\_A | BCKSW | CGRSW | 2 |
| 2024 | July | SRICGRS8 | 6840\_\_B | NVKSW | ANARN | 2 |
| 2024 | July | XFTS89 | ALPINE\_BRONCO1\_1 | ALPINE | BRONCO | 2 |
| 2024 | July | DELMTEX5 | BLESSI\_LOLITA1\_1 | BLESSING | LOLITA | 2 |
| 2024 | July | SSHIMC28 | CNT\_MCCR\_1 | MCCREE | CENTRVIL | 2 |
| 2024 | July | DKENBA89 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 2 |
| 2024 | July | SBRAHAM8 | GANSO\_MAVERI1\_1 | GANSO | MAVERICK | 2 |
| 2024 | July | BASE CASE | I\_KALO | n/a | n/a | 2 |
| 2024 | July | SWRDYN8 | LANCTY\_LAN\_CT1\_1 | LAN\_CTY | LANCTYPM | 2 |
| 2024 | July | DFL\_MAR8 | STLTB\_66\_A | TB | STL | 2 |
| 2024 | July | SBELTMP8 | 221T355\_1 | CHIEBR | GEORGE | 2 |
| 2024 | July | DFERSTA8 | 231T323\_1 | PALEPE | MARSFO | 2 |
| 2024 | July | MANSSTP5 | 589T589\_1 | EL\_CAMPO | RICEBI | 2 |
| 2024 | July | SCARFRI8 | ATSO\_SONR1\_1 | SONR | ATSO | 2 |
| 2024 | July | SHONMOO8 | BIG\_FO\_PLEASA1\_1 | BIG\_FOOT | PLEASANT | 2 |
| 2024 | July | MANSSTP5 | BLESSI\_LOLITA1\_1 | BLESSING | LOLITA | 2 |
| 2024 | July | SSEPT8 | LANCTY\_LAN\_CT1\_1 | LAN\_CTY | LANCTYPM | 2 |
| 2024 | July | BASE CASE | N\_TO\_H | n/a | n/a | 2 |
| 2024 | July | DSNG\_TB5 | STLTB\_66\_A | TB | STL | 2 |
| 2024 | July | DRAZSA89 | UVALDE\_W\_BATE1\_1 | UVALDE | W\_BATESV | 2 |
| 2024 | July | DELMTEX5 | 589T589\_1 | EL\_CAMPO | RICEBI | 2 |
| 2024 | July | DCMNCMN8 | 660\_\_B | MGPSW | ZEPHYR | 2 |
| 2024 | July | SS\_MRAI8 | BENTSE\_S\_MCAL1\_1 | S\_MCALLN | BENTSEN | 2 |
| 2024 | July | SCOLPAW5 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 2 |
| 2024 | July | SDI2DIL9 | DILLEYSW\_69A1 | DILLEYSW | DILLEYSW | 2 |
| 2024 | July | DWHICOT5 | FARMLAND\_LONGD\_1 | FARMLAND | W\_LD\_345 | 2 |
| 2024 | July | DELMTEX5 | LANCTY\_LAN\_CT1\_1 | LAN\_CTY | LANCTYPM | 2 |
| 2024 | July | DBIGKEN5 | ORNT\_REDCRE1\_1 | REDCREEK | ORNT | 2 |
| 2024 | July | BASE CASE | VALEXP | n/a | n/a | 2 |
| 2024 | July | SHCKRNK5 | 106\_\_B | ALLNC | RNKSW | 2 |
| 2024 | July | SW\_LVLT5 | 15060\_\_A | KOCHTAP | BUZSW | 2 |
| 2024 | July | DTMPBE58 | 221T355\_1 | CHIEBR | GEORGE | 2 |
| 2024 | July | DELMTEX5 | ANGSTR\_STP1\_1 | STP | ANGSTROM | 2 |
| 2024 | July | DELMTEX5 | MARKHA\_MARKHM1\_1 | MARKHAM | MARKHMTP | 2 |
| 2024 | July | SWHILON5 | NUECES\_WHITE\_2\_1 | NUECES\_B | WHITE\_PT | 2 |
| 2024 | July | DROUCHI8 | 1710\_\_C | BELCNTY | SALSW | 2 |
| 2024 | July | SBCESN35 | 431\_\_A | BCESW | SNDSW | 2 |
| 2024 | July | DCAGCO58 | 583T583\_1 | BANDER | MASOCR | 2 |
| 2024 | July | SEBHUG8 | 589T589\_1 | EL\_CAMPO | RICEBI | 2 |
| 2024 | July | DZORHAY5 | BERGHE\_AT1H | BERGHE | BERGHE | 2 |
| 2024 | July | DELMSAN5 | BIG\_FO\_PLEASA1\_1 | BIG\_FOOT | PLEASANT | 2 |
| 2024 | July | MANGSTP5 | BLESSING\_1382 | BLESSING | BLESSING | 2 |
| 2024 | July | SEL\_ARR8 | BLESSING\_69A1 | BLESSING | BLESSING | 2 |
| 2024 | July | SBRAUVA8 | BRACKE\_ESCOND1\_1 | BRACKETT | ESCONDID | 2 |
| 2024 | July | DBIGKEN5 | CARVER\_TINSLE1\_1 | CARVER | TINSLEY | 2 |
| 2024 | July | SMDOPHR5 | G138\_10B\_1 | SEMINOLE | MAGNO\_TN | 2 |
| 2024 | July | SBRAPIN8 | GANSO\_MAVERI1\_1 | GANSO | MAVERICK | 2 |
| 2024 | July | SI\_DI\_48 | I\_DUPP\_I\_DUPS2\_1 | I\_DUPP1 | I\_DUPSW | 2 |
| 2024 | July | DVLSPAC5 | 1561\_\_A | DPREA | RCSES | 2 |
| 2024 | July | DBEEPAL8 | 231T323\_1 | PALEPE | MARSFO | 2 |
| 2024 | July | SHAYZO25 | 6T227\_1 | HAYSEN | ZORN | 2 |
| 2024 | July | SCARFRI8 | ATSO\_OZNC1\_1 | ATSO | OZNC | 2 |
| 2024 | July | DWAP\_JN5 | BI\_SMR98\_A | SMITHERS | BI | 2 |
| 2024 | July | MANSSTP5 | BLESSI\_PALACI1\_1 | BLESSING | PALACIOS | 2 |
| 2024 | July | SBONNED5 | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 2 |
| 2024 | July | DRAZSA89 | DOWNIE\_READIN1\_1 | READING | DOWNIES | 2 |
| 2024 | July | BASE CASE | EBONY\_GENTIE\_1 | EBNY\_ESS | EBNY\_ESS | 2 |
| 2024 | July | MANSSTP5 | LANCTY\_LAN\_CT1\_1 | LAN\_CTY | LANCTYPM | 2 |
| 2024 | July | MLOBFOR5 | LASCRU\_MILO1\_1 | LASCRUCE | MILO | 2 |
| 2024 | July | SBLSJAC8 | MYRA\_VAL\_1 | MYRA | VALYVIEW | 2 |
| 2024 | July | DPRSHWK8 | 1561\_\_A | DPREA | RCSES | 2 |
| 2024 | July | MWHPLON5 | 589T589\_1 | EL\_CAMPO | RICEBI | 2 |
| 2024 | July | DCAGCO58 | 656T656\_1 | KENDAL | BERGHE | 2 |
| 2024 | July | XFTS89 | ALPINE\_BRONCO1\_1 | BRONCO | ALPINE | 2 |
| 2024 | July | SBENRAI8 | BENTS\_FRTER\_1B\_1 | FRONTERA | S\_MISSIN | 2 |
| 2024 | July | DELMTEX5 | CKT\_3123\_1 | HLJ | HOLMAN | 2 |
| 2024 | July | SBROALP9 | COCS\_FTST1\_1 | FTST | COCS | 2 |
| 2024 | July | SWHILON5 | LON\_HI\_WWKS\_T1\_1 | LON\_HILL | WWKS\_TAP | 2 |
| 2024 | July | DELMSAN5 | MAGRUD\_VICTOR2\_1 | VICTORIA | MAGRUDER | 2 |
| 2024 | July | DVENFTS5 | 1210\_\_B | HUBRD | HAN1 | 2 |
| 2024 | July | DWIRSTA8 | 231T323\_1 | PALEPE | MARSFO | 2 |
| 2024 | July | SBROALP9 | COCS\_FTST1\_1 | COCS | FTST | 2 |
| 2024 | July | MLARMIL8 | DEL\_MA\_LAREDO1\_1 | LAREDO | DEL\_MAR | 2 |
| 2024 | July | SBRAPIN8 | GANSO\_MAVERI1\_1 | MAVERICK | GANSO | 2 |
| 2024 | July | DCONLNG5 | 14040\_\_E | DEWTP | MDPOD | 1 |
| 2024 | July | DFERGRM8 | 34T267\_1 | SANDMO | CTECBU | 1 |
| 2024 | July | DSALHUT5 | 630\_\_B | KLNSW | HHSTH | 1 |
| 2024 | July | DVICDUP8 | BIGTRE\_V\_DUPS1\_1 | V\_DUPSW | BIGTRE | 1 |
| 2024 | July | SEL\_ARR8 | BLESSI\_MIDFIE1\_1 | BLESSING | MIDFIELD | 1 |
| 2024 | July | MWHPLON5 | BLESSI\_PALACI1\_1 | BLESSING | PALACIOS | 1 |
| 2024 | July | MPASTNE5 | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 1 |
| 2024 | July | SLOLFOR8 | GOHLKE\_JOSLIN1\_1 | JOSLIN | GOHLKE | 1 |
| 2024 | July | SCITNUE8 | MORRIS\_NUECES1\_1 | NUECES\_B | MORRIS | 1 |
| 2024 | July | DRAZHON8 | READIN\_UVALDE1\_1 | UVALDE | READING | 1 |
| 2024 | July | SBOSELM5 | 1210\_\_C | HAN1 | NVARO | 1 |
| 2024 | July | DTVWJON5 | 6017\_\_B | MBDSW | CMBSW | 1 |
| 2024 | July | DGRSPKR5 | 6377\_\_A | BRTSW | ORANS | 1 |
| 2024 | July | DI\_DRIN8 | ALIQUI\_OXY\_IN1\_1 | OXY\_INGL | ALIQUING | 1 |
| 2024 | July | DBLHJWF5 | BLESSING\_1382 | BLESSING | BLESSING | 1 |
| 2024 | July | DELMTEX5 | BLESSI\_PALACI1\_1 | BLESSING | PALACIOS | 1 |
| 2024 | July | UCOLCOL1 | BLESSI\_PALACI1\_1 | BLESSING | PALACIOS | 1 |
| 2024 | July | SBATPEA8 | DILLEYSW\_69A1 | DILLEYSW | DILLEYSW | 1 |
| 2024 | July | SMSHJCH8 | LOCUST\_NODE\_1 | LOCUST\_D | DMENODE | 1 |
| 2024 | July | SRAZDRY8 | READIN\_UVALDE1\_1 | UVALDE | READING | 1 |
| 2024 | July | DRNS\_TB5 | THWZEN71\_A | ZEN | THW | 1 |
| 2024 | July | DBYRBOW5 | 6011\_\_B | RILEY | FSHSW | 1 |
| 2024 | July | DKENCA58 | 656T656\_1 | KENDAL | BERGHE | 1 |
| 2024 | July | SBROALP9 | BELD\_COCS1\_1 | COCS | BELD | 1 |
| 2024 | July | SFORFOR8 | BROOKT\_JOSLIN1\_1 | JOSLIN | BROOKTAP | 1 |
| 2024 | July | DCAGTA58 | H3\_K0\_1 | K0 | H3 | 1 |
| 2024 | July | DNOECED5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 1 |
| 2024 | July | DSGTSCH5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 1 |
| 2024 | July | SGOHJOS8 | LOLITA\_VICTOR1\_1 | LOLITA | VICTORIA | 1 |
| 2024 | July | SPAWCAL5 | MAGRUD\_VICTOR2\_1 | VICTORIA | MAGRUDER | 1 |
| 2024 | July | XVAN89 | RAYBURN\_69\_2 | RAYBURN | RAYBURN | 1 |
| 2024 | July | DD1RAZ\_8 | READIN\_UVALDE1\_1 | UVALDE | READING | 1 |
| 2024 | July | SLPRGDL8 | 1485\_\_A | LPRSW | TRSES | 1 |
| 2024 | July | SECMGPI8 | 361T361\_1 | SCHERT | PARKWA | 1 |
| 2024 | July | DCIBSCH8 | 581T581\_1 | ECMORN | PARKWA | 1 |
| 2024 | July | SWRDYN8 | 589T589\_1 | EL\_CAMPO | RICEBI | 1 |
| 2024 | July | SCMNCPS5 | 651\_\_C | CMNTP | SHILO | 1 |
| 2024 | July | DCAGTA58 | 656T656\_1 | KENDAL | BERGHE | 1 |
| 2024 | July | SBRAHAM8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 1 |
| 2024 | July | BASE CASE | HLJSTP64\_A | STP | HLJ | 1 |
| 2024 | July | MANGSTP5 | LOLITA\_VICTOR1\_1 | LOLITA | VICTORIA | 1 |
| 2024 | July | MANSSTP5 | MELONC\_SEADRF1\_1 | SEADRFTC | MELONCRE | 1 |
| 2024 | July | MANGSTP5 | NCARBI\_SEADRF1\_1 | NCARBIDE | SEADRFTC | 1 |
| 2024 | July | DHILPAN8 | P3\_P1TAP\_1 | SKYLINE | P1 | 1 |
| 2024 | July | DHJWFCK5 | STPWAP39\_1 | STP | WAP | 1 |
| 2024 | July | MODLBRA8 | TURTLECK\_WCRYS\_1 | TURTLCRK | WCRYSTS | 1 |
| 2024 | July | SSTAWIC8 | 138\_IH2\_COT\_1 | IH20 | TNCOLIET | 1 |
| 2024 | July | DSNDBCE5 | 36040\_\_A | KNBSW | SALSW | 1 |
| 2024 | July | DBIGSCH5 | BAKRFLD\_CEDCAN\_1 | CEDACA | BAKESW | 1 |
| 2024 | July | SBRAHAM8 | BRACKE\_ESCOND1\_1 | BRACKETT | ESCONDID | 1 |
| 2024 | July | SFBFL8 | BV\_FL\_09\_A | BV | FL | 1 |
| 2024 | July | DVICDUP8 | GREENL\_WEAVER1\_1 | WEAVERRD | GREENLK | 1 |
| 2024 | July | MANSSTP5 | LOLITA\_VICTOR1\_1 | LOLITA | VICTORIA | 1 |
| 2024 | July | SRA2D18 | READIN\_UVALDE1\_1 | UVALDE | READING | 1 |
| 2024 | July | SWHILON5 | WHITE\_PT\_T3H | WHITE\_PT | WHITE\_PT | 1 |
| 2024 | July | DTRSRCH5 | 1210\_\_B | HUBRD | HAN1 | 1 |
| 2024 | July | SBOSELM5 | 1210\_\_B | HUBRD | HAN1 | 1 |
| 2024 | July | DWTRBIG5 | 31\_\_A | RCHBR | TRSES | 1 |
| 2024 | July | MANGWHP5 | BLESSING\_1382 | BLESSING | BLESSING | 1 |
| 2024 | July | MANSSTP5 | BROOKH\_P\_LAVA1\_1 | P\_LAVACA | BROOKHOL | 1 |
| 2024 | July | SBRAHAM8 | ESCOND\_GANSO1\_1 | ESCONDID | GANSO | 1 |
| 2024 | July | SBVFB8 | FB\_FL\_60\_A | FB | FL | 1 |
| 2024 | July | BASE CASE | WHARTN | n/a | n/a | 1 |
| 2024 | July | DVENFTS5 | 1210\_\_C | HAN1 | NVARO | 1 |
| 2024 | July | SLPRTRS8 | 1480\_\_A | LPRSW | GDLTP | 1 |
| 2024 | July | MFTSFVL5 | 35055\_\_A | SAMSW | VENSW | 1 |
| 2024 | July | SLCLAN8 | BLESSING\_1382 | BLESSING | BLESSING | 1 |
| 2024 | July | SNWEWES8 | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 1 |
| 2024 | July | SWHILON5 | CAL\_WW\_WWKS\_T1\_1 | WWKS\_TAP | CAL\_WWKS | 1 |
| 2024 | July | XUVA189 | CHAPAR\_TURTLC1\_1 | TURTLCRK | CHAPARRO | 1 |
| 2024 | July | DROUCHI8 | GABRIE\_AT1 | GABRIE | GABRIE | 1 |
| 2024 | July | DCASRAF8 | READIN\_UVALDE1\_1 | UVALDE | READING | 1 |
| 2024 | July | DWAP\_OB5 | RO\_WW\_25\_A | WW | RO | 1 |
| 2024 | July | MODLBRA8 | TURTLECK\_WCRYS\_1 | WCRYSTS | TURTLCRK | 1 |
| 2024 | July | MDSAMFV5 | 1210\_\_B | HUBRD | HAN1 | 1 |
| 2024 | July | XTRS258 | 1210\_\_B | HUBRD | HAN1 | 1 |
| 2024 | July | DSLKSOL5 | 138\_FLT\_FXT\_1 | TNFXTAIL | FLAT\_TOP | 1 |
| 2024 | July | DGRSPKR5 | 6375\_\_A | GRSES | GRMES | 1 |
| 2024 | July | SSCLWF18 | 6840\_\_B | NVKSW | ANARN | 1 |
| 2024 | July | DFOWSMG5 | AEPCHKCN\_SGMOR\_1 | CHOKCNYN | SIGMOR | 1 |
| 2024 | July | DELMTEX5 | BLESSING\_69A1 | BLESSING | BLESSING | 1 |
| 2024 | July | MANSSTP5 | BROOKH\_P\_LAVA1\_1 | BROOKHOL | P\_LAVACA | 1 |
| 2024 | July | DRIZACE5 | CENIZO\_TIEMPO1\_1 | TIEMPO | CENIZO | 1 |
| 2024 | July | SSCJFS8 | GP\_TNK94\_A | GP | TNK | 1 |
| 2024 | July | SSCJFS8 | GP\_TNK94\_A | TNK | GP | 1 |
| 2024 | July | BASE CASE | I\_DUPS\_LGE1\_1 | LGE | I\_DUPSW | 1 |
| 2024 | July | SMCEESK8 | MERK\_MKLT1\_1 | MKLT | MERK | 1 |
| 2024 | July | SMCEESK8 | MKLT\_TRNT1\_1 | TRNT | MKLT | 1 |
| 2024 | July | MANSSTP5 | NCARBI\_SEADRF1\_1 | NCARBIDE | SEADRFTC | 1 |
| 2024 | July | DELMSAN5 | PAWNEE\_SPRUCE\_1 | PAWNEE | CALAVERS | 1 |

1. Current Wind Generation Record: 27,881 MW on 06/17/2024 at 21:15 | Current Wind Penetration Record: 69.15% on 04/10/2022 at 01:43

   Current Solar Generation Record: 20,484 MW on 07/31/2024 at 14:31 | Current Solar Penetration Record: 42.98% 03/28/2024 at 11:27 [↑](#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)