

December 2023 ERCOT Monthly Operations Report Public

Reliability and Operations Subcommittee Meeting

February 08, 2024

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# Report Highlights

* The unofficial ERCOT peak demand was 56,976 MW for the month of December on 12/11/2023 HE 8:00; this was 17,549 MW less than the previous December record of 74,427 MW set on 12/23/2022 HE 8:00, and 28,488 MW less than the previous all-time record of 85,464 MW set on 8/10/2023 HE 18:00.
* There was 1 frequency event**.**
* There were no Watches for the month of December.
* There was 1 Advisory for geomagnetic disturbance K7.
* There were no Media Appeal’s through public news media.
* 1 OCN for the PANHANDLE IROL due to planned outage and topology change.
* There was 1 HRUC commitment.
* There were 18 days congestion on Valley Export GTC, 19 days on North Edinburg to Lobo GTC, 20 days on Panhandle GTC, 13 days on West Texas Export GTC, 8 days on Nelson Sharpe to Rio Hondo GTC, 1 day on Hamilton GTC, 5 days on East Texas GTC, 9 days on Zapata Starr GTC, 1 day on the McCamey GTC, and 1 day in the Redtap GTC. There was no activity on the remaining GTCs during the month.

# Frequency Control

## Frequency Events

The ERCOT Interconnection experienced 1 frequency event, which resulted from units tripping. The event duration was 00:06:09.

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)** |
| 12/14/2023 19:29:32 | 0.073 | 59.890 | 00:06:09 | 0.79 | 6% | 565 | 47,499 | 36% | 239,607 |



(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** |
| 12/14/2023 19:29 | 12/14/2023 19:36 | 0:06:56 | 805.4 | 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

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 was 1 HRUC commitments.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Resource Location** | **# of Resources** | **Operating Day** | **Total # of Hours Committed** |  **Total MWhs**  | **Reason for Commitment** |
| FAR\_WEST | 1 | 12/20/2023 | 7 | 2,386 | DCONLNG5 |

# 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 64.83% on 12/07/2023 interval ending 11:50 and minimum IRR penetration for the month was 2.76% on 12/25/2023 interval ending 20:10.

During the hour of peak load for the month, hourly integrated wind generation was 10,230 MW and solar generation was 602 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 December 2023 is 1512 MW, 2841 MW, 3903 MW, 6762 MW, and 13703 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** |
| December 2014 | 1,014 MW | 1,689 MW | 2,112 MW | 3,034 MW | 5,296 MW |
| December 2015 | 962 MW | 1,637 MW | 1,995 MW | 3,241 MW | 5,516 MW |
| December 2016 | 857 MW | 1,404 MW | 1,827 MW | 3,166 MW | 5,866 MW |
| December 2017 | 964 MW | 1,581 MW | 2,078 MW | 3,393 MW | 5,708 MW |
| December 2018 | 923 MW | 1,553 MW | 2,148 MW | 4,109 MW | 7,218 MW |
| December 2019 | 1,014 MW | 1,689 MW | 2,112 MW | 3,034 MW | 5,296 MW |
| December 2020 | 1,083 MW | 1,780 MW | 2,479 MW | 5,882 MW | 10,364 MW |
| December 2021 | 933 MW | 1,518 MW | 2,154 MW | 4,103 MW | 7,128 MW |
| December 2022 | 1,138 MW | 1,981 MW | 2,841 MW | 5,459 MW | 10,490 MW |
| December 2023 | 1,512 MW12/29/23(IE 17:02) | 2,841 MW12/29/23 (IE 17:05) | 3,903 MW 12/29/23(IE 17:10) | 6,762 MW12/29/23 (IE 17:11) | 13,703 MW12/29/23 (IE 17:17) |
| All months in 2014-2023 | 2,789 MW10/16/23(IE 11:56) | 3,018 MW10/11/23(IE 11:12) | 4,023 MW10/11/23(IE 11:17) | 7,209 MW10/04/23(IE 12:07) | 13,703 MW12/29/23 (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** | **# of Days Constraint Binding** | **Congestion Rent** | **Transmission Project** |
| DMGSBTR5 | 6036\_\_A | 18 | $27,074,749.37 |   |
| BASE CASE | WESTEX | 10 | $13,083,047.32 |   |
| DCONLNG5 | HARGRO\_TWINBU1\_1 | 5 | $12,493,924.49 |   |
| DCONLNG5 | 6095\_\_D | 10 | $12,154,368.33 |   |
| SBAKCED5 | HARGRO\_TWINBU1\_1 | 14 | $10,736,020.90 |   |
| DCONLNG5 | 6471\_\_C | 7 | $8,901,180.76 |   |
| DCONLNG5 | 15060\_\_B | 4 | $3,468,125.96 |   |
| BASE CASE | EASTEX | 4 | $3,077,200.44 |   |
| XFOW58 | CATARI\_PILONC1\_1 | 9 | $2,490,366.32 | AEP\_TCC\_AshertontoPiloncillo138kVLine\_rebuild (73100) |
| DCHBJO25 | CBY\_AT3 | 2 | $2,246,747.71 |   |
| SBWDDBM5 | LPLNW\_LPLMD\_1 | 3 | $2,213,413.63 |   |
| DMGSBIT5 | 6036\_\_A | 10 | $1,923,989.37 |   |
| DSWECCR5 | 6036\_\_A | 4 | $1,871,008.62 |   |
| DFOWSMG5 | CATARI\_PILONC1\_1 | 11 | $1,585,156.00 |   |
| SW\_GODE5 | 15060\_\_B | 5 | $1,433,721.39 |   |
| BASE CASE | NE\_LOB | 15 | $1,369,167.24 | 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. |
| DCONLNG5 | 14040\_\_A | 7 | $1,364,835.37 | Oncor\_FW\_45640\_Spraberry - Polecat Creek 138 kV Line (23RPG009, 45640) |
| SCARFRI8 | ATSO\_SONR1\_1 | 8 | $1,283,381.62 |   |
| SCEDHI\_5 | HARGRO\_TWINBU1\_1 | 8 | $1,167,450.28 |   |
| MNOESGT5 | HARGRO\_TWINBU1\_1 | 3 | $1,127,930.19 |   |
| MFOWLOB5 | CATARI\_PILONC1\_1 | 6 | $1,047,867.81 | AEP\_TCC\_AshertontoPiloncillo138kVLine\_rebuild (73100) |
| BASE CASE | PNHNDL | 13 | $1,017,472.76 |   |
| DBIGSCH5 | BAKRFLD\_CEDCAN\_1 | 3 | $808,066.62 |   |
| SBWDDBM5 | LPLMK\_LPLNE\_1 | 4 | $771,421.33 |   |
| SCRMSAR8 | CONCHO\_VRBS1\_1 | 6 | $564,883.89 |   |
| MHARNED5 | BURNS\_RIOHONDO\_1 | 4 | $557,201.25 | STEC\_71930\_RioHondo\_Burns\_Upgrade (71930), STEC\_71926\_Burns\_Heidelberg\_Upgrade (71926), STEC\_71928\_Heidelberg\_AEPWeslaco\_Upgrade (71928) |
| DBIGKEN5 | CARVER\_TINSLE1\_1 | 4 | $465,479.64 | AEP\_TCC\_RebuildCarver-Maxwell (22RPG042, 52070) |
| SCOLBAL8 | CONAN\_SANA1\_1 | 3 | $431,914.48 |   |
| DBIGKEN5 | HAMILT\_MAXWEL1\_1 | 10 | $423,102.22 |   |
| DSALKLN5 | 630\_\_B | 4 | $412,150.07 |   |
| BASE CASE | VALEXP | 16 | $409,866.11 | The Lower Rio Grande Valley (LRGV) System Enhancement Project (21RPG017) will improve but not eliminate the need for this GTC. |
| DKOCNUE8 | MCKENZ\_WESTSI1\_1 | 7 | $387,155.45 |   |
| SBRAUVA8 | HAMILT\_MAVERI1\_1 | 9 | $367,474.56 |   |
| SNOECED5 | HARGRO\_TWINBU1\_1 | 4 | $346,329.43 |   |
| SGRICOL5 | PAWNEE\_TANGO1\_1 | 3 | $333,481.17 |   |
| DFOWSMG5 | LARDVN\_LASCRU1\_1 | 4 | $279,277.54 |   |
| DCONLNG5 | 15060\_\_A | 3 | $221,548.93 |   |
| DSALHUT5 | 1710\_\_C | 3 | $206,213.22 |   |
| DMGSCON5 | 6471\_\_C | 3 | $187,127.16 |   |
| DBIGKEN5 | TREADW\_YELWJC1\_1 | 6 | $182,413.67 |   |
| SKLNSAL5 | 271\_\_A | 3 | $141,875.53 |   |
| DBIGKEN5 | HAMILT\_MAVERI1\_1 | 4 | $86,762.09 |   |
| SBRAUVA8 | ESCOND\_GANSO1\_1 | 4 | $85,012.63 | AEP\_TCC\_Escondido - Ganso 138 kV Line Rebuild (55624) |
| BASE CASE | NELRIO | 6 | $84,158.79 | The Lower Rio Grande Valley (LRGV) System Enhancement Project (21RPG017) will cause there to be no stability constraint for NelsonSharpe\_RioHondoGTC under normal conditions. |
| BASE CASE | ZAPSTR | 5 | $30,273.48 |   |
| SNICBLU8 | ABNTHW\_CALLAH1\_1 | 3 | $21,788.79 |   |
| SNATBEA8 | 6144\_\_A | 4 | $11,475.48 |   |
| SMADSAP8 | MADDUX\_SAPOWE2\_1 | 4 | $6,179.34 |   |
| MFOWLOB5 | LARDVN\_LASCRU1\_1 | 3 | $5,531.27 |   |
| SWALWLN8 | SWI\_OLIN\_1 | 3 | $3,439.19 |   |

## Generic Transmission Constraint Congestion

There were 18 days congestion on Valley Export GTC, 19 days on North Edinburg to Lobo GTC, 20 days on Panhandle GTC, 13 days on West Texas Export GTC, 8 days on Nelson Sharpe to Rio Hondo GTC, 1 day on Hamilton GTC, 5 days on East Texas GTC, 9 days on Zapata Starr GTC, 1 day on the McCamey GTC, and 1 day in the Redtap 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

There were no overrides for the month of December.

## 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 | 10,212 | $165,191,719.27 |
| MGSES TO CCRSW 345 AND BTRCK TO MGSES 345 DBLCKT | Tonkawa Switch - Morgan Creek Ses 345kV | 13,634 | $110,893,694.49 |
| Basecase | WESTEX GTC | 21,274 | $92,006,191.94 |
| TWR(345) WAP-WLF64 & WAP-WLY72 | South Texas Project - Wa Parish 345kV | 5,163 | $89,574,495.11 |
| MAN\_DBL\_MDSSW-ODEHB\_and\_CONSW-QALSW\_345kV\_DBLCKT | Midessa South Sw 138kV | 11,605 | $79,014,288.16 |
| Basecase | NE\_LOB GTC | 41,396 | $71,097,931.44 |
| BEVO to BEVO LIN 1 | Hamilton Road - Maverick 138kV | 7,602 | $52,011,887.52 |
| Rattlesnake Rd Switch to LAKE CREEK SES LIN \_A | St Johns Switch - Jewett 345kV | 4,881 | $45,754,231.09 |
| SKYWEST to SKYWEST LIN 1 | Consavvy Switch - Cottonfield Sub 138kV | 2,909 | $45,341,291.63 |
| CONSW-MGSES\_and\_CONSW-LNGSW\_345kV\_DBLCKT | Lamesa - Jim Payne Poi 138kV | 7,743 | $43,458,873.37 |
| SKYWEST to SKYWEST LIN 1 | South Midland - Consavvy Switch 138kV | 10,282 | $41,928,489.30 |
| HICKS SWITCH to HICKS SWITCH LIN \_A | Hicks Switch - Alliance 345kV | 2,814 | $40,032,160.11 |
| SALSW - HUTTO 345KV | Bell County - Salado Switch 138kV | 4,911 | $37,802,066.93 |
| BLACKWATER DRAW SWITCH to DOUBLE MOUNTAIN SWITCH LIN 1 | Mackenzie Substation - Northeast Substation 115kV | 10,663 | $34,942,811.08 |
| Basecase | PNHNDL GTC | 15,085 | $34,642,832.42 |
| TWR(345) WAP-WLF64 & CCK-WLY72 | South Texas Project - Wa Parish 345kV | 4,025 | $34,465,421.37 |
| Austro-Daffin&Dunlap-Decker 138kV | Sim Gideon - Bastrop City 138kV | 2,244 | $28,796,696.82 |
| DMTSW TO SCOSW 345 DBLCKT | Knapp - Scurry Chevron 138kV | 10,898 | $28,124,431.10 |
| Manual\_SGL\_CONSW-MDSSW\_345kV\_SglCkt | Quail Switch - Odessa Ehv Switch 345kV | 3,594 | $26,545,479.50 |
| Manual dbl ckt for NEDIN-BONILLA 345kV & RIOH-PRIM138kV | Burns Sub - Rio Hondo 138kV | 11,577 | $25,185,694.52 |

# System Events

## ERCOT Peak Load

The unofficial ERCOT peak load for the month was 56,976 MW and occurred on 12/11/2023, during hour ending 08:00.

## 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

None.

## TRE/DOE Reportable Events

* AEN Submitted a DOE-417 For 12/12/2023 System Report: Damage or destruction of a Facility
* Oncor Submitted a EOP-004-4 For 12/12/2023 Damage or destruction of its Facility
* Oncor Submitted a DOE-417 For 12/12/2023 Damage or destruction of its Facility
* LCRA Submitted a DOE-417 For 12/30/2023 System Report - Physical threat to its Facility

## New/Updated Constraint Management Plans

None

## New/Modified/Removed RAS

None.

## New Procedures/Forms/Operating Bulletins

|  |  |  |
| --- | --- | --- |
| **Date** | **Subject** | **Bulletin No.** |
| 12/28/2023 | DC Tie V1 Rev 75 | 1118  |
| 12/28/2023 | Real Time Desk V1 Rev 92 | 1119  |
| 12/28/2023 | Reliability Risk Desk Operating Procedure V1 Rev 34 | 1120  |
| 12/28/2023 | Reliability Unit Commitment V1 Rev 75 | 1121  |
| 12/28/2023 | Resource Desk V1 Rev 79 | 1122  |
| 12/28/2023 | Scripts V1 Rev 54 | 1123  |
| 12/28/2023 | Shift Supervisor Desk V1 Rev 93 | 1124  |
| 12/28/2023 | Transmission and Security Desk V1 Rev 105 | 1125 |

# Emergency Conditions

## OCNs

|  |  |
| --- | --- |
| **Date and Time** | **Message** |
| Dec 06, 2023 09:37 CPT | ERCOT issued an OCN for PANHANDLE IROL due to planned outage and topology change. |

## Advisories

|  |  |
| --- | --- |
| **Date and Time** | **Message** |
| Dec 01, 2023 05:43CPT | ERCOT issued an Advisory for geomagnetic disturbance of K-7. |

## Watches

None.

## 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 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) | 2 |
| 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) | 1 |
| DENTON MUNICIPAL ELECTRIC (TDSP) | 0 |
| ELECTRIC TRANSMISSION TEXAS LLC (TDSP) | 0 |
| ERCOT | 3 |
| LCRA TRANSMISSION SERVICES CORPORATION (TDSP) | 3 |
| LONE STAR TRANSMISSION LLC (TSP) | 0 |
| ONCOR ELECTRIC DELIVERY COMPANY LLC (TDSP) | 3 |
| 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 of the Year | Contingency Name | Overloaded Element | From Station | To Station | Count of Days |
| 2023 | 12 | BASE CASE | PNHNDL | n/a | n/a | 20 |
| 2023 | 12 | DMGSBTR5 | 6036\_\_A | TKWSW | MGSES | 20 |
| 2023 | 12 | DMGSBIT5 | 6036\_\_A | TKWSW | MGSES | 19 |
| 2023 | 12 | BASE CASE | NE\_LOB | n/a | n/a | 18 |
| 2023 | 12 | BASE CASE | VALEXP | n/a | n/a | 17 |
| 2023 | 12 | SBAKCED5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 15 |
| 2023 | 12 | DCONLNG5 | 6095\_\_D | LMESA | JPPOI | 14 |
| 2023 | 12 | SW\_GODE5 | 15060\_\_B | VEALMOOR | KOCHTAP | 14 |
| 2023 | 12 | SCARFRI8 | ATSO\_SONR1\_1 | SONR | ATSO | 14 |
| 2023 | 12 | BASE CASE | WESTEX | n/a | n/a | 13 |
| 2023 | 12 | SCEDHI\_5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 13 |
| 2023 | 12 | DCONLNG5 | 14040\_\_A | PCTSW | DEWTP | 13 |
| 2023 | 12 | DSWECCR5 | 6036\_\_A | TKWSW | MGSES | 12 |
| 2023 | 12 | DFOWSMG5 | CATARI\_PILONC1\_1 | CATARINA | PILONCIL | 12 |
| 2023 | 12 | DFOWSMG5 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 12 |
| 2023 | 12 | DBIGKEN5 | HAMILT\_MAXWEL1\_1 | MAXWELL | HAMILTON | 11 |
| 2023 | 12 | XFOW58 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 11 |
| 2023 | 12 | DCONLNG5 | 6471\_\_C | MGSES | NAVIG | 10 |
| 2023 | 12 | SBRAUVA8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 9 |
| 2023 | 12 | SNOECED5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 9 |
| 2023 | 12 | DMGSCON5 | 6471\_\_C | MGSES | NAVIG | 9 |
| 2023 | 12 | DCONLNG5 | 15060\_\_B | VEALMOOR | KOCHTAP | 8 |
| 2023 | 12 | SCRMSAR8 | CONCHO\_VRBS1\_1 | CONCHO | VRBS | 8 |
| 2023 | 12 | MNOESGT5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 8 |
| 2023 | 12 | BASE CASE | ZAPSTR | n/a | n/a | 8 |
| 2023 | 12 | DCONLNG5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 7 |
| 2023 | 12 | DKOCNUE8 | MCKENZ\_WESTSI1\_1 | WESTSIDE | MCKENZIE | 7 |
| 2023 | 12 | BASE CASE | NELRIO | n/a | n/a | 7 |
| 2023 | 12 | DNOECED5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 7 |
| 2023 | 12 | MFOWLOB5 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 7 |
| 2023 | 12 | DSALKLN5 | 630\_\_B | KLNSW | HHSTH | 7 |
| 2023 | 12 | DBIGKEN5 | TREADW\_YELWJC1\_1 | TREADWEL | YELWJCKT | 7 |
| 2023 | 12 | SNATBEA8 | 6144\_\_A | BSPRW | STASW | 6 |
| 2023 | 12 | SMADSAP8 | MADDUX\_SAPOWE2\_1 | MADDUX | SAPOWER | 6 |
| 2023 | 12 | DFOWSMG5 | LARDVN\_LASCRU1\_1 | LARDVNTH | LASCRUCE | 6 |
| 2023 | 12 | SKEYWLV8 | 15060\_\_B | VEALMOOR | KOCHTAP | 5 |
| 2023 | 12 | DCONLNG5 | 6046\_\_A | MGSES | FLCNS | 5 |
| 2023 | 12 | DBIGKEN5 | HAMILT\_MAVERI1\_1 | MAVERICK | HAMILTON | 5 |
| 2023 | 12 | BASE CASE | EASTEX | n/a | n/a | 5 |
| 2023 | 12 | SBTPBNT8 | MYRA\_VAL\_1 | MYRA | VALYVIEW | 5 |
| 2023 | 12 | DBIGKEN5 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 5 |
| 2023 | 12 | SBWDDBM5 | LPLMK\_LPLNE\_1 | LPLMK | LPLNE | 5 |
| 2023 | 12 | DBIGKEN5 | CARVER\_TINSLE1\_1 | CARVER | TINSLEY | 4 |
| 2023 | 12 | DCONLNG5 | 15060\_\_A | KOCHTAP | BUZSW | 4 |
| 2023 | 12 | SKLNSAL5 | 271\_\_A | KLNSW | SALSW | 4 |
| 2023 | 12 | SGRICOL5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 4 |
| 2023 | 12 | MHARNED5 | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 4 |
| 2023 | 12 | BASE CASE | RANDAD\_ZAPATA1\_1 | RANDADO | ZAPATA | 4 |
| 2023 | 12 | SNICBLU8 | ABNTHW\_CALLAH1\_1 | CALLAHAN | ABNTHWST | 4 |
| 2023 | 12 | SILLFTL8 | HAMILT\_MAXWEL1\_1 | MAXWELL | HAMILTON | 4 |
| 2023 | 12 | SEL\_ARR8 | BLESSI\_PAVLOV1\_1 | BLESSING | PAVLOV | 4 |
| 2023 | 12 | SBRAPIN8 | HAMILT\_MAVERI1\_1 | MAVERICK | HAMILTON | 4 |
| 2023 | 12 | XFOW58 | LARDVN\_LASCRU1\_1 | LARDVNTH | LASCRUCE | 4 |
| 2023 | 12 | DFOWSMG5 | ASHERT\_CATARI1\_1 | CATARINA | ASHERTON | 4 |
| 2023 | 12 | DCHBJO25 | CBY\_AT3 | CBY | CBY | 4 |
| 2023 | 12 | SBRAUVA8 | ESCOND\_GANSO1\_1 | GANSO | ESCONDID | 4 |
| 2023 | 12 | SBRAPIN8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 4 |
| 2023 | 12 | BASE CASE | RANDAD\_ZAPATA1\_1 | ZAPATA | RANDADO | 4 |
| 2023 | 12 | DBIGSCH5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 4 |
| 2023 | 12 | XBOM358 | 6558\_\_B | FSHSW | WFALS | 3 |
| 2023 | 12 | DELMSAN5 | PAWNEE\_SPRUCE\_1 | PAWNEE | CALAVERS | 3 |
| 2023 | 12 | DBIGKEN5 | ESCOND\_GANSO1\_1 | ESCONDID | GANSO | 3 |
| 2023 | 12 | DBIGKEN5 | ESCOND\_GANSO1\_1 | GANSO | ESCONDID | 3 |
| 2023 | 12 | DBIGSCH5 | BAKRFLD\_CEDCAN\_1 | CEDACA | BAKESW | 3 |
| 2023 | 12 | SCOLBAL8 | CONAN\_SANA1\_1 | SANA\_TAP | CONAN | 3 |
| 2023 | 12 | SRT2WC8 | G138\_15\_1 | WCOLLOCL | ANGLETON | 3 |
| 2023 | 12 | MSGTSCH5 | HARGRO\_TWINBU1\_1 | TWINBU | HARGROVE | 3 |
| 2023 | 12 | SWALWLN8 | SWI\_OLIN\_1 | OLINGR | SWINDELL | 3 |
| 2023 | 12 | DSALHUT5 | 1710\_\_C | BELCNTY | SALSW | 3 |
| 2023 | 12 | MFOWLOB5 | LARDVN\_LASCRU1\_1 | LARDVNTH | LASCRUCE | 3 |
| 2023 | 12 | SBWDDBM5 | LPLNW\_LPLMD\_1 | LPLNW | LPLMD | 3 |
| 2023 | 12 | SW\_GODE5 | 15060\_\_A | KOCHTAP | BUZSW | 3 |
| 2023 | 12 | XFOW58 | ASHERT\_CATARI1\_1 | CATARINA | ASHERTON | 3 |
| 2023 | 12 | DCHBJO25 | CBY\_AT3L | CBY | CBY | 3 |
| 2023 | 12 | DMTSCOS5 | 6437\_\_F | SCRCV | KNAPP | 3 |
| 2023 | 12 | SBONNED5 | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 3 |
| 2023 | 12 | XFOW58 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 3 |
| 2023 | 12 | SFORYEL8 | HEXT\_YELWJC1\_1 | YELWJCKT | HEXT | 3 |
| 2023 | 12 | DKOCNUE8 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 3 |
| 2023 | 12 | DSCOTKW5 | 15060\_\_B | VEALMOOR | KOCHTAP | 2 |
| 2023 | 12 | SDC\_RAI8 | VALEXP | n/a | n/a | 2 |
| 2023 | 12 | DCONLNG5 | 6095\_\_G | JPPOI | ALKLK | 2 |
| 2023 | 12 | SCMNCPS5 | 651\_\_B | CMNSW | CMNTP | 2 |
| 2023 | 12 | SBROALP9 | BELD\_BRONCO1\_1 | BELD | BRONCO | 2 |
| 2023 | 12 | SLAQLOB8 | FALFUR\_PREMON1\_1 | FALFUR | PREMONT | 2 |
| 2023 | 12 | DBIGKEN5 | YELWJCKT\_PS\_1 | YELWJCKT | YELWJCKT | 2 |
| 2023 | 12 | DSALKLN5 | 610\_\_A | BLTON | TMSTH | 2 |
| 2023 | 12 | SVEAW\_L5 | 6217\_\_A | WLVSW | GAILS | 2 |
| 2023 | 12 | SHOLNLA8 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 2 |
| 2023 | 12 | XBAL89 | CONCHO\_VRBS1\_1 | CONCHO | VRBS | 2 |
| 2023 | 12 | SCARFRI8 | FDR\_OZNC\_1 | OZNC | FRIEND\_R | 2 |
| 2023 | 12 | DBIGKEN5 | MADDUX\_TREADW1\_1 | MADDUX | TREADWEL | 2 |
| 2023 | 12 | DCONLNG5 | 6471\_\_B | NAVIG | MCDLD | 2 |
| 2023 | 12 | SBROALP9 | BELD\_BRONCO1\_1 | BRONCO | BELD | 2 |
| 2023 | 12 | DBRNCMN8 | CONCHO\_VRBS1\_1 | CONCHO | VRBS | 2 |
| 2023 | 12 | DFRIILL8 | HAMILT\_MAXWEL1\_1 | MAXWELL | HAMILTON | 2 |
| 2023 | 12 | MRESMCM8 | RINCON\_WHITE\_2\_1 | RINCON | WHITE\_PT | 2 |
| 2023 | 12 | DMCOPHA8 | AZTECA\_HEC1\_1 | HEC | AZTECA | 2 |
| 2023 | 12 | DBIGKEN5 | CONCHO\_VRBS1\_1 | CONCHO | VRBS | 2 |
| 2023 | 12 | SBAKCED5 | HARGRO\_PUMPJA1\_1 | HARGROVE | PUMPJACK | 2 |
| 2023 | 12 | SLANARR8 | LAN\_CT\_PAVLOV1\_1 | PAVLOV | LAN\_CTY | 2 |
| 2023 | 12 | SBTPBNT8 | SPR\_VALY\_1 | VALYVIEW | SPR | 2 |
| 2023 | 12 | MFOWLOB5 | ASHERT\_CATARI1\_1 | CATARINA | ASHERTON | 2 |
| 2023 | 12 | SCARFRI8 | ATSO\_OZNC1\_1 | ATSO | OZNC | 2 |
| 2023 | 12 | SSANFER8 | CORONA\_AT4 | CORONA | CORONA | 2 |
| 2023 | 12 | XFOW58 | LASCRU\_MILO1\_1 | LASCRUCE | MILO | 2 |
| 2023 | 12 | SKLELOY8 | LOYOLA\_69\_1 | LOYOLA | LOYOLA | 2 |
| 2023 | 12 | DCOLFA59 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 2 |
| 2023 | 12 | STMPTHS5 | 305\_\_A | LCSES | BLFSW | 2 |
| 2023 | 12 | DBIGKEN5 | GANSO\_MAVERI1\_1 | GANSO | MAVERICK | 2 |
| 2023 | 12 | DNORCAS8 | LCRANE\_RIOPEC1\_1 | RIOPECOS | LCRANE | 2 |
| 2023 | 12 | BASE CASE | RIOHND\_ERIOHND\_1 | MV\_RIOHO | RIOHONDO | 2 |
| 2023 | 12 | BASE CASE | WRANCH\_TLINE\_1 | WL\_RANCH | BIGHIL | 2 |
| 2023 | 12 | DKG\_NB\_5 | BCVLY\_03\_A | BCV | LY | 2 |
| 2023 | 12 | SCHBJOR5 | CBY\_AT3 | CBY | CBY | 2 |
| 2023 | 12 | SLARLAR8 | LARDVN\_LASCRU1\_1 | LARDVNTH | LASCRUCE | 2 |
| 2023 | 12 | SFTLMES8 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 2 |
| 2023 | 12 | SILLFTL8 | CARVER\_TINSLE1\_1 | CARVER | TINSLEY | 2 |
| 2023 | 12 | SBRAHAM8 | GANSO\_MAVERI1\_1 | GANSO | MAVERICK | 2 |
| 2023 | 12 | DCONLNG5 | JERRY\_PUMPJA1\_1 | PUMPJACK | JERRY | 2 |
| 2023 | 12 | DTWIDIV5 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 2 |
| 2023 | 12 | MDTMBEL5 | 1830\_\_F | WATCO | COTONBLT | 2 |
| 2023 | 12 | DTVWVE85 | 160\_\_B | CNTRY | SHRSW | 1 |
| 2023 | 12 | DCRLLSW5 | 589\_C\_1 | LWSVS | CRLNW | 1 |
| 2023 | 12 | SKATLON5 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 1 |
| 2023 | 12 | DCAGCO58 | BERGHE\_AT1L | BERGHE | BERGHE | 1 |
| 2023 | 12 | DAUSDUN8 | CKT\_1032\_1 | TRIDGE | ASHWDS | 1 |
| 2023 | 12 | DFIRBA89 | CONCHO\_VRBS1\_1 | CONCHO | VRBS | 1 |
| 2023 | 12 | SBRAPIN8 | ESCOND\_GANSO1\_1 | ESCONDID | GANSO | 1 |
| 2023 | 12 | SBRAPIN8 | GANSO\_MAVERI1\_1 | GANSO | MAVERICK | 1 |
| 2023 | 12 | DFRIILL8 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 1 |
| 2023 | 12 | BASE CASE | REDTAP | n/a | n/a | 1 |
| 2023 | 12 | SENSENW8 | 943\_\_B | ENWSW | SHKSW | 1 |
| 2023 | 12 | SSANFOW5 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 1 |
| 2023 | 12 | DBRNCMN8 | ATBR\_MILES1\_1 | ATBR | MILES | 1 |
| 2023 | 12 | DELMSAN5 | BEEVIL\_NORMAN1\_1 | BEEVILLE | NORMANNA | 1 |
| 2023 | 12 | MPROPOM5 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 1 |
| 2023 | 12 | DABPAB98 | ESTES\_PECAN\_1\_1 | PECAN\_BY | ESTES | 1 |
| 2023 | 12 | DBIGKEN5 | FORTMA\_YELWJC1\_1 | FORTMA | YELWJCKT | 1 |
| 2023 | 12 | SGRILON5 | NCARBI\_SEADRF1\_1 | NCARBIDE | SEADRFTC | 1 |
| 2023 | 12 | DELMSAN5 | NORMAN\_PETTUS1\_1 | NORMANNA | PETTUS | 1 |
| 2023 | 12 | DLONWAR5 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 1 |
| 2023 | 12 | SL\_4RAY8 | RAYBURN\_69\_2 | RAYBURN | RAYBURN | 1 |
| 2023 | 12 | SDESRDO8 | TRU\_UAT1 | TRU | TRU | 1 |
| 2023 | 12 | DCRLLSW5 | 589\_E\_1 | LWVTI | LWSVS | 1 |
| 2023 | 12 | SFLTLNG8 | 6635\_\_G | MRVLY | ESTLD | 1 |
| 2023 | 12 | DCC1DUKE | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 1 |
| 2023 | 12 | MRAPCEN5 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 1 |
| 2023 | 12 | SKATLON5 | CATARI\_PILONC1\_1 | CATARINA | PILONCIL | 1 |
| 2023 | 12 | STORLOB5 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 1 |
| 2023 | 12 | DGARHIC8 | CKT\_1027\_1 | DUNLAP | DECKER | 1 |
| 2023 | 12 | SVICCO28 | COLETO\_VICTOR2\_1 | COLETO | VICTORIA | 1 |
| 2023 | 12 | SBRAHAM8 | ESCOND\_GANSO1\_1 | GANSO | ESCONDID | 1 |
| 2023 | 12 | SDIMBEV8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 1 |
| 2023 | 12 | MPROPOM5 | LARDVN\_LASCRU1\_1 | LARDVNTH | LASCRUCE | 1 |
| 2023 | 12 | BASE CASE | MCCAMY | n/a | n/a | 1 |
| 2023 | 12 | MWHILON5 | NCARBI\_SEADRF1\_1 | NCARBIDE | SEADRFTC | 1 |
| 2023 | 12 | DBIGSCH5 | PALOUS\_WOLFCA1\_1 | PALOUSE | WOLFCAMP | 1 |
| 2023 | 12 | XLOB258 | PAWNEE\_TANGO1\_1 | TANGO | PAWNEE | 1 |
| 2023 | 12 | DCAGCI58 | 255T279\_1 | PIPECR | MEDILA | 1 |
| 2023 | 12 | DCONLNG5 | 6045\_\_A | FLCNS | MDLNE | 1 |
| 2023 | 12 | SCOCBAR9 | ALPINE\_BRONCO1\_1 | BRONCO | ALPINE | 1 |
| 2023 | 12 | DBRNCMN8 | ATBR\_BRONTE1\_1 | BRONTE | ATBR | 1 |
| 2023 | 12 | DBIGKEN5 | BALLIN\_PAINTR1\_1 | BALLINGE | PAINTROC | 1 |
| 2023 | 12 | MHARNED5 | BURNS\_HEIDLBRG\_1 | MV\_BURNS | MV\_HBRG4 | 1 |
| 2023 | 12 | DCC1DUKE | BURNS\_RIOHONDO\_1 | RIOHONDO | MV\_BURNS | 1 |
| 2023 | 12 | SBAKCED5 | JERRY\_PUMPJA1\_1 | PUMPJACK | JERRY | 1 |
| 2023 | 12 | DYELHE89 | KATEMC\_MASN1\_1 | MASN | KATEMCY | 1 |
| 2023 | 12 | DLCRKIN8 | LCRANE\_RIOPEC1\_1 | RIOPECOS | LCRANE | 1 |
| 2023 | 12 | SCISPUT8 | SOUTHA\_VINSON1\_1 | SOUTHABI | VINSON | 1 |
| 2023 | 12 | DCONLNG5 | 6144\_\_A | BSPRW | STASW | 1 |
| 2023 | 12 | DCC3\_NED | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 1 |
| 2023 | 12 | MSTPANG5 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 1 |
| 2023 | 12 | MPOMPRO5 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 1 |
| 2023 | 12 | MRAPDEL5 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 1 |
| 2023 | 12 | DSTVSTN8 | CONAN\_SANA1\_1 | SANA\_TAP | CONAN | 1 |
| 2023 | 12 | SBRAUVA8 | GANSO\_MAVERI1\_1 | GANSO | MAVERICK | 1 |
| 2023 | 12 | SBR2BRA8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 1 |
| 2023 | 12 | DBIGKEN5 | HARI\_VRBS1\_1 | VRBS | HARI | 1 |
| 2023 | 12 | DELMSAN5 | OAKS9\_69\_1 | OAKS9 | OAKS9 | 1 |
| 2023 | 12 | SCOLBAL8 | SANA\_FMR1 | SANA | SANA | 1 |
| 2023 | 12 | SCEDHI\_5 | 6095\_\_D | LMESA | JPPOI | 1 |
| 2023 | 12 | DBYRRIL5 | 6380\_\_D | PAINTCRE | MURRAY | 1 |
| 2023 | 12 | DWLFMOS5 | 6485\_\_B | RLKSW | PWPOD | 1 |
| 2023 | 12 | MSTPANG5 | CATARI\_PILONC1\_1 | CATARINA | PILONCIL | 1 |
| 2023 | 12 | XCMN58 | CONCHO\_VRBS1\_1 | CONCHO | VRBS | 1 |
| 2023 | 12 | SCISPUT8 | ESTES\_PECAN\_1\_1 | PECAN\_BY | ESTES | 1 |
| 2023 | 12 | SECLBRA8 | GANSO\_MAVERI1\_1 | GANSO | MAVERICK | 1 |
| 2023 | 12 | DCONLNG5 | HARGRO\_PUMPJA1\_1 | HARGROVE | PUMPJACK | 1 |
| 2023 | 12 | BASE CASE | HMLTN | n/a | n/a | 1 |
| 2023 | 12 | SFORYEL8 | MASNPH\_MASN1\_1 | MASN | MASNPHT | 1 |
| 2023 | 12 | STANPAW5 | MELONC\_SEADRF1\_1 | MELONCRE | SEADRFTC | 1 |
| 2023 | 12 | SN\_SLON5 | N\_SHARPE\_XF1 | N\_SHARPE | N\_SHARPE | 1 |
| 2023 | 12 | SSAMTH35 | 505\_\_B | FBRSW | THSES | 1 |
| 2023 | 12 | SGODTAN5 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 1 |
| 2023 | 12 | SDIMBEV8 | BRACKE\_ESCOND1\_1 | BRACKETT | ESCONDID | 1 |
| 2023 | 12 | MCE\_LO58 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 1 |
| 2023 | 12 | DBIGKEN5 | CTHR\_TINSLE1\_1 | TINSLEY | CTHR | 1 |
| 2023 | 12 | SCOMHA38 | HAMILT\_MAXWEL1\_1 | MAXWELL | HAMILTON | 1 |
| 2023 | 12 | MRAPDEL5 | LARDVN\_LASCRU1\_1 | LARDVNTH | LASCRUCE | 1 |
| 2023 | 12 | DHUTHUT5 | 1661\_\_A | RRNES | RNDRK | 1 |
| 2023 | 12 | XTRS258 | 1920\_\_B | ATHNS | TRNDD | 1 |
| 2023 | 12 | SW\_GW\_L5 | 6051\_\_A | QALSW | ODEHV | 1 |
| 2023 | 12 | DCAGCO58 | 656T656\_1 | KENDAL | BERGHE | 1 |
| 2023 | 12 | STANPAW5 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 1 |
| 2023 | 12 | SBROALP9 | BELD\_COCS1\_1 | BELD | COCS | 1 |
| 2023 | 12 | MCE\_RI58 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 1 |
| 2023 | 12 | MNEDPOM5 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 1 |
| 2023 | 12 | SHOLNLA8 | CATARI\_PILONC1\_1 | PILONCIL | CATARINA | 1 |
| 2023 | 12 | STANPAW5 | CATARI\_PILONC1\_1 | CATARINA | PILONCIL | 1 |
| 2023 | 12 | DELMSAN5 | COLETO\_ROSATA1\_1 | COLETO | ROSATA | 1 |
| 2023 | 12 | DBWN\_AM5 | CONCHO\_VRBS1\_1 | CONCHO | VRBS | 1 |
| 2023 | 12 | SMDOPHR5 | G138\_10B\_1 | SEMINOLE | MAGNO\_TN | 1 |
| 2023 | 12 | SBRAHAM8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 1 |
| 2023 | 12 | SPAWSAN5 | LOOP\_VICTORIA\_1 | VICTORIA | L\_463S | 1 |
| 2023 | 12 | DCOLFA59 | NCARBI\_SEADRF1\_1 | NCARBIDE | SEADRFTC | 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)