



**Report on the Capacity, Demand and Reserves  
(CDR) in the ERCOT Region, 2020-2029**

May 8, 2019

## Table of Contents

| <u>Tab</u>                       | <u>Notes</u>   |
|----------------------------------|--|
| <u>Disclaimer</u>                | Please read  |
| <u>Changes from previous CDR</u> | List of significant changes relative to the last CDR, published December 2018  |
| <u>Definitions</u>               | List of definitions  |
| <u>Executive Summary</u>         | Synopsis of considerations for this report   |
| <u>SummerSummary</u>             | Shows load forecast, resource capacity and reserve margin for Summer 2020 through Summer 2024  |
| <u>SummerCapacities</u>          | List of registered resources and capabilities used in determining the capacity contribution for Summer Peak Season   |
| <u>SummerFuelTypes</u>           | Lists generation fuel types by MW and by percentage for Summer 2020 through Summer 2024  |
| <u>WinterSummary</u>             | Shows load forecast, resource capacity and reserve margin for Winter 2019/2020 through Winter 2023/2024  |
| <u>WinterCapacities</u>          | List of registered resources and capabilities used in determining the capacity contribution for Winter Peak Season   |
| <u>WinterFuelTypes</u>           | Lists generation fuel types by MW and by percentage for Winter 2019/2020 through Winter 2023/2024  |
| <u>Supplemental</u>              | Shows the capacity of proposed generation resources for the summer of each forecast year based on meeting various interconnection process milestones. Also shows the load forecast, resource capacity and reserve margin for both Summer and Winter seasons for the later half of the CDR forecast period. |

## **Disclaimer**

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## Notes on Changes Relative to the Last CDR, Published December 2018

**1** The following Planned Resources have been moved to Operational Status since the release of the December 2018 CDR report:

| Project Name                | Unit Code      | County | Fuel   | Zone    | Installed Capacity MW | Summer Capacity MW |
|-----------------------------|----------------|--------|--------|---------|-----------------------|--------------------|
| TAHOKA WIND 1               | TAHOKA_UNIT_1  | LYNN   | WIND   | WEST    | 150.0                 | 22.5               |
| TAHOKA WIND 2               | TAHOKA_UNIT_2  | LYNN   | WIND   | WEST    | 150.0                 | 22.5               |
| STELLA WIND                 | STELLA_UNIT1   | KENEDY | WIND-C | COASTAL | 201.0                 | 116.6              |
| BNB LAMESA SOLAR (PHASE II) | LMESASLR_IVORY | DAWSON | SOLAR  | WEST    | 50.0                  | 37.0               |
| WAYMARK SOLAR               | WAYMARK_UNIT1  | UPTON  | SOLAR  | WEST    | 182.0                 | 134.7              |
| <b>TOTAL</b>                |                |        |        |         | <b>733.0</b>          | <b>333.3</b>       |

**2** The following Planned Resources have finalized the necessary agreements and permits to be added to the CDR report:

| Project Name                       | GENERATION INTERCONNECTION PROJECT CODE | County     | Fuel  | Zone      | Year of Projected Commercial Operations <sup>1/</sup> | Capacity MW    | Summer Capacity MW |
|------------------------------------|---|------------|-------|-----------|---|----------------|--------------------|
| GRAPE CREEK WIND                   | 19INR0156                               | COKE       | WIND  | WEST      | 2020  | 525.0          | 78.8               |
| GRIFFIN TRAIL WIND                 | 20INR0052                               | KNOX       | WIND  | WEST      | 2020  | 201.6          | 30.2               |
| HIDALGO II WIND                    | 19INR0053                               | HIDALGO    | WIND  | SOUTH     | 2019  | 51.0           | 7.7                |
| LAS LOMAS WIND                     | 16INR0111                               | STARR      | WIND  | SOUTH     | 2019  | 200.0          | 30.0               |
| RELOJ DEL SOL WIND                 | 17INR0025                               | ZAPATA     | WIND  | SOUTH     | 2020  | 202.0          | 30.3               |
| WHITE MESA WIND                    | 19INR0128                               | CROCKETT   | WIND  | WEST      | 2020  | 500.0          | 75.0               |
| WHITEHORSE WIND                    | 19INR0080                               | FISHER     | WIND  | WEST      | 2019  | 418.9          | 62.8               |
| AGATE SOLAR                        | 20INR0023                               | ELLIS      | SOLAR | NORTH     | 2020  | 60.0           | 44.4               |
| FOWLER RANCH                       | 18INR0039                               | CRANE      | SOLAR | WEST      | 2020  | 150.0          | 111.0              |
| GARNET SOLAR                       | 20INR0021                               | WILLIAMSON | SOLAR | SOUTH     | 2020  | 20.0           | 14.8               |
| GREASEWOOD SOLAR                   | 19INR0034                               | PECOS      | SOLAR | WEST      | 2020  | 200.0          | 148.0              |
| IP TITAN                           | 20INR0032                               | CULBERSON  | SOLAR | WEST      | 2021  | 272.0          | 201.3              |
| JUNO SOLAR                         | 21INR0026                               | BORDEN     | SOLAR | WEST      | 2021  | 495.0          | 366.3              |
| LAPETUS SOLAR 2                    | 19INR0185                               | ANDREWS    | SOLAR | WEST      | 2019  | 100.0          | 74.0               |
| LILY SOLAR                         | 19INR0044                               | KAUFMAN    | SOLAR | NORTH     | 2020  | 150.0          | 111.0              |
| MISAE SOLAR II                     | 20INR0091                               | CHILDRESS  | SOLAR | PANHANDLE | 2020  | 517.3          | 382.8              |
| MUSTANG CREEK SOLAR                | 18INR0050                               | JACKSON    | SOLAR | SOUTH     | 2020  | 150.0          | 111.0              |
| OXY SOLAR                          | 19INR0184                               | ECTOR      | SOLAR | WEST      | 2019  | 16.2           | 12.0               |
| RAYOS DEL SOL                      | 19INR0045                               | CAMERON    | SOLAR | COASTAL   | 2020  | 150.0          | 111.0              |
| SHAKES SOLAR                       | 19INR0073                               | ZAVALA     | SOLAR | SOUTH     | 2020  | 206.0          | 152.4              |
| SPINEL SOLAR                       | 20INR0025                               | MEDINA     | SOLAR | SOUTH     | 2020  | 30.0           | 22.2               |
| TAYGETE SOLAR                      | 20INR0054                               | PECOS      | SOLAR | WEST      | 2020  | 254.2          | 188.1              |
| TAYGETE II SOLAR                   | 21INR0233                               | PECOS      | SOLAR | WEST      | 2021  | 256.3          | 189.7              |
| JOHNSON CITY BESS                  |   | BLANCO     | OTHER | SOUTH     | 2019  | 2.3            | -                  |
| COMMERCE ST ESS                    |   | BEXAR      | OTHER | SOUTH     | 2019  | 10.0           | -                  |
| JUNO STORAGE                       | 21INR0032                               | BORDEN     | OTHER | WEST      | 2021  | 495.0          | -                  |
| RABBIT HILL ENERGY STORAGE PROJECT |   | WILLIAMSON | OTHER | SOUTH     | 2019  | 9.9            | -                  |
| <b>TOTAL</b>                       |   |            |       |           | <b>5,642.7</b>  | <b>2,554.8</b> |                    |

<sup>1/</sup> This date is based on the projected Commercial Operations Date (COD) reported by the project developer. In contrast, a unit's first summer CDR forecast year (reported in the SummerCapacities sheet) is defined as the first year in which the capacity is available for the entire summer Peak Load Season. (The summer Peak Load Season constitutes the months of June, July, August and September.) For example, if a unit has a projected COD of July 1, 2020, the first summer CDR forecast year would be 2021.

**3** The DC tie import forecast methodology changed due to NPPR 922. The new methodology uses import flows during the most recent Energy Emergency Alert (EEA) event for a given season. The old forecast method was based on the average net import flows seen in the top 20 load hours, by summer and winter season, for each of the previous three years.

4 GIBBONS CREEK U1 (470 MW) will enter 'indefinite mothball' status on 6/1/2019. The unit has been in 'seasonal mothball' status since 10/1/2018.

5 Five operational DG biomass units totaling 15.8 MW were removed from the report due to retirements between 2014 and 2016. ERCOT is now tracking retirements of Unregistered DG units for resource adequacy reporting.

## Definitions

### **Available Mothballed Capacity based on Owner's Return Probability**

Mothballed capacity with a return-to-service probability of 50% or greater for a given season of the year, as provided by its owner, constitutes available mothballed generation. Return probabilities for individual units are considered protected information under the ERCOT Protocols and therefore are not included in this report.

### **Emergency Response Service**

ERCOT uses the methodology specified in Protocol Section 3.2.6.2.1, Peak Load Estimate, to derive the ERS capacity forecast for future years. The Current Year for the calculations is defined as the latest year for which ERS has been procured. The ERS capacity amounts are grossed up by 2% to reflect avoided transmission line losses.

### **Energy Efficiency Program Savings Forecast**

ERCOT's energy efficiency forecast uses the PUCT's annual verified energy efficiency program savings estimates as the starting point. (See the definition for verified energy efficiency program savings below.) ERCOT computes the historical average annual verified savings, but excludes 2017 from the calculation due to Hurricane Harvey load impacts. (For prior forecasts, ERCOT used a formula based on the State energy efficiency goals in Utilities Code Section 39.905. Since the impacts of the goals were assumed to accumulate for just seven years from the time that the goals must be first met (2013), ERCOT no longer uses the goal-based forecasting approach.)

Finally, ERCOT incorporates annual energy efficiency estimates from municipal utilities and electric cooperatives provided to the State Energy Conservation Office (SECO). Annual SECO report submission by these entities is required under S.B. No. 924. If annual reports for the previous calendar year are not available at the time the CDR is prepared, ERCOT incorporates report data for the most recently available reporting year.

The energy efficiency capacity amounts are grossed up by a factor representing avoided transmission and distribution line losses. The factor is currently 1.076, reflecting 2% for avoided transmission losses and 5.6% for avoided distribution losses. The loss percentages are based on transmission and distribution loss factors posted to ERCOT's MIS website.

### **Mothballed Unit**

A generation resource for which a generation entity has submitted a Notification of Suspension of Operations, for which ERCOT has declined to execute an RMR agreement, and for which the generation entity has not announced retirement of the generation resource. A seasonal mothballed unit is one in which the generation entity requests a seasonal operation period that must include the summer Peak Load Season, June 1 through September 30.

### **Mothballed Capacity**

Capacity that is designated as mothballed by a generating unit's owner as described above, and which is not available for operations during the summer Peak Load Season (June, July, August and September) or winter Peak Load Season (December, January and February).

### **Forecast Zone**

Forecast Zones generally have the same boundaries as the 2003 Congestion Management Zones with the following exceptions: A) Panhandle Zone for resources in the Texas Panhandle counties and outside the 2003 Congestion Management Zones, and B) Coastal Zone for resources in 11 counties along the Texas Gulf Coast and formerly in the South Zone of the 2003 Congestion Management Zones.

### **Full Interconnection Study (FIS)**

The set of studies conducted by a Transmission Service Provider (TSP) for the purpose of identifying any electric system improvements or enhancements required to reliably interconnect a new All-Inclusive Generation Resource consistent with the provisions of Planning Guide Section 5, Generation Resource Interconnection or Change Request. These studies may include steady-state studies, system protection (short-circuit) studies, dynamic and transient stability studies, facility studies, and sub-synchronous oscillation studies.

### **LRs (Load Resources)**

Load capable of reducing or increasing the need for electrical energy or providing Ancillary Services to the ERCOT System, as described in the ERCOT Protocols, Section 6, Ancillary Services. These Resources may provide the following Ancillary Services: Responsive Reserve Service, Non-Spinning Reserve Service, Replacement Reserve Service, and Regulation Service. The Resources must be registered and qualified by ERCOT and will be scheduled by a Qualified Scheduling Entity (QSE). LR capacity has been grossed up by 2% to reflect avoided transmission line losses.

**Peak Load Seasons**

Summer months are June, July, August, and September; winter months are December, January, and February.

**Private Use Networks**

An electric network connected to the ERCOT transmission grid that contains load that is not directly metered by ERCOT (i.e., load that is typically netted with internal generation).

**Non-Synchronous Tie**

Any non-synchronous transmission interconnection between ERCOT and non-ERCOT electric power systems.

**Reliability Must-Run (RMR) Unit**

A generation resource unit operated under the terms of an agreement with ERCOT that would not otherwise be operated except that they are necessary to provide voltage support, stability or management of localized transmission constraints under first contingency criteria.

**Signed SGIA (Standard Generation Interconnection Agreement)**

An agreement that sets forth requirements for physical connection between an eligible transmission service customer and a transmission or distribution service provider.

**Switchable Unit**

A generation resource that can be connected to either the ERCOT transmission grid or a grid outside the ERCOT Region.

**Verified Energy Efficiency Program Savings**

The total megawatt (MW) amount of verified peak load capacity reductions due to residential and commercial sector energy efficiency incentive programs that are reported by electric utilities in the ERCOT Region to the Public Utility Commission of Texas. See Utilities Code Section 39.905.

**Wind Peak Average Capacity Contribution**

The seasonal net capacity rating of wind resources multiplied by the Seasonal Peak Average Capacity Percentage for non-coastal and coastal regions.

**Wind Seasonal Peak Average Capacity Percentage**

The average wind capacity available for the summer and winter Peak Load Seasons for a region (non-coastal / coastal) divided by the installed capacity for the region, expressed as a percentage. Details for the derivation of the percentages are outlined in ERCOT Protocol Section 3.2.6.2.2 (see [http://www.ercot.com/content/wcm/current\\_guides/53528/03-040517\\_Nodal.doc](http://www.ercot.com/content/wcm/current_guides/53528/03-040517_Nodal.doc)).

**Wind Regions**

The coastal wind region comprises the following 11 Texas counties along the southern Gulf Coast: Cameron, Willacy, Kenedy, Kleberg, Nueces, San Patricio, Refugio, Aransas, Calhoun, Matagorda, and Brazoria. The non-coastal region consists of all other counties in the ERCOT Region.

## CDR Report - Executive Summary

The ERCOT region continues to experience above-normal growth in electric demand, with the system-wide growth rate expected to be 2.5 to 3% through 2022. Electric demand growth remains especially strong in far West Texas due to oil and gas development and along the coast where new industrial facilities are being constructed.

The updated CDR report calculates higher planning reserve margins between 2020 and 2023, primarily due to an increased number of potential wind and solar projects that are currently in the interconnection queue and eligible to be included in the CDR.

Since the December 2018 CDR, approximately 733 MW of installed wind and solar capacity has been approved by ERCOT for commercial operations, with summer peak capacity contributions of 333 MW. Twenty-two Distributed Generation solar units totaling 143 MW were also added to the report and have a combined capacity contribution of 106 MW.

Planned resources that became newly eligible for inclusion in this CDR report total 5,643 MW of installed capacity by 2023, including 517 MW of battery storage.

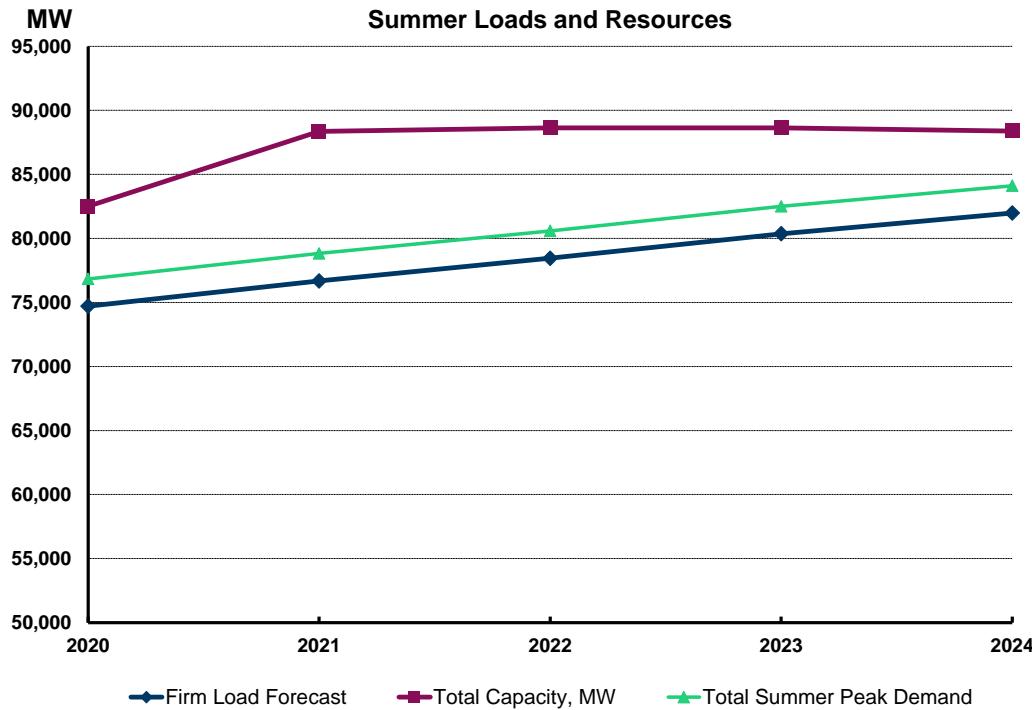
## Report on the Capacity, Demand and Reserves in the ERCOT Region

### Summer Summary: 2020-2024

| <b>Load Forecast, MW:</b>   | <b>2020</b>   | <b>2021</b>   | <b>2022</b>   | <b>2023</b>   | <b>2024</b>   |
|---|---------------|---------------|---------------|---------------|---------------|
| Summer Peak Demand (based on normal weather)  | 76,845        | 78,824        | 80,590        | 82,506        | 84,121        |
| plus: Energy Efficiency Program Savings Forecast  | 1,764         | 2,065         | 2,285         | 2,592         | 2,821         |
| Total Summer Peak Demand (before Reductions from Energy Efficiency Programs)                            | 78,609        | 80,888        | 82,875        | 85,098        | 86,943        |
| less: Load Resources providing Responsive Reserves  | -1,173        | -1,173        | -1,173        | -1,173        | -1,173        |
| less: Load Resources providing Non-Spinning Reserves  | 0             | 0             | 0             | 0             | 0             |
| less: Emergency Response Service (10- and 30-min ramp products)   | -749          | -749          | -749          | -749          | -749          |
| less: TDSP Standard Offer Load Management Programs  | -219          | -219          | -219          | -219          | -219          |
| less: Energy Efficiency Program Savings Forecast  | -1,764        | -2,065        | -2,285        | -2,592        | -2,821        |
| <b>Firm Peak Load, MW</b>   | <b>74,705</b> | <b>76,683</b> | <b>78,449</b> | <b>80,365</b> | <b>81,981</b> |
| <b>Resources, MW:</b>   | <b>2020</b>   | <b>2021</b>   | <b>2022</b>   | <b>2023</b>   | <b>2024</b>   |
| Installed Capacity, Thermal/Hydro   | 65,207        | 65,284        | 65,284        | 65,284        | 65,284        |
| Switchable Generation Resource Capacity, MW   | 3,514         | 3,514         | 3,514         | 3,514         | 3,514         |
| less: Switchable Capacity Unavailable to ERCOT, MW  | -842          | -542          | -542          | -542          | -542          |
| Available Mothballed Capacity, MW   | 118           | 118           | 0             | 0             | 0             |
| Capacity from Private Use Networks  | 3,478         | 3,398         | 3,378         | 3,378         | 3,123         |
| Non-Coastal Wind, Peak Average Capacity Contribution (15% of installed capacity)                        | 2,884         | 2,887         | 2,887         | 2,887         | 2,887         |
| Coastal Wind, Peak Average Capacity Contribution (58% of installed capacity)                            | 1,636         | 1,636         | 1,636         | 1,636         | 1,636         |
| Solar Utility-Scale, Peak Average Capacity Contribution (74% of installed capacity)                     | 1,377         | 1,377         | 1,377         | 1,377         | 1,377         |
| Storage, Peak Average Capacity Contribution (0% of installed capacity)                                  | 0             | 0             | 0             | 0             | 0             |
| RMR Capacity to be under Contract   | 0             | 0             | 0             | 0             | 0             |
| Capacity Pending Retirement, MW   | 0             | 0             | 0             | 0             | 0             |
| <b>Operational Generation Capacity, MW</b>  | <b>77,371</b> | <b>77,671</b> | <b>77,533</b> | <b>77,533</b> | <b>77,278</b> |
| Non-Synchronous Ties, Capacity Contribution (75% of installed capacity)                                 | 938           | 938           | 938           | 938           | 938           |
| Planned Thermal Resources with Signed IA, Air Permits and Water Rights, MW                              | 301           | 2,012         | 2,012         | 2,012         | 2,012         |
| Planned Non-Coastal Wind with Signed IA, Peak Average Capacity Contribution (15% of installed capacity) | 937           | 1,731         | 1,814         | 1,814         | 1,814         |
| Planned Coastal Wind with Signed IA, Peak Average Capacity Contribution (58% of installed capacity)     | 703           | 1,079         | 1,079         | 1,079         | 1,079         |
| Planned Solar Utility-Scale, Peak Average Capacity Contribution (74% of installed capacity)             | 2,271         | 4,928         | 5,267         | 5,267         | 5,267         |
| Planned Storage, Peak Average Capacity Contribution (0% of installed capacity)                          | 0             | 0             | 0             | 0             | 0             |
| <b>Total Capacity, MW</b>   | <b>82,521</b> | <b>88,359</b> | <b>88,644</b> | <b>88,644</b> | <b>88,389</b> |

**Reserve Margin**

(Total Resources - Firm Load Forecast) / Firm Load Forecast























## Unit Capacities - Summer

| UNIT NAME  | GENERATION<br>INTERCONNECTION<br>PROJECT CODE | UNIT CODE           | COUNTY   | FUEL    | ZONE    | IN SERVICE | 2020    | 2021    | 2022    | 2023    | 2024    | 2025    | 2026    | 2027    | 2028    | 2029    |
|--|---|---------------------|----------|---------|---------|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 829 RE MAPLEWOOD 2A SOLAR  | 17INR0020a                                    | PECOS               | SOLAR    | WEST    | 2020    | 222.0      | 222.0   | 222.0   | 222.0   | 222.0   | 222.0   | 222.0   | 222.0   | 222.0   | 222.0   |         |
| 830 RE MAPLEWOOD 2B SOLAR  | 17INR0020b                                    | PECOS               | SOLAR    | WEST    | 2020    | -          | 28.0    | 28.0    | 28.0    | 28.0    | 28.0    | 28.0    | 28.0    | 28.0    | 28.0    |         |
| 831 RE MAPLEWOOD 2C SOLAR  | 17INR0020c                                    | PECOS               | SOLAR    | WEST    | 2021    | -          | 250.0   | 250.0   | 250.0   | 250.0   | 250.0   | 250.0   | 250.0   | 250.0   | 250.0   |         |
| 832 SHAKES SOLAR   | 19INR0073                                     | ZAVALA              | SOLAR    | SOUTH   | 2020    | 206.0      | 206.0   | 206.0   | 206.0   | 206.0   | 206.0   | 206.0   | 206.0   | 206.0   | 206.0   |         |
| 833 SODA LAKE SOLAR 1  | 18INR0040                                     | CRANE               | SOLAR    | WEST    | 2020    | -          | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   |         |
| 834 SODA LAKE SOLAR 2  | 20INR0143                                     | CRANE               | SOLAR    | WEST    | 2020    | -          | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   | 200.0   |         |
| 835 SPINEL SOLAR   | 20INR0025                                     | MEDINA              | SOLAR    | SOUTH   | 2020    | -          | 30.0    | 30.0    | 30.0    | 30.0    | 30.0    | 30.0    | 30.0    | 30.0    | 30.0    |         |
| 836 TAYGETE SOLAR  | 20INR0054                                     | PECOS               | SOLAR    | WEST    | 2020    | -          | 254.2   | 254.2   | 254.2   | 254.2   | 254.2   | 254.2   | 254.2   | 254.2   | 254.2   |         |
| 837 TAYGETE II SOLAR   | 21INR0233                                     | PECOS               | SOLAR    | WEST    | 2021    | -          | 256.3   | 256.3   | 256.3   | 256.3   | 256.3   | 256.3   | 256.3   | 256.3   | 256.3   |         |
| 838 UPTON SOLAR  | 16INR0114                                     | UPTON               | SOLAR    | WEST    | 2020    | 104.6      | 104.6   | 104.6   | 104.6   | 104.6   | 104.6   | 104.6   | 104.6   | 104.6   | 104.6   |         |
| 839 WEST OF PELOS SOLAR  | 14INR0044                                     | REEVES              | SOLAR    | WEST    | 2019    | 100.0      | 100.0   | 100.0   | 100.0   | 100.0   | 100.0   | 100.0   | 100.0   | 100.0   | 100.0   |         |
| 840 Planned Capacity Total (Solar)                                 |   |                     |          |         |         | 3,069.0    | 6,659.8 | 7,118.1 | 7,118.1 | 7,118.1 | 7,118.1 | 7,118.1 | 7,118.1 | 7,118.1 | 7,118.1 | 7,118.1 |
| 841 Solar Peak Average Capacity Percentage                         |   | SOLAR_PL_PEAK_PCT   | %        |         |         | 74.0       | 74.0    | 74.0    | 74.0    | 74.0    | 74.0    | 74.0    | 74.0    | 74.0    | 74.0    | 74.0    |
| 842  |   |                     |          |         |         |            |         |         |         |         |         |         |         |         |         |         |
| 843 Planned Storage Resources with Executed SGIA                   |   |                     |          |         |         |            |         |         |         |         |         |         |         |         |         |         |
| 844 CASTLE GAP BATTERY   |   | UPTON               | OTHER    | WEST    | 2018    | 9.9        | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     |
| 845 COMMERCE ST ESS  |   | BEXAR               | OTHER    | SOUTH   | 2019    | 10.0       | 10.0    | 10.0    | 10.0    | 10.0    | 10.0    | 10.0    | 10.0    | 10.0    | 10.0    | 10.0    |
| 846 JOHNSON CITY BESS  |   | BLANCO              | OTHER    | SOUTH   | 2019    | 2.3        | 2.3     | 2.3     | 2.3     | 2.3     | 2.3     | 2.3     | 2.3     | 2.3     | 2.3     | 2.3     |
| 847 JUNO STORAGE   | 21INR0032                                     | BORDEN              | OTHER    | WEST    | 2021    | -          | 495.0   | 495.0   | 495.0   | 495.0   | 495.0   | 495.0   | 495.0   | 495.0   | 495.0   | 495.0   |
| 848 RABBIT HILL ENERGY STORAGE PROJECT                             |   | WILLIAMSON          | OTHER    | SOUTH   | 2019    | 9.9        | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     | 9.9     |
| 849 Planned Capacity Total (Storage)                               |   |                     |          |         |         | 32.1       | 527.1   | 527.1   | 527.1   | 527.1   | 527.1   | 527.1   | 527.1   | 527.1   | 527.1   | 527.1   |
| 850 Storage Peak Average Capacity Percentage                       |   | STORAGE_PL_PEAK_PCT | %        |         |         | -          | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| 851  |   |                     |          |         |         |            |         |         |         |         |         |         |         |         |         |         |
| 852 Seasonal Mothballed Resources                                  |   |                     |          |         |         |            |         |         |         |         |         |         |         |         |         |         |
| 853 SPENCER STG U4   |   | SPNCER_SPNCE_4      | DENTON   | GAS     | NORTH   | 1966       | 57.0    | 57.0    | 57.0    | 57.0    | 57.0    | 57.0    | 57.0    | 57.0    | 57.0    | 57.0    |
| 854 SPENCER STG U5   |   | SPNCER_SPNCE_5      | DENTON   | GAS     | NORTH   | 1973       | 61.0    | 61.0    | 61.0    | 61.0    | 61.0    | 61.0    | 61.0    | 61.0    | 61.0    | 61.0    |
| 855 Total Seasonal Mothballed Capacity                             |   |                     |          |         |         | 118.0      | 118.0   | 118.0   | 118.0   | 118.0   | 118.0   | 118.0   | 118.0   | 118.0   | 118.0   | 118.0   |
| 856  |   |                     |          |         |         |            |         |         |         |         |         |         |         |         |         |         |
| 857 Mothballed Resources   |   |                     |          |         |         |            |         |         |         |         |         |         |         |         |         |         |
| 858 JT DEELY U1 (AS OF 12/31/2018)                                 |   | CALAVERS_JTD1_M     | BEXAR    | COAL    | SOUTH   | 1977       | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   |
| 859 JT DEELY U2 (AS OF 12/31/2018)                                 |   | CALAVERS_JTD2_M     | BEXAR    | COAL    | SOUTH   | 1978       | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   | 420.0   |
| 860 GIBBONS CREEK U1 (AS OF 10/1/2018)                             |   | GIBCRK_GIB_CRG1     | GRIMES   | COAL    | NORTH   | 1983       | 470.0   | 470.0   | 470.0   | 470.0   | 470.0   | 470.0   | 470.0   | 470.0   | 470.0   | 470.0   |
| 861 Total Mothballed Capacity                                      |   |                     |          |         |         | 1,310.0    | 1,310.0 | 1,310.0 | 1,310.0 | 1,310.0 | 1,310.0 | 1,310.0 | 1,310.0 | 1,310.0 | 1,310.0 | 1,310.0 |
| 862  |   |                     |          |         |         |            |         |         |         |         |         |         |         |         |         |         |
| 863 Retiring Resources Unavailable to ERCOT (since last CDR/SARA)* |   |                     |          |         |         |            |         |         |         |         |         |         |         |         |         |         |
| 864 FORT WORTH METHANE LFG   |   | DG_RDLML_1UNIT      | TARRANT  | BIOMASS | NORTH   | 2011       | 1.6     | 1.6     | 1.6     | 1.6     | 1.6     | 1.6     | 1.6     | 1.6     | 1.6     | 1.6     |
| 865 MCKINNEY LFG   |   | DG_MKNSW_2UNITS     | COLLIN   | BIOMASS | NORTH   | 2011       | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     |
| 866 TRINITY OAKS LFG   |   | DG_KLBRG_1UNIT      | DALLAS   | BIOMASS | NORTH   | 2011       | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     | 3.2     |
| 867 VIRIDIS ENERGY-LIBERTY LFG                                     |   | DG_LB_DG1           | HARRIS   | BIOMASS | HOUSTON | 2002       | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     |
| 868 VIRIDIS ENERGY-TRINITY BAY LFG                                 |   | DG_TRN_DG1          | CHAMBERS | BIOMASS | HOUSTON | 2002       | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     | 3.9     |
| 869 Total Retiring Capacity  |   |                     |          |         |         | 15.8       | 15.8    | 15.8    | 15.8    | 15.8    | 15.8    | 15.8    | 15.8    | 15.8    | 15.8    | 15.8    |

Notes:

Capacity changes due to planned repower/upgrade projects are reflected in the operational units' ratings upon (1) receipt and ERCOT approval of a new Resource Asset Registration Form (RARF), or (2) the unit owner has submitted, and ERCOT has approved, a Generation Interconnection or Change Request (GINR) application, and the project modifies the installed capacity by at least 10 MW as reported in the GINR request. Projects associated with interconnection change requests that meet the 10 MW size threshold are indicated with a code in the "Generation Interconnection Project Code" column. Projects with more than one unit have capacity change amounts prorated equally across the units. These prorated capacity adjustments are temporary until project owners submit RARFs that reflect updated seasonal MW ratings for each unit.

Although seasonal capacity ratings for battery energy storage systems are reported above, the ratings are not included in the operational capacity formula. These resources are assumed to provide regulation reserves rather than sustained capacity available to meet system peak loads.

\* ERCOT is now tracking and accounting for retirements of Registered DG facilities. These biomass facilities actually retired between 2014 and 2016.

## Summer Fuel Types - ERCOT

Fuel type is based on the primary fuel. Capacity contribution of the wind resources is included at 15% for Non-Coastal and 58% for Coastal counties, while the solar capacity contribution is 74%. Private Use Network, and Hydro are included based on the three-year average historical capability for each Summer Season's 20 peak load hours. Non-Synchronous Tie resources import forecast is based on flows seen during Energy Emergency Alert (EEA) periods in the most recent summer of occurrence. Non-Synchronous Tie resources are categorized as Other. Mothballed resource capacity is excluded except for Available Mothball Capacity based on a Seasonal Availability Schedule or Owner's reported Return Probability. Private Use Network is categorized as gas.

**In MW**

| <b>Fuel_Type</b> | <b>Capacity_Pct</b> | <b>2020</b>   | <b>2021</b>   | <b>2022</b>   | <b>2023</b>   | <b>2024</b>   |
|------------------|---------------------|---------------|---------------|---------------|---------------|---------------|
| Biomass          | 100%                | 186           | 186           | 186           | 186           | 186           |
| Coal             | 100%                | 14,225        | 14,225        | 14,225        | 14,225        | 14,225        |
| Gas              | 100%                | 51,941        | 53,949        | 53,811        | 53,811        | 53,556        |
| Nuclear          | 100%                | 4,960         | 4,960         | 4,960         | 4,960         | 4,960         |
| Other            | 75%                 | 962           | 1,333         | 1,333         | 1,333         | 1,333         |
| Hydro            | 83%                 | 463           | 463           | 463           | 463           | 463           |
| Wind             | 15%                 | 3,821         | 4,617         | 4,701         | 4,701         | 4,701         |
| Wind-C           | 58%                 | 2,339         | 2,715         | 2,715         | 2,715         | 2,715         |
| Solar            | 74%                 | 3,648         | 6,305         | 6,644         | 6,644         | 6,644         |
| Storage          | 0%                  | -             | -             | -             | -             | -             |
| <b>Total</b>     |                     | <b>82,545</b> | <b>88,754</b> | <b>89,039</b> | <b>89,039</b> | <b>88,784</b> |

| <b>Fuel_Type</b> | <b>In Percentages</b> |               |               |               |               |
|------------------|-----------------------|---------------|---------------|---------------|---------------|
|                  | <b>2020</b>           | <b>2021</b>   | <b>2022</b>   | <b>2023</b>   | <b>2024</b>   |
| Biomass          | 0.2%                  | 0.2%          | 0.2%          | 0.2%          | 0.2%          |
| Coal             | 17.2%                 | 16.0%         | 16.0%         | 16.0%         | 16.0%         |
| Natural Gas      | 62.9%                 | 60.8%         | 60.4%         | 60.4%         | 60.3%         |
| Nuclear          | 6.0%                  | 5.6%          | 5.6%          | 5.6%          | 5.6%          |
| Other            | 1.2%                  | 1.5%          | 1.5%          | 1.5%          | 1.5%          |
| Hydro            | 0.6%                  | 0.5%          | 0.5%          | 0.5%          | 0.5%          |
| Wind             | 4.6%                  | 5.2%          | 5.3%          | 5.3%          | 5.3%          |
| Wind-C           | 2.8%                  | 3.1%          | 3.0%          | 3.0%          | 3.1%          |
| Solar            | 4.4%                  | 7.1%          | 7.5%          | 7.5%          | 7.5%          |
| Storage          | 0.0%                  | 0.0%          | 0.0%          | 0.0%          | 0.0%          |
| <b>Total</b>     | <b>100.0%</b>         | <b>100.0%</b> | <b>100.0%</b> | <b>100.0%</b> | <b>100.0%</b> |

## Report on the Capacity, Demand and Reserves in the ERCOT Region

### Winter Summary: 2019/2020 through 2023/2024

#### **Load Forecast, MW:**

|  | 2019/2020     | 2020/2021     | 2021/2022     | 2022/2023     | 2023/2024     |
|--|---------------|---------------|---------------|---------------|---------------|
| Winter Peak Demand (based on normal weather)                                 | 61,150        | 62,782        | 64,449        | 66,102        | 67,896        |
| plus: Energy Efficiency Program Savings Forecast                             | 1,764         | 2,065         | 2,285         | 2,592         | 2,821         |
| Total Winter Peak Demand (before Reductions from Energy Efficiency Programs) | 62,913        | 64,847        | 66,733        | 68,694        | 70,717        |
| less: Load Resources providing Responsive Reserves                           | -1,723        | -1,723        | -1,723        | -1,723        | -1,723        |
| less: Load Resources providing Non-Spinning Reserves                         | 0             | 0             | 0             | 0             | 0             |
| less: Emergency Response Service (10- and 30-min ramp products)              | -1,061        | -1,061        | -1,061        | -1,061        | -1,061        |
| less: TDSP Standard Offer Load Management Programs                           | 0             | 0             | 0             | 0             | 0             |
| less: Energy Efficiency Program Savings Forecast                             | -1,764        | -2,065        | -2,285        | -2,592        | -2,821        |
| <b>Firm Peak Load, MW</b>  | <b>58,366</b> | <b>59,999</b> | <b>61,665</b> | <b>63,318</b> | <b>65,112</b> |

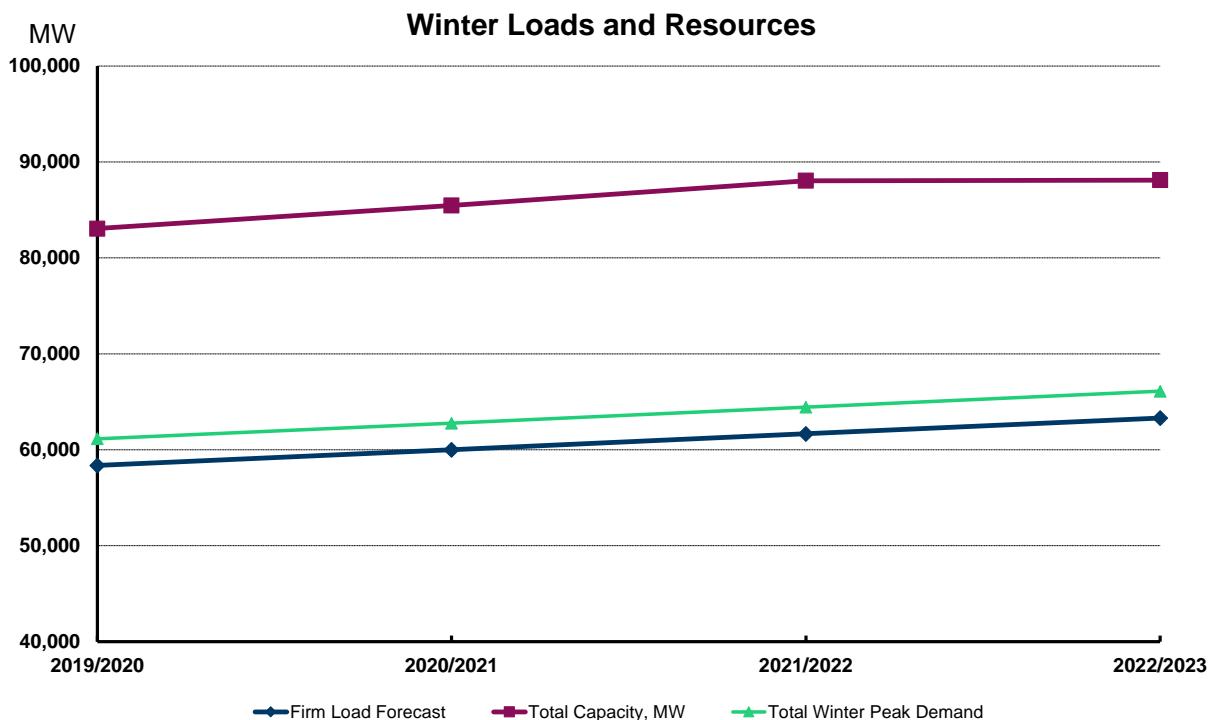
#### **Resources, MW:**

|   | 2019/2020     | 2020/2021     | 2021/2022     | 2022/2023     | 2023/2024     |
|---|---------------|---------------|---------------|---------------|---------------|
| Installed Capacity, Thermal/Hydro   | 68,766        | 68,766        | 68,847        | 68,847        | 68,847        |
| Switchable Generation Resource Capacity, MW   | 3,746         | 3,746         | 3,746         | 3,746         | 3,746         |
| less: Switchable Capacity Unavailable to ERCOT  | -868          | -868          | -568          | -568          | -568          |
| Available Mothballed Capacity   | 0             | 0             | 0             | 0             | 0             |
| Capacity from Private Use Networks  | 3,965         | 3,885         | 3,865         | 3,865         | 3,610         |
| Non-Coastal Wind, Peak Average Capacity Contribution (20% of installed capacity)                        | 3,848         | 3,849         | 3,849         | 3,849         | 3,849         |
| Coastal Wind, Peak Average Capacity Contribution (43% of installed capacity)                            | 1,213         | 1,213         | 1,213         | 1,213         | 1,213         |
| Solar Utility-Scale, Peak Average Capacity Contribution (12% of installed capacity)                     | 223           | 223           | 223           | 223           | 223           |
| Storage, Peak Average Capacity Contribution (0%)  | 0             | 0             | 0             | 0             | 0             |
| RMR Capacity to be under Contract   | 0             | 0             | 0             | 0             | 0             |
| Capacity Pending Retirement, MW   | 0             | 0             | 0             | 0             | 0             |
| <b>Operational Generation Capacity, MW</b>  | <b>80,892</b> | <b>80,814</b> | <b>81,175</b> | <b>81,175</b> | <b>80,920</b> |
| Non-Synchronous Ties, Capacity Contribution (67% of installed capacity)                                 | 838           | 838           | 838           | 838           | 838           |
| Planned Resources (not wind or solar) with Signed IA, Air Permits and Water Rights                      | 307           | 307           | 2,018         | 2,018         | 2,018         |
| Planned Non-Coastal Wind with Signed IA, Peak Average Capacity Contribution (20% of installed capacity) | 716           | 2,289         | 2,370         | 2,431         | 2,431         |
| Planned Coastal Wind with Signed IA, Peak Average Capacity Contribution (43% of installed capacity)     | 232           | 725           | 800           | 800           | 800           |
| Planned Solar Utility-Scale, Peak Average Capacity Contribution (12% of installed capacity)             | 65            | 506           | 854           | 854           | 854           |
| Planned Storage, Peak Average Capacity Contribution (0%)  | 0             | 0             | 0             | 0             | 0             |
| <b>Total Capacity, MW</b>   | <b>83,051</b> | <b>85,479</b> | <b>88,055</b> | <b>88,116</b> | <b>87,861</b> |

#### **Reserve Margin**

(Total Resources - Firm Load Forecast) / Firm Load Forecast

42.3%      42.5%      42.8%      39.2%      34.9%

























## Winter Fuel Types - ERCOT

Fuel type is based on the primary fuel. Capacity contribution of the wind resources is 20% for Non-Coastal and 43% for Coastal counties, while the solar capacity contribution is 0%. Private Use Network, and Hydro are included based on the three-year average historic for each Summer Season's 20 peak load hours. Non-Synchronous Tie resources impact is based on flows seen during Energy Emergency Alert (EEA) periods in the most recent occurrence. Non-Synchronous Tie resources are categorized as Other. Mothballed resources capacity is excluded except for Available Mothball Capacity based on a Seasonal Availability Schedule or Owner's reported Return Probability. Private Use Network is categorized as Other.

| Fuel_Type | Capacity_Pct | In MW     |           |           |           |
|-----------|--------------|-----------|-----------|-----------|-----------|
|           |              | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 |
| Biomass   | 100%         | 186       | 186       | 186       | 186       |
| Coal      | 100%         | 14,297    | 14,297    | 14,297    | 14,297    |
| Gas       | 100%         | 55,835    | 55,755    | 57,828    | 57,828    |
| Nuclear   | 100%         | 5,140     | 5,140     | 5,140     | 5,140     |
| Other     | 67%          | 859       | 859       | 1,191     | 1,191     |
| Hydro     | 82%          | 457       | 457       | 457       | 457       |
| Wind      | 20%          | 4,564     | 6,138     | 6,219     | 6,280     |
| Wind-C    | 43%          | 1,445     | 1,938     | 2,013     | 2,013     |
| Solar     | 12%          | 289       | 729       | 1,077     | 1,077     |
| Storage   | 0%           | -         | -         | -         | -         |
| Total     |              | 83,072    | 85,500    | 88,408    | 88,469    |

| Fuel_Type | In Percentages |           |           |           |
|-----------|----------------|-----------|-----------|-----------|
|           | 2019/2020      | 2020/2021 | 2021/2022 | 2022/2023 |
| Biomass   | 0.2%           | 0.2%      | 0.2%      | 0.2%      |
| Coal      | 17.2%          | 16.7%     | 16.2%     | 16.2%     |
| Gas       | 67.2%          | 65.2%     | 65.4%     | 65.4%     |
| Nuclear   | 6.2%           | 6.0%      | 5.8%      | 5.8%      |
| Other     | 1.0%           | 1.0%      | 1.3%      | 1.3%      |
| Hydro     | 0.6%           | 0.5%      | 0.5%      | 0.5%      |
| Wind      | 5.5%           | 7.2%      | 7.0%      | 7.1%      |
| Wind-C    | 1.7%           | 2.3%      | 2.3%      | 2.3%      |
| Solar     | 0.3%           | 0.9%      | 1.2%      | 1.2%      |
| Storage   | 0.0%           | 0.0%      | 0.0%      | 0.0%      |
| Total     | 100.0%         | 100.0%    | 100.0%    | 100.0%    |

## Capacity of Proposed Generation Resources Based on Interconnection Milestone Status

Cumulative Summer Capacity Contribution (in MW) of Resources Available by June 1 of the Reporting Year

|   | 2020   | 2021   | 2022   | 2023   | 2024   |
|---|--------|--------|--------|--------|--------|
| <b>Planned Resource Category</b>  |        |        |        |        |        |
| Commissioning Plan Submitted  | 410    | 410    | 410    | 410    | 410    |
| Planning Guide 6.9 Criteria plus completed Full Interconnect Study                                    | 2,413  | 2,976  | 2,976  | 2,976  | 2,976  |
| Meets Planning Guide Sec. 6.9 Criteria (CDR plus TSP Financial Security Posted and Notice to Proceed) | 3,321  | 5,097  | 5,180  | 5,180  | 5,180  |
| CDR Eligible (signed IA, air permits, proof of adequate water supply)                                 | 4,212  | 9,750  | 10,173 | 10,173 | 10,173 |
| Signed Interconnection Agreement with the TSP   | 4,212  | 9,750  | 10,916 | 10,916 | 10,916 |
| Full Interconnect Study Requested   | 10,165 | 32,301 | 40,371 | 40,815 | 40,815 |

### Notes:

- (1) Resource categories are listed by highest to lowest likelihood that the resource capacity will be in commercial operation in the reported year. For example, resources in the Commissioning Plan Submitted category have reached the "substantially completed construction" phase, and associated transmission switchyard facilities are operational. Conversely, resources in the Full Interconnection Study Requested category include projects that are generally in the development proposal stage and have a significant risk of interconnection request cancellation or project development delays.
- (2) The data presented here is based upon the latest information provided to ERCOT by resource developers and can change without notice.
- (3) Resource developers may execute an Interconnection Agreement with a TSP prior to completion of the Full Interconnection Study. This is most common with wind and solar projects.
- (4) Wind and solar resource capacities reflect their estimated summer on-peaking average values as determined by the methodologies in Protocol section 3.2.6.2.2.
- (5) Battery storage projects are assumed to provide no seasonal sustained peak-hour capacity contributions, and are thus reported as zero MW.

## Capacity, Demand and Reserves, Summer 2025 Through Winter 2029/2030

The summer and winter capacity summaries below show the reserve margin impact of not adding any new resources during the latter half of the CDR forecast period. Since project developers typically submit interconnection requests no more than three to five years before the facility is expected to enter commercial operations, reserve margins reported beyond this window always show a declining trend. Also note that the reserve margin impact of potential future unit retirements and associated market responses to replace retired units are not accounted for here or elsewhere in this CDR report.

|  | Summer        |               |               |               |               |
|--|---------------|---------------|---------------|---------------|---------------|
| <b>Load Forecast, MW:</b>  | <b>2025</b>   | <b>2026</b>   | <b>2027</b>   | <b>2028</b>   | <b>2029</b>   |
| Summer Peak Demand (based on normal weather)                                 | 85,732        | 87,345        | 88,913        | 90,426        | 91,914        |
| plus: Energy Efficiency Program Savings Forecast                             | 3,138         | 3,376         | 3,704         | 3,922         | 4,230         |
| Total Summer Peak Demand (before Reductions from Energy Efficiency Programs) | 88,870        | 90,721        | 92,617        | 94,348        | 96,144        |
| less: Load Resources providing Responsive Reserves                           | -1,173        | -1,173        | -1,173        | -1,173        | -1,173        |
| less: Load Resources providing Non-Spinning Reserves                         | 0             | 0             | 0             | 0             | 0             |
| less: Emergency Response Service (10- and 30-min ramp products)              | -749          | -749          | -749          | -749          | -749          |
| less: TDSP Standard Offer Load Management Programs                           | -219          | -219          | -219          | -219          | -219          |
| less: Energy Efficiency Program Savings Forecast                             | -3,138        | -3,376        | -3,704        | -3,922        | -4,230        |
| <b>Firm Peak Load, MW</b>  | <b>83,591</b> | <b>85,204</b> | <b>86,772</b> | <b>88,285</b> | <b>89,773</b> |

|   | <b>2025</b>   | <b>2026</b>   | <b>2027</b>   | <b>2028</b>   | <b>2029</b>   |
|---|---------------|---------------|---------------|---------------|---------------|
| <b>Resources, MW:</b>   |               |               |               |               |               |
| Installed Capacity, Thermal/Hydro   | 65,284        | 65,284        | 65,284        | 65,284        | 65,284        |
| Switchable Generation Resource Capacity, MW   | 3,514         | 3,514         | 3,514         | 3,514         | 3,514         |
| less: Switchable Capacity Unavailable to ERCOT, MW  | -542          | -542          | -542          | -542          | -542          |
| Available Mothballed Capacity, MW   | 0             | 0             | 0             | 0             | 0             |
| Capacity from Private Use Networks  | 3,123         | 3,123         | 3,123         | 3,123         | 3,123         |
| Non-Coastal Wind, Peak Average Capacity Contribution (15% of installed capacity)                        | 2,887         | 2,887         | 2,887         | 2,887         | 2,887         |
| Coastal Wind, Peak Average Capacity Contribution (58% of installed capacity)                            | 1,636         | 1,636         | 1,636         | 1,636         | 1,636         |
| Solar Utility-Scale, Peak Average Capacity Contribution (74% of installed capacity)                     | 1,377         | 1,377         | 1,377         | 1,377         | 1,377         |
| Storage, Peak Average Capacity Contribution (0% of installed capacity)                                  | 0             | 0             | 0             | 0             | 0             |
| RMR Capacity to be under Contract   | 0             | 0             | 0             | 0             | 0             |
| Capacity Pending Retirement, MW   | 0             | 0             | 0             | 0             | 0             |
| <b>Operational Generation Capacity, MW</b>  | <b>77,278</b> | <b>77,278</b> | <b>77,278</b> | <b>77,278</b> | <b>77,278</b> |
| Non-Synchronous Ties, Capacity Contribution (75% of installed capacity)                                 | 938           | 938           | 938           | 938           | 938           |
| Planned Thermal Resources with Signed IA, Air Permits and Water Rights, MW                              | 2,012         | 2,012         | 2,012         | 2,012         | 2,012         |
| Planned Non-Coastal Wind with Signed IA, Peak Average Capacity Contribution (15% of installed capacity) | 1,814         | 1,814         | 1,814         | 1,814         | 1,814         |
| Planned Coastal Wind with Signed IA, Peak Average Capacity Contribution (58% of installed capacity)     | 1,079         | 1,079         | 1,079         | 1,079         | 1,079         |
| Planned Solar Utility-Scale, Peak Average Capacity Contribution (74% of installed capacity)             | 5,267         | 5,267         | 5,267         | 5,267         | 5,267         |
| Planned Storage, Peak Average Capacity Contribution (0% of installed capacity)                          | 0             | 0             | 0             | 0             | 0             |
| <b>Total Capacity, MW</b>   | <b>88,389</b> | <b>88,389</b> | <b>88,389</b> | <b>88,389</b> | <b>88,389</b> |

| <b>Reserve Margin</b>                                       | <b>5.7%</b> | <b>3.7%</b> | <b>1.9%</b> | <b>0.1%</b> | <b>-1.5%</b> |
|---|-------------|-------------|-------------|-------------|--------------|
| (Total Resources - Firm Load Forecast) / Firm Load Forecast |             |             |             |             |              |

|   | Winter        |               |               |               |               |
|---|---------------|---------------|---------------|---------------|---------------|
|   | 2024/2025     | 2025/2026     | 2026/2027     | 2027/2028     | 2028/2029     |
| <b>Load Forecast, MW:</b>   |               |               |               |               |               |
| Winter Peak Demand (based on normal weather)  | 69,407        | 70,949        | 72,477        | 73,951        | 75,394        |
| plus: Energy Efficiency Program Savings Forecast  | 3,138         | 3,376         | 3,704         | 3,922         | 4,230         |
| Total Winter Peak Demand (before Reductions from Energy Efficiency Programs)                            | 72,545        | 74,325        | 76,181        | 77,873        | 79,624        |
| less: Load Resources providing Responsive Reserves  | -1,723        | -1,723        | -1,723        | -1,723        | -1,723        |
| less: Load Resources providing Non-Spinning Reserves  | 0             | 0             | 0             | 0             | 0             |
| less: Emergency Response Service (10- and 30-min ramp products)   | -1,061        | -1,061        | -1,061        | -1,061        | -1,061        |
| less: TDSP Standard Offer Load Management Programs  | 0             | 0             | 0             | 0             | 0             |
| less: Energy Efficiency Program Savings Forecast  | -3,138        | -3,376        | -3,704        | -3,922        | -4,230        |
| <b>Firm Peak Load, MW</b>   | <b>66,623</b> | <b>68,166</b> | <b>69,693</b> | <b>71,168</b> | <b>72,611</b> |
| <b>Resources, MW:</b>   |               |               |               |               |               |
| Installed Capacity, Thermal/Hydro   | 68,847        | 68,847        | 68,847        | 68,847        | 68,847        |
| Switchable Generation Resource Capacity, MW   | 3,746         | 3,746         | 3,746         | 3,746         | 3,746         |
| less: Switchable Capacity Unavailable to ERCOT  | -568          | -568          | -568          | -568          | -568          |
| Available Mothballed Capacity   | 0             | 0             | 0             | 0             | 0             |
| Capacity from Private Use Networks  | 3,610         | 3,610         | 3,610         | 3,610         | 3,610         |
| Non-Coastal Wind, Peak Average Capacity Contribution (20% of installed capacity)                        | 3,849         | 3,849         | 3,849         | 3,849         | 3,849         |
| Coastal Wind, Peak Average Capacity Contribution (43% of installed capacity)                            | 1,213         | 1,213         | 1,213         | 1,213         | 1,213         |
| Solar Utility-Scale, Peak Average Capacity Contribution (12% of installed capacity)                     | 223           | 223           | 223           | 223           | 223           |
| Storage, Peak Average Capacity Contribution (0%)  | 0             | 0             | 0             | 0             | 0             |
| RMR Capacity to be under Contract   | 0             | 0             | 0             | 0             | 0             |
| Capacity Pending Retirement, MW   | 0             | 0             | 0             | 0             | 0             |
| <b>Operational Generation Capacity, MW</b>  | <b>80,920</b> | <b>80,920</b> | <b>80,920</b> | <b>80,920</b> | <b>80,920</b> |
| Non-Synchronous Ties, Capacity Contribution (67% of installed capacity)                                 | 838           | 838           | 838           | 838           | 838           |
| Planned Resources (not wind or solar) with Signed IA, Air Permits and Water Rights                      | 2,018         | 2,018         | 2,018         | 2,018         | 2,018         |
| Planned Non-Coastal Wind with Signed IA, Peak Average Capacity Contribution (20% of installed capacity) | 2,431         | 2,431         | 2,431         | 2,431         | 2,431         |
| Planned Coastal Wind with Signed IA, Peak Average Capacity Contribution (43% of installed capacity)     | 800           | 800           | 800           | 800           | 800           |
| Planned Solar Utility-Scale, Peak Average Capacity Contribution (12% of installed capacity)             | 854           | 854           | 854           | 854           | 854           |
| Planned Storage, Peak Average Capacity Contribution (0%)  | 0             | 0             | 0             | 0             | 0             |
| <b>Total Capacity, MW</b>   | <b>87,861</b> | <b>87,861</b> | <b>87,861</b> | <b>87,861</b> | <b>87,861</b> |
| <b>Reserve Margin</b>   | <b>31.9%</b>  | <b>28.9%</b>  | <b>26.1%</b>  | <b>23.5%</b>  | <b>21.0%</b>  |

(Total Resources - Firm Load Forecast) / Firm Load Forecast