



**Report on the Capacity, Demand and Reserves
(CDR) in the ERCOT Region, 2018-2027**

May 2, 2017

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Notes on Changes Relative to the Last CDR, Published December 2016

- 1 GREENS BAYOU STG U5 (GBY_GBY_5) moved from Reliability Must Run (RMR) status to Mothball status as its RMR contract will terminate on May 29, 2017.
- 2 Wind Winter Peak Average Capacity Contribution Percentages (WINDPEAKPCT) were updated based on winter 2016/2017 data. The Non-coastal region is unchanged at 20%. The Coastal region increased from 35% to 42% due to a 80.8% capacity contribution for the past winter.
- 3 The solar Winter Peak Average Capacity Contribution Percentage (SOLAR_PEAK_PCT) was updated based on winter 2016/2017 data, and increased from 5% to 9.8%.
- 4 The following Planned Resources have been moved to Operational Status since the release of the December 2016 CDR report:

Project Name	Unit Code	County	Fuel	Zone	Installed Capacity MW	Summer Capacity MW
ELECTRA WIND 1	DIGBY_UNIT1	WILBARGER	WIND	WEST	98.9	13.8
ELECTRA WIND 2	DIGBY_UNIT2	WILBARGER	WIND	WEST	131.1	18.4
HIDALGO & STARR WIND 11	MIRASOLE_MIR11	HIDALGO	WIND	SOUTH	50.0	7.0
HIDALGO & STARR WIND 12	MIRASOLE_MIR12	HIDALGO	WIND	SOUTH	100.0	14.0
HIDALGO & STARR WIND 21	MIRASOLE_MIR21	HIDALGO	WIND	SOUTH	100.0	14.0
HORSE CREEK WIND 1	HORSECRK_UNIT1	HASKELL	WIND	WEST	131.1	18.4
HORSE CREEK WIND 2	HORSECRK_UNIT2	HASKELL	WIND	WEST	98.9	13.8
JAVELINA II WIND 1	BORDAS2_JAVEL2_A	WEBB	WIND	SOUTH	96.0	13.4
JAVELINA II WIND 2	BORDAS2_JAVEL2_B	WEBB	WIND	SOUTH	74.0	10.4
JAVELINA II WIND 3	BORDAS2_JAVEL2_C	WEBB	WIND	SOUTH	30.0	4.2
MARIAH DEL NORTE 1	MARIAH_NORTE1	PARMER	WIND	WEST	115.2	16.1
MARIAH DEL NORTE 2	MARIAH_NORTE2	PARMER	WIND	WEST	115.2	16.1
TYLER BLUFF WIND	TYLWRWIND_UNIT1	COOKE	WIND	NORTH	125.6	17.6
FS EAST PECOS SOLAR	BOOTLEG_UNIT1	PECOS	SOLAR	WEST	121.1	93.2
OCI ALAMO 6 (WEST TEXAS)	SIRIUS_UNIT1	PECOS	SOLAR	WEST	108.3	83.4
COTTON PLAINS WIND	COTPLNS_COTTONPL	FLOYD	WIND	PANHANDLE	50.0	7.0
OLD SETTLER WIND	COTPLNS_OLDSETLR	FLOYD	WIND	PANHANDLE	150.0	21.0
SAN ROMAN WIND	SANROMAN_WIND_1	CAMERON	WIND-C	COASTAL	95.2	55.2
TOTAL					1,790.6	437.1

- 5 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 ^{1/}	Capacity MW	Summer Capacity MW
CASTLEMAN CHAMON	17INR0042	HARRIS	GAS	HOUSTON	2017	88.0	88.0
WEST OF PECOS SOLAR	14INR0044	REEVES	SOLAR	WEST	2017	100.0	77.0
RE MAPLEWOOD 2E SOLAR	17INR0020e	PECOS	SOLAR	WEST	2020	100.0	77.0
BLUE SUMMIT BATTERY	16INR0122	WILBARGER	STORAGE	WEST	2017	-	-
BEARKAT WIND B	15INR0064b	GLASSCOCK	WIND	WEST	2018	163.0	22.8
CACTUS FLATS WIND	16INR0086	CONCHO	WIND	WEST	2018	150.0	21.0
TOTAL						601.0	285.8

^{1/} 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, 2017, the first summer CDR forecast year would be 2018.

- 6 LUFKIN BIOMASS (LFBIO_UNIT1, 45 MW) changed to retired status, effective February 6, 2017.

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.) Annual incremental growth in energy efficiency savings is calculated by multiplying ERCOT's peak load forecast by an energy efficiency penetration factor. The current factor is 0.0018, and is derived using the following assumptions:

- The unadjusted penetration rate for energy efficiency is 0.4% of total load for all residential and commercial consumers (including NOIEs)
- A 50% adjustment is applied to account for actual program effectiveness and program savings that may already be accounted for in the load forecast model
- A 90% adjustment is applied to represent the proportion of the total load forecast that is commercial and residential customers

Energy efficiency impacts from meeting the Texas Legislature's goals are assumed to accumulate for seven years from the time that the annual goals must first be met (December 31, 2013).

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 2% to reflect avoided transmission line losses.

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).

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 methodology for developing this report is defined in Section 3.2.6 of the ERCOT Protocols (see: http://www.ercot.com/content/wcm/current_guides/53528/03-040517_Nodal.doc). ERCOT developed this report using data provided by resource developers and owners. Although ERCOT works to ensure that the data provided are as accurate and current as possible, it cannot independently verify all of the information. Information available to ERCOT as of April 28 is included in this report.

The 2018 summer planning reserve margin is projected to be 18.9%. In contrast, the margin reported in the December 2016 CDR report was 20.2%. The 2018 reserve margin drop reflects delays in forecasted commercial operation dates beyond 2018 for several generation projects. Margins for the subsequent three years continue to exceed 18%.

The 2018 summer peak demand forecast is 74,149 MW. The load forecast in this report does not reflect recently revised load projections for petrochemical plants along the Gulf Coast or oil and gas exploration in the Permian Basin region, which will be incorporated into ERCOT's next report in December 2017. See the [2017 Long Term Hourly Peak Demand and Energy Forecast](#) report for more forecast details, available at http://www.ercot.com/content/wcm/lists/114580/2017_Long-Term_Hourly_Peak_Demand_and_Energy_Forecast.pdf.

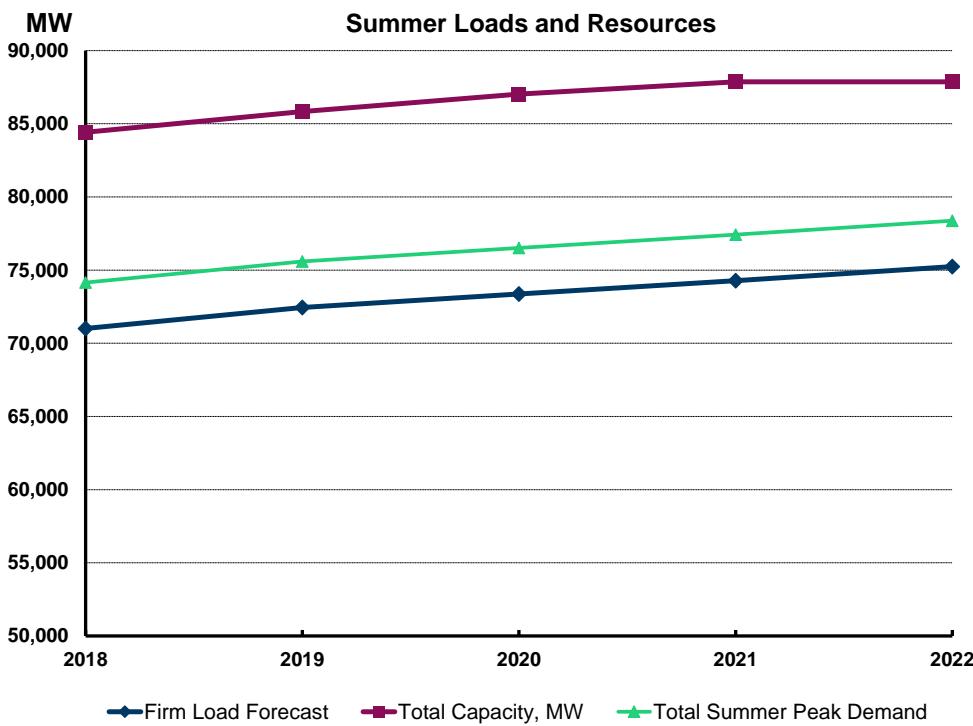
Since the release of the December 2016 CDR report, resources totaling 1,791 MW have been approved by ERCOT for commercial operations. All of the resources are wind and solar, and provide an expected summer peak capacity contribution of 437 MW. Planned resources that became newly eligible for inclusion in this CDR report total 601 MW of installed capacity, including 313 MW of wind resources and 200 MW of solar resources. The summer peak-hour capacity contribution for these planned wind and solar resources totals 198 MW.

The possibility remains that several units included in this CDR report may be retired or mothballed within the next several years. As ERCOT receives additional information from generation owners about planned operational changes and unit retirements, it will incorporate this information in future CDR reports.

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

Summer Summary: 2018-2022

Load Forecast, MW:	2018	2019	2020	2021	2022
Summer Peak Demand (based on normal weather)	74,149	75,588	76,510	77,417	78,377
plus: Energy Efficiency Program Savings Forecast, per Utilities Code Section 39.905 (b-4)	524	663	663	663	663
Total Summer Peak Demand (before Reductions from Energy Efficiency Programs)	74,674	76,251	77,173	78,080	79,040
less: Load Resources providing Responsive Reserves	-1,191	-1,191	-1,191	-1,191	-1,191
less: Load Resources providing Non-Spinning Reserves	0	0	0	0	0
less: Emergency Response Service (10- and 30-min ramp products)	-1,743	-1,743	-1,743	-1,743	-1,743
less: TDSP Standard Offer Load Management Programs	-203	-203	-203	-203	-203
less: Energy Efficiency Program Savings Forecast	-524	-663	-663	-663	-663
Firm Peak Load, MW	71,012	72,451	73,373	74,280	75,240
Resources, MW:	2018	2019	2020	2021	2022
Installed Capacity, Thermal/Hydro	67,290	66,450	66,450	66,450	66,450
Switchable Capacity, MW	3,706	3,706	3,706	3,706	3,706
less: Switchable Capacity Unavailable to ERCOT, MW	-844	-844	-844	-544	-544
Available Mothballed Capacity, MW	0	0	0	0	0
Capacity from Private Use Networks	4,197	4,126	4,097	4,157	4,157
Non-Coastal Wind, Peak Average Capacity Contribution (14%)	2,348	2,348	2,348	2,348	2,348
Coastal Wind, Peak Average Capacity Contribution (58%)	1,243	1,243	1,243	1,243	1,243
Solar Utility-Scale, Peak Average Capacity Contribution (77%)	603	603	603	603	603
RMR Capacity to be under Contract	0	0	0	0	0
Operational Generation Capacity, MW	78,543	77,632	77,603	77,963	77,963
Capacity Contribution - Non-Synchronous Ties, MW	425	425	425	425	425
Planned Thermal Resources with Signed IA, Air Permits and Water Rights, MW	3,557	4,931	5,956	6,280	6,280
Planned Non-Coastal Wind with Signed IA, Peak Average Capacity Contribution (14%)	773	1,203	1,225	1,225	1,225
Planned Coastal Wind with Signed IA, Peak Average Capacity Contribution (58%)	371	562	562	562	562
Planned Solar Utility-Scale, Peak Average Capacity Contribution (77%)	752	1,081	1,258	1,412	1,412
Total Capacity, MW	84,420	85,834	87,029	87,867	87,867
Reserve Margin	18.9%	18.5%	18.6%	18.3%	16.8%
(Total Resources - Firm Load Forecast) / Firm Load Forecast					



Unit Capacities - Summer

GENERATION INTERCONNECTION																
UNIT NAME	PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	IN SERVICE	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
722 UPTON SOLAR	16INR0114		UPTON	SOLAR	WEST	2018	-	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	
723 WEST OF PECOS SOLAR	14INR0044		REEVES	SOLAR	WEST	2017	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
724 Planned Capacity Total (Solar)							976.5	1,403.5	1,633.5	1,833.5	1,833.5	1,833.5	1,833.5	1,833.5	1,833.5	
725 Solar Peak Average Capacity Percentage		SOLAR_PL_PEAK_PCT	%				77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	
726																
727 Mothballed Resources																
728 GREENS BAYOU STG U5		GBY_GBY_5	HARRIS	GAS	HOUSTON	2016	371.0	371.0	371.0	371.0	371.0	371.0	371.0	371.0	371.0	
729 J T 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	
730 J T 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	
731 S R BERTRON CTG 2 (SINCE 5/15/2013)		SRB_SRGBT_2	HARRIS	GAS	HOUSTON	1967	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	
732 S R BERTRON U1 (SINCE 5/15/2013)		SRB_SR.B_G1	HARRIS	GAS	HOUSTON	1958	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0	
733 S R BERTRON U2 (SINCE 5/15/2013)		SRB_SR.B_G2	HARRIS	GAS	HOUSTON	1956	174.0	174.0	174.0	174.0	174.0	174.0	174.0	174.0	174.0	
734 S R BERTRON U3 (SINCE 5/22/2013)		SRB_SR.B_G3	HARRIS	GAS	HOUSTON	1959	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	
735 S R BERTRON U4 (SINCE 5/22/2013)		SRB_SR.B_G4	HARRIS	GAS	HOUSTON	1960	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	
736 Total Mothballed Capacity							1,098.0	1,938.0								
737																
738 Retiring Resources Unavailable to ERCOT (since last CDR)																
739 LUFKIN BIOMASS		LFBIO_UNIT1	ANGELINA	BIOMASS	NORTH	2012	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	
740 Total Retiring Capacity							45.0									

Summer Fuel Types - ERCOT

Fuel type is based on the primary fuel. Capacity contribution of the wind resources is included at 14% for Non-Coastal and 58% for Coastal counties, while the solar capacity contribution is 77%. Private Use Network, Hydro and Non-Synchronous Tie resources are included based on the three-year average historical capability for each Summer Season's 20 peak load hours. 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. The Private Use Network capacity contribution is categorized as gas, except for the coal-fired Sandow 4 unit. Battery storage is assigned a zero MW capacity contribution to reflect the lack of sustained capability for the duration of the peak load hour.

In MW

Fuel_Type	Capacity_Pct	2018	2019	2020	2021	2022
Biomass	100%	199	199	199	199	199
Coal	100%	19,798	18,967	19,207	19,207	19,207
Gas	100%	52,487	53,790	54,546	55,230	55,230
Nuclear	100%	4,981	4,981	4,981	4,981	4,981
Other	100%	425	425	425	425	425
Hydro	79%	441	441	441	441	441
Wind	14%	3,120	3,551	3,573	3,573	3,573
Wind-C	58%	1,613	1,805	1,805	1,805	1,805
Solar	77%	1,147	1,320	1,320	1,320	1,320
Storage	0%	-	-	-	-	-
Total		84,212	85,479	86,497	87,181	87,181

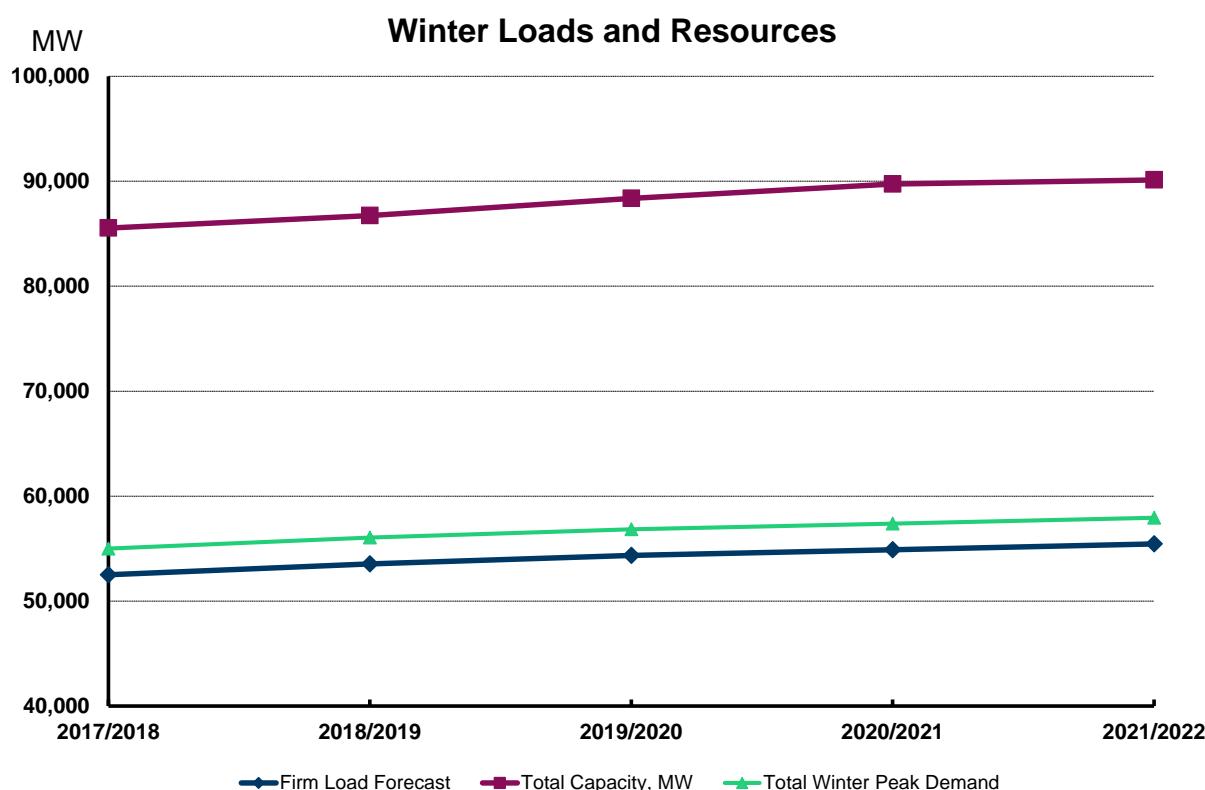
In Percentages

Fuel_Type	2018	2019	2020	2021	2022
Biomass	0.2%	0.2%	0.2%	0.2%	0.2%
Coal	23.5%	22.2%	22.2%	22.0%	22.0%
Natural Gas	62.3%	62.9%	63.1%	63.4%	63.4%
Nuclear	5.9%	5.8%	5.8%	5.7%	5.7%
Other	0.5%	0.5%	0.5%	0.5%	0.5%
Hydro	0.5%	0.5%	0.5%	0.5%	0.5%
Wind	3.7%	4.2%	4.1%	4.1%	4.1%
Wind-C	1.9%	2.1%	2.1%	2.1%	2.1%
Solar	1.4%	1.5%	1.5%	1.5%	1.5%
Storage	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

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Winter Summary: 2017/2018 through 2021/2022

Load Forecast, MW:	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
Winter Peak Demand (based on normal weather)	55,003	56,043	56,836	57,383	57,939
plus: Energy Efficiency Program Savings Forecast, per Utilities Code Section 39.905 (b-4)	524	663	663	663	663
Total Winter Peak Demand (before Reductions from Energy Efficiency Programs)	55,527	56,706	57,499	58,046	58,602
less: Load Resources providing Responsive Reserves	-1,348	-1,348	-1,348	-1,348	-1,348
less: Load Resources providing Non-Spinning Reserves	0	0	0	0	0
less: Emergency Response Service (10- and 30-min ramp products)	-1,146	-1,146	-1,146	-1,146	-1,146
less: TDSP Standard Offer Load Management Programs	0	0	0	0	0
less: Energy Efficiency Program Savings Forecast	-524	-663	-663	-663	-663
Firm Peak Load, MW	52,509	53,550	54,342	54,889	55,446
Resources, MW:	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
Installed Capacity, Thermal/Hydro	69,936	69,096	69,096	69,096	69,096
Switchable Capacity	3,931	3,931	3,931	3,931	3,931
less: Switchable Capacity Unavailable to ERCOT	-844	-844	-844	-844	-544
Available Mothballed Capacity	0	0	0	0	0
Capacity from Private Use Networks	4,352	4,348	4,277	4,248	4,308
Non-Coastal Wind, Peak Average Capacity Contribution (20%)	3,354	3,354	3,354	3,354	3,354
Coastal Wind, Peak Average Capacity Contribution (35%)	900	900	900	900	900
Solar Utility-Scale, Peak Average Capacity Contribution (5%)	77	77	77	77	77
RMR Capacity to be under Contract	0	0	0	0	0
Operational Generation Capacity, MW	81,706	80,862	80,791	80,762	81,122
Capacity Contribution - Non-Synchronous Ties	166	166	166	166	166
Planned Resources (not wind or solar) with Signed IA, Air Permits and Water Rights	2,875	3,744	5,143	6,492	6,492
Planned Non-Coastal Wind with Signed IA, Peak Average Capacity Contribution (20%)	452	1,451	1,725	1,756	1,756
Planned Coastal Wind with Signed IA, Peak Average Capacity Contribution (35%)	268	407	407	407	407
Planned Solar Utility-Scale, Peak Average Capacity Contribution (5%)	71	106	138	160	180
Total Capacity, MW	85,539	86,735	88,369	89,743	90,122
Reserve Margin					
(Total Resources - Firm Load Forecast) / Firm Load Forecast	62.9%	62.0%	62.6%	63.5%	62.5%



GENERATION INTERCONNECTION		UNIT CODE	COUNTRY	FUEL	ZONE	IN SERVICE	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028
UNIT NAME	PROJECT CODE						2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028
720 RE MAPLEWOOD 2D SOLAR	17INR0020d	PECOS	SOLAR	WEST	2020	-	-	-	-	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
721 RE MAPLEWOOD 2E SOLAR	17INR0020e	PECOS	SOLAR	WEST	2020	-	-	-	-	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
722 UPTON SOLAR	16INR0114	UPTON	SOLAR	WEST	2018	-	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0
723 WEST OF PECOS SOLAR	14INR0044	REEVES	SOLAR	WEST	2017	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
724 Planned Capacity Total (Solar)						729.0	1,078.5	1,403.5	1,633.5	1,833.5							
725 Solar Peak Average Capacity Percentage		SOLAR_PL_PEAK_PCT	%			9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
726																	
727 Mothballed Resources																	
728 GREENS BAYOU STG U5	GBY_GBY_5	HARRIS	GAS	HOUSTON	2016	371.0	371.0	371.0	371.0	371.0	371.0	371.0	371.0	371.0	371.0	371.0	371.0
729 J T DEELY U1 (AS OF 12/31/2018)	CALAVERAS_JTD1_M	BEXAR	COAL	SOUTH	1977	430.0	430.0	430.0	430.0	430.0	430.0	430.0	430.0	430.0	430.0	430.0	430.0
730 J T DEELY U2 (AS OF 12/31/2018)	CALAVERAS_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	420.0	420.0
731 S R BERTRON CTG 2 (SINCE 5/15/2013)	SRB_SRGBT_2	HARRIS	GAS	HOUSTON	1967	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
732 S R BERTRON U1 (SINCE 5/15/2013)	SRB_SRBU_1	HARRIS	GAS	HOUSTON	1958	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0
733 S R BERTRON U2 (SINCE 5/15/2013)	SRB_SRBU_2	HARRIS	GAS	HOUSTON	1956	174.0	174.0	174.0	174.0	174.0	174.0	174.0	174.0	174.0	174.0	174.0	174.0
734 S R BERTRON U3 (SINCE 5/22/2013)	SRB_SRBU_3	HARRIS	GAS	HOUSTON	1959	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0
735 S R BERTRON U4 (SINCE 5/22/2013)	SRB_SRBU_4	HARRIS	GAS	HOUSTON	1960	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0	211.0
736 Total Mothballed Capacity						1,948.0											
737																	
738 Retiring Resources Unavailable to ERCOT (since last CDR)																	
739 LUFKIN BIOMASS	LFBIO_UNIT1	ANGELINA	BIOMASS	NORTH	2012	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
740 Total Retiring Capacity						45.0											

Winter Fuel Types - ERCOT

Fuel type is based on the primary fuel. Capacity contribution of the wind resources is included at 20% for Non-Coastal and 42% for Coastal counties, while the solar capacity contribution is 8%. Private Use Network, Hydro and Non-Synchronous Tie resources are included based on the three-year average historical capability for each Summer Season's 20 peak load hours. 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. The Private Use Network capacity contribution is categorized as gas, except for the coal-fired Sandow 4 unit. Battery storage is assigned a zero MW capacity contribution to reflect the lack of sustained capability for the duration of the peak load hour.

Fuel_Type	Capacity_Pct	In MW				
		2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
Biomass	100%	199	199	199	199	199
Coal	100%	19,891	19,051	19,051	19,291	19,291
Gas	100%	54,565	55,430	56,758	57,838	58,198
Nuclear	100%	5,164	5,164	5,164	5,164	5,164
Other	100%	166	166	166	166	166
Hydro	78%	432	432	432	432	432
Wind	20%	3,806	4,805	5,078	5,110	5,110
Wind-C	42%	1,168	1,307	1,307	1,307	1,307
Solar	10%	122	146	168	168	168
Storage	0%	-	-	-	-	-
Total		85,512	86,698	88,322	89,674	90,034

Fuel_Type	In Percentages				
	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
Biomass	0.2%	0.2%	0.2%	0.2%	0.2%
Coal	23.3%	22.0%	21.6%	21.5%	21.4%
Gas	63.8%	63.9%	64.3%	64.5%	64.6%
Nuclear	6.0%	6.0%	5.8%	5.8%	5.7%
Other	0.2%	0.2%	0.2%	0.2%	0.2%
Hydro	0.5%	0.5%	0.5%	0.5%	0.5%
Wind	4.5%	5.5%	5.7%	5.7%	5.7%
Wind-C	1.4%	1.5%	1.5%	1.5%	1.5%
Solar	0.1%	0.2%	0.2%	0.2%	0.2%
Storage	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	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				
	2018	2019	2020	2021	2022
Planned Resource Category					
Commissioning Plan Submitted	2,554	2,554	2,554	2,554	2,554
Meets Planning Guide Sec. 6.9 Criteria (CDR-eligible plus Financial Security Posted and Notice-to-Proceed Given)	4,053	4,814	4,991	5,145	5,145
CDR-Eligible (signed IA, air permits received, proof of adequate water supplies provided)	5,452	7,777	9,001	9,479	9,479
Signed Interconnection Agreement with the TSP and Full Interconnection Study completed and accepted by ERCOT	7,459	10,379	10,664	10,988	10,988
Signed Interconnection Agreement with the TSP	8,721	14,069	15,997	16,475	16,475
Full Interconnection Study Requested	9,736	24,795	30,109	31,265	31,265

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-peak 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, 2023 Through Winter 2026/2027

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				
	2023	2024	2025	2026	2027
Load Forecast, MW:					
Summer Peak Demand (based on normal weather)	79,348	80,315	81,261	82,286	83,273
plus: Energy Efficiency Program Savings Forecast, per Utilities Code Section 39.905 (b-4)	663	663	663	663	663
Total Summer Peak Demand (before Reductions from Energy Efficiency Programs)	80,011	80,978	81,924	82,949	83,936
less: Load Resources providing Responsive Reserves	-1,191	-1,191	-1,191	-1,191	-1,191
less: Load Resources providing Non-Spinning Reserves	0	0	0	0	0
less: Emergency Response Service (10- and 30-min ramp products)	-1,743	-1,743	-1,743	-1,743	-1,743
less: TDSP Standard Offer Load Management Programs	-203	-203	-203	-203	-203
less Energy Efficiency Programs	-663	-663	-663	-663	-663
Firm Peak Load, MW	76,210	77,178	78,123	79,149	80,136
Resources, MW:					
Installed Capacity, Thermal/Hydro	66,450	66,450	66,450	66,450	66,450
Switchable Capacity, MW	3,706	3,706	3,706	3,706	3,706
less: Switchable Capacity Unavailable to ERCOT, MW	-544	-544	-544	-544	-544
Available Mothballed Capacity, MW	0	0	0	0	0
Capacity from Private Use Networks	4,147	4,147	4,147	4,147	4,147
Non-Coastal Wind, Peak Average Capacity Contribution (14%)	2,348	2,348	2,348	2,348	2,348
Coastal Wind, Peak Average Capacity Contribution (58%)	1,243	1,243	1,243	1,243	1,243
Solar Utility-Scale, Peak Average Capacity Contribution (77%)	603	603	603	603	603
RMR Capacity to be under Contract	0	0	0	0	0
Operational Generation Capacity, MW	77,953	77,953	77,953	77,953	77,953
Capacity Contribution - Non-Synchronous Ties, MW	425	425	425	425	425
Planned Thermal Resources with Signed IA, Air Permits and Water Rights, MW	6,280	6,280	6,280	6,280	6,280
Planned Non-Coastal Wind with Signed IA, Peak Average Capacity Contribution (12%)	1,225	1,225	1,225	1,225	1,225
Planned Coastal Wind with Signed IA, Peak Average Capacity Contribution (55%)	562	562	562	562	562
Planned Solar Utility-Scale, Peak Average Capacity Contribution (80%)	1,412	1,412	1,412	1,412	1,412
Total Capacity, MW	87,857	87,857	87,857	87,857	87,857
Reserve Margin	15.3%	13.8%	12.5%	11.0%	9.6%
(Total Resources - Firm Load Forecast) / Firm Load Forecast					

	Winter				
	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027
Load Forecast, MW:					
Winter Peak Demand (based on normal weather)	58,509	59,083	59,640	60,207	61,411
plus: Energy Efficiency Program Savings Forecast, per Utilities Code Section 39.905 (b-4)	663	663	663	663	663
Total Winter Peak Demand (before Reductions from Energy Efficiency Programs)	59,172	59,746	60,303	60,870	62,074
less: Load Resources providing Responsive Reserves	-1,348	-1,348	-1,348	-1,348	-1,348
less: Load Resources providing Non-Spinning Reserves	0	0	0	0	0
less: Emergency Response Service (10- and 30-min ramp products)	-1,146	-1,146	-1,146	-1,146	-1,146
less: TDSP Standard Offer Load Management Programs	0	0	0	0	0
less Energy Efficiency Programs	-663	-663	-663	-663	-663
Firm Peak Load, MW	56,016	56,590	57,146	57,713	58,917
Resources, MW:					
Installed Capacity, Thermal/Hydro	69,096	69,096	69,096	69,096	69,096
Switchable Capacity, MW	3,931	3,931	3,931	3,931	3,931
less: Switchable Capacity Unavailable to ERCOT, MW	-544	-544	-544	-544	-544
Available Mothballed Capacity, MW	0	0	0	0	0
Capacity from Private Use Networks	4,308	4,298	4,298	4,298	4,298
Non-Coastal Wind, Peak Average Capacity Contribution (20%)	3,354	3,354	3,354	3,354	3,354
Coastal Wind, Peak Average Capacity Contribution (35%)	900	900	900	900	900
Solar Utility-Scale, Peak Average Capacity Contribution (5%)	77	77	77	77	77
RMR Capacity to be under Contract	0	0	0	0	0
Operational Generation Capacity, MW	81,122	81,112	81,112	81,112	81,112
Capacity Contribution - Non-Synchronous Ties, MW	166	166	166	166	166
Planned Thermal Resources with Signed IA, Air Permits and Water Rights, MW	6,492	6,492	6,492	6,492	6,492
Planned Non-Coastal Wind with Signed IA, Peak Average Capacity Contribution (20%)	1,756	1,756	1,756	1,756	1,756
Planned Coastal Wind with Signed IA, Peak Average Capacity Contribution (35%)	407	407	407	407	407
Planned Solar Utility-Scale, Peak Average Capacity Contribution (5%)	180	180	180	180	180
Total Capacity, MW	90,122	90,112	90,112	90,112	90,112
Reserve Margin	60.9%	59.2%	57.7%	56.1%	52.9%
(Total Resources - Firm Load Forecast) / Firm Load Forecast					