

Release Date: September 6, 2018

**FINAL
Seasonal Assessment of Resource Adequacy for the ERCOT Region (SARA)
Fall 2018**

SUMMARY

The ERCOT Region is expected to have sufficient system-wide installed generating capacity to serve forecasted peak demands in the upcoming fall season (October- November 2018).

This SARA report includes a 58,619 MW fall peak load forecast, which is unchanged from the forecast used for the preliminary fall SARA report released in May 2018.

Relative to the preliminary fall SARA report, total resource capacity is lower by 702 MW. The drop is mainly due to a 470 MW coal unit that is now planned to be mothballed starting in October with an expected return to service between mid-May and mid-June 2019. There is also a delay in 300 MW of planned wind projects beyond the fall season. The fall capacity contribution for these wind projects is 108 MW.

Since the release of the preliminary fall SARA, two natural gas-fired power plants (568 MW fall seasonal capacity rating), one wind project (300 MW nameplate, 108 MW fall capacity contribution) and three solar projects (380 MW nameplate, 239 MW fall capacity contribution) have moved from planned to operational status.

This final fall SARA report includes a unit outage forecast of 14,335 MW developed from historical fall season outage data gathered since 2015. This outage forecast is unchanged from the one used for the preliminary fall SARA report.

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Forecasted Capacity and Demand

Operational Resources (thermal and hydro), MW	67,352	Based on current Seasonal Maximum Sustainable Limits reported through the unit registration process
Switchable Capacity Total, MW	3,722	Installed capacity of units that can interconnect with other Regions and are available to ERCOT
less Switchable Capacity Unavailable to ERCOT, MW	-789	Based on survey responses of Switchable Resource owners
Available Mothball Resources, MW	0	Based on seasonal Mothball units plus Probability of Return responses of Mothball Resource owners
Private Use Network Capacity Contribution, MW	2,475	Average capability of the top 20 hours in the fall peak seasons for the past three years (2015-2017)
Non-Coastal Wind Resources Capacity Contribution, MW	6,682	Based on 36% of installed capacity for non-coastal wind resources per ERCOT Nodal Protocols Section 3.2.6.2.2
Coastal Wind Resources Capacity Contribution, MW	1,074	Based on 41% of installed capacity for coastal wind resources per ERCOT Nodal Protocols Section 3.2.6.2.2
Solar Utility-Scale, Peak Average Capacity Contribution, MW	936	Based on 63% of installed capacity for solar resources per Nodal Protocols Section 3.2.6.2.2
RMR Resources to be under Contract, MW	0	
Capacity Pending Retirement	0	Announced retired capacity that is undergoing ERCOT grid reliability reviews pursuant to Nodal Protocol Section 3.14.1.2.
Non-Synchronous Ties Capacity Contribution, MW	19	Average capability of the top 20 hours in the fall peak seasons for the past three years (2015-2017)
Planned Thermal Resources with Signed IA, Air Permits and Adeq. Water Supplies, MW	130	Based on in-service dates provided by developers
Planned Non-Coastal Wind with signed IA , MW	130	Based on in-service dates provided by developers and 36% of installed capacity for non-coastal wind resources.
Planned Coastal Wind with signed IA , MW	0	Based on in-service dates provided by developers and 41% of installed capacity for coastal wind resources
Planned Solar Utility-Scale with signed IA, MW	5	Based on 63% of installed capacity for solar resources
[a] Total Resources, MW	81,734	
[b] Peak Demand, MW	58,619	Based on average peak weather conditions from 2002 – 2016
[c] Reserve Capacity [a - b], MW	23,115	

Range of Potential Risks

	Forecasted Season Peak Load / Typical Generation Outages	Forecasted Season Peak Load / Extreme Generation Outages	Extreme Season Peak Load / Typical Generation Outages	
Seasonal Load Adjustment	-	-	2,884	Based on fall 2014 weather
Typical Maintenance Outages	10,913	10,913	10,913	Based on historical average of planned outages for October through November weekdays (starting in 2015), and accounts for recent capacity rating changes for operational units
Typical Forced Outages, Thermal	3,422	3,422	3,422	Based on historical average of forced outages for October through November weekdays (starting in 2015), and accounts for recent capacity rating changes for operational units
90th Percentile Forced Outages, Thermal	-	1,668	-	Based on historical forced outages assuming a 90% confidence interval
[d] Total Uses of Reserve Capacity	14,335	16,003	17,219	
[e] Capacity Available for Operating Reserves (c-d), MW Less than 2,300 MW indicates risk of EEA1	8,780	7,112	5,896	

UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
673 SUNEDISON RABEL ROAD SOLAR		DG_VALL1_1UNIT	BEXAR	SOLAR	SOUTH	2012	9.9
674 SUNEDISON VALLEY ROAD SOLAR		DG_VALL2_1UNIT	BEXAR	SOLAR	SOUTH	2012	9.9
675 SUNEDISON CPS3 SOMERSET 1 SOLAR		DG_SOME1_1UNIT	BEXAR	SOLAR	SOUTH	2012	5.6
676 SUNEDISON SOMERSET 2 SOLAR		DG_SOME2_1UNIT	BEXAR	SOLAR	SOUTH	2012	5.0
677 WALNUT SPRINGS		DG_WLNTSPRG_1UNIT	BOSQUE	SOLAR	NORTH	2016	10.0
678 Operational Capacity Total (Solar)							1,485.4
679 Solar Peak Average Capacity Percentage		SOLAR_PEAK_PCT	%				63.0
680							-
681 Reliability Must-Run (RMR) Capacity		RMR_CAP_CONT		GAS			-
682							-
683 Capacity Pending Retirement		PENDRETIRE_CAP					-
684							-
685 Non-Synchronous Tie Resources							
686 EAST TIE		DC_E	FANNIN		NORTH		600.0
687 NORTH TIE		DC_N	WILBARGER		WEST		220.0
688 EAGLE PASS TIE		DC_S	MAVERICK		SOUTH		30.0
689 LAREDO VFT TIE		DC_L	WEBB		SOUTH		100.0
690 SHARYLAND RAILROAD TIE		DC_R	HIDALGO		SOUTH		150.0
691 SHARYLAND RAILROAD TIE 2		DC_R2	HIDALGO		SOUTH		150.0
692 Non-Synchronous Ties Total							1,250.0
693 Non-Synchronous Ties Capacity Contribution (Top 20 Hours)		DCTIE_CAP_CONT		OTHER			18.6
694							-
695 Planned Thermal Resources with Executed SGIA, Air Permit, GHG Permit and Proof of Adequate Water Supplies							
696 BETHEL CAES PROJECT	15INR0013		ANDERSON	GAS	NORTH	2020	-
697 FGE TEXAS I PROJECT	16INR0010		MITCHELL	GAS	WEST	2020	-
698 FRIENDSWOOD G	13INR0049		HARRIS	GAS	HOUSTON	2018	119.0
699 HALYARD HENDERSON	16INR0045		HENDERSON	GAS	NORTH	2021	-
700 HALYARD WHARTON ENERGY CENTER	16INR0044		WHARTON	GAS	SOUTH	2020	-
701 HUDSON (BRAZORIA ENERGY G)	16INR0076		BRAZORIA	GAS	COASTAL	2019	-
702 INDECK WHARTON ENERGY CENTER	15INR0023		WHARTON	GAS	SOUTH	2021	-
703 MIRAGE	17INR0022		HARRIS	GAS	HOUSTON	2018	11.0
704 PINECREST ENERGY CENTER PROJECT	16INR0006		ANGELINA	GAS	NORTH	2020	-
705 VICTORIA CITY (CITYVICT)	18INR0035		VICTORIA	GAS	SOUTH	2018	-
706 VICTORIA PORT (VICTPORT)	17INR0045		VICTORIA	GAS	SOUTH	2018	-
707 Planned Capacity Total (Coal, Gas & Storage)							130.0
708							-
709 Planned Wind Resources with Executed SGIA							
710 BLUE SUMMIT II	18INR0070		WILBARGER	WIND	WEST	2019	-
711 CABEZON WIND (RIO BRAVO I WIND)	17INR0005		STARR	WIND	SOUTH	2019	-
712 CACTUS FLATS WIND	16INR0086		CONCHO	WIND	WEST	2018	-
713 CANADIAN BREAKS WIND	13INR0026		OLDHAM	WIND	PANHANDLE	2019	-
714 COMANCHE RUN WIND	12INR0029		SWISHER	WIND	PANHANDLE	2019	-
715 COYOTE WIND	17INR0027b		SCURRY	WIND	WEST	2019	-
716 DARMSTADT	18INR0023		SCHLEICHER	WIND	WEST	2019	-
717 EASTER WIND	15INR0063		CASTRO	WIND	PANHANDLE	2020	-
718 EDMONDSON RANCH WIND	18INR0043		GLASSCOCK	WIND	WEST	2019	-
719 FLAT TOP WIND I	15INR0082		COMANCHE	WIND	NORTH	2018	200.0
720 FOARD CITY WIND	19INR0019		FOARD	WIND	WEST	2019	-
721 GOODNIGHT WIND	14INR0033		ARMSTRONG	WIND	PANHANDLE	2019	-
722 GOPHER CREEK WIND	18INR0067		SCURRY	WIND	WEST	2019	-
723 GRANDVIEW WIND 3 (CONWAY)	13INR0005c		CARSON	WIND	PANHANDLE	2019	-
724 HARALD (BEARKAT WIND B)	15INR0064b		GLASSCOCK	WIND	WEST	2019	-
725 RTS 2 WIND (HEART OF TEXAS WIND)	18INR0016		MCCULLOCH	WIND	SOUTH	2019	-
726 HIGH LONESOME W	19INR0038		CROCKETT	WIND	WEST	2019	-
727 WILSON RANCH (INFINITY LIVE OAK WIND)	12INR0060		SCHLEICHER	WIND	WEST	2018	-
728 BARROW RANCH (JUMBO HILL WIND)	18INR0038		ANDREWS	WIND	WEST	2019	-
729 KONTIKI 1 WIND	19INR0099a		GLASSCOCK	WIND	WEST	2019	-
730 KONTIKI 2 WIND	19INR0099b		GLASSCOCK	WIND	WEST	2020	-
731 S_HILLS WIND (LITTLE MOUNTAIN WIND)	12INR0055		BAYLOR	WIND	WEST	2019	-
732 LOCKETT WIND FARM	16INR0062b		WILBARGER	WIND	WEST	2019	-
733 LOMA PINTA WIND	16INR0112		LA SALLE	WIND	SOUTH	2019	-
734 LORAINA WINDPARK PHASE III	18INR0068		MITCHELL	WIND	WEST	2018	-
735 MARIAH DEL ESTE	13INR0010a		PARMER	WIND	PANHANDLE	2018	-
736 MESTENO WIND	16INR0081		STARR	WIND	SOUTH	2019	-
737 NORTHDRAW WIND	13INR0025		RANDALL	WIND	PANHANDLE	2019	-
738 OVEJA WIND	18INR0033		IRION	WIND	WEST	2019	-
739 PANHANDLE WIND 3	14INR0030c		CARSON	WIND	PANHANDLE	2020	-
740 PUMPKIN FARM WIND	16INR0037c		FLOYD	WIND	PANHANDLE	2019	-
741 RANCHERO WIND	20INR0011		CROCKETT	WIND	WEST	2019	-
742 RTS WIND	16INR0087		MCCULLOCH	WIND	SOUTH	2018	160.0
743 SAGE DRAW WIND	19INR0163		LYNN	WIND	WEST	2019	-
744 SCANDIA WIND DEF	13INR0010def		PARMER	WIND	PANHANDLE	2019	-
745 SILVER CANYON WIND A	12INR0002a		BRISCOE	WIND	PANHANDLE	2019	-
746 TAHOKA WIND (STAKED PLAINS WIND 1)	18INR0025		LYNN	WIND	WEST	2018	-
747 TORRECILLAS WIND	14INR0045		WEBB	WIND	SOUTH	2018	-
748 UNITY WIND	15INR0050		DEAF SMITH	WIND	PANHANDLE	2019	-
749 VERA WIND	19INR0051		KNOX	WIND	WEST	2019	-
750 WILDROSE WIND (SWISHER WIND)	13INR0038		SWISHER	WIND	PANHANDLE	2019	-
751 WKN AMADEUS WIND	14INR0009		KENT	WIND	WEST	2019	-
752 KARANKAWA 2 WIND FARM	19INR0074		SAN PATRICIO	WIND-C	COASTAL	2019	-
753 KARANKAWA WIND ALT A	18INR0014		SAN PATRICIO	WIND-C	COASTAL	2019	-
754 LAS MAJADAS WIND	17INR0035		WILLACY	WIND-C	COASTAL	2020	-
755 MIDWAY FARMS WIND	11INR0054		SAN PATRICIO	WIND-C	COASTAL	2018	-
756 PALMAS ALTAS WIND	17INR0037		CAMERON	WIND-C	COASTAL	2019	-
757 PATRIOT WIND (PETRONILLA)	11INR0062		NUECES	WIND-C	COASTAL	2019	-
758 PEYTON CREEK WIND	18INR0018		MATAGORDA	WIND-C	COASTAL	2019	-
759 STELLA 1 WIND	15INR0035		KENEDY	WIND-C	COASTAL	2018	-
760 Planned Capacity Total (Wind)							360.0
761							-
762 Planned Wind Capacity Sub-total (Non-Coastal Counties)		WIND_PLANNED_NC					360.0
763 Wind Peak Average Capacity Percentage (Non-Coastal)		WIND_PL_PLPEAK_PCT_NC	%				36.0
764							-
765 Planned Wind Capacity Sub-total (Coastal Counties)		WIND_PLANNED_C					-
766 Wind Peak Average Capacity Percentage (Coastal)		WIND_PL_PLPEAK_PCT_C	%				41.0
767							-
768 Planned Solar Resources with Executed SGIA							-

UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
769 ARAGORN SOLAR	19INR0088		CULBERSON	SOLAR	WEST	2019	-
770 BLUEBELL SOLAR (CAPRICORN RIDGE SOLAR)	16INR0019		COKE	SOLAR	WEST	2018	-
771 FS BARILLA SOLAR 1B [HOVEY_UNIT2]	12INR0059b		PECOS	SOLAR	WEST	2018	7.4
772 LAMESA SOLAR (PHASE II)	16INR0023b		DAWSON	SOLAR	WEST	2018	-
773 MISAE SOLAR	18INR0045		CHILDRESS	SOLAR	WEST	2019	-
774 NAZARETH SOLAR	16INR0049		CASTRO	SOLAR	PANHANDLE	2019	-
775 EMERALD GROVE SOLAR (PECOS SOLAR POWER I)	15INR0059		PECOS	SOLAR	WEST	2019	-
776 PFLUGERVILLE SOLAR	15INR0090		TRAVIS	SOLAR	SOUTH	2019	-
777 PHOEBE SOLAR	19INR0029		WINKLER	SOLAR	WEST	2019	-
778 PROSPERO SOLAR	19INR0092		ANDREWS	SOLAR	WEST	2019	-
779 RE MAPLEWOOD 2A SOLAR	17INR0020a		PECOS	SOLAR	WEST	2019	-
780 RE MAPLEWOOD 2B SOLAR	17INR0020b		PECOS	SOLAR	WEST	2019	-
781 RE MAPLEWOOD 2C SOLAR	17INR0020c		PECOS	SOLAR	WEST	2019	-
782 RE MAPLEWOOD 2D SOLAR	17INR0020d		PECOS	SOLAR	WEST	2020	-
783 RE MAPLEWOOD 2E SOLAR	17INR0020e		PECOS	SOLAR	WEST	2020	-
784 RES WINK SOLAR	18INR0022		WINKLER	SOLAR	WEST	2019	-
785 SODA LAKE SOLAR 1 AND 2	18INR0040		CRANE	SOLAR	WEST	2019	-
786 UPTON SOLAR	16INR0114		UPTON	SOLAR	WEST	2019	-
787 WAYMARK SOLAR	16INR0115		PECOS	SOLAR	WEST	2018	-
788 WEST OF PECOS SOLAR	14INR0044		REEVES	SOLAR	WEST	2019	-
789 Planned Capacity Total (Solar)							7.4
790 Solar Peak Average Capacity Percentage		SOLAR_PL_PEAK_PCT	%				63.0
791							
792 Seasonal Mothballed Resources							
793 N/A							
794 Total Seasonal Mothballed Capacity							-
795							
796 Mothballed Resources							
797 J T DEELY U1 (AS OF 12/31/2018)		CALAVERS_JTD1_M	BEXAR	COAL	SOUTH	1977	430.0
798 J T DEELY U2 (AS OF 12/31/2018)		CALAVERS_JTD2_M	BEXAR	COAL	SOUTH	1978	420.0
799 S R BERTRON U1 (SINCE 5/15/2013)		SRB_SR_B1	HARRIS	GAS	HOUSTON	1958	115.0
800 S R BERTRON U2 (SINCE 5/15/2013)		SRB_SR_B2	HARRIS	GAS	HOUSTON	1956	171.0
801 Total Mothballed Capacity							1,136.0

Note: Capacity changes due to planned repower projects are reflected in the operational units' ratings upon project completion.

Seasonal Assessment of Resource Adequacy for the ERCOT Region

Background

The Seasonal Assessment of Resource Adequacy (SARA) report is a deterministic approach to considering the impact of potential variables that may affect the sufficiency of installed resources to meet the peak electrical demand on the ERCOT System during a particular season.

The standard approach to assessing resource adequacy for one or more years into the future is to account for projected load and resources on a normalized basis and to require sufficient reserves (resources in excess of peak demand, on this normalized basis) to cover the uncertainty in peak demand and resource availability to meet a probabilistic reliability standard.

For seasonal assessments that look ahead less than a year, specific information may be available (such as seasonal climate forecasts or anticipated common-mode events such as drought) which can be used to consider the range of resource adequacy in a more deterministic manner.

The SARA report focuses on the availability of sufficient operating reserves to avoid emergency actions such as deployment of voluntary load reduction resources. It uses an operating reserve threshold of 2,300 MW to indicate the risk that an Energy Emergency Alert Level 1 (EEA1) may be triggered during the time of the forecasted seasonal peak load. This threshold level is intended to be roughly analogous to the 2,300 MW Physical Responsive Capability (PRC) threshold for EEA1. However, PRC is a real-time capability measure for Resources that can quickly respond to system disturbances. In contrast, the SARA operating reserve reflects additional capability assumed to be available before energy emergency procedures are initiated, such as from Resources qualified to provide non-spinning reserves. Additionally, the amount of operating reserves available may increase relative to what is included in the SARA report due to the market responding to wholesale market price increases and anticipated capacity scarcity conditions. Given these considerations, ERCOT believes that the 2,300 MW reserve capacity threshold is a reasonable indicator for the risk of Energy Emergency Alerts given the uncertainties in predicting system conditions months in advance.

The SARA report is intended to illustrate the range of resource adequacy outcomes that might occur. It serves as a situational awareness tool for ERCOT operational planning purposes, and helps fulfill the "extreme weather" resource adequacy assessment requirement per Public Utility Commission of Texas rule 25.362(i)(2)(H). In addition to a base scenario, several other scenarios are developed by varying the value of load forecast and resource availability parameters. The variation in these parameters is based on historic ranges of the parameter values or known changes expected in the near-term. The SARA report is not intended to indicate the likelihood of any of these scenario outcomes.