	UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	2015
660	VALLEY SES U1		VLSES_UNIT1	FANNIN	GAS	NORTH	1962	174.0
661	VALLEY SES U2		VLSES_UNIT2	FANNIN	GAS	NORTH	1967	520.0
662	VALLEY SES U3		VLSES_UNIT3	FANNIN	GAS	NORTH	1971	375.0
663	**Total Retiring Capacity**							**1,659.0**

Release Date: May 4, 2015

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 one-in-ten-years loss-of-load event criteria on a probabilistic basis.

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.

In contrast to the Capacity, Demand and Reserves (CDR) report, which addresses the sufficiency of planning reserves on an annual basis as described above, the SARA report focuses on the availability of sufficient operating reserves to avoid emergency actions such as deployment of voluntary load reduction resources. Consequently, load reduction resources included in the CDR report, such as Emergency Response Service (ERS) and Load Resources that provide operating reserves (LRs), are excluded from the SARA.

The SARA report is intended to illustrate the range of resource adequacy outcomes that might occur, and thus help fulfill the reporting requirement per Public Utility Commission of Texas rule 25.362(i)(2)(H). Several sensitivity analyses are developed by varying the value of certain parameters that affect resource adequacy. The variation in these parameters is based on historic values of these parameters or adjustments by any known or expected changes.

Release Date: November 2, 2015

FINAL
Seasonal Assessment of Resource Adequacy for the ERCOT Region
Winter 2015/2016

SUMMARY

The ERCOT Region is expected to have sufficient installed generating capacity to serve forecasted peak demands in the upcoming winter season (December 2015 - February 2016). Based on the results of this study, an extreme higher-than-normal number of forced generation outages occurring during a period of unusually high demand would be unlikely to result in insufficient resources being available to serve those demands. Even if those conditions coincide with extremely low temperatures and associated capacity reductions resulting from natural gas curtailments, current information indicates that there would be sufficient generation available on a systemwide basis.

This capacity outlook includes the same peak forecast used for the preliminary winter SARA report released September 1, 2015, reflecting our peak forecast expectations based on customer demand experienced during recent winter season cold-weather events and current expectations for average weather in the upcoming winter season. Total resource capacity also increased by nearly 1,100 MW relative to capacity reported in the preliminary winter SARA. The increase was due to the return to service of coal units previously in seasonal mothball status, as well as several wind and gas resources recategorized from planned to operational status.

ERCOT will continue to monitor the potential effect of future drought conditions on generation capacity and ongoing changes to environmental regulations.

Seasonal Assessment of Resource Adequacy for the ERCOT Region
Winter 2015/2016 - Final
Release Date: November 2, 2015

Forecasted Capacity and Demand

Operational Resources (excluding wind), MW	68,063	Based on current ratings reported through the unit registration process
Switchable Capacity Total, MW	3,702	Rated capacity of resources that can interconnect with other regions and are available to ERCOT
less Switchable Capacity Unavailable to ERCOT, MW	(470)	Based on survey responses of Switchable Resource owners
Mothball Resources, MW	0	Based on seasonal Mothball units plus Probability of Return responses of Mothball Resource owners
Private Use Network Capacity Contribution, MW	4,433	Average capability of the top 20 hours in the winter peak seasons for the past three years
Non-Coastal Wind Resources Capacity Contribution, MW	2,287	Based on 18% of rated capacity for non-coastal wind resources per Nodal Protocols Section 3.2.6.2.2
Coastal Wind Resources Capacity Contribution, MW	622	Based on 37% of rated capacity for coastal wind resources per Nodal Protocols Section 3.2.6.2.2
RMR Resources to be under Contract, MW	0	No RMR resources currently under contract
Non-Synchronous Ties Capacity Contribution, MW	371	Average capability of the top 20 hours in the winter peak seasons for the past three years
Planned Resources (not wind), MW	7	Based on projected dates provided by developers of generation resources
Planned Non-Coastal Wind, MW	189	Based on projected dates and 18% of rated capacity for non-coastal wind resources
Planned Coastal Wind, MW	136	Based on projected dates and 37% of rated capacity for coastal wind resources
[a] Total Resources, MW	79,341	
[b] Peak Demand, MW	57,400	Peak forecast is based on expected demand and weather conditions for winter 2015
[c] Reserve Capacity [a - b], MW	21,941	

Range of Potential Scenarios

	Forecasted Season Peak Load	Extreme Peak Load / Typical Generation Outages	Extreme Peak Load / Extreme Generation Outages
Peak Load Adjustment (1)	0	3,434	3,434
Typical Maintenance Outages (2)	4,061	4,061	4,061
Typical Forced Outages (2)	3,756	5,268 (3)	5,268 (3)
Extreme Forced Outages (4)	0	0	4,584
[d] Total Uses of Reserve Capacity	7,817	12,763	17,347
[e] Capacity Available for Operating Reserves (c-d), MW Less than 2,300 MW indicates risk of EEA1	14,124	9,178	4,594

(1) Winter Peak Load Extreme Forecast is 60,834 MW based on the 90th percentile level.
(2) Maintenance Outages and Forced Outages based on average of historical outage data for December, January and February weekdays, hours ending 7 am to 10 am (starting in 2010).
(3) Includes typical outages/derates due to natural gas curtailments during extreme peak load hours.
(4) Extreme Forced Outages include forecasted derates due to natural gas curtailments at low ambient temperatures during extreme peak load hours.

Unit Capacities - Winter

	UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
	Operational Resources							
4	COMANCHE PEAK U1		CPSES_UNIT1	SOMERVELL	NUCLEAR	NORTH	1990	1,235 0
5	COMANCHE PEAK U2		CPSES_UNIT2	SOMERVELL	NUCLEAR	NORTH	1993	1,225 0
6	SOUTH TEXAS U1		STP_STP_G1	MATAGORDA	NUCLEAR	COASTAL	1988	1,350 0
7	SOUTH TEXAS U2		STP_STP_G2	MATAGORDA	NUCLEAR	COASTAL	1989	1,354 0
8	BIG BROWN U1		BBSES_UNIT1	FREESTONE	COAL	NORTH	1971	606 0
9	BIG BROWN U2		BBSES_UNIT2	FREESTONE	COAL	NORTH	1972	602 0
10	COLETO CREEK		COLETO_COLETOG1	GOLIAD	COAL	SOUTH	1980	660 0
11	FAYETTE POWER U1		FPPYD1_FPP_G1	FAYETTE	COAL	SOUTH	1979	603 0
12	FAYETTE POWER U2		FPPYD1_FPP_G2	FAYETTE	COAL	SOUTH	1980	605 0
13	FAYETTE POWER U3		FPPYD2_FPP_G3	FAYETTE	COAL	SOUTH	1988	449 0
14	GIBBONS CREEK U1		GIBCRK_GIB_CRG1	GRIMES	COAL	NORTH	1983	470 0
15	J K SPRUCE U1		CALAVERS_JKS1	BEXAR	COAL	SOUTH	1992	560 0
16	J K SPRUCE U2	09INR0002	CALAVERS_JKS2	BEXAR	COAL	SOUTH	2010	775 0
17	J T DEELY U1		CALAVERS_JTD1	BEXAR	COAL	SOUTH	1977	420 0
18	J T DEELY U2		CALAVERS_JTD2	BEXAR	COAL	SOUTH	1978	420 0
19	LIMESTONE U1		LEG_LEG_G1	LIMESTONE	COAL	NORTH	1985	831 0
20	LIMESTONE U2		LEG_LEG_G2	LIMESTONE	COAL	NORTH	1986	858 0
21	MARTIN LAKE U3		MLSES_UNIT3	RUSK	COAL	NORTH	1979	820 0
22	MONTICELLO U1		MNSES_UNIT1	TITUS	COAL	NORTH	1974	580 0
23	MONTICELLO U2		MNSES_UNIT2	TITUS	COAL	NORTH	1975	580 0
24	MONTICELLO U3		MNSES_UNIT3	TITUS	COAL	NORTH	1978	795 0
25	OAK GROVE SES U1	09INR0006a	OGSES_UNIT1A	ROBERTSON	COAL	NORTH	2010	840 0
26	OAK GROVE SES U2	09INR0006b	OGSES_UNIT2	ROBERTSON	COAL	NORTH	2011	825 0
27	OKLAUNION U1		OKLA_OKLA_G1	WILBARGER	COAL	WEST	1986	650 0
28	SAN MIGUEL U1		SANMIGL_SANMIGG1	ATASCOSA	COAL	SOUTH	1982	391 0
29	SANDOW U5	08INR0003	SD5SES_UNIT5	MILAM	COAL	SOUTH	2010	600 0
30	SANDY CREEK U1		SCES_UNIT1	MCLENNAN	COAL	NORTH	2013	970 0
31	TWIN OAKS U1		TNP_ONE_TNP_O_1	ROBERTSON	COAL	NORTH	1990	158 0
32	TWIN OAKS U2		TNP_ONE_TNP_O_2	ROBERTSON	COAL	NORTH	1991	158 0
33	W A PARISH U5		WAP_WAP_G5	FT BEND	COAL	HOUSTON	1977	659 0
34	W A PARISH U6		WAP_WAP_G6	FT BEND	COAL	HOUSTON	1978	658 0
35	W A PARISH U7		WAP_WAP_G7	FT BEND	COAL	HOUSTON	1980	577 0
36	W A PARISH U8		WAP_WAP_G8	FT BEND	COAL	HOUSTON	1982	610 0
37	ARTHUR VON ROSENBERG 1 CTG 1	00INR0017	BRAUNIG_AVR1_CT1	BEXAR	GAS	SOUTH	2000	149 0
38	ARTHUR VON ROSENBERG 1 CTG 2	00INR0017	BRAUNIG_AVR1_CT2	BEXAR	GAS	SOUTH	2000	149 0
39	ARTHUR VON ROSENBERG 1 STG	00INR0017	BRAUNIG_AVR1_ST	BEXAR	GAS	SOUTH	2000	160 0
40	BARNEY M DAVIS REPOWER CTG 3	09INR0038	B_DAVIS_B_DAVIG3	NUECES	GAS	COASTAL	2010	165 0
41	BARNEY M DAVIS REPOWER CTG 4	09INR0038	B_DAVIS_B_DAVIG4	NUECES	GAS	COASTAL	2010	165 0
42	BARNEY M DAVIS REPOWER STG 2		B_DAVIS_B_DAVIG2	NUECES	GAS	COASTAL	1976	325 0
43	BASTROP ENERGY CENTER CTG 1	01INR0021	BASTEN_GTG1100	BASTROP	GAS	SOUTH	2002	167 0
44	BASTROP ENERGY CENTER CTG 2	01INR0021	BASTEN_GTG2100	BASTROP	GAS	SOUTH	2002	167 0
45	BASTROP ENERGY CENTER STG	01INR0021	BASTEN_ST0100	BASTROP	GAS	SOUTH	2002	234 0
46	BOSQUE ENERGY CENTER CTG 1	00INR0018	BOSQUESW_BSQSU_1	BOSQUE	GAS	NORTH	2000	170 9
47	BOSQUE ENERGY CENTER STG 4	00INR0028	BOSQUESW_BSQSU_4	BOSQUE	GAS	NORTH	2001	85 2
48	BOSQUE ENERGY CENTER CTG 2	00INR0018	BOSQUESW_BSQSU_2	BOSQUE	GAS	NORTH	2000	170 9
49	BOSQUE ENERGY CENTER CTG 3	00INR0018	BOSQUESW_BSQSU_3	BOSQUE	GAS	NORTH	2001	168.5
50	BOSQUE ENERGY CENTER STG 5	08INR0046	BOSQUESW_BSQSU_5	BOSQUE	GAS	NORTH	2009	226 7
51	BRAZOS VALLEY CTG 1	01INR0031	BVE_UNIT1	FORT BEND	GAS	HOUSTON	2003	168 0
52	BRAZOS VALLEY CTG 2	01INR0031	BVE_UNIT2	FORT BEND	GAS	HOUSTON	2003	168 0
53	BRAZOS VALLEY STG 3	01INR0031	BVE_UNIT3	FORT BEND	GAS	HOUSTON	2003	270 0
54	CALENERGY-FALCON SEABOARD CTG 1		FLCNS_UNIT1	HOWARD	GAS	WEST	1987	77 5
55	CALENERGY-FALCON SEABOARD CTG 2		FLCNS_UNIT2	HOWARD	GAS	WEST	1987	77.5
56	CALENERGY-FALCON SEABOARD STG 3		FLCNS_UNIT3	HOWARD	GAS	WEST	1988	74 0
57	CEDAR BAYOU 4 CTG 1	08INR0035	CBY4_CT41	CHAMBERS	GAS	HOUSTON	2009	173 0
58	CEDAR BAYOU 4 CTG 2	08INR0035	CBY4_CT42	CHAMBERS	GAS	HOUSTON	2009	173 0
59	CEDAR BAYOU 4 STG	08INR0035	CBY4_ST04	CHAMBERS	GAS	HOUSTON	2009	186 0
60	COLORADO BEND ENERGY CENTER CTG 1	06INR0035b	CBEC_GT1	WHARTON	GAS	SOUTH	2007	79 0
61	COLORADO BEND ENERGY CENTER CTG 2	06INR0035b	CBEC_GT2	WHARTON	GAS	SOUTH	2007	72 0
62	COLORADO BEND ENERGY CENTER STG 1	06INR0035b	CBEC_STG1	WHARTON	GAS	SOUTH	2007	102 0
63	COLORADO BEND ENERGY CENTER CTG 3	06INR0035a	CBEC_GT3	WHARTON	GAS	SOUTH	2008	77 0
64	COLORADO BEND ENERGY CENTER CTG 4	06INR0035a	CBEC_GT4	WHARTON	GAS	SOUTH	2008	73 0
65	COLORADO BEND ENERGY CENTER STG 2	06INR0035a	CBEC_STG2	WHARTON	GAS	SOUTH	2008	108 0
66	CVC CHANNELVIEW CTG 1	02INR0004	CVC_CVC_G1	HARRIS	GAS	HOUSTON	2008	191 0
67	CVC CHANNELVIEW CTG 2	02INR0004	CVC_CVC_G2	HARRIS	GAS	HOUSTON	2008	189 0
68	CVC CHANNELVIEW CTG 3	02INR0004	CVC_CVC_G3	HARRIS	GAS	HOUSTON	2008	189 0
69	CVC CHANNELVIEW STG 5	02INR0004	CVC_CVC_G5	HARRIS	GAS	HOUSTON	2008	146 0
70	DEER PARK ENERGY CENTER CTG 1	02INR0020	DDPEC_GT1	HARRIS	GAS	HOUSTON	2002	203 0
71	DEER PARK ENERGY CENTER CTG 2	02INR0020	DDPEC_GT2	HARRIS	GAS	HOUSTON	2002	215 0
72	DEER PARK ENERGY CENTER CTG 3	02INR0020	DDPEC_GT3	HARRIS	GAS	HOUSTON	2002	203 0
73	DEER PARK ENERGY CENTER CTG 4	02INR0020	DDPEC_GT4	HARRIS	GAS	HOUSTON	2002	215 0
74	DEER PARK ENERGY CENTER STG	02INR0020	DDPEC_ST1	HARRIS	GAS	HOUSTON	2002	290 0
75	DEER PARK ENERGY CENTER CTG 6	14INR0015	DDPEC_GT6	HARRIS	GAS	HOUSTON	2014	190 0
76	ENNIS POWER STATION CTG 2	01INR0008	ETCCS_CT1	ELLIS	GAS	NORTH	2002	231 0
77	ENNIS POWER STATION STG 1	01INR0008	ETCCS_UNIT1	ELLIS	GAS	NORTH	2002	127 0
78	FERGUSON REPLACEMENT CTG1	13INR0021	FERGCC_FERGGT1	LLANO	GAS	SOUTH	2014	186 1
79	FERGUSON REPLACEMENT CTG2	13INR0021	FERGCC_FERGGT2	LLANO	GAS	SOUTH	2014	186 1
80	FERGUSON REPLACEMENT STG	13INR0021	FERGCC_FERGST1	LLANO	GAS	SOUTH	2014	194 9
81	FORNEY ENERGY CENTER CTG 11	01INR0007	FRNYPP_GT11	KAUFMAN	GAS	NORTH	2003	192 0

Unit Capacities - Winter

	UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
82	FORNEY ENERGY CENTER CTG 12	01INR0007	FRNYPP_GT12	KAUFMAN	GAS	NORTH	2003	184 0
83	FORNEY ENERGY CENTER CTG 13	01INR0007	FRNYPP_GT13	KAUFMAN	GAS	NORTH	2003	184 0
84	FORNEY ENERGY CENTER CTG 21	01INR0007	FRNYPP_GT21	KAUFMAN	GAS	NORTH	2003	192 0
85	FORNEY ENERGY CENTER CTG 22	01INR0007	FRNYPP_GT22	KAUFMAN	GAS	NORTH	2003	184 0
86	FORNEY ENERGY CENTER CTG 23	01INR0007	FRNYPP_GT23	KAUFMAN	GAS	NORTH	2003	184 0
87	FORNEY ENERGY CENTER STG 10	01INR0007	FRNYPP_ST10	KAUFMAN	GAS	NORTH	2003	420 0
88	FORNEY ENERGY CENTER STG 20	01INR0007	FRNYPP_ST20	KAUFMAN	GAS	NORTH	2003	420 0
89	FREESTONE ENERGY CENTER CTG 1	01INR0009	FREC_GT1	FREESTONE	GAS	NORTH	2002	160 7
90	FREESTONE ENERGY CENTER CTG 2	01INR0009	FREC_GT2	FREESTONE	GAS	NORTH	2002	160 7
91	FREESTONE ENERGY CENTER STG 3	01INR0009	FREC_ST3	FREESTONE	GAS	NORTH	2002	179 8
92	FREESTONE ENERGY CENTER CTG 4	01INR0009	FREC_GT4	FREESTONE	GAS	NORTH	2002	161 1
93	FREESTONE ENERGY CENTER CTG 5	01INR0009	FREC_GT5	FREESTONE	GAS	NORTH	2002	161 1
94	FREESTONE ENERGY CENTER STG 6	01INR0009	FREC_ST6	FREESTONE	GAS	NORTH	2002	179 7
95	GUADALUPE ENERGY CENTER CTG 1	01INR0004	GUADG_GAS1	GUADALUPE	GAS	SOUTH	2000	167 0
96	GUADALUPE ENERGY CENTER CTG 2	01INR0004	GUADG_GAS2	GUADALUPE	GAS	SOUTH	2000	167 0
97	GUADALUPE ENERGY CENTER CTG 3	01INR0004	GUADG_GAS3	GUADALUPE	GAS	SOUTH	2000	167 0
98	GUADALUPE ENERGY CENTER CTG 4	01INR0004	GUADG_GAS4	GUADALUPE	GAS	SOUTH	2000	167 0
99	GUADALUPE ENERGY CENTER STG 5	01INR0004	GUADG_STM5	GUADALUPE	GAS	SOUTH	2000	203 0
100	GUADALUPE ENERGY CENTER STG 6	01INR0004	GUADG_STM6	GUADALUPE	GAS	SOUTH	2000	203 0
101	HAYS ENERGY FACILITY CSG 1	01INR0003	HAYSEN_HAYSENG1	HAYS	GAS	SOUTH	2002	237 0
102	HAYS ENERGY FACILITY CSG 2	01INR0003	HAYSEN_HAYSENG2	HAYS	GAS	SOUTH	2002	237 0
103	HAYS ENERGY FACILITY CSG 3	01INR0003	HAYSEN_HAYSENG3	HAYS	GAS	SOUTH	2002	247 0
104	HAYS ENERGY FACILITY CSG 4	01INR0003	HAYSEN_HAYSENG4	HAYS	GAS	SOUTH	2002	247 0
105	HIDALGO ENERGY CENTER CTG 1	00INR0006	DUKE_DUKE_GT1	HIDALGO	GAS	SOUTH	2000	150 0
106	HIDALGO ENERGY CENTER CTG 2	00INR0006	DUKE_DUKE_GT2	HIDALGO	GAS	SOUTH	2000	150 0
107	HIDALGO ENERGY CENTER STG	00INR0006	DUKE_DUKE_ST1	HIDALGO	GAS	SOUTH	2000	176 0
108	JACK COUNTY GEN FACILITY CTG 1	05INR0010	JACKCNTY_CT1	JACK	GAS	NORTH	2005	165 0
109	JACK COUNTY GEN FACILITY CTG 2	05INR0010	JACKCNTY_CT2	JACK	GAS	NORTH	2005	165 0
110	JACK COUNTY GEN FACILITY STG 1	05INR0010	JACKCNTY_STG	JACK	GAS	NORTH	2005	310 0
111	JACK COUNTY GEN FACILITY CTG 3	10INR0010	JCKCNTY2_CT3	JACK	GAS	NORTH	2011	165 0
112	JACK COUNTY GEN FACILITY CTG 4	10INR0010	JCKCNTY2_CT4	JACK	GAS	NORTH	2011	165 0
113	JACK COUNTY GEN FACILITY STG 2	10INR0010	JCKCNTY2_ST2	JACK	GAS	NORTH	2011	310 0
114	JOHNSON COUNTY GEN FACILITY CTG		TEN_CT1	JOHNSON	GAS	NORTH	1997	177 0
115	JOHNSON COUNTY GEN FACILITY STG		TEN_STG	JOHNSON	GAS	NORTH	1997	106 0
116	LAMAR ENERGY CENTER CTG 11	00INR0008	LPCCS_CT11	LAMAR	GAS	NORTH	2000	186 0
117	LAMAR ENERGY CENTER CTG 12	00INR0008	LPCCS_CT12	LAMAR	GAS	NORTH	2000	176 0
118	LAMAR ENERGY CENTER CTG 21	00INR0008	LPCCS_CT21	LAMAR	GAS	NORTH	2000	176 0
119	LAMAR ENERGY CENTER CTG 22	00INR0008	LPCCS_CT22	LAMAR	GAS	NORTH	2000	186 0
120	LAMAR ENERGY CENTER STG 1	00INR0008	LPCCS_UNIT1	LAMAR	GAS	NORTH	2000	204 0
121	LAMAR ENERGY CENTER STG 2	00INR0008	LPCCS_UNIT2	LAMAR	GAS	NORTH	2000	204 0
122	LOST PINES POWER CTG 1	02INR0005	LOSTPI_LOSTPGT1	BASTROP	GAS	SOUTH	2001	183 0
123	LOST PINES POWER CTG 2	02INR0005	LOSTPI_LOSTPGT2	BASTROP	GAS	SOUTH	2001	183 0
124	LOST PINES POWER STG	02INR0005	LOSTPI_LOSTPST1	BASTROP	GAS	SOUTH	2001	192 0
125	MAGIC VALLEY STATION CTG 1	00INR0009	NEDIN_NEDIN_G1	HIDALGO	GAS	SOUTH	2001	218 6
126	MAGIC VALLEY STATION CTG 2	00INR0009	NEDIN_NEDIN_G2	HIDALGO	GAS	SOUTH	2001	218 6
127	MAGIC VALLEY STATION STG	00INR0009	NEDIN_NEDIN_G3	HIDALGO	GAS	SOUTH	2001	257 9
128	MIDLOTHIAN ENERGY FACILITY CS 1	00INR0012	MDANP_CT1	ELLIS	GAS	NORTH	2001	240 0
129	MIDLOTHIAN ENERGY FACILITY CS 2	00INR0012	MDANP_CT2	ELLIS	GAS	NORTH	2001	240 0
130	MIDLOTHIAN ENERGY FACILITY CS 3	00INR0012	MDANP_CT3	ELLIS	GAS	NORTH	2001	240 0
131	MIDLOTHIAN ENERGY FACILITY CS 4	00INR0012	MDANP_CT4	ELLIS	GAS	NORTH	2001	240 0
132	MIDLOTHIAN ENERGY FACILITY CS 5	02INR0008	MDANP_CT5	ELLIS	GAS	NORTH	2002	257 0
133	MIDLOTHIAN ENERGY FACILITY CS 6	02INR0008	MDANP_CT6	ELLIS	GAS	NORTH	2002	257 0
134	NUECES BAY REPOWER CTG 8	09INR0039	NUECES_B_NUECESG8	NUECES	GAS	COASTAL	2010	165 0
135	NUECES BAY REPOWER CTG 9	09INR0039	NUECES_B_NUECESG9	NUECES	GAS	COASTAL	2010	165 0
136	NUECES BAY REPOWER STG 7		NUECES_B_NUECESG7	NUECES	GAS	COASTAL	1972	325 0
137	ODESSA-ECTOR POWER CTG 11	01INR0026	OECCS_CT11	ECTOR	GAS	WEST	2001	162 6
138	ODESSA-ECTOR POWER CTG 12	01INR0026	OECCS_CT12	ECTOR	GAS	WEST	2001	151.2
139	ODESSA-ECTOR POWER CTG 21	01INR0026	OECCS_CT21	ECTOR	GAS	WEST	2001	155 8
140	ODESSA-ECTOR POWER CTG 22	01INR0026	OECCS_CT22	ECTOR	GAS	WEST	2001	153 3
141	ODESSA-ECTOR POWER STG 1	01INR0026	OECCS_UNIT1	ECTOR	GAS	WEST	2001	216 0
142	ODESSA-ECTOR POWER STG 2	01INR0026	OECCS_UNIT2	ECTOR	GAS	WEST	2001	216 0
143	PANDA SHERMAN POWER CTG1	10INR0021	PANDA_S_SHER1CT1	GRAYSON	GAS	NORTH	2014	218 5
144	PANDA SHERMAN POWER CTG2	10INR0021	PANDA_S_SHER1CT2	GRAYSON	GAS	NORTH	2014	218 5
145	PANDA SHERMAN POWER STG	10INR0021	PANDA_S_SHER1ST1	GRAYSON	GAS	NORTH	2014	333 6
146	PANDA TEMPLE I POWER CTG1	10INR0020a	PANDA_T1_TMPL1CT1	BELL	GAS	NORTH	2014	218 5
147	PANDA TEMPLE I POWER CTG2	10INR0020a	PANDA_T1_TMPL1CT2	BELL	GAS	NORTH	2014	218 5
148	PANDA TEMPLE I POWER STG	10INR0020a	PANDA_T1_TMPL1ST1	BELL	GAS	NORTH	2014	333 6
149	PANDA TEMPLE II POWER CTG1	10INR0020b	PANDA_T2_TMPL2CT1	BELL	GAS	NORTH	2015	218 5
150	PANDA TEMPLE II POWER CTG2	10INR0020b	PANDA_T2_TMPL2CT2	BELL	GAS	NORTH	2015	218 5
151	PANDA TEMPLE II POWER STG	10INR0020b	PANDA_T2_TMPL2ST1	BELL	GAS	NORTH	2015	333 6
152	PARIS ENERGY CENTER CTG 1		TNSKA_GT1	LAMAR	GAS	NORTH	1989	87 0
153	PARIS ENERGY CENTER CTG 2		TNSKA_GT2	LAMAR	GAS	NORTH	1989	87 0
154	PARIS ENERGY CENTER STG		TNSKA_STG	LAMAR	GAS	NORTH	1990	89 0
155	PASADENA COGEN FACILITY CTG 2	00INR0014	PSG_PSG_GT2	HARRIS	GAS	HOUSTON	2000	176 0
156	PASADENA COGEN FACILITY CTG 3	00INR0014	PSG_PSG_GT3	HARRIS	GAS	HOUSTON	2000	176 0
157	PASADENA COGEN FACILITY STG 2	00INR0014	PSG_PSG_ST2	HARRIS	GAS	HOUSTON	2000	169 0
158	QUAIL RUN ENERGY CTG 1	06INR0036b	QALSW_GT1	ECTOR	GAS	WEST	2007	84 0
159	QUAIL RUN ENERGY CTG 2	06INR0036b	QALSW_GT2	ECTOR	GAS	WEST	2007	86 0
160	QUAIL RUN ENERGY STG 1	06INR0036b	QALSW_STG1	ECTOR	GAS	WEST	2007	98 0

Unit Capacities - Winter

	UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
161	QUAIL RUN ENERGY CTG 3	06INR0036a	QALSW_GT3	ECTOR	GAS	WEST	2008	81.0
162	QUAIL RUN ENERGY CTG 4	06INR0036a	QALSW_GT4	ECTOR	GAS	WEST	2008	81.0
163	QUAIL RUN ENERGY STG 2	06INR0036a	QALSW_STG2	ECTOR	GAS	WEST	2008	98.0
164	RIO NOGALES POWER CTG 1	02INR0001	RIONOG_CT1	GUADALUPE	GAS	SOUTH	2002	175.0
165	RIO NOGALES POWER CTG 2	02INR0001	RIONOG_CT2	GUADALUPE	GAS	SOUTH	2002	175.0
166	RIO NOGALES POWER CTG 3	02INR0001	RIONOG_CT3	GUADALUPE	GAS	SOUTH	2002	175.0
167	RIO NOGALES POWER STG 4	02INR0001	RIONOG_ST1	GUADALUPE	GAS	SOUTH	2002	323.0
168	SAM RAYBURN POWER CTG 7	03INR0014	RAYBURN_RAYBURG7	VICTORIA	GAS	SOUTH	2003	50.0
169	SAM RAYBURN POWER CTG 8	03INR0014	RAYBURN_RAYBURG8	VICTORIA	GAS	SOUTH	2003	51.0
170	SAM RAYBURN POWER CTG 9	03INR0014	RAYBURN_RAYBURG9	VICTORIA	GAS	SOUTH	2003	50.0
171	SAM RAYBURN POWER STG 10	03INR0014	RAYBURN_RAYBURG10	VICTORIA	GAS	SOUTH	2003	40.0
172	SANDHILL ENERGY CENTER CTG 5A	03INR0033	SANDHSYD_SH_5A	TRAVIS	GAS	SOUTH	2004	170.0
173	SANDHILL ENERGY CENTER STG 5C	03INR0033	SANDHSYD_SH_5C	TRAVIS	GAS	SOUTH	2004	160.0
174	SILAS RAY POWER STG 6		SILASRAY_SILAS_6	CAMERON	GAS	COASTAL	1962	21.0
175	SILAS RAY POWER CTG 9		SILASRAY_SILAS_9	CAMERON	GAS	COASTAL	1996	49.0
176	T H WHARTON POWER CTG 31		THW_THWGT31	HARRIS	GAS	HOUSTON	1972	57.0
177	T H WHARTON POWER CTG 32		THW_THWGT32	HARRIS	GAS	HOUSTON	1972	57.0
178	T H WHARTON POWER CTG 33		THW_THWGT33	HARRIS	GAS	HOUSTON	1972	57.0
179	T H WHARTON POWER CTG 34		THW_THWGT34	HARRIS	GAS	HOUSTON	1972	57.0
180	T H WHARTON POWER STG 3		THW_THWST_3	HARRIS	GAS	HOUSTON	1974	104.0
181	T H WHARTON POWER CTG 41		THW_THWGT41	HARRIS	GAS	HOUSTON	1972	57.0
182	T H WHARTON POWER CTG 42		THW_THWGT42	HARRIS	GAS	HOUSTON	1972	57.0
183	T H WHARTON POWER CTG 43		THW_THWGT43	HARRIS	GAS	HOUSTON	1974	57.0
184	T H WHARTON POWER CTG 44		THW_THWGT44	HARRIS	GAS	HOUSTON	1974	57.0
185	T H WHARTON POWER STG 4		THW_THWST_4	HARRIS	GAS	HOUSTON	1974	104.0
186	TEXAS CITY POWER CTG A		TXCTY_CTA	GALVESTON	GAS	HOUSTON	2000	102.4
187	TEXAS CITY POWER CTG B		TXCTY_CTB	GALVESTON	GAS	HOUSTON	2000	102.4
188	TEXAS CITY POWER CTG C		TXCTY_CTC	GALVESTON	GAS	HOUSTON	2000	102.4
189	TEXAS CITY POWER STG		TXCTY_ST	GALVESTON	GAS	HOUSTON	2000	131.5
190	VICTORIA POWER CTG 6	08INR0050	VICTORIA_VICTORG6	VICTORIA	GAS	SOUTH	2009	171.0
191	VICTORIA POWER STG 5	08INR0050	VICTORIA_VICTORG5	VICTORIA	GAS	SOUTH	1963	132.0
192	WICHITA FALLS CTG 1		WFCOGEN_UNIT1	WICHITA	GAS	WEST	1987	20.0
193	WICHITA FALLS CTG 2		WFCOGEN_UNIT2	WICHITA	GAS	WEST	1987	20.0
194	WICHITA FALLS CTG 3		WFCOGEN_UNIT3	WICHITA	GAS	WEST	1987	20.0
195	WICHITA FALLS STG 4		WFCOGEN_UNIT4	WICHITA	GAS	WEST	1987	16.0
196	WISE-TRACTEBEL POWER CTG 1	02INR0009	WCPP_CT1	WISE	GAS	NORTH	2004	275.0
197	WISE-TRACTEBEL POWER CTG 2	02INR0009	WCPP_CT2	WISE	GAS	NORTH	2004	275.0
198	WISE-TRACTEBEL POWER STG 1	02INR0009	WCPP_ST1	WISE	GAS	NORTH	2004	290.0
199	WOLF HOLLOW POWER CTG 1	01INR0015	WHCCS_CT1	HOOD	GAS	NORTH	2002	249.0
200	WOLF HOLLOW POWER CTG 2	01INR0015	WHCCS_CT2	HOOD	GAS	NORTH	2002	249.0
201	WOLF HOLLOW POWER STG	01INR0015	WHCCS_STG	HOOD	GAS	NORTH	2002	293.0
202	ATKINS CTG 7		ATKINS_ATKINSG7	BRAZOS	GAS	NORTH	1973	20.0
203	DANSBY CTG 2		DANSBY_DANSBYG2	BRAZOS	GAS	NORTH	2004	48.0
204	DANSBY CTG 3	09INR0072	DANSBY_DANSBYG3	BRAZOS	GAS	NORTH	2010	50.0
205	DECKER CREEK CTG 1		DECKER_DPGT_1	TRAVIS	GAS	SOUTH	1989	54.0
206	DECKER CREEK CTG 2		DECKER_DPGT_2	TRAVIS	GAS	SOUTH	1989	54.0
207	DECKER CREEK CTG 3		DECKER_DPGT_3	TRAVIS	GAS	SOUTH	1989	54.0
208	DECKER CREEK CTG 4		DECKER_DPGT_4	TRAVIS	GAS	SOUTH	1989	54.0
209	DECORDOVA CTG 1		DCSES_CT10	HOOD	GAS	NORTH	1990	80.0
210	DECORDOVA CTG 2		DCSES_CT20	HOOD	GAS	NORTH	1990	79.0
211	DECORDOVA CTG 3		DCSES_CT30	HOOD	GAS	NORTH	1990	78.0
212	DECORDOVA CTG 4		DCSES_CT40	HOOD	GAS	NORTH	1990	77.0
213	ECTOR COUNTY ENERGY CTG 1	14INR0039	ECEC_G1	ECTOR	GAS	WEST	2015	170.4
214	ECTOR COUNTY ENERGY CTG 2	14INR0039	ECEC_G2	ECTOR	GAS	WEST	2015	170.4
215	EXTEX LAPORTE GEN STN CTG 1	01INR0044	AZ_AZ_G1	HARRIS	GAS	HOUSTON	2009	45.0
216	EXTEX LAPORTE GEN STN CTG 2	01INR0044	AZ_AZ_G2	HARRIS	GAS	HOUSTON	2009	45.0
217	EXTEX LAPORTE GEN STN CTG 3	01INR0044	AZ_AZ_G3	HARRIS	GAS	HOUSTON	2009	45.0
218	EXTEX LAPORTE GEN STN CTG 4	01INR0044	AZ_AZ_G4	HARRIS	GAS	HOUSTON	2009	45.0
219	GREENS BAYOU CTG 73		GBY_GBYGT73	HARRIS	GAS	HOUSTON	1976	54.0
220	GREENS BAYOU CTG 74		GBY_GBYGT74	HARRIS	GAS	HOUSTON	1976	54.0
221	GREENS BAYOU CTG 81		GBY_GBYGT81	HARRIS	GAS	HOUSTON	1976	54.0
222	GREENS BAYOU CTG 82		GBY_GBYGT82	HARRIS	GAS	HOUSTON	1976	58.0
223	GREENS BAYOU CTG 83		GBY_GBYGT83	HARRIS	GAS	HOUSTON	1976	64.0
224	GREENS BAYOU CTG 84		GBY_GBYGT84	HARRIS	GAS	HOUSTON	1976	54.0
225	GREENVILLE IC ENGINE PLANT	10INR0070	STEAM_ENGINE_1	HUNT	GAS	NORTH	2010	8.4
226	GREENVILLE IC ENGINE PLANT	10INR0070	STEAM_ENGINE_2	HUNT	GAS	NORTH	2010	8.4
227	GREENVILLE IC ENGINE PLANT	10INR0070	STEAM_ENGINE_3	HUNT	GAS	NORTH	2010	8.4
228	LAREDO CTG 4	08INR0064	LARDVFTN_G4	WEBB	GAS	SOUTH	2008	97.4
229	LAREDO CTG 5	08INR0064	LARDVFTN_G5	WEBB	GAS	SOUTH	2008	94.4
230	LEON CREEK PEAKER CTG 1	04INR0009	LEON_CRK_LCPCT1	BEXAR	GAS	SOUTH	2004	48.0
231	LEON CREEK PEAKER CTG 2	04INR0009	LEON_CRK_LCPCT2	BEXAR	GAS	SOUTH	2004	48.0
232	LEON CREEK PEAKER CTG 3	04INR0009	LEON_CRK_LCPCT3	BEXAR	GAS	SOUTH	2004	48.0
233	LEON CREEK PEAKER CTG 4	04INR0009	LEON_CRK_LCPCT4	BEXAR	GAS	SOUTH	2004	48.0
234	MORGAN CREEK CTG 1		MGSES_CT1	MITCHELL	GAS	WEST	1988	81.0
235	MORGAN CREEK CTG 2		MGSES_CT2	MITCHELL	GAS	WEST	1988	81.0
236	MORGAN CREEK CTG 3		MGSES_CT3	MITCHELL	GAS	WEST	1988	81.0
237	MORGAN CREEK CTG 4		MGSES_CT4	MITCHELL	GAS	WEST	1988	81.0
238	MORGAN CREEK CTG 5		MGSES_CT5	MITCHELL	GAS	WEST	1988	81.0
239	MORGAN CREEK CTG 6		MGSES_CT6	MITCHELL	GAS	WEST	1988	81.0

Unit Capacities - Winter

	UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
240	PEARSALL IC ENGINE PLANT A	09INR0079a	PEARSAL2_AGR_A	FRIO	GAS	SOUTH	2012	50 6
241	PEARSALL IC ENGINE PLANT B	09INR0079a	PEARSAL2_AGR_B	FRIO	GAS	SOUTH	2012	50 6
242	PEARSALL IC ENGINE PLANT C	09INR0079b	PEARSAL2_AGR_C	FRIO	GAS	SOUTH	2012	50 6
243	PEARSALL IC ENGINE PLANT D	09INR0079b	PEARSAL2_AGR_D	FRIO	GAS	SOUTH	2012	50 6
244	PERMIAN BASIN CTG 1		PB2SES_CT1	WARD	GAS	WEST	1988	71 0
245	PERMIAN BASIN CTG 2		PB2SES_CT2	WARD	GAS	WEST	1988	71 0
246	PERMIAN BASIN CTG 3		PB2SES_CT3	WARD	GAS	WEST	1988	74 0
247	PERMIAN BASIN CTG 4		PB2SES_CT4	WARD	GAS	WEST	1990	75 0
248	PERMIAN BASIN CTG 5		PB2SES_CT5	WARD	GAS	WEST	1990	75 0
249	R W MILLER CTG 4		MIL_MILLERG4	PALO PINTO	GAS	NORTH	2000	115 0
250	R W MILLER CTG 5		MIL_MILLERG5	PALO PINTO	GAS	NORTH	2000	115 0
251	RAY OLINGER CTG 4	00INR0024	OLINGR_OLING_4	COLLIN	GAS	NORTH	2001	84 0
252	SAM RAYBURN CTG 1		RAYBURN_RAYBURG1	VICTORIA	GAS	SOUTH	1963	13 5
253	SAM RAYBURN CTG 2		RAYBURN_RAYBURG2	VICTORIA	GAS	SOUTH	1963	13 5
254	SAN JACINTO SES CTG 1		SJS_SJS_G1	HARRIS	GAS	HOUSTON	1995	81 0
255	SAN JACINTO SES CTG 2		SJS_SJS_G2	HARRIS	GAS	HOUSTON	1995	81 0
256	SANDHILL ENERGY CENTER CTG 1	01INR0041	SANDHSYD_SH1	TRAVIS	GAS	SOUTH	2001	48 0
257	SANDHILL ENERGY CENTER CTG 2	01INR0041	SANDHSYD_SH2	TRAVIS	GAS	SOUTH	2001	48 0
258	SANDHILL ENERGY CENTER CTG 3	01INR0041	SANDHSYD_SH3	TRAVIS	GAS	SOUTH	2001	48 0
259	SANDHILL ENERGY CENTER CTG 4	01INR0041	SANDHSYD_SH4	TRAVIS	GAS	SOUTH	2001	48 0
260	SANDHILL ENERGY CENTER CTG 6	09INR0045	SANDHSYD_SH6	TRAVIS	GAS	SOUTH	2010	48 0
261	SANDHILL ENERGY CENTER CTG 7	09INR0045	SANDHSYD_SH7	TRAVIS	GAS	SOUTH	2010	48 0
262	SILAS RAY CTG 10	04INR0014	SILASRAY_SILAS_10	CAMERON	GAS	COASTAL	2004	46 0
263	T H WHARTON CTG 51		THW_THWGT51	HARRIS	GAS	HOUSTON	1975	57 0
264	T H WHARTON CTG 52		THW_THWGT52	HARRIS	GAS	HOUSTON	1975	57 0
265	T H WHARTON CTG 53		THW_THWGT53	HARRIS	GAS	HOUSTON	1975	57 0
266	T H WHARTON CTG 54		THW_THWGT54	HARRIS	GAS	HOUSTON	1975	57 0
267	T H WHARTON CTG 55		THW_THWGT55	HARRIS	GAS	HOUSTON	1975	57 0
268	T H WHARTON CTG 56		THW_THWGT56	HARRIS	GAS	HOUSTON	1975	57 0
269	T H WHARTON CTG G1		THW_THWGT_1	HARRIS	GAS	HOUSTON	1967	13 0
270	TEXAS GULF SULPHUR		TGF_TGFGT_1	WHARTON	GAS	SOUTH	1985	89 0
271	V H BRAUNIG CTG 5	09INR0028	BRAUNIG_VHB6CT5	BEXAR	GAS	SOUTH	2009	48 0
272	V H BRAUNIG CTG 6	09INR0028	BRAUNIG_VHB6CT6	BEXAR	GAS	SOUTH	2009	48 0
273	V H BRAUNIG CTG 7	09INR0028	BRAUNIG_VHB6CT7	BEXAR	GAS	SOUTH	2009	48 0
274	V H BRAUNIG CTG 8	09INR0028	BRAUNIG_VHB6CT8	BEXAR	GAS	SOUTH	2009	47 0
275	W A PARISH CTG 1		WAP_WAPGT_1	FT BEND	GAS	HOUSTON	1967	13 0
276	W A PARISH - PETRA NOVA CTG	12INR0086	PNPI_GT2	FORT BEND	GAS	HOUSTON	2013	88 0
277	WINCHESTER POWER PARK CTG 1	09INR0027	WIPOPA_WPP_G1	FAYETTE	GAS	SOUTH	2009	46 0
278	WINCHESTER POWER PARK CTG 2	09INR0027	WIPOPA_WPP_G2	FAYETTE	GAS	SOUTH	2009	46 0
279	WINCHESTER POWER PARK CTG 3	09INR0027	WIPOPA_WPP_G3	FAYETTE	GAS	SOUTH	2009	46 0
280	WINCHESTER POWER PARK CTG 4	09INR0027	WIPOPA_WPP_G4	FAYETTE	GAS	SOUTH	2009	46 0
281	B M DAVIS STG U1		B_DAVIS_B_DAVIG1	NUECES	GAS	COASTAL	1974	330 0
282	CEDAR BAYOU STG U1		CBY_CBY_G1	CHAMBERS	GAS	HOUSTON	1970	745 0
283	CEDAR BAYOU STG U2		CBY_CBY_G2	CHAMBERS	GAS	HOUSTON	1972	749 0
284	DANSBY STG U1		DANSBY_DANSBYG1	BRAZOS	GAS	NORTH	1978	110 0
285	DECKER CREEK STG U1		DECKER_DPG1	TRAVIS	GAS	SOUTH	1971	320 0
286	DECKER CREEK STG U2		DECKER_DPG2	TRAVIS	GAS	SOUTH	1978	428 0
287	GRAHAM STG U1		GRSES_UNIT1	YOUNG	GAS	WEST	1960	234 0
288	GRAHAM STG U2		GRSES_UNIT2	YOUNG	GAS	WEST	1969	390 0
289	GREENS BAYOU STG U5		GBY_GBY_5	HARRIS	GAS	HOUSTON	1973	371 0
290	HANDLEY STG U3		HLSES_UNIT3	TARRANT	GAS	NORTH	1963	395 0
291	HANDLEY STG U4		HLSES_UNIT4	TARRANT	GAS	NORTH	1976	435 0
292	HANDLEY STG U5		HLSES_UNIT5	TARRANT	GAS	NORTH	1977	435 0
293	LAKE HUBBARD STG U1		LHSES_UNIT1	DALLAS	GAS	NORTH	1970	392 0
294	LAKE HUBBARD STG U2		LHSES_UNIT2A	DALLAS	GAS	NORTH	1973	523 0
295	MOUNTAIN CREEK STG U6		MCSES_UNIT6	DALLAS	GAS	NORTH	1956	122 0
296	MOUNTAIN CREEK STG U7		MCSES_UNIT7	DALLAS	GAS	NORTH	1958	118 0
297	MOUNTAIN CREEK STG U8		MCSES_UNIT8	DALLAS	GAS	NORTH	1967	568 0
298	O W SOMMERS STG U1		CALAVERS_OWS1	BEXAR	GAS	SOUTH	1972	420 0
299	O W SOMMERS STG U2		CALAVERS_OWS2	BEXAR	GAS	SOUTH	1974	410 0
300	PEARSALL STG U1		PEARSALL_PEARS_1	FRIO	GAS	SOUTH	1961	20 0
301	PEARSALL STG U2		PEARSALL_PEARS_2	FRIO	GAS	SOUTH	1961	24 0
302	PEARSALL STG U3		PEARSALL_PEARS_3	FRIO	GAS	SOUTH	1961	22 0
303	POWERLANE PLANT STG U1		STEAM1A_STEAM_1	HUNT	GAS	NORTH	1966	20 0
304	POWERLANE PLANT STG U2		STEAM_STEAM_2	HUNT	GAS	NORTH	1967	26 0
305	POWERLANE PLANT STG U3		STEAM_STEAM_3	HUNT	GAS	NORTH	1978	41 0
306	R W MILLER STG U1		MIL_MILLERG1	PALO PINTO	GAS	NORTH	2000	75 0
307	R W MILLER STG U2		MIL_MILLERG2	PALO PINTO	GAS	NORTH	2000	120 0
308	R W MILLER STG U3		MIL_MILLERG3	PALO PINTO	GAS	NORTH	2000	208 0
309	RAY OLINGER STG U1		OLINGR_OLING_1	COLLIN	GAS	NORTH	1967	78 0
310	RAY OLINGER STG U2		OLINGR_OLING_2	COLLIN	GAS	NORTH	1971	107 0
311	RAY OLINGER STG U3		OLINGR_OLING_3	COLLIN	GAS	NORTH	1975	146 0
312	SIM GIDEON STG U1		GIDEON_GIDEONG1	BASTROP	GAS	SOUTH	1965	130 0
313	SIM GIDEON STG U2		GIDEON_GIDEONG2	BASTROP	GAS	SOUTH	1968	135 0
314	SIM GIDEON STG U3		GIDEON_GIDEONG3	BASTROP	GAS	SOUTH	1972	340 0
315	SPENCER STG U4		SPNCER_SPNCE_4	DENTON	GAS	NORTH	1966	61 0
316	SPENCER STG U5		SPNCER_SPNCE_5	DENTON	GAS	NORTH	1973	61 0
317	STRYKER CREEK STG U1		SCSES_UNIT1A	CHEROKEE	GAS	NORTH	1958	167 0
318	STRYKER CREEK STG U2		SCSES_UNIT2	CHEROKEE	GAS	NORTH	1965	502 0

Unit Capacities - Winter

	UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
319	TRINIDAD STG U6		TRSES_UNIT6	HENDERSON	GAS	NORTH	1965	235.0
320	V H BRAUNIG STG U1		BRAUNIG_VHB1	BEXAR	GAS	SOUTH	1966	220.0
321	V H BRAUNIG STG U2		BRAUNIG_VHB2	BEXAR	GAS	SOUTH	1968	230.0
322	V H BRAUNIG STG U3		BRAUNIG_VHB3	BEXAR	GAS	SOUTH	1970	412.0
323	W A PARISH STG U1		WAP_WAP_G1	FT BEND	GAS	HOUSTON	1958	169.0
324	W A PARISH STG U2		WAP_WAP_G2	FT BEND	GAS	HOUSTON	1958	169.0
325	W A PARISH STG U3		WAP_WAP_G3	FT BEND	GAS	HOUSTON	1961	258.0
326	W A PARISH STG U4		WAP_WAP_G4	FT BEND	GAS	HOUSTON	1968	552.0
327	NACOGDOCHES POWER	09INR0007	NACPW_UNIT1	NACOGDOCHE	BIOMASS	NORTH	2012	105.0
328	LUFKIN BIOMASS	08INR0033	LFBIO_UNIT1	ANGELINA	BIOMASS	NORTH	2012	45.0
329	BIOENERGY AUSTIN WALZEM RD LFG		DG_WALZE_4UNITS	BEXAR	BIOMASS	SOUTH	2002	9.8
330	BIOENERGY TEXAS COVEL GARDENS LFG		DG_MEDIN_1UNIT	BEXAR	BIOMASS	SOUTH	2005	9.6
331	FORT WORTH METHANE LFG		DG_RDLML_1UNIT	TARRANT	BIOMASS	NORTH	2011	1.6
332	GRAND PRAIRIE LFG		DG_TRIRA_1UNIT	DALLAS	BIOMASS	NORTH	2015	4.0
333	MCKINNEY LFG		DG_MKNSW_2UNITS	COLLIN	BIOMASS	NORTH	2011	3.2
334	NELSON GARDENS LFG		DG_78252_4UNITS	BEXAR	BIOMASS	SOUTH	2013	4.2
335	SKYLINE LFG		DG_FERIS_4 UNITS	DALLAS	BIOMASS	NORTH	2007	6.4
336	TRINITY OAKS LFG		DG_KLBRG_1UNIT	DALLAS	BIOMASS	NORTH	2011	3.2
337	VIRIDIS ENERGY-ALVIN LFG		DG_AV_DG1	GALVESTON	BIOMASS	HOUSTON	2002	6.7
338	VIRIDIS ENERGY-HUMBLE LFG		DG_HB_DG1	HARRIS	BIOMASS	HOUSTON	2002	10.0
339	VIRIDIS ENERGY-LIBERTY LFG		DG_LB_DG1	HARRIS	BIOMASS	HOUSTON	2002	3.9
340	VIRIDIS ENERGY-TRINITY BAY LFG		DG_TRN_DG1	CHAMBERS	BIOMASS	HOUSTON	2002	3.9
341	WM RENEWABLE-AUSTIN LFG		DG_SPRIN_4UNITS	TRAVIS	BIOMASS	SOUTH	2007	6.4
342	WM RENEWABLE-DFW GAS RECOVERY LFG		DG_BIO2_4UNITS	DENTON	BIOMASS	NORTH	2009	6.4
343	WM RENEWABLE-BIOENERGY PARTNERS LFG		DG_BIOE_2UNITS	DENTON	BIOMASS	NORTH	1988	6.2
344	WM RENEWABLE-MESQUITE CREEK LFG		DG_FREIH_2UNITS	COMAL	BIOMASS	SOUTH	2011	3.2
345	WM RENEWABLE-WESTSIDE LFG		DG_WSTHL_3UNITS	PARKER	BIOMASS	NORTH	2010	4.8
346	NOTREES BATTERY FACILITY	12INR0076	NWF_NBS	WINKLER	STORAGE	WEST	2012	-
347	**Operational Capacity Total (Nuclear, Coal, Gas, Biomass)**							**68,013.6**
348								
349	**Operational Resources (Hydro)**							
350	AMISTAD HYDRO 1		AMISTAD_AMISTAG1	VAL VERDE	HYDRO	WEST	1983	37.9
351	AMISTAD HYDRO 2		AMISTAD_AMISTAG2	VAL VERDE	HYDRO	WEST	1983	37.9
352	AUSTIN HYDRO 1		AUSTPL_AUSTING1	TRAVIS	HYDRO	SOUTH	1940	8.0
353	AUSTIN HYDRO 2		AUSTPL_AUSTING2	TRAVIS	HYDRO	SOUTH	1940	9.0
354	BUCHANAN HYDRO 1		BUCHAN_BUCHANG1	LLANO	HYDRO	SOUTH	1938	16.0
355	BUCHANAN HYDRO 2		BUCHAN_BUCHANG2	LLANO	HYDRO	SOUTH	1938	16.0
356	BUCHANAN HYDRO 3		BUCHAN_BUCHANG3	LLANO	HYDRO	SOUTH	1950	17.0
357	DENISON DAM 1		DNDAM_DENISOG1	GRAYSON	HYDRO	NORTH	1944	40.0
358	DENISON DAM 2		DNDAM_DENISOG2	GRAYSON	HYDRO	NORTH	1948	40.0
359	FALCON HYDRO 1		FALCON_FALCONG1	STARR	HYDRO	SOUTH	1954	12.0
360	FALCON HYDRO 2		FALCON_FALCONG2	STARR	HYDRO	SOUTH	1954	12.0
361	FALCON HYDRO 3		FALCON_FALCONG3	STARR	HYDRO	SOUTH	1954	12.0
362	GRANITE SHOALS HYDRO 1		WIRTZ_WIRTZ_G1	BURNET	HYDRO	SOUTH	1951	29.0
363	GRANITE SHOALS HYDRO 2		WIRTZ_WIRTZ_G2	BURNET	HYDRO	SOUTH	1951	29.0
364	INKS HYDRO 1		INKSDA_INKS_G1	LLANO	HYDRO	SOUTH	1938	14.0
365	MARBLE FALLS HYDRO 1		MARBFA_MARBFAG1	BURNET	HYDRO	SOUTH	1951	21.0
366	MARBLE FALLS HYDRO 2		MARBFA_MARBFAG2	BURNET	HYDRO	SOUTH	1951	20.0
367	MARSHALL FORD HYDRO 1		MARSFO_MARSFOG1	TRAVIS	HYDRO	SOUTH	1941	36.0
368	MARSHALL FORD HYDRO 2		MARSFO_MARSFOG2	TRAVIS	HYDRO	SOUTH	1941	36.0
369	MARSHALL FORD HYDRO 3		MARSFO_MARSFOG3	TRAVIS	HYDRO	SOUTH	1941	29.0
370	WHITNEY DAM HYDRO		WND_WHITNEY1	BOSQUE	HYDRO	NORTH	1953	24.0
371	WHITNEY DAM HYDRO 2		WND_WHITNEY2	BOSQUE	HYDRO	NORTH	1953	24.0
372	ARLINGTON OUTLET HYDROELECTRIC FACILITY		DG_OAKHL_1UNIT	TARRANT	HYDRO	NORTH	2014	1.4
373	EAGLE PASS HYDRO		DG_EAGLE_HY_EAGLE_	MAVERICK	HYDRO	SOUTH	2005	9.6
374	GUADALUPE BLANCO RIVER AUTH-CANYON		DG_CANYHY_CANYHYG	COMAL	HYDRO	SOUTH	1989	6.0
375	GUADALUPE BLANCO RIVER AUTH-LAKEWOOD TAP		DG_LKWDT_2UNITS	GONZALES	HYDRO	SOUTH	1931	4.8
376	GUADALUPE BLANCO RIVER AUTH-MCQUEENEY		DG_MCQUE_5UNITS	GUADALUPE	HYDRO	SOUTH	1928	7.7
377	GUADALUPE BLANCO RIVER AUTH-SCHUMANSVILLE		DG_SCHUM_2UNITS	GUADALUPE	HYDRO	SOUTH	1928	3.6
378	LEWISVILLE HYDRO-CITY OF GARLAND		DG_LWSVL_1UNIT	DENTON	HYDRO	NORTH	1991	2.2
379	**Operational Capacity Total (Hydro)**							**555.1**
380	Hydro Capacity Contribution (Top 20 Hours)		HYDRO_CAP_CONT					52.0
381								
382	**Operational Resources (Solar)**							
383	ACACIA SOLAR	13DGR0001	ACACIA_UNIT_1	PRESIDIO	SOLAR	WEST	2012	10.0
384	FS BARILLA SOLAR-PECOS	12INR0059	HOVEY_UNIT1	PECOS	SOLAR	WEST	2014	22.0
385	OCI ALAMO 1 SOLAR	13INR0058	OCI_ALM1_UNIT1	BEXAR	SOLAR	SOUTH	2013	39.2
386	OCI ALAMO 4 SOLAR-BRACKETVILLE	14INR0024	ECLIPSE_UNIT1	KINNEY	SOLAR	SOUTH	2014	37.6
387	WEBBERVILLE SOLAR	10INR0082	WEBBER_S_WSP1	TRAVIS	SOLAR	SOUTH	2011	26.7
388	BLUE WING 1 SOLAR		DG_BROOK_1UNIT	BEXAR	SOLAR	SOUTH	2010	7.6
389	BLUE WING 2 SOLAR		DG_ELEM_1UNIT	BEXAR	SOLAR	SOUTH	2010	7.3
390	OCI ALAMO 2 SOLAR-ST HEDWIG		DG_STHWG_UNIT1	BEXAR	SOLAR	SOUTH	2014	4.4
391	OCI ALAMO 3-WALZEM SOLAR		DG_WALZM_UNIT1	BEXAR	SOLAR	SOUTH	2014	5.5
392	RENEWABLE ENERGY ALTERNATIVES-CCS1		DG_COSERVSS_CCS1	DENTON	SOLAR	NORTH	2015	2.0
393	SUNEDISON CPS3 SOMERSET 1 SOLAR		DG_SOME1_1UNIT	BEXAR	SOLAR	SOUTH	2012	5.6
394	SUNEDISON SOMERSET 2 SOLAR		DG_SOME2_1UNIT	BEXAR	SOLAR	SOUTH	2012	5.0
395	SUNEDISON RABEL ROAD SOLAR		DG_VALL1_1UNIT	BEXAR	SOLAR	SOUTH	2012	9.9
396	SUNEDISON VALLEY ROAD SOLAR		DG_VALL2_1UNIT	BEXAR	SOLAR	SOUTH	2012	9.9
397	**Operational Capacity Total (Solar)**							**192.7**

	UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
398	Solar Peak Average Capacity Percentage		SOLAR_PEAK_PCT	%				100 0
399								
400	Operational Capacity Unavailable due to Extended Outage or Derate		OPERATION_UNAVAIL		GAS			(195 0)
401	**Operational Capacity Total (Including Hydro & Solar)**		OPERATION_TOTAL					**68,063.3**
402								
403	**Switchable Resources**							
404	TENASKA KIAMICHI STATION 1CT101	03INR0012	KMCHI_1CT101	FANNIN	GAS	NORTH	2003	178 0
405	TENASKA KIAMICHI STATION 1CT201	03INR0012	KMCHI_1CT201	FANNIN	GAS	NORTH	2003	180 0
406	TENASKA KIAMICHI STATION 1ST	03INR0012	KMCHI_1ST	FANNIN	GAS	NORTH	2003	307 0
407	TENASKA KIAMICHI STATION 2CT101	03INR0012	KMCHI_2CT101	FANNIN	GAS	NORTH	2003	178 0
408	TENASKA KIAMICHI STATION 2CT201	03INR0012	KMCHI_2CT201	FANNIN	GAS	NORTH	2003	180 0
409	TENASKA KIAMICHI STATION 2ST	03INR0012	KMCHI_2ST	FANNIN	GAS	NORTH	2003	307 0
410	TENASKA FRONTIER STATION CTG 1	00PSR4	FTR_FTR_G1	GRIMES	GAS	NORTH	2000	180 0
411	TENASKA FRONTIER STATION CTG 2	00PSR4	FTR_FTR_G2	GRIMES	GAS	NORTH	2000	180 0
412	TENASKA FRONTIER STATION CTG 3	00PSR4	FTR_FTR_G3	GRIMES	GAS	NORTH	2000	180 0
413	TENASKA FRONTIER STATION STG 4	00PSR4	FTR_FTR_G4	GRIMES	GAS	NORTH	2000	400 0
414	TENASKA GATEWAY STATION CTG 1	01INR0019	TGCCS_CT1	RUSK	GAS	NORTH	2001	162 0
415	TENASKA GATEWAY STATION CTG 2	01INR0019	TGCCS_CT2	RUSK	GAS	NORTH	2001	179 0
416	TENASKA GATEWAY STATION CTG 3	01INR0019	TGCCS_CT3	RUSK	GAS	NORTH	2001	178 0
417	TENASKA GATEWAY STATION STG 4	01INR0019	TGCCS_UNIT4	RUSK	GAS	NORTH	2001	389 0
418	FRONTERA GENERATION CTG 1		FRONTERA_FRONTEG1	HIDALGO	GAS	SOUTH	1999	170 0
419	FRONTERA GENERATION CTG 2		FRONTERA_FRONTEG2	HIDALGO	GAS	SOUTH	1999	170 0
420	FRONTERA GENERATION STG		FRONTERA_FRONTEG3	HIDALGO	GAS	SOUTH	2000	184 0
421	**Switchable Capacity Total**							**3,702.0**
422								
423	Switchable Capacity Unavailable to ERCOT		SWITCH_UNAVAIL		GAS			(470 0)
424								
425	Available Mothball Capacity based on Owner's Return Probability		MOTH_AVAIL		COAL			-
426								
427	Private-Use Network Capacity Contribution (Top 20 Hours)		PUN_CAP_CONT		GAS			4,433 0
428								
429	**Wind Resources**							
430	ANACACHO WIND	12INR0072	ANACACHO_ANA	KINNEY	WIND	SOUTH	2012	99 8
431	BARTON CHAPEL WIND	06INR0021	BRTSW_BCW1	JACK	WIND	NORTH	2007	120 0
432	BLUE SUMMIT WIND 5	12INR0075	BLSUMMIT_BLSMT1_5	WILBARGER	WIND	WEST	2013	9 0
433	BLUE SUMMIT WIND 6	12INR0075	BLSUMMIT_BLSMT1_6	WILBARGER	WIND	WEST	2013	126.4
434	BOBCAT BLUFF WIND	08INR0049	BCATWIND_WIND_1	ARCHER	WIND	WEST	2012	150 0
435	BUFFALO GAP WIND 1	04INR0015	BUFF_GAP_UNIT1	TAYLOR	WIND	WEST	2006	120 6
436	BUFFALO GAP WIND 2_1	06INR0037	BUFF_GAP_UNIT2_1	TAYLOR	WIND	WEST	2007	115 5
437	BUFFALO GAP WIND 2_2	06INR0037	BUFF_GAP_UNIT2_2	TAYLOR	WIND	WEST	2007	117 0
438	BUFFALO GAP WIND 3	07INR0030	BUFF_GAP_UNIT3	TAYLOR	WIND	WEST	2008	170 2
439	BULL CREEK WIND U1	07INR0037	BULLCRK_WND1	BORDEN	WIND	WEST	2009	88 0
440	BULL CREEK WIND U2	07INR0037	BULLCRK_WND2	BORDEN	WIND	WEST	2009	90 0
441	CALLAHAN WIND	04INR0013	CALLAHAN_WND1	CALLAHAN	WIND	WEST	2004	114 0
442	CAMP SPRINGS WIND 1	06INR0038	CSEC_CSECG1	SCURRY	WIND	WEST	2007	130 5
443	CAMP SPRINGS WIND 2	07INR0040	CSEC_CSECG2	SCURRY	WIND	WEST	2007	120 0
444	CAPRICORN RIDGE WIND 1	07INR0018	CAPRIDGE_CR1	STERLING	WIND	WEST	2007	214 5
445	CAPRICORN RIDGE WIND 2	07INR0041	CAPRIDGE_CR3	STERLING	WIND	WEST	2008	186 0
446	CAPRICORN RIDGE WIND 3	07INR0041	CAPRIDGE_CR2	STERLING	WIND	WEST	2007	149 5
447	CAPRICORN RIDGE WIND 4	08INR0063	CAPRIDG4_CR4	COKE	WIND	WEST	2008	112 5
448	CEDRO HILL WIND 1	09INR0082	CEDROHIL_CHW1	WEBB	WIND	SOUTH	2010	75 0
449	CEDRO HILL WIND 2	09INR0082	CEDROHIL_CHW2	WEBB	WIND	SOUTH	2010	75 0
450	CHAMPION WIND	07INR0045d	CHAMPION_UNIT1	NOLAN	WIND	WEST	2008	126 5
451	DESERT SKY WIND 1		INDNENR_INDNENR	PECOS	WIND	WEST	2002	84 0
452	DESERT SKY WIND 2		INDNENR_INDNENR_2	PECOS	WIND	WEST	2002	76 5
453	ELBOW CREEK WIND	08INR0053	ELB_ELBCREEK	HOWARD	WIND	WEST	2008	118 7
454	FOREST CREEK WIND	05INR0019	MCDLD_FCW1	GLASSCOCK	WIND	WEST	2007	124 2
455	GOAT WIND	07INR0028	GOAT_GOATWIND	STERLING	WIND	WEST	2008	80 0
456	GOAT WIND 2	07INR0028b	GOAT_GOATWIN2	STERLING	WIND	WEST	2010	69 6
457	GOLDTHWAITE WIND 1	11INR0013	GWEC_GWEC_G1	MILLS	WIND	NORTH	2014	148 6
458	GRANDVIEW WIND 1 (CONWAY) GV1A	13INR0005a	GRANDVW1_GV1A	CARSON	WIND	PANHANDLE	2014	107 4
459	GRANDVIEW WIND 1 (CONWAY) GV1B	13INR0005a	GRANDVW1_GV1B	CARSON	WIND	PANHANDLE	2014	103 8
460	GREEN MOUNTAIN WIND (BRAZOS) U1	03INR0020	BRAZ_WND_WND1	SCURRY	WIND	WEST	2003	99 0
461	GREEN MOUNTAIN WIND (BRAZOS) U2	03INR0020	BRAZ_WND_WND2	SCURRY	WIND	WEST	2003	61.0
462	HACKBERRY WIND	04INR0011e	HWF_HWFG1	SHACKELFORD	WIND	WEST	2008	163 5
463	HEREFORD WIND G	13INR0059a	HRFDWIND_WIND_G	DEAF SMITH	WIND	PANHANDLE	2015	99 9
464	HEREFORD WIND V	13INR0059a	HRFDWIND_WIND_V	DEAF SMITH	WIND	PANHANDLE	2015	100 0
465	HORSE HOLLOW WIND 1	05INR0018b	H_HOLLOW_WND1	TAYLOR	WIND	WEST	2005	206 6
466	HORSE HOLLOW WIND 2	05INR0018a	HHOLLOW2_WIND1	TAYLOR	WIND	WEST	2006	158 0
467	HORSE HOLLOW WIND 3	06INR0040	HHOLLOW3_WND_1	TAYLOR	WIND	WEST	2006	208 0
468	HORSE HOLLOW WIND 4	06INR0040	HHOLLOW4_WND1	TAYLOR	WIND	WEST	2006	108 0
469	INADALE WIND	07INR0045b	INDL_INADALE1	NOLAN	WIND	WEST	2008	196 6
470	INDIAN MESA WIND	00INR0022	INDNNWP_INDNNWP	PECOS	WIND	WEST	2001	82 5
471	JUMBO ROAD WIND 1	13INR0059b	HRFDWIND_JRDWIND1	DEAF SMITH	WIND	PANHANDLE	2015	146.2
472	JUMBO ROAD WIND 2	13INR0059b	HRFDWIND_JRDWIND2	DEAF SMITH	WIND	PANHANDLE	2015	153.6
473	KEECHI WIND 138 KV JOPLIN	14INR0049_2	KEECHI_U1	JACK	WIND	NORTH	2014	110 0
474	KING MOUNTAIN WIND (NE)	00INR0025	KING_NE_KINGNE	UPTON	WIND	WEST	2001	79 3
475	KING MOUNTAIN WIND (NW)	00INR0025	KING_NW_KINGNW	UPTON	WIND	WEST	2001	79 3
476	KING MOUNTAIN WIND (SE)	00INR0025	KING_SE_KINGSE	UPTON	WIND	WEST	2001	40.3

Unit Capacities - Winter

	UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
477	KING MOUNTAIN WIND (SW)	00INR0025	KING_SW_KINGSW	UPTON	WIND	WEST	2001	79.3
478	LANGFORD WIND POWER	10INR0026	LGD_LANGFORD	TOM GREEN	WIND	WEST	2009	155.0
479	LOGANS GAP WIND I U1	13INR0050	LGW_UNIT1	COMANCHE	WIND	NORTH	2015	103.8
480	LOGANS GAP WIND I U2	13INR0050	LGW_UNIT2	COMANCHE	WIND	NORTH	2015	106.3
481	LONE STAR WIND 1 (MESQUITE)	04INR0011d	LNCRK_G83	SHACKELFORI	WIND	WEST	2006	200.0
482	LONE STAR WIND 2 (POST OAK) U1	04INR0011a	LNCRK2_G871	SHACKELFORI	WIND	WEST	2007	100.0
483	LONE STAR WIND 2 (POST OAK) U2	04INR0011a	LNCRK2_G872	SHACKELFORI	WIND	WEST	2007	100.0
484	LONGHORN WIND NORTH U1	14INR0023	LHORN_N_UNIT1	FLOYD	WIND	PANHANDLE	2015	100.0
485	LONGHORN WIND NORTH U2	14INR0023	LHORN_N_UNIT2	FLOYD	WIND	PANHANDLE	2015	100.0
486	LORAINE WINDPARK I	09INR0047	LONEWOLF_G1	MITCHELL	WIND	WEST	2009	49.5
487	LORAINE WINDPARK II	09INR0047	LONEWOLF_G2	MITCHELL	WIND	WEST	2009	51.0
488	LORAINE WINDPARK III	09INR0047	LONEWOLF_G3	MITCHELL	WIND	WEST	2011	25.5
489	LORAINE WINDPARK IV	09INR0047	LONEWOLF_G4	MITCHELL	WIND	WEST	2011	24.0
490	MESQUITE CREEK WIND 1	09INR0051	MESQCRK_WND1	DAWSON	WIND	WEST	2015	105.6
491	MESQUITE CREEK WIND 2	09INR0051	MESQCRK_WND2	DAWSON	WIND	WEST	2015	105.6
492	MIAMI WIND G1	14INR0012a	MIAM1_G1	GRAY	WIND	PANHANDLE	2014	144.3
493	MIAMI WIND G2	14INR0012a	MIAM1_G2	GRAY	WIND	PANHANDLE	2014	144.3
494	MCADOO WIND	08INR0028	MWEC_G1	DICKENS	WIND	PANHANDLE	2008	150.0
495	NOTREES WIND 1	07INR0005	NWF_NWF1	WINKLER	WIND	WEST	2009	92.6
496	NOTREES WIND 2	07INR0005	NWF_NWF2	WINKLER	WIND	WEST	2009	60.0
497	OCOTILLO WIND	04INR0017	OWF_OWF	HOWARD	WIND	WEST	2008	58.8
498	PANHANDLE WIND 1 U1	14INR0030a_2	PH1_UNIT1	CARSON	WIND	PANHANDLE	2014	109.2
499	PANHANDLE WIND 1 U2	14INR0030a_2	PH1_UNIT2	CARSON	WIND	PANHANDLE	2014	109.2
500	PANHANDLE WIND 2 U1	14INR0030b	PH2_UNIT1	CARSON	WIND	PANHANDLE	2014	94.2
501	PANHANDLE WIND 2 U2	14INR0030b	PH2_UNIT2	CARSON	WIND	PANHANDLE	2014	96.6
502	PANTHER CREEK WIND 1	07INR0022	PC_NORTH_PANTHER1	HOWARD	WIND	WEST	2008	142.5
503	PANTHER CREEK WIND 2	08INR0037	PC_SOUTH_PANTHER2	HOWARD	WIND	WEST	2008	115.5
504	PANTHER CREEK WIND 3	11INR0015	PC_SOUTH_PANTHER3	HOWARD	WIND	WEST	2009	199.5
505	PECOS WIND 1 (WOODWARD)	01INR0035	WOODWRD1_WOODWR	PECOS	WIND	WEST	2001	82.5
506	PECOS WIND 2 (WOODWARD)	01INR0035	WOODWRD2_WOODWR	PECOS	WIND	WEST	2001	77.2
507	PYRON WIND	07INR0045a	PYR_PYRON1	SCURRY	WIND	WEST	2008	249.0
508	RATTLESNAKE DEN WIND PHASE 1 G1	13INR0020a	RSNAKE_G1	GLASSCOCK	WIND	WEST	2015	104.3
509	RATTLESNAKE DEN WIND PHASE 1 G2	13INR0020a	RSNAKE_G2	GLASSCOCK	WIND	WEST	2015	103.0
510	RED CANYON WIND	05INR0017	RDCANYON_RDCNY1	BORDEN	WIND	WEST	2006	84.0
511	ROSCOE WIND	07INR0045e	TKWSW1_ROSCOE	NOLAN	WIND	WEST	2008	209.0
512	ROUTE 66 WIND	14INR0032a	ROUTE_66_WIND1	CARSON	WIND	PANHANDLE	2015	150.0
513	SAND BLUFF WIND	05INR0019	MCDLD_SBW1	GLASSCOCK	WIND	WEST	2008	90.0
514	SENATE WIND	08INR0011	SENATEWD_UNIT1	JACK	WIND	NORTH	2012	150.0
515	SHERBINO 1 WIND	06INR0012a	KEO_KEO_SM1	PECOS	WIND	WEST	2008	150.0
516	SHERBINO 2 WIND	06INR0012b	KEO_SHRBINO2	PECOS	WIND	WEST	2011	147.5
517	SILVER STAR WIND	03INR0034	FLTCK_SSI	EASTLAND	WIND	NORTH	2008	60.0
518	SNYDER WIND	04INR0020	ENAS_ENA1	SCURRY	WIND	WEST	2007	63.0
519	SOUTH TRENT WIND	07INR0029	STWF_T1	NOLAN	WIND	WEST	2008	98.2
520	SPINNING SPUR WIND TWO	13INR0048	SSPURTWO_WIND_1	OLDHAM	WIND	PANHANDLE	2014	161.0
521	SPINNING SPUR 3 [WIND 1]	14INR0053	SSPURTWO_SS3WIND1	OLDHAM	WIND	PANHANDLE	2015	96.0
522	SPINNING SPUR 3 [WIND 2]	14INR0053	SSPURTWO_SS3WIND2	OLDHAM	WIND	PANHANDLE	2015	98.0
523	STANTON WIND ENERGY	07INR0010	SWEC_G1	MARTIN	WIND	WEST	2008	120.0
524	STEPHENS RANCH WIND 1	12INR0034a	SRWE1_UNIT1	BORDEN	WIND	WEST	2014	211.2
525	STEPHENS RANCH WIND 2	12INR0034b	SRWE1_SRWE2	BORDEN	WIND	WEST	2015	164.7
526	SWEETWATER WIND 1	01INR0036	SWEETWND_WND1	NOLAN	WIND	WEST	2003	36.6
527	SWEETWATER WIND 2A	01INR0036	SWEETWN2_WND24	NOLAN	WIND	WEST	2006	15.9
528	SWEETWATER WIND 2B	01INR0036	SWEETWN2_WND2	NOLAN	WIND	WEST	2004	97.5
529	SWEETWATER WIND 3A	01INR0036	SWEETWN3_WND3A	NOLAN	WIND	WEST	2011	28.5
530	SWEETWATER WIND 3B	01INR0036	SWEETWN3_WND3B	NOLAN	WIND	WEST	2011	100.5
531	SWEETWATER WIND 4-5	07INR0023	SWEETWN4_WND5	NOLAN	WIND	WEST	2007	79.2
532	SWEETWATER WIND 4-4B	07INR0023	SWEETWN4_WND4B	NOLAN	WIND	WEST	2007	103.7
533	SWEETWATER WIND 4-4A	07INR0023	SWEETWN4_WND4A	NOLAN	WIND	WEST	2007	117.8
534	TEXAS BIG SPRING WIND a		SGMTN_SIGNALMT	HOWARD	WIND	WEST	1999	27.7
535	TEXAS BIG SPRING WIND b		SGMTN_SIGNALM2	HOWARD	WIND	WEST	1999	6.6
536	TRENT WIND	01INR0038	TRENT_TRENT	NOLAN	WIND	WEST	2001	150.0
537	TRINITY HILLS WIND 1	08INR0062	TRINITY_TH1_BUS1	YOUNG	WIND	WEST	2012	117.5
538	TRINITY HILLS WIND 2	08INR0062	TRINITY_TH1_BUS2	YOUNG	WIND	WEST	2012	107.5
539	TURKEY TRACK WIND	07INR0011	TTWEC_G1	NOLAN	WIND	WEST	2008	169.5
540	WEST TEXAS WIND		SW_MESA_SW_MESA	UPTON	WIND	WEST	1999	80.3
541	WHIRLWIND ENERGY	07INR0003	WEC_WECG1	FLOYD	WIND	PANHANDLE	2007	57.0
542	WHITETAIL WIND	11INR0091	EXGNWTL_WIND_1	WEBB	WIND	SOUTH	2012	91.0
543	WINDTHORST 2 WIND	13INR0057	WNDTHST2_UNIT1	ARCHER	WIND	WEST	2014	67.6
544	WKN MOZART WIND	09INR0061	MOZART_WIND_1	KENT	WIND	WEST	2012	30.0
545	WOLF RIDGE WIND	07INR0034	WHTTAIL_WR1	COOKE	WIND	NORTH	2008	112.5
546	TSTC WEST TEXAS WIND		DG_ROSC2_1UNIT	NOLAN	WIND	WEST	2008	2.0
547	WOLF FLATS WIND (WIND MGT)		DG_TURL_UNIT1	HALL	WIND	PANHANDLE	2007	1.0
548	**Operational Wind Capacity Sub-total (Non-Coastal Counties)**							**12,705.4**
549	Wind Peak Average Capacity Percentage (Non-Coastal)		WIND_PEAK_PCT_NC	%				18.0
550								
551	GULF WIND I	05INR0015a	TGW_T1	KENEDY	WIND-C	COASTAL	2010	141.6
552	GULF WIND II	05INR0015a	TGW_T2	KENEDY	WIND-C	COASTAL	2010	141.6
553	LOS VIENTOS WIND I	11INR0033	LV1_LV1A	WILLACY	WIND-C	COASTAL	2013	200.1
554	LOS VIENTOS WIND II	11INR0033	LV1_LV1B	WILLACY	WIND-C	COASTAL	2013	201.6
555	MAGIC VALLEY WIND (REDFISH) 1A	10INR0060	REDFISH_MV1A	WILLACY	WIND-C	COASTAL	2012	99.8

Unit Capacities - Winter

	UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
556	MAGIC VALLEY WIND (REDFISH) 1B	10INR0060	REDFISH_MV1B	WILLACY	WIND-C	COASTAL	2012	103.5
557	PAPALOTE CREEK WIND	08INR0012a	PAP1_PAP1	SAN PATRICIO	WIND-C	COASTAL	2009	179.9
558	PAPALOTE CREEK WIND II	08INR0012b	COTTON_PAP2	SAN PATRICIO	WIND-C	COASTAL	2010	200.1
559	PENASCAL WIND 1	06INR0022a	PENA_UNIT1	KENEDY	WIND-C	COASTAL	2009	160.8
560	PENASCAL WIND 2	06INR0022b	PENA_UNIT2	KENEDY	WIND-C	COASTAL	2009	141.6
561	PENASCAL WIND 3	06INR0022b	PENA3_UNIT3	KENEDY	WIND-C	COASTAL	2011	100.8
562	HARBOR WIND		DG_NUECE_6UNITS	NUECES	WIND-C	COASTAL	2012	9.0
563	**Operational Wind Capacity Sub-total (Coastal Counties)**							**1,680.4**
564	Wind Peak Average Capacity Percentage (Coastal)		WIND_PEAK_PCT_C	%				37.0
565								
566	**Operational Wind Capacity Total (All Counties)**		WIND_OPERATIONAL					**14,385.8**
567								
568	Reliability Must-Run (RMR) Capacity		RMR_CAP_CONT		GAS			-
569								
570	**Non-Synchronous Tie Resources**							
571	EAGLE PASS TIE		DC_S	MAVERICK		SOUTH		30.0
572	EAST TIE		DC_E	FANNIN		NORTH		600.0
573	LAREDO VFT TIE		DC_L	WEBB		SOUTH		100.0
574	NORTH TIE		DC_N	WILBARGER		WEST		220.0
575	SHARYLAND RAILROAD TIE		DC_R	HIDALGO		SOUTH		150.0
576	SHARYLAND RAILROAD TIE 2		DC_R2	HIDALGO		SOUTH		150.0
577	**Non-Synchronous Ties Total**							**1,250.0**
578	Non-Synchronous Ties Capacity Contribution (Top 20 Hours)		DCTIE_CAP_CONT		OTHER			371.4
579								
580	**Planned Resources with Executed SGIA, Air Permit, GHG Permit and Water Rights**							
581	TEXAS CLEAN ENERGY PROJECT	13INR0023		ECTOR	COAL	WEST	2018	-
582	FGE TEXAS I PROJECT	16INR0010		MITCHELL	GAS	WEST	2017	-
583	GSEC ANTELOPE 1-3 IC & ELK 1 CTG (SWITCHABLE)	13INR0028		HALE	GAS	PANHANDLE	2016	-
584	LA PALOMA ENERGY CENTER PROJECT	16INR0004		CAMERON	GAS	COASTAL	2018	-
585	PHR PEAKERS [BAC_CTG1-6]	14INR0038		GALVESTON	GAS	HOUSTON	2016	-
586	SKY GLOBAL POWER ONE	16INR0057		COLORADO	GAS	SOUTH	2016	-
587	INDECK WHARTON ENERGY CENTER	15INR0023		WHARTON	GAS	SOUTH	2017	-
588	PONDERA KING PROJECT	10INR0022		HARRIS	GAS	HOUSTON	2017	-
589	PINECREST ENERGY CENTER PROJECT	16INR0006		ANGELINA	GAS	NORTH	2017	-
590	STEC RED GATE IC PLANT	14INR0040		HIDALGO	GAS	SOUTH	2016	-
591	GSEC ELK STATION CTG 2 (SWITCHABLE)	15INR0032		HALE	GAS	PANHANDLE	2016	-
592	GSEC ELK STATION CTG 3	15INR0033		HALE	GAS	PANHANDLE	2016	-
593	BETHEL CAES	15INR0013		ANDERSON	STORAGE	NORTH	2018	-
594	**Planned Capacity Total (Coal, Gas & Storage)**							-
595								
596	**Planned Solar Resources with Executed SGIA**							
597	FS BARILLA SOLAR 1B [HOVEY_UNIT2]	12INR0059b		PECOS	SOLAR	WEST	2015	7.4
598	FS BARILLA SOLAR 2	12INR0059c		PECOS	SOLAR	WEST	2016	-
599	OCI ALAMO 5 (DOWNIE RANCH) [HELIOS_UNIT1]	15INR0036		UVALDE	SOLAR	SOUTH	2015	-
600	RE ROSEROCK SOLAR	16INR0048		PECOS	SOLAR	WEST	2016	-
601	OCI ALAMO 6 (WEST TEXAS)	15INR0070_1		PECOS	SOLAR	WEST	2016	-
602	OCI ALAMO 6 (WEST TEXAS PHASE II)	15INR0070_1b		PECOS	SOLAR	WEST	2016	-
603	SE BUCKTHORN WESTEX SOLAR (OAK)	15INR0045		PECOS	SOLAR	WEST	2017	-
604	FS EAST PECOS SOLAR	16INR0073		PECOS	SOLAR	WEST	2016	-
605	OCI ALAMO 7 (PAINT CREEK)	16INR0052		HASKELL	SOLAR	WEST	2016	
606	LC NAZARETH SOLAR	16INR0049		CASTRO	SOLAR	PANHANDLE	2016	
607	PECOS SOLAR POWER I	15INR0059		PECOS	SOLAR	WEST	2017	
608	BNB LAMESA SOLAR	16INR0023		DAWSON	SOLAR	WEST	2016	-
609	CAPRICORN RIDGE SOLAR	16INR0019		COKE	SOLAR	WEST	2016	-
610	UPCO POWER 1 (SP-TX-12)	16INR0065		UPTON	SOLAR	WEST	2016	-
611	**Planned Capacity Total (Solar)**							**7.4**
612								
613	**Planned Wind Resources with Executed SGIA**							
614	GUNSIGHT MOUNTAIN WIND	08INR0018		HOWARD	WIND	WEST	2016	-
615	BAFFIN WIND [BAFFIN_UNIT1-2]	06INR0022c		KENEDY	WIND-C	COASTAL	2015	202.0
616	MIDWAY FARMS WIND	11INR0054		SAN PATRICIO	WIND-C	COASTAL	2016	-
617	LONGHORN WIND SOUTH	14INR0023b		BRISCOE	WIND	PANHANDLE	2016	-
618	MARIAH WIND A	13INR0010a		PARMER	WIND	PANHANDLE	2016	-
619	MARIAH WIND B	13INR0010b		PARMER	WIND	PANHANDLE	2016	-
620	MIAMI WIND 1B	14INR0012b		GRAY	WIND	PANHANDLE	2016	-
621	SHANNON WIND [SHANNONW_UNIT_1]	11INR0079a		CLAY	WIND	WEST	2015	200.0
622	SENDERO WIND ENERGY [EXGNSND_WIND_1]	12INR0068		JIM HOGG	WIND	SOUTH	2015	-
623	RATTLESNAKE DEN WIND 2	13INR0020b		GLASSCOCK	WIND	WEST	2017	-
624	PATRIOT WIND (PETRONILLA)	11INR0062		NUECES	WIND-C	COASTAL	2016	-
625	COMANCHE RUN WIND	12INR0029		SWISHER	WIND	PANHANDLE	2016	-
626	CAMERON COUNTY WIND [CAMWIND_UNIT1]	11INR0057		CAMERON	WIND-C	COASTAL	2015	165.0
627	LOS VIENTOS III WIND [LV3_UNIT_1]	13INR0052		STARR	WIND	SOUTH	2015	200.0
628	PAMPA WIND	12INR0018		GRAY	WIND	PANHANDLE	2017	-
629	GREEN PASTURES WIND [GPASTURE_WIND_I & II]	12INR0070		KNOX	WIND	WEST	2015	300.0
630	SOUTH PLAINS WIND I [SPLAIN1_WIND1-2]	14INR0025a		FLOYD	WIND	PANHANDLE	2015	200.0
631	SOUTH PLAINS WIND II	14INR0025b		FLOYD	WIND	PANHANDLE	2016	-
632	SOUTH PLAINS WIND III	14INR0025c		FLOYD	WIND	PANHANDLE	2016	-
633	BRISCOE WIND [BRISCOE_WIND]	14INR0072		BRISCOE	WIND	PANHANDLE	2015	150.0
634	WAKE WIND	14INR0047		DICKENS	WIND	PANHANDLE	2016	-

Unit Capacities - Winter

UNIT NAME	GENERATION INTERCONNECTION PROJECT CODE	UNIT CODE	COUNTY	FUEL	ZONE	START YEAR	CAPACITY (MW)
635 DOUG COLBECK'S CORNER (CONWAY)	13INR0005b		CARSON	WIND	PANHANDLE	2016	-
636 GRANDVIEW WIND 3 (CONWAY)	13INR0005c		CARSON	WIND	PANHANDLE	2016	-
637 SCANDIA WIND D	13INR0010d		PARMER	WIND	PANHANDLE	2017	-
638 SCANDIA WIND E	13INR0010e		PARMER	WIND	PANHANDLE	2017	-
639 SCANDIA WIND F	13INR0010f		PARMER	WIND	PANHANDLE	2017	-
640 PULLMAN ROAD WIND	15INR0079		RANDALL	WIND	PANHANDLE	2016	-
641 PANHANDLE WIND 3	14INR0030c		CARSON	WIND	PANHANDLE	2016	-
642 SALT FORK WIND	14INR0062		GRAY	WIND	PANHANDLE	2016	-
643 LOS VIENTOS IV WIND	15INR0037		STARR	WIND	SOUTH	2016	-
644 LOS VIENTOS V WIND [LV5_UNIT_1]	15INR0021		STARR	WIND	SOUTH	2015	-
645 PALO DURO WIND	15INR0050		DEAF SMITH	WIND	PANHANDLE	2016	-
646 JAVELINA WIND [BORDAS_JAVEL18 & 20]	13INR0055		ZAPATA	WIND	SOUTH	2015	-
647 CAPROCK WIND	10INR0009		CASTRO	WIND	PANHANDLE	2017	-
648 SAN ROMAN WIND	14INR0013		CAMERON	WIND-C	COASTAL	2016	-
649 TORRECILLAS WIND A	14INR0045a		WEBB	WIND	SOUTH	2016	-
650 TORRECILLAS WIND B	14INR0045b		WEBB	WIND	SOUTH	2016	-
651 CHANGING WINDS	13INR0045		CASTRO	WIND	PANHANDLE	2016	-
652 ELECTRA WIND	16INR0062		WILBARGER	WIND	WEST	2016	-
653 HORSE CREEK WIND	14INR0060		HASKELL	WIND	WEST	2016	-
654 WILLOW SPRINGS WIND	14INR0060b		HASKELL	WIND	WEST	2016	-
655 MUENSTER WIND	15INR0085		COOKE	WIND	NORTH	2016	-
656 HAPPY WHITEFACE WIND	15INR0074		DEAF SMITH	WIND	PANHANDLE	2016	-
657 CHAPMAN RANCH WIND I	16INR0055		NUECES	WIND-C	COASTAL	2016	-
658 HIDALGO & STARR WIND	16INR0024		HIDALGO	WIND	SOUTH	2016	-
659 BLANCO CANYON WIND (COTTON PLAINS)	16INR0037		FLOYD	WIND	PANHANDLE	2016	-
660 BLANCO CANYON WIND (OLD SETTLER)	16INR0037b		FLOYD	WIND	PANHANDLE	2016	
661 ROCK SPRINGS VAL VERDE WIND	11INR0082a		VAL VERDE	WIND	WEST	2016	
662 MAGIC VALLEY WIND II (REDFISH 2A)	14INR0041a		WILLACY	WIND-C	COASTAL	2016	
663 MAGIC VALLEY WIND II (REDFISH 2B)	14INR0041b		WILLACY	WIND-C	COASTAL	2016	
664 SALT FORK WIND 2	16INR0082		CARSON	WIND	PANHANDLE	2016	-
665 SWISHER WIND	13INR0038		SWISHER	WIND	PANHANDLE	2016	-
666 BUCKTHORN WIND 1	14INR0057		ERATH	WIND	NORTH	2016	-
667 BUCKTHORN WIND 2	14INR0057b		ERATH	WIND	NORTH	2016	-
668 **Planned Capacity Total (Wind)**							**1,417 0**
669							
670 Planned Wind Capacity Sub-total (Non-Coastal Counties)		WIND_PLANNED_NC					1,050 0
671 Wind Peak Average Capacity Percentage (Non-Coastal)		WIND_PEAK_PCT_NC	%				18 0
672							
673 Planned Wind Capacity Sub-total (Coastal Counties)		WIND_PLANNED_C					367 0
674 Wind Peak Average Capacity Percentage (Coastal)		WIND_PEAK_PCT_C	%				37 0
675							
676 **Seasonal Mothballed Resources**							
677 MARTIN LAKE U1 (SEASONAL MOTHBALL)		MLSES_UNIT1_M	RUSK	COAL	NORTH	2016	815 0
678 MARTIN LAKE U2		MLSES_UNIT2	RUSK	COAL	NORTH	1978	820 0
679 **Total Seasonal Mothballed Capacity**							**1,635.0**
680							
681 **Mothballed Resources**							
682 J T DEELY U1 (MOTHBALLED)		CALAVERS_JTD1_M	BEXAR	COAL	SOUTH	2018	-
683 J T DEELY U2 (MOTHBALLED)		CALAVERS_JTD2_M	BEXAR	COAL	SOUTH	2018	-
684 SILAS RAY CTG 5 (RETIRES 3/5/2016)		SILASRAY_SILAS_5	CAMERON	GAS	COASTAL	1953	10 0
685 S R BERTRON CTG 2		SRB_SRBGT_2	HARRIS	GAS	HOUSTON	1967	13 0
686 S R BERTRON U1		SRB_SRB_G1	HARRIS	GAS	HOUSTON	1958	118 0
687 S R BERTRON U2		SRB_SRB_G2	HARRIS	GAS	HOUSTON	1956	174 0
688 S R BERTRON U3		SRB_SRB_G3	HARRIS	GAS	HOUSTON	1959	211 0
689 S R BERTRON U4		SRB_SRB_G4	HARRIS	GAS	HOUSTON	1960	211 0
690 **Total Mothballed Capacity**							**737.0**

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 one-in-ten-years loss-of-load event criteria on a probabilistic basis.

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.

In contrast to the Capacity, Demand and Reserves (CDR) report, which addresses the sufficiency of planning reserves on an annual basis as described above, the SARA report focuses on the availability of sufficient operating reserves to avoid emergency actions such as deployment of voluntary load reduction resources. Consequently, load reduction resources included in the CDR report, such as Emergency Response Service (ERS) and Load Resources that provide operating reserves (LRs), are excluded from the SARA.

The SARA report is intended to illustrate the range of resource adequacy outcomes that might occur, and thus help fulfill the reporting requirement per Public Utility Commission of Texas rule 25.362(i)(2)(H). Several sensitivity analyses are developed by varying the value of certain parameters that affect resource adequacy. The variation in these parameters is based on historic values of these parameters or adjustments by any known or expected changes.

Attachment I

201 Report on Existing and Potential Electric System Constraints and Needs

Report on Existing and Potential

Electric System Constraints and Needs

December 2015

Executive Summary

The annual Electric System Constraints and Needs report is provided by the Electric Reliability Council of Texas, Inc. (ERCOT) to identify and analyze existing and potential constraints in the transmission system that pose reliability concerns or may increase costs to the electric power market and, ultimately, to Texas consumers. This report satisfies the annual reporting requirements of Public Utility Regulatory Act (PURA) Section 39.155(b) and a portion of the requirements of Public Utility Commission Substantive Rules 25.362(i)(2)(I) and 25.505(c).

In 2015, the most significant constraint on the ERCOT System was related to the import of power into the Houston area from the north. From October 2014 through September 2015 this area has experienced over $39 million in congestion rent. Congestion in this area has been high for several years. In addition to the observed congestion, reliability studies have identified possible overloads in the next several years on transmission lines along this path. As shown in Figure ES.1, the Coast weather zone, which is primarily comprised of the Houston area, is the only zone in the ERCOT System to see a net decrease in generation since 2004. This means that the area has required increasing amounts of power to be imported from elsewhere in the ERCOT System. ERCOT has reviewed and endorsed a reliability-driven project to increase the import capability into the Houston area. The project, primarily consisting of new 345 kV transmission lines, is expected to be in-service by the summer of 2018.

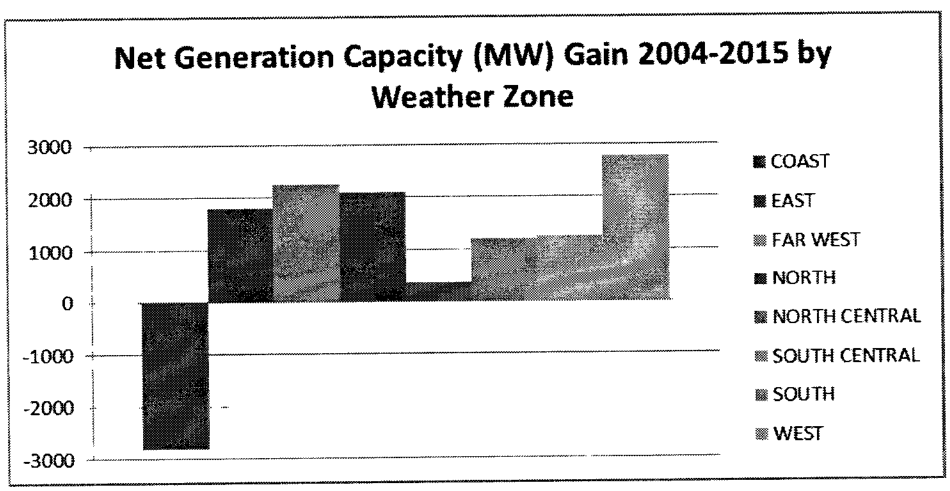

Figure ES.1: Net Change in Generation Capacity by Weather Zone (2004-2015)

The San Angelo area experienced high amounts of congestion in 2015 due to the outage of a transformer during an upgrade. This upgrade, which includes a new transformer, will improve the reliability of the system in the area moving forward.

Congestion due to oil- and gas-related activities in the Permian Basin in West Texas has been significantly reduced over the last several years due to the transmission improvements that have been implemented in the area. Permian Basin-related congestion accounted for only one of the top 15 constraints on the ERCOT System in 2015 compared to six in 2013 and three in 2014. Figure ES.2 shows the cost of transmission improvements (excluding Competitive Renewable Energy Zone projects) by weather zone in ERCOT since 2007. The Far West weather zone, which encompasses most of the Permian Basin's oil- and gas-related load, has seen a substantial increase in transmission investment over that time.

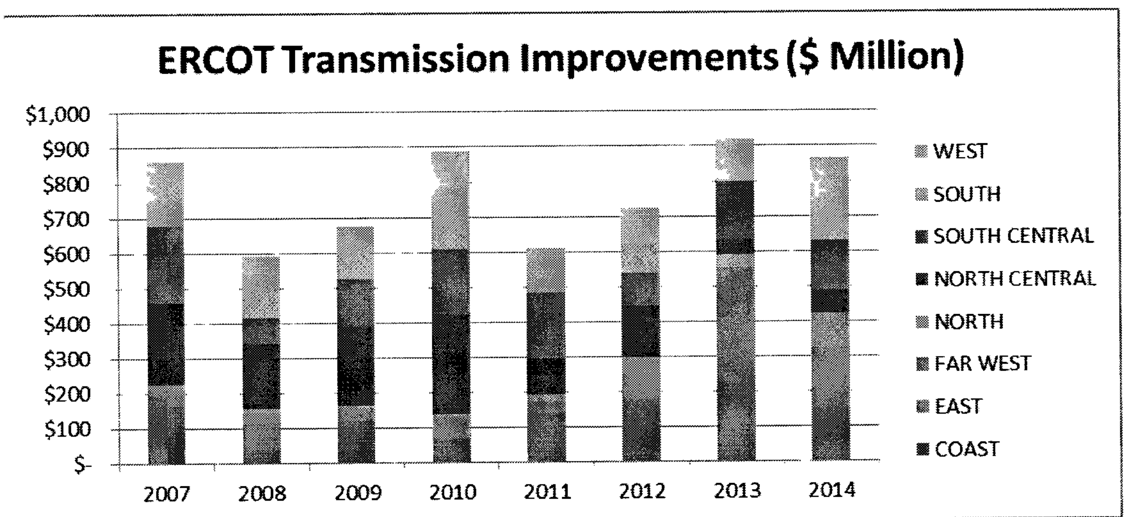

Figure ES.2: ERCOT (Non-CREZ) Transmission Improvements by Weather Zone and Year

In the Lower Rio Grande Valley (LRGV), a new 345 kV import line and the upgrade of the two existing 345 kV import lines are part of a project under construction to increase the overall import capability into the area by 2016. Additionally, a new 345 kV line that runs east-west across the LRGV is planned to meet reliability needs in and around the Brownsville area. ERCOT is currently evaluating the need for additional system improvements after 2016. This assessment is being driven by the recent announcement that one generation unit in the LRGV will be switched from serving ERCOT load to serving customers in the Mexico system. Potential needs for additional transmission may be deferred by several potential generation projects that are under study in the area.

Treatment of natural gas to form liquefied natural gas (LNG) is an energy-intensive process and the construction of such a facility can significantly increase the load already being served in an area. Several potential LNG facilities have been proposed across the United States, including many along the ERCOT Gulf Coast. The Freeport LNG liquefaction project and Cheniere's Corpus Christi Liquefaction facility were the first LNG export facilities within the ERCOT region to receive all necessary approvals to begin construction.

The Freeport LNG facility will be located on Quintana Island in Brazoria County and, at full production, will require 690 MW to serve its load. In 2015, ERCOT endorsed the Jones Creek project to meet the transmission needs of this project. The Cheniere facility, while having only slightly less LNG production capacity, will have a much lower electric power need because it will utilize different technology to drive its process needs and will require less extensive transmission upgrades. LNG exports from both facilities are expected to begin in 2018 and reach full output in 2019. Both projects are pursuing possible plant expansions and six additional LNG projects are exploring connection to the ERCOT grid in the Brownsville area.

A changing resource mix in ERCOT could lead to constraints in several areas. Wind generation development in the Panhandle will soon exceed the capability of the transmission system to export power out of the region. ERCOT is currently pursuing several upgrade solutions to this constraint, but congestion may persist if generation development continues. There are a substantial number of solar generation projects under study in Far West Texas. This area has a relatively weak transmission system and significant congestion could occur if a large amount of the solar generation under study moves forward with construction. ERCOT is planning to finalize a study of the region in 2016. Finally, the potential retirement of coal generation in ERCOT could lead to a considerable amount of local and regional reliability impacts on the transmission system.

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Chapter 1. Introduction

The Electric Reliability Council of Texas (ERCOT), as the independent organization (IO) under the Public Utility Regulatory Act (PURA), is charged with nondiscriminatory coordination of market transactions, system-wide transmission planning and network reliability, and ensuring the reliability and adequacy of the regional electric network in accordance with ERCOT and North American Electric Reliability Corporation (NERC) Reliability Standards. The IO ensures access to the transmission and distribution systems for all buyers and sellers of electricity on nondiscriminatory terms. In addition, ERCOT, as the NERC--registered Planning Coordinator/ Planning Authority, is responsible for assessing the longer-term reliability needs for the ERCOT Region.

ERCOT supervises and exercises comprehensive independent authority over the planning of transmission projects for the ERCOT System as outlined in PURA and Public Utility Commission of Texas (PUCT) Substantive Rules. The PUCT Substantive Rules further indicate that the IO shall evaluate and make a recommendation to the PUCT as to the need for any transmission facility over which it has comprehensive transmission planning authority. In performing its evaluation of different transmission projects, ERCOT takes into consideration the need for and cost-effectiveness of proposed transmission projects in meeting the ERCOT planning criteria and NERC Reliability Standards.

Transmission planning (i.e., planning of facilities 60 kV and above) is a complex undertaking that requires significant work by, and coordination between, ERCOT, the Transmission Service Providers (TSP), stakeholders, and other market participants. ERCOT works directly with the TSPs, stakeholders, and market participants through the Regional Planning Group (RPG). Each of these entities has responsibilities to ensure that appropriate transmission planning and construction occurs.

The Protocols and Planning Guide describe the practices and procedures through which ERCOT meets its requirements related to system planning under PURA, PUCT Substantive Rules, and NERC Reliability Standards.

Chapter 2. ERCOT Transmission Planning

Every year ERCOT performs a planning assessment of the transmission system. This assessment is primarily based on three sets of studies.

1. The Regional Transmission Plan (RTP) addresses region-wide reliability and economic transmission needs and includes the recommendation of specific planned improvements to meet those needs for the upcoming six years. The 2015 RTP report is posted on the ERCOT Market Information System website.
2. The Long-Term System Assessment (LTSA) uses scenario-analysis techniques to assess the potential needs of the ERCOT System up to 15 years into the future. The role of the LTSA is to identify upgrades that provide benefits across a range of scenarios or might be more economic than the upgrades that would be determined considering only near-term needs in the RTP development. The LTSA does not recommend the construction of specific system upgrades due to the degree of uncertainty associated with the amount and location of loads and resources in this timeframe. The biennial LTSA study is conducted in even-numbered years. The 2014 Long-Term System Assessment report is posted on the ERCOT website at: http://www.ercot.com/news/presentations/.
3. Stability studies are performed to assess angular stability, voltage stability, and frequency response of the ERCOT System. Due to the security-related sensitive nature of the information contained in these study reports, they are not published on the ERCOT website.

These three Transmission Planning studies are conducted using models that represent expected future transmission topology, demand, and generation. The models are tested against reliability and economic planning criteria per NERC Standards and the ERCOT Protocols and Planning Guide. When system simulations indicate a deficiency in meeting the criteria, a corrective action plan is developed; this corrective action plan typically includes a planned transmission improvement project. TSPs also perform studies to assess the reliability of their portion of the ERCOT System.

For analysis purposes, the ERCOT System is divided into eight regions, termed "weather zones," developed based on overall consistency of weather patterns. Figure 2.1 depicts the location of these weather zones.

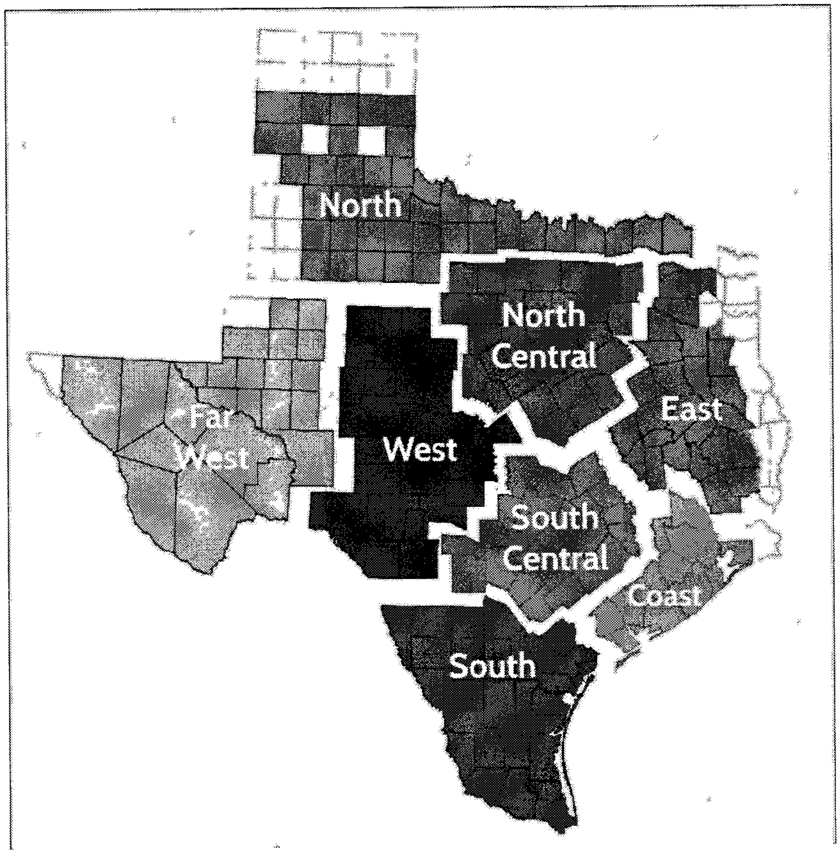

Figure 2.1: ERCOT Weather Zones

Transmission improvement projects that are estimated to cost more than $15 million or that require a Certificate of Convenience and Necessity (CCN) are reviewed by the RPG prior to implementation.[1] The RPG is a non-voting forum made up of ERCOT, TSPs, Market Participants, other stakeholders, and PUCT Staff. In 2015, $477.6 million of transmission improvement projects were reviewed and endorsed through the RPG process.

Transmission system improvements are built by TSPs and are paid for by consumers. During the twelve-month period from October 2014 through September 2015, TSPs completed $800.8 million worth of transmission improvement projects. Figure 2.2 shows the cost of transmission

[1] Per ERCOT Protocol Section 3.11.4 certain projects are exempt from RPG review, such as projects to connect new generation or load customers.

improvements completed in ERCOT, by calendar year, from 2007 through 2014. The cost is divided by Competitive Renewable Energy Zone (CREZ)-related projects and non-CREZ-related projects.

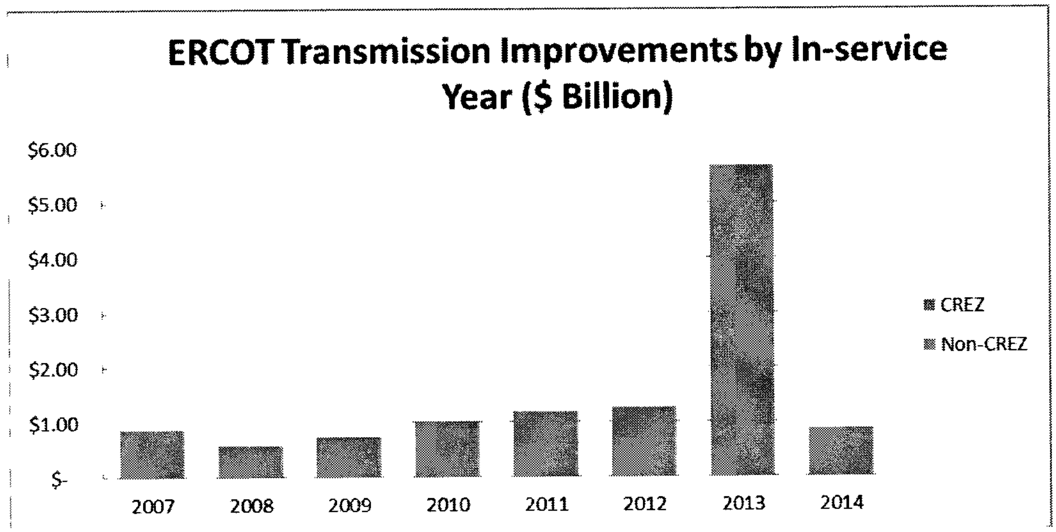

Figure 2.2: ERCOT Transmission Improvements by Year

Figure 2.3 further breaks down the non-CREZ-related improvements by weather zone. The data shows that the Far West weather zone has seen a significant increase in transmission investment since 2012, which can be attributed to oil- and gas-related upgrades.

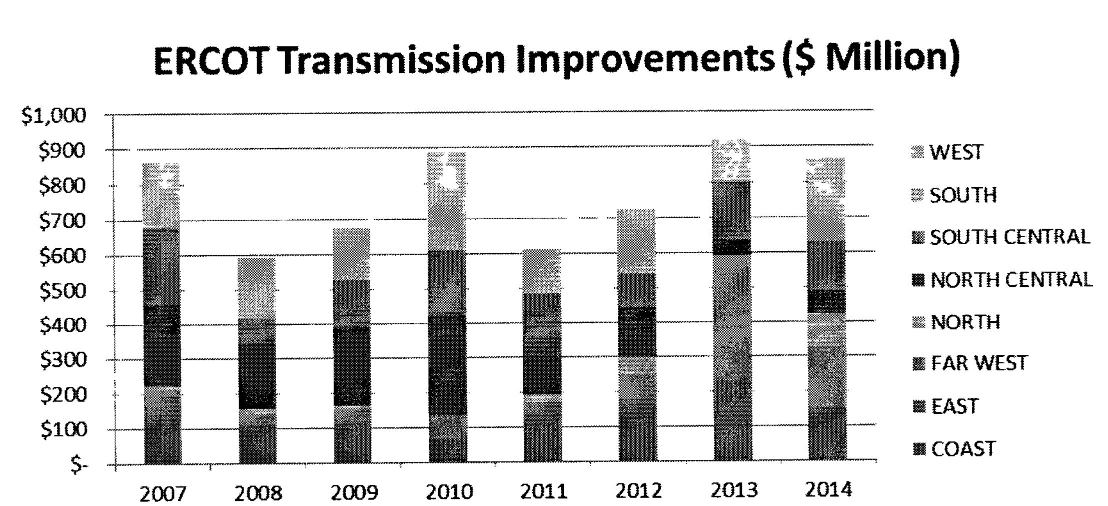

Figure 2.3: ERCOT (Non-CREZ) Transmission Improvements by Weather Zone and Year

A comprehensive list of recently completed and future transmission projects can be found in the Transmission Project Information Tracking (TPIT) report located at: http://www.ercot.com/gridinfo/sysplan/.

Chapter 3. Recent Constraints

Congestion occurs when transmission limitations do not allow for the most efficient dispatch of generation to meet customer demand. Table 3.1 and Figure 3.1 show the top 15 congested constraints on the ERCOT System, from October 2014 through September 2015, based on real-time data.

Table 3.1: 2015 Top 15 Congested Constraints on the ERCOT System

Map Index	Constraint	Congestion Rent
1	North to Houston Import	$39,316,039
2	Heights 138/69 kV transformer	$35,902,821
3	Rio Hondo-East Rio Hondo 138 kV line	$20,894,616
4	Harlingen Switch-Oleander 138 kV line	$19,245,752
5	Moss-Westover 138 kV line	$17,791,984
6	Hockley-Betka 138 kV line	$12,809,188
7	San Angelo College Hills 138/69 kV transformer	$12,124,531
8	La Palma-Villa Cavazos 138 kV line	$10,681,931
9	San Angelo Power 138/69 kV transformer	$10,622,923
10	Collin Switch 345/138 kV transformer	$9,098,021
11	Lon Hill-Smith 69 kV line	$8,504,021
12	Pflugerville-Gilleland Creek 138 kV line	$7,592,286
13	Cedar Hill-Mountain Creek 138 kV line	$7,469,997
14	Marion-Skyline 345 kV line	$7,358,307
15	East Levee-Reagan Street 138 kV line	$6,600,415

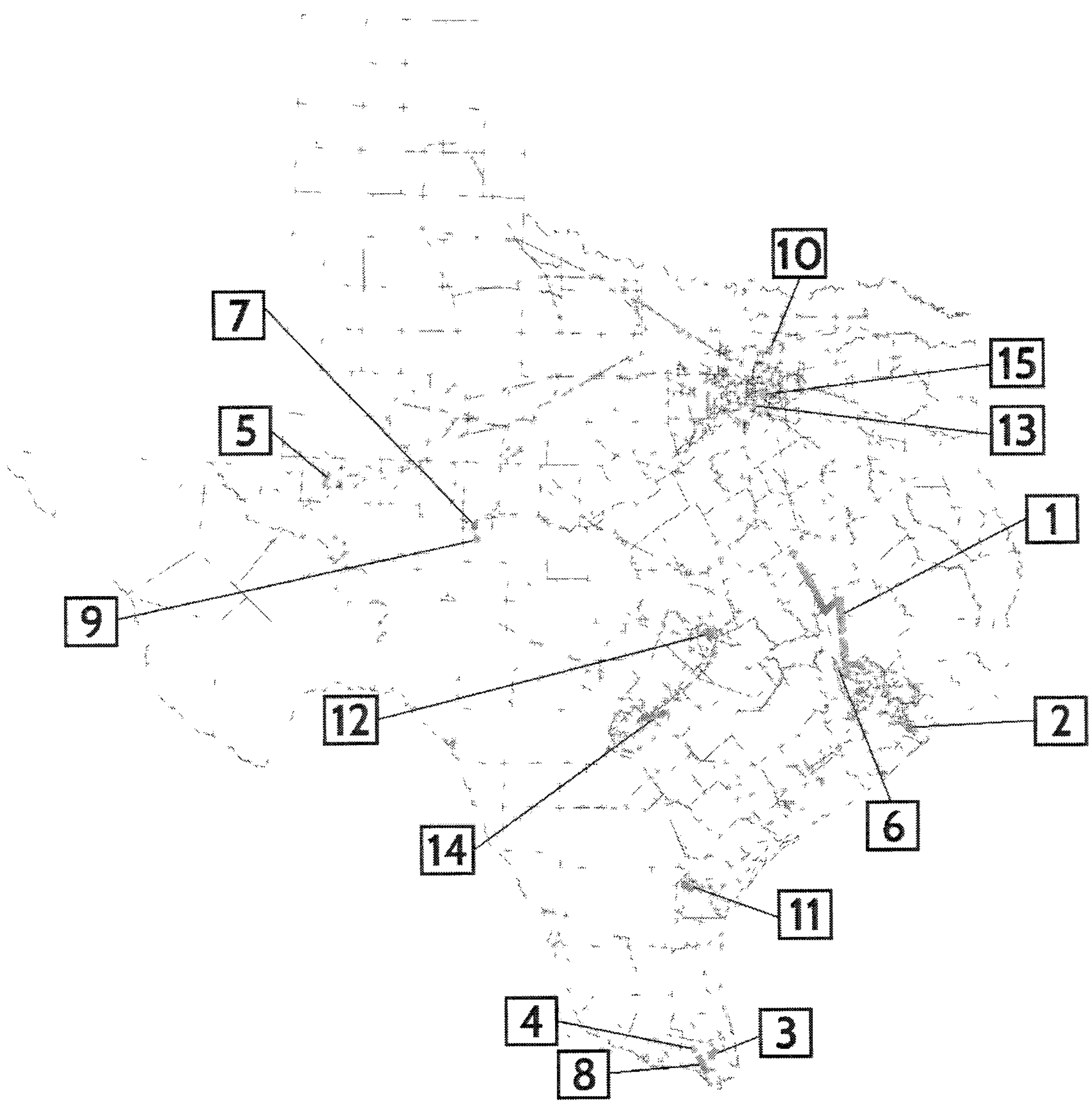

Figure 3.1: Map of 2015 Top 15 Congested Constraints on the ERCOT System

3.1 Houston Import

The import of power into the Houston area from the north caused the highest amount of congestion on the ERCOT System in 2015, totaling over $39 million in congestion rent. Multiple 345 kV lines coming into the area from the north experienced congestion, including the Twin Oak – Jack Creek 345 kV line, Singleton – Gibbons Creek 345 kV line, Gibbons Creek – Twin Oak 345 kV line, Singleton – Zenith 345 kV line, and the Singleton – Tomball 345 kV line. Additionally, the import of power to Houston from the North was constrained due to voltage stability limitations.

This voltage constraint is commonly referred to as the North to Houston stability limit. Congestion on these lines has been consistently high for several years. In addition to having the highest congestion rent in 2015, the North-Houston path experienced the fourth-highest congestion rent on the system in 2014 and the second-highest in 2013.

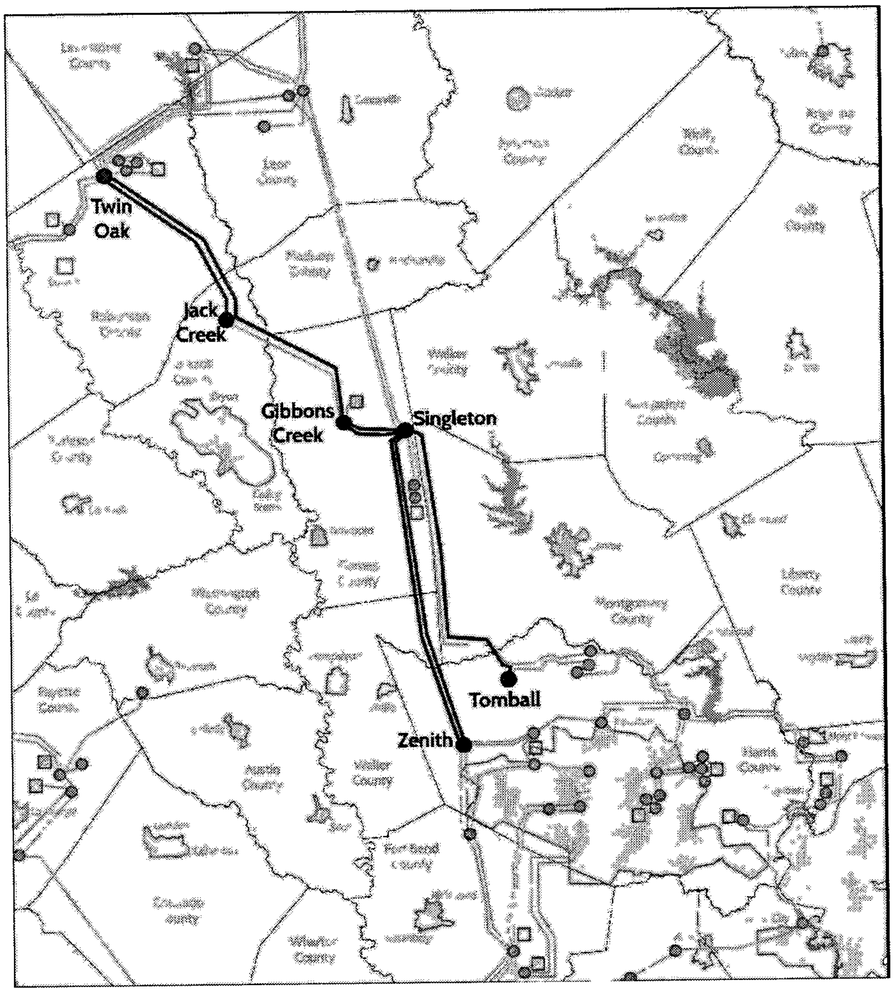

Figure 3.2: Houston Area 345 kV Congestion

The Houston metropolitan area is the second-largest load center in Texas, serving more than 25% of the entire load in the ERCOT System. Houston ranks fourth among U.S. cities in terms of population and nominal gross domestic product (GDP). With a nominal GDP of over $500 billion, Houston would rank 25th in the world if it were an independent country. In June 2015, there were more jobs in the Houston metropolitan area than in 35 individual U.S. states. Among U.S. ports, the Port of Houston has ranked first in import tonnage and second in total tonnage for 23 consecutive years.[2]

Houston, the "Energy Capital of the World," is expected to experience some negative economic impact due to the recent drop in oil prices. However, CenterPoint Energy, the primary transmission and distribution service provider in the Houston area, recently indicated that the number of residential customers on its system has historically not been correlated to oil prices. Their data shows that since 1980, residential customer growth has remained steady despite multiple spikes and dips in the price of oil.[3]

According to the Bureau of Economic Geology, approximately $24 billion of petrochemical and related large industrial projects are slated to come online along the ERCOT Gulf Coast between 2015 and 2018.[4] These projects, typically ranging from tens of megawatts to hundreds of megawatts, will add a significant amount of demand to the system. The addition of such large industrial facilities can represent future load growth that is not as easy to forecast when compared to residential and commercial customer classes.

The Coast weather zone, which primarily consists of the Houston area, is the only zone in the ERCOT System to have a net loss of generation capacity since 2004 (see Figure 4.3). This generation capacity loss plus the experienced and forecasted load growth has resulted in a significant increase in the amount of power being imported into the Houston area. The 2006, 2008, 2010, and 2012 Long-Term System Assessments all identified a need to increase the import capability of the transmission system serving the Houston area.

In the summer of 2013, ERCOT received three separate proposals for RPG review to construct a new 345 kV double circuit line into the Houston area. Each of the three proposals identified reliability criteria violations starting in 2018. ERCOT conducted an independent review of the proposals and confirmed that there was a reliability need for additional imports into the Houston

[2] https://www.houston.org/assets/pdf/economy/Houston%20Facts_web.pdf
[3] http://files.shareholder.com/downloads/HOU/942334299x0x828290/813581C4-2267-4EAD-B5A0-E6D03DD67010/Q1_Slides_Final.pdf
[4] http://www.ercot.com/content/wcm/key_documents_lists/67259/GGulen_Oil_GasDevelopmentsinTexas_ERCOT LTSA071315.pdf

area. In addition to the base scenario, ERCOT conducted sensitivity analyses on three alternate scenarios based on stakeholder feedback. All of the sensitivity analyses showed a reliability need for a project.

ERCOT analyzed 21 options for solving the reliability criteria violations. To select the best long-term and most cost-effective option, ERCOT performed a variety of analyses. Based on these study results, in early 2014, ERCOT recommended the Houston Import Project, which involved the construction of a new 345 kV double circuit line from Limestone to Gibbons Creek, a new 345 kV double circuit line from Gibbons Creek to Zenith, and the upgrade of the TH Wharton to Addicks 345 kV line. The ERCOT Board of Directors endorsed the need for the project in April 2014, and deemed the new 345 kV double circuit lines as critical to reliability. The project is expected to be completed by summer of 2018.

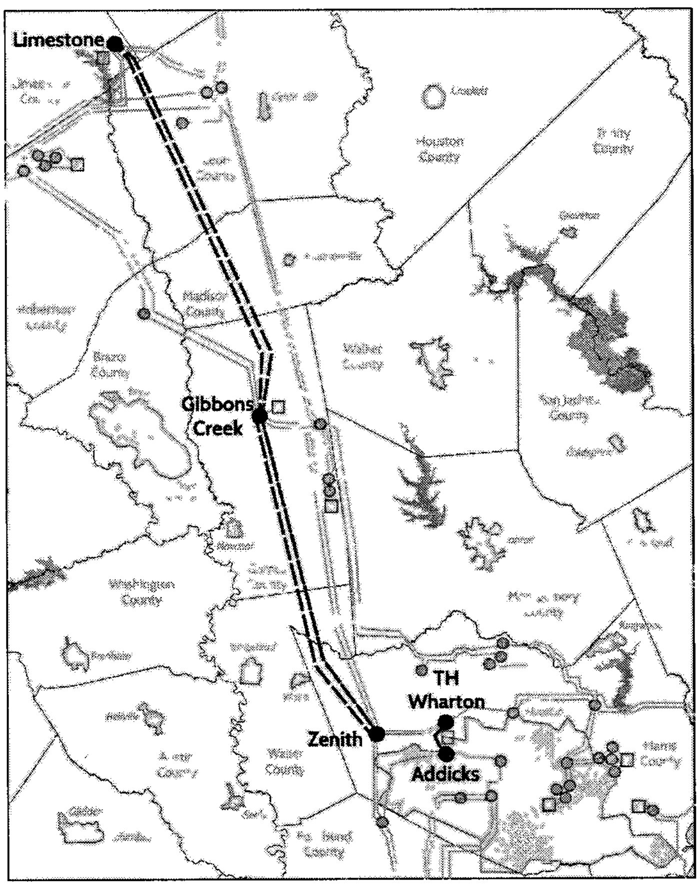

Figure 3.3: Houston Import Project Area

The 2015 RTP was conducted using more up-to-date assumptions than were used in the independent review of the Houston Import Project. Although the independent review indicated that the project was needed by 2018, a reliability criteria violation was found in the 2015 RTP for year 2016. However, it is unlikely that the project can be completed by 2016, and consequently, weather and outages could result in significant congestion costs on the import lines prior to completion. ERCOT operators will need to develop mitigation measures to ensure reliability for the system as a whole. These may include plans to shed load should certain contingencies occur on the system. It should also be noted that the Freeport LNG project (discussed further in Section 4.3), which will add a sizable amount of load to the south side of the Houston area, was not included in the Houston Import Project analysis. At the time of the study, the Freeport project developer had not yet provided financial commitment to the TSP for the entire project. The addition of the Freeport LNG project would likely increase the need for the Houston Import Project.

3.2 San Angelo Congestion

The load in the San Angelo area, located in Tom Green County, is served by a 69 kV and 138 kV transmission system that includes four existing 138/69 kV transformers located at the San Angelo College Hills, San Angelo Power, San Angelo North, and San Angelo Concho substations. The peak demand in the San Angelo area is expected to reach approximately 290 MW by 2016. Almost half of the peak demand is served by the 69 kV transmission system through the four existing 138/69 kV transformers. The load in the area is expected to grow as shown in Table 3.2.

Table 3.2: Expected Peak Demand in San Angelo Area (source: 2015 RTP Cases)

2015 RTP Case	Expected peak demand served by 69 kV transmission (MW)	Expected peak demand served by 138 kV transmission (MW)	Total (MW)
2016	130	160	290
2018	133	167	300
2020	137	173	310

As shown previously in Table 3.1, one of the most congested areas on the system in 2015 was the area served by the 138/69 kV transformers at San Angelo College Hills and San Angelo Power (see Figure 3.4). The combined congestion rent on these transformers was greater than $22 million. The high congestion rent is the result of reduced capacity of area transformers due to the planned outage of the San Angelo Concho transformer. The Concho transformer has been out of service since February 2015, in order to construct the new 138/69 kV substation at Rusthill, which was put in-service in July. American Electric Power (AEP) built the Rusthill substation near the existing Concho substation in order to replace the Concho transformer with a new, larger transformer. Many outages were implemented to complete the substation construction, including re-terminating the 138 kV lines from Concho into Rusthill and replacing the existing Concho substation. The Rusthill 138/69 kV substation will improve the reliability of the system in the San Angelo area with the additional 138/69 kV transformer capacity (130 MVA). According to the ERCOT TPIT report, AEP is planning to replace the existing San Angelo North 138/69 kV transformer in 2018. The new transformer at Rusthill is expected to minimize the reliability and congestion impact when the San Angelo North transformer is replaced.

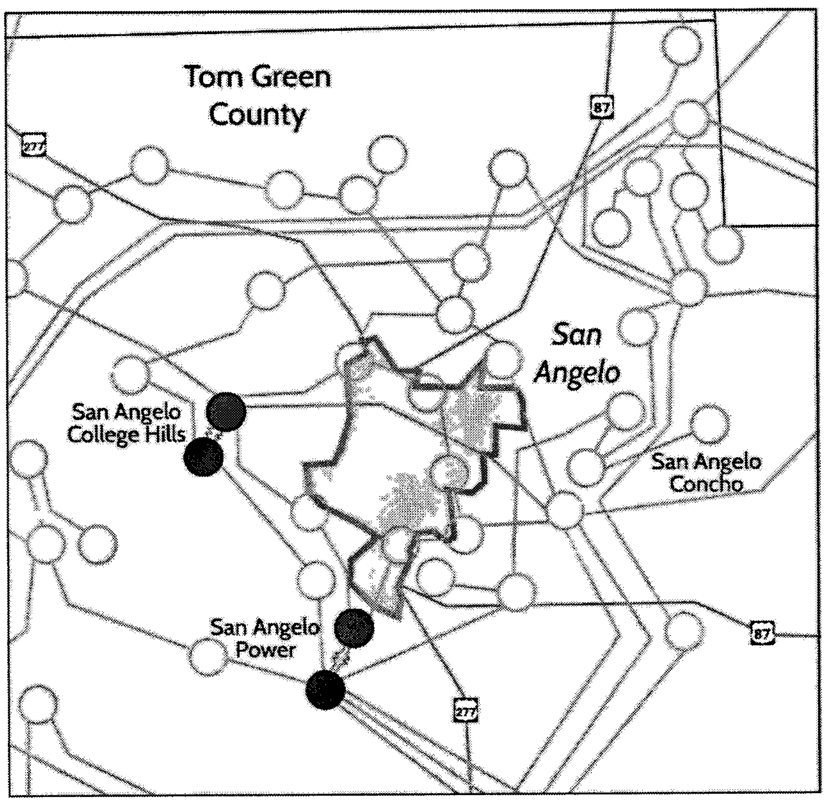

Figure 3.4: Congested Transformers in the San Angelo Area

3.3 West Texas Oil and Gas Load

Over the last several years the ERCOT System has experienced a significant amount of congestion in West Texas due to the growth in electric demand from the oil and natural gas industry and the associated economic expansion in residential and commercial developments in the Permian Basin area. However, from October 2014 through September 2015, only one of the top 15 constraints on the ERCOT System was located in Far West region of Texas (Moss Switch – Westover 138 kV line). In comparison, of the top 15 constraints in 2013, six were related to load in West Texas, and in 2014, three were related to West Texas needs. This improvement can be attributed to the implementation of several system improvement projects in that area.

Table 3.3 and Figure 3.5 show some of the significant West Texas transmission upgrade projects completed in the first half of 2015.

Table 3.3: Recently Completed West Texas Transmission Upgrades

Map ID	Project	Completion Date
1	Upgrade Midland Airport – Glenhaven 138 kV Line	May 15
2	Construct New Dermott Sw. Sta. – Ennis Creek Tap 138 kV Line	May 15
3	Upgrade Big Spring Switch – Big Spring West 138 kV Line	May 15
4	Install McDonald Road Sw. Sta. – Garden City East 138 kV Line	May 15
5	Replace Morgan Creek 138/69 kV Autotransformer	May 15
6	Upgrade Odessa North – Amoco South Foster – Westover 138 kV Line	May 15
7	Upgrade McDonald Road 138 kV Switching Station	May 15
8	Rebuild Holt 138 kV Switching Station as Double-Bus	May 15
9	Upgrade China Grove Switching Station Terminal Equipment	May 15
10	Construct New Andrews County South 345/138 kV Switching Station	May 15
11	Construct New Midland County Northwest 345/138 kV Switching Station	May 15
12	Upgrade North Andrews – Means 69 kV Line	May 15
13	Replace North Andrews 138/69 kV Autotransformers	May 15

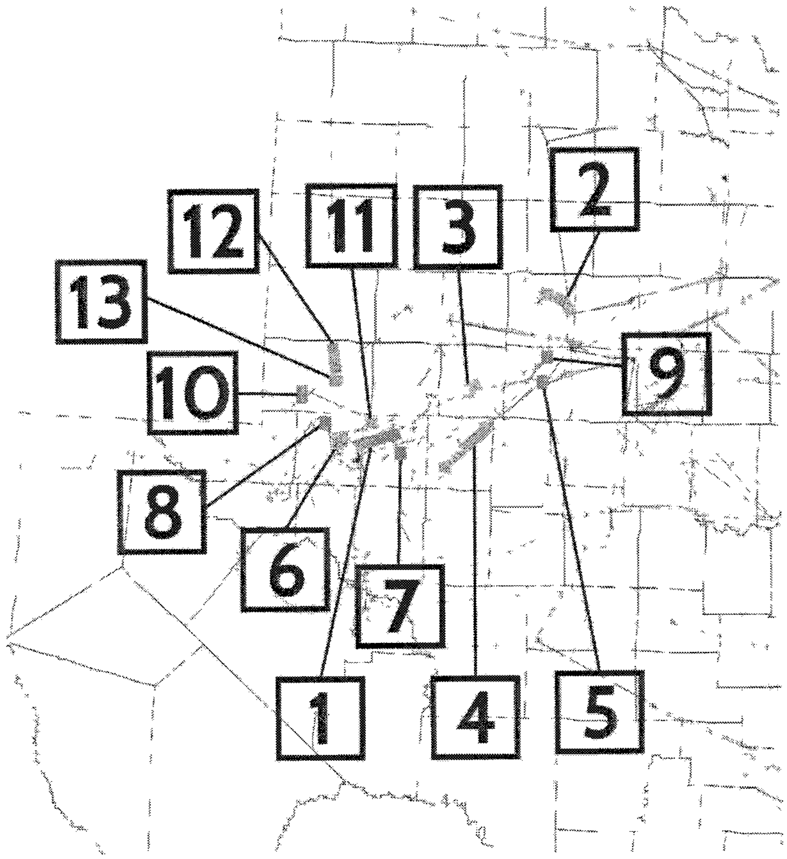

Figure 3.5: Recently Completed West Texas Transmission Upgrades

The load in West Texas continues to grow more quickly than in other parts of ERCOT. Despite the drop in oil prices, drilling activity in the Permian Basin continues. Peak demand in the Far West weather zone, which contains most of the Permian Basin, has increased at an average annual rate of 8.2% since 2009. Some of the growth in peak demand in 2014 can be attributed to the moving of load on the Sharyland Utilities system from the Eastern Interconnection to ERCOT. This transfer was completed in early 2014. Annual energy use in the Far West weather zone has experienced similar growth, increasing by an average annual rate of 9.9% from 2009 through 2014. Figures 3.6 and 3.7 show the Far West weather zone historical growth in peak demand and energy, respectively, since 2009.

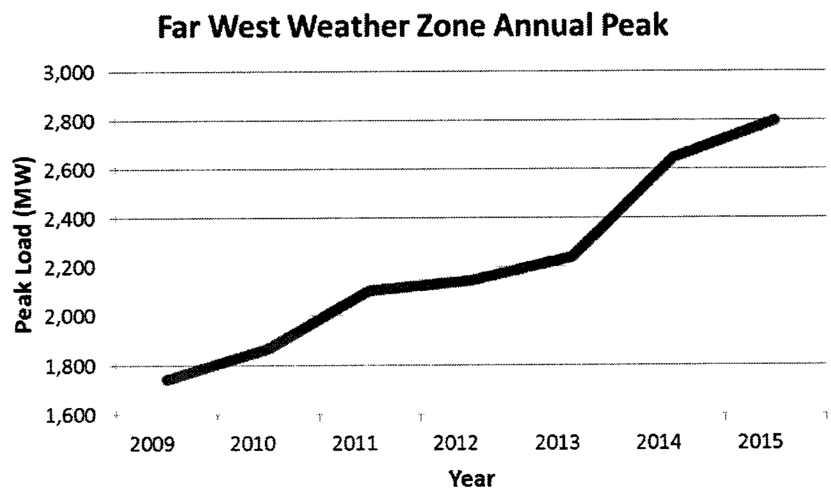

Figure 3.6: Far West Weather Zone Annual Peak Demand (2009-2015)

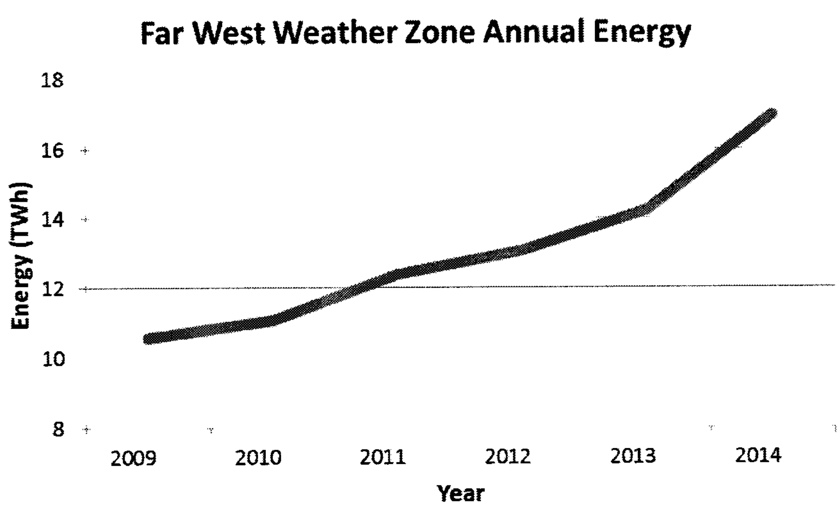

Figure 3.7: Far West Weather Zone Annual Energy (2009-2014)

Chapter 4. Planned Improvements

4.1 Historical Investments and Improvements

The need for transmission improvements is typically driven by increases in demand or changes in generation resources (both additions and retirements). Figure 4.1 shows the net change in weather zone peak demand between 2004 and 2015. The data shows that the two largest weather zones, Coast and North Central, had the largest net increase in peak demand. This result is to be expected since the two largest metropolitan areas in Texas—Houston and Dallas-Fort Worth—are located in these weather zones.

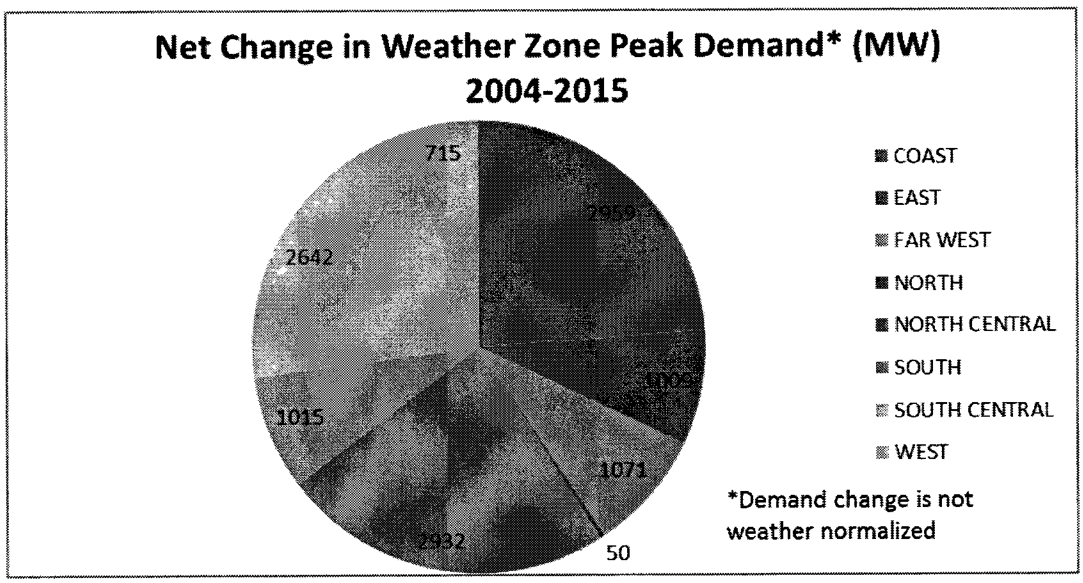

Figure 4.1: Net Change in Weather Zone Peak Demand (2004-2015)

Figure 4.2 shows the total growth percentage change in weather zone peak demand between 2004 and 2015. The chart shows that the Far West and West weather zones had the largest percentage increases in demand. This is most likely due to the increased demand from oil and natural gas activities in the Permian Basin. The Far West weather zone demand increase is also partially due to the aforementioned move of Sharyland Utilities load into the ERCOT System.

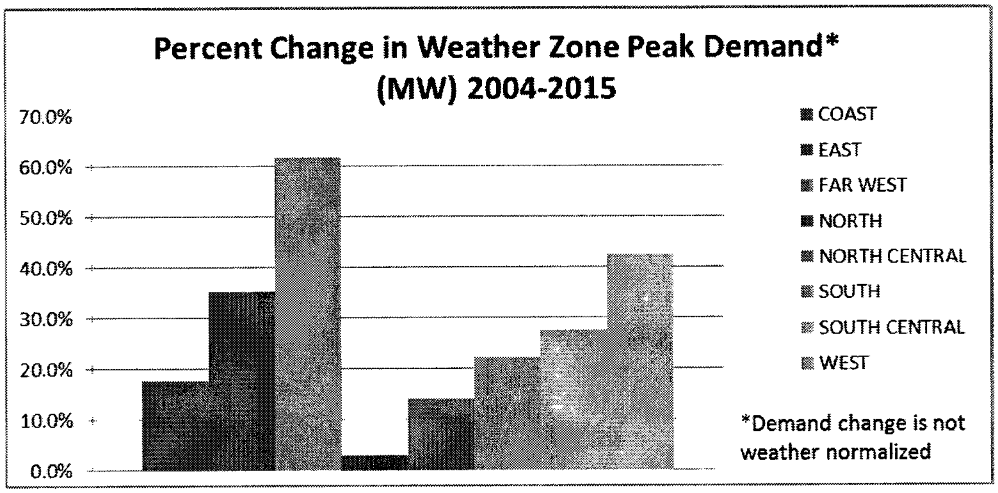

Figure 4.2: Percent Change in Weather Zone Peak Demand (2004-2015)

Figure 4.3 illustrates the net change in generation capacity by weather zone between 2004 and 2015. The chart indicates that all weather zones saw a net increase in generation capacity except for the Coast weather zone. The Coast weather zone, which is largely made up of the Houston area, saw a decrease of nearly 3,000 MW of generation capacity over this timeframe. The largest increases in generation capacity were seen in the West and Far West weather zones, which can be attributed to the wind generation additions in these zones. It should be noted that for purposes of this chart, wind generation was counted based on the nameplate capacity of the wind resources.

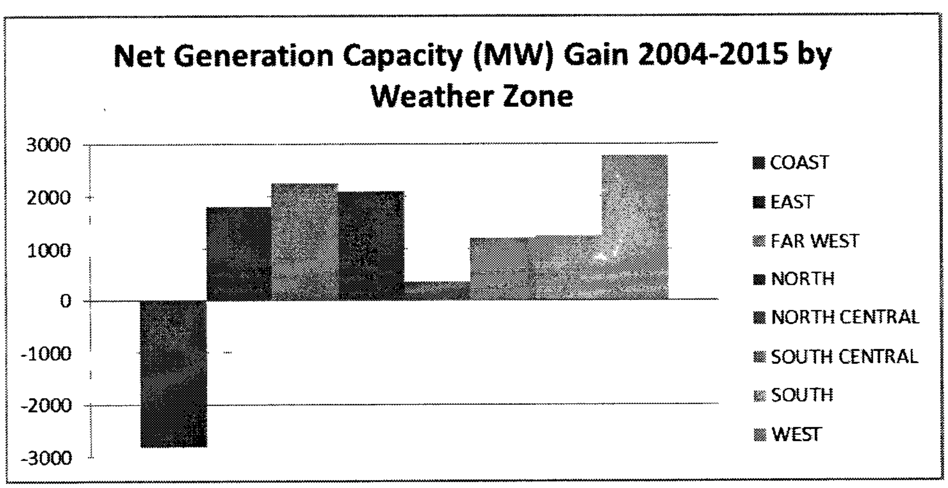

Figure 4.3: Net Change in Generation Capacity by Weather Zone (2004-2015)

Currently, there are $5.8 billion of future transmission improvement projects that are planned to be in service between 2016 and the end of 2021. Table 4.1 and Figure 4.4 show some of the significant improvements planned to be in-service within the next six years.

Table 4.1: Planned Transmission Improvement Projects

Map Index	Transmission Improvement	In-service Year
1	New Lobo – North Edinburg 345 kV line (Valley Import)	2016
2	New North Edinburg – Loma Alta 345 kV line (Cross Valley)	2016
3	Add Midessa South 345/138 kV transformer	2016
4	Add second Jewett 345/138 kV transformer	2016
5	Add second Jordan 345/138 kV transformer	2016
6	Add second Twin Buttes 345/138 kV transformer	2016
7	Add second Meadow 345/138 kV transformer	2016
8	New Fowlerton 345 kV station with 345/138 kV transformer	2017
9	New Jones Creek 345 kV station with two 345/138 kV transformers	2017
10	Upgrade McDonald Road – Garden City 138/69 kV line	2018
11	Houston Import Project	2018
12	Add second 345 kV circuit in the Panhandle loop	2018
13	Add synchronous condenser in the Panhandle loop	2018
14	Add Zorn – Marion 345 kV transmission line	2019
15	Add second Hicks 345/138 kV transformer	2020
16	Add Salado Switch 345/138 kV transformer	2021

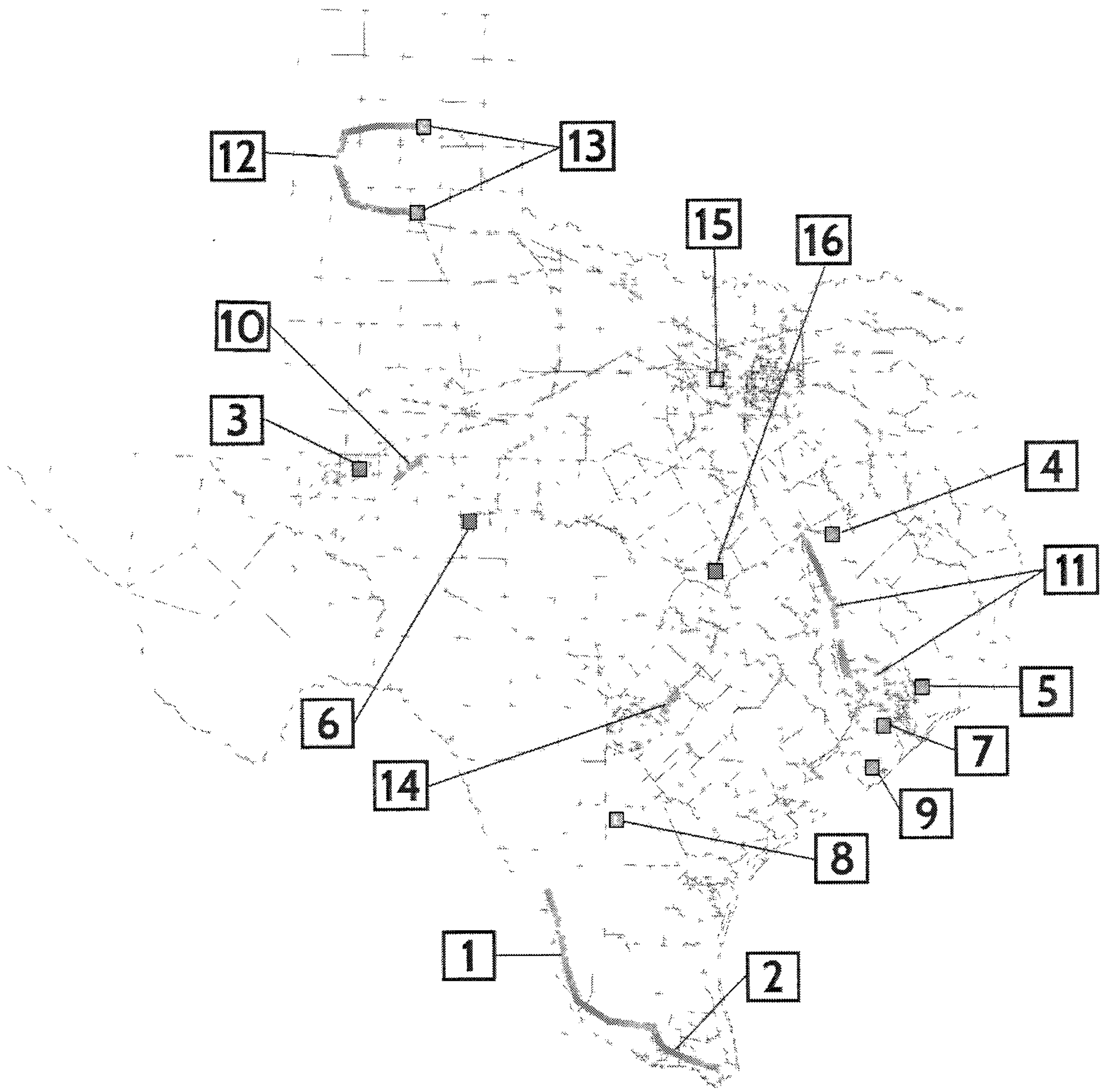

Figure 4.4: Planned Transmission Improvement Projects

4.2 Lower Rio Grande Valley

Currently, demand in the Lower Rio Grande Valley (LRGV) is supported by two existing 345 kV lines, three 138 kV lines, and approximately 1,700 MW of natural gas generation at four plants. The area also has hydroelectric and wind generation and an asynchronous tie with the Mexico system. Because the area is dependent on such a small number of resources, transmission and generation maintenance outages must be carefully planned in order to reliably serve the area. The area is vulnerable to contingency events that cause multiple pieces of equipment to be out of service at the same time due to equipment failure. Two transmission projects endorsed by the ERCOT Board of Directors in late 2011 and early 2012 will support the LRGV and are expected to be in-service by the summer of 2016. The first involves the construction of a new 345 kV line from the Lobo substation, near Laredo, to the North Edinburg substation. This new line will provide a third 345 kV import circuit into the LRGV. Additionally, the project includes upgrading both the existing 345 kV import lines. The second significant project includes a new 345 kV line from the North Edinburg station, located on the west side of the LRGV, to the Loma Alta station, located on the east side of the LRGV. Figure 4.5 shows a map of the LRGV area transmission system.

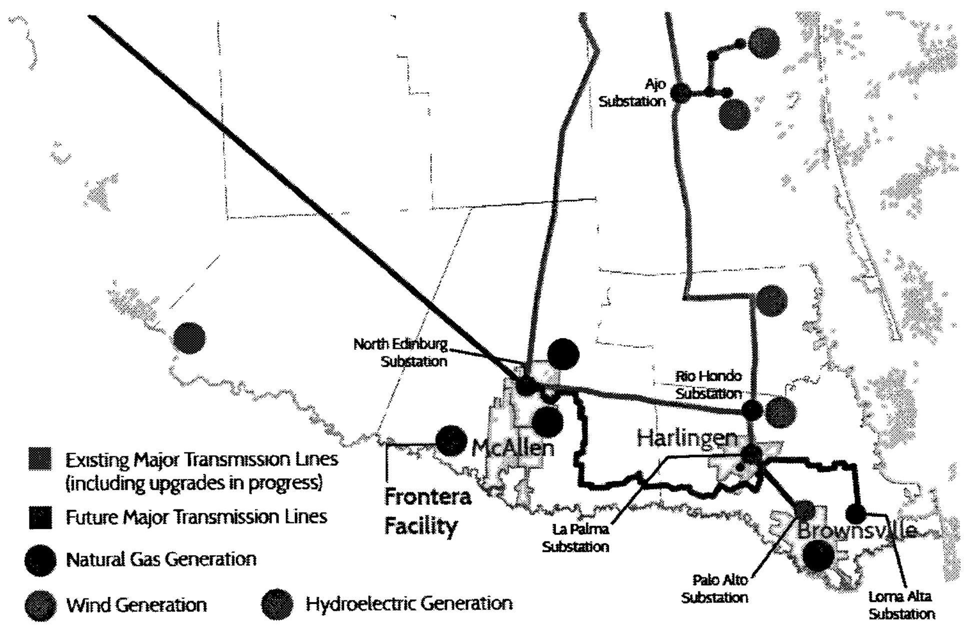

Figure 4.5: Map of Lower Rio Grande Valley

In July 2014, the owners of the Frontera generation plant, a 524 MW natural gas facility located on the west side of the LRGV, announced that they were planning to switch part of the facility (170 MW) out of the ERCOT market in 2015, and the entire facility (524 MW) starting in late 2016. Going forward, the plant will be generating electricity for the Mexico power system. ERCOT has concluded that the two planned 345 kV projects will largely relieve the reliability issues in 2016, but additional system improvements likely will be required sometime after 2016.

As of October 2015, the LRGV has one new natural gas plant (225 MW capacity) and several wind generation projects (more than 2000 MW capacity) with signed generation interconnection agreements (SGIA) and financial commitment. In addition, two new natural gas plants have SGIAs, but the developers have not yet provided financial commitment. Two transmission upgrade projects for the LRGV area have been submitted separately by TSPs to RPG to improve the reliability and import capability of the LRGV. ERCOT is currently conducting the independent review of these RPG projects and expects to complete the studies in 2016.

4.3 Liquefied Natural Gas Facilities

In February 2015, the ERCOT Board of Directors unanimously endorsed the Jones Creek project for a transmission upgrade to serve a load unlike any previously connected to the ERCOT System—a natural gas liquefaction and export facility. The production of liquefied natural gas (LNG) is an energy-intensive process and the construction of such a facility can significantly increase the load already being served in an area. Several potential LNG facilities have been proposed across the United States, including many along the ERCOT Gulf Coast. The Freeport LNG liquefaction project, which the Jones Creek upgrade will serve, and Cheniere's Corpus Christi liquefaction facility were the first LNG export facilities within the ERCOT region to receive all necessary approvals to begin construction.

The Freeport LNG facility will be located on Quintana Island in Brazoria County and, at full production, will require 690 MW to serve its load. The Cheniere facility, while having only slightly less LNG production capacity, will have a much lower electric power need because it uses different technology to drive its process needs and will require less extensive transmission upgrades. LNG exports from both facilities are expected to begin in 2018 and reach full output in 2019.

LNG facilities represent a type of load expansion that can dramatically impact local electric service. For instance, the Freeport area load is currently less than 80 MW. Adding the LNG liquefaction facility's 690 MW load will result a nearly ten-fold increase. This single project produced a significant need for additional electrical infrastructure in the Freeport area, and this need will be addressed by two projects that have been reviewed by the Regional Planning Group. The construction of LNG liquefaction facilities in other locations may have similar impacts. The Cheniere facility, which will use natural gas turbines instead of electric motors to drive the liquefaction compressors, will require much less power from the electric grid and more modest transmission upgrades or additions. However, future upgrades may be needed at each facility because both companies have begun the process for approval to expand the liquefaction and export capacity at their existing sites.

In addition to the two facilities under construction, six other projects have begun the LNG export project approval process. Developers have already applied to the Department of Energy (DOE) for licenses to export LNG from five of these proposed facilities. All six proposed facilities are located in the Brownsville area. Developers have begun the FERC pre-filing review process for three of these projects. Table 4.2 shows all LNG facilities in the ERCOT Gulf Coast region that have completed or begun the regulatory process for approval to liquefy and export natural gas. In addition to the almost 5 billion cubic feet per day (Bcf/d) of LNG authorized under current Freeport LNG and Cheniere approvals, the other proposed LNG facilities and expansions in the ERCOT region seek authority to export nearly an additional 13 Bcf/d. In total, companies across the Lower 48 States have filed export applications with the DOE for over 46 Bcf/d.[5] Figure 4.6 shows the general location of the approved and proposed LNG projects in the ERCOT system.

[5] Long Term Applications Received by DOE/FE to Export Domestically Produced LNG from the Lower-48 States, Department of Energy/Fossil Fuels Office, October 14, 2015.

Table 4.2: Proposed LNG Facilities in ERCOT

Company	Export Quantity (Bcf/d)	Free Trade Agreement Application[6]	Non-FTA Application[7]	Location
Freeport LNG	2.8	Approved	Approved (1.8 Bcf/d)	Freeport
Gulf Coast LNG Export	2.8	Approved	Under review	Brownsville
Cheniere Marketing and Corpus Christi Liquefaction	2.1	Approved	Approved	Ingleside
Eos LNG	1.6	Approved	Under review	Brownsville
Barca LNG	1.6	Approved	Under review	Brownsville
Annova LNG Common Infrastructure	0.94	Approved	n/a	Brownsville
Texas LNG Brownsville	0.55	Approved	Under review	Brownsville
Corpus Christi Liquefaction Expansion	1.41	Approved	Under review	Ingleside
Freeport LNG Expansion	0.9			Freeport
Rio Grande LNG	3.6			Brownsville
Total	**18.0**			

[6] Application to import or export natural gas to countries that have a Free Trade Agreement with the United States requiring national treatment for trade in natural gas. These applications are deemed to be in the public interest under Section 3(c) of the Natural Gas Act.
[7] Application to import or export natural gas to countries that do not have a Free Trade Agreement with the United States requiring national treatment for trade in natural gas. These applications are not deemed to be in the public interest under Section 3(c) of the Natural Gas Act and are subject to a public comment and review process to determine if the application is in the public interest.

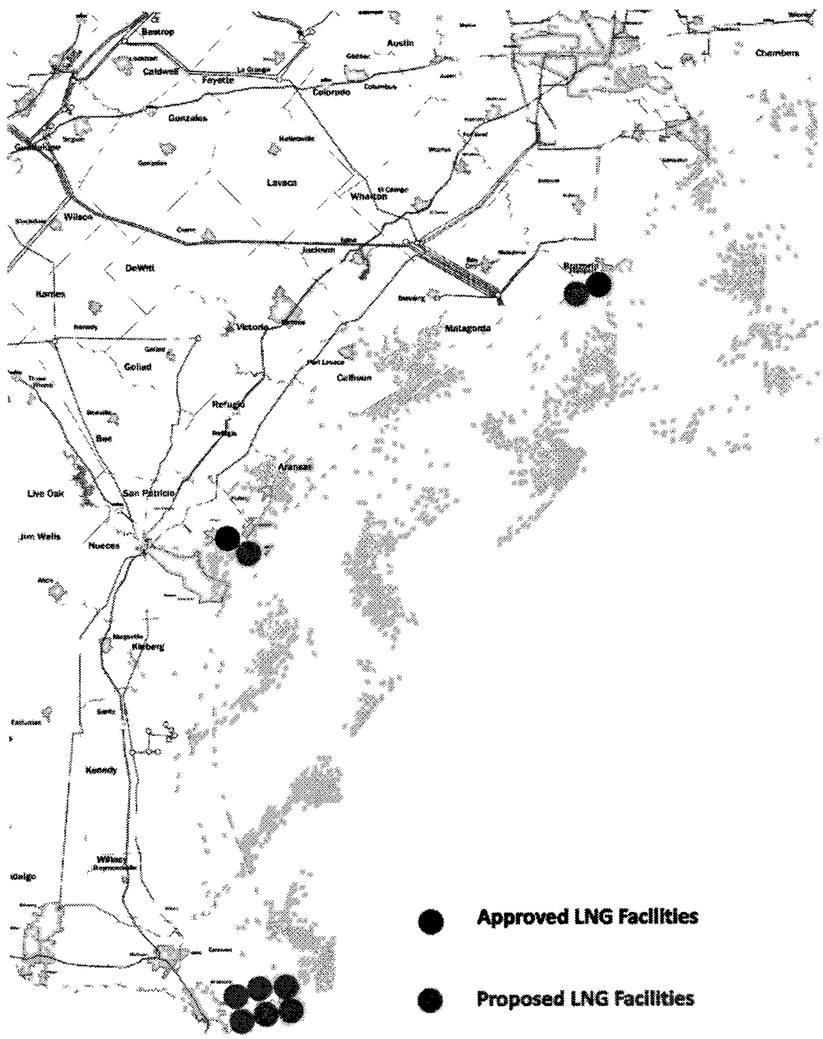

Figure 4.6: Approved and Proposed LNG Facilities in ERCOT

As with the facilities already under construction, the load impact of the proposed Brownsville facilities will depend on the technology chosen to drive the liquefaction compressors. Statements made in filings at FERC reveal the potential for significant load increases in the Brownville area. Texas LNG plans to use electric motors to drive its compression and therefore needs 240 MW of transmission capability.[8] The Annova facility also plans to use electric-driven compression and will have a 405 MW maximum load requirement.[9] The Rio Grande LNG Project currently plans to drive their liquefaction compressors using a pair of 300 MW natural gas turbines with electric helper motors, which would result in a minimal load impact.[10] However, Rio Grande LNG reported to FERC that they will also investigate grid-supplied power.[11] Each of these projects expects to begin operation in 2020, if approved. If these projects are approved and Rio Grande LNG elects to use grid-supplied power to serve its load, the projects could add over 600 MW of load in 2020 and another 600 MW in years to follow as subsequent phases of project development are completed. This rapid load increase could require significant transmission upgrades to meet customer needs and maintain reliability.

No specific information is publicly available about the power requirements of the Barca LNG, Eos LNG, and Gulf Coast LNG projects. None of these three Brownsville LNG projects have initiated the pre-filing process with FERC. However, these proposals—approximately 6 Bcf/d—will have large electric power requirements if they are constructed. Finally, another possible ERCOT-area LNG project could be developed in Galveston on Pelican Island. Next Decade, which is also proposing the Rio Grande LNG project, is exploring the feasibility of a 0.8 Bcf/d facility at that site. If approved and constructed, it is unlikely that any of these projects would be in service as soon as 2020. However, collectively, these projects could require significant power and associated transmission additions or upgrades.

4.4 San Antonio System Additions

The city of San Antonio, located in Bexar County, is the seventh most populous city in the United States and was among the top five fastest growing cities from 2000 to 2012.[12] Claritas projects the population of Bexar County to grow an additional 7.4% between 2015 and 2020.[13] Comal and

[8] Texas LNG Draft Resource Report 1, Federal Energy Regulatory Commission, Oct 21, 2015.
[9] Annova Draft Resource Report 1, Federal Energy Regulatory Commission, Sep 29, 2015.
[10] Rio Grande Request to Initiate NEPA Pre-Filing Process, March 20, 2015.
[11] Rio Grande Draft Resource Report 1, May 13, 2015.
[12] http://www.citymayors.com/gratis/uscities_growth.html
[13] http://www.sanantonioedf.com/living/demographics/

Hays counties, located north of Bexar County on the IH-35 corridor between Austin and San Antonio, are also expected to see significant growth.

The load in San Antonio is currently served by local generation, located near the southern edge of the county, and the 345 kV transmission loop connected to an inner 138 kV network. The bulk of the city's power needs are met by import paths from the Clear Springs, Zorn, and Elm Creek substations located in neighboring Guadalupe County (east of Bexar County) and the Kendall substation located in Kendall County (north of Bexar County).

In 2014, CPS Energy announced that the J.T. Deely coal-fired power plant, located in the southern part of Bexar County, will be retired at the end of 2018. With an output of approximately 850 MW, this plant currently represents nearly 20% of the generation capacity in Bexar County. The 2014 RTP identified that the combination of local demand growth and the retirement of J.T. Deely will result in reliability criteria violations on the transmission system from northeast Bexar County, extending into Comal and Hays Counties, unless significant improvements are constructed by 2019. Furthermore, in 2015, congestion rent on the 345 kV line between the Marion and Skyline substations was over $7.3 million (Table 3.1).

In June 2014, CPS Energy and LCRA Transmission Services Corporation submitted a project proposal to the RPG to address these violations. ERCOT conducted an independent review of the proposal and identified reliability criteria violations on several 345 kV and 138 kV lines and multiple transformers. In the independent review, ERCOT evaluated thirteen project alternatives to resolve the violations and endorsed approximately $86 million dollars of transmission upgrades to improve the transmission system supporting San Antonio before summer of 2019. The project strengthens the import path into Bexar County and mitigates the impact of contingencies, which are currently resulting in the high congestion costs mentioned above. The most noteworthy upgrades, as seen in Figure 4.7, are the construction of a new 18-mile 345 kV transmission line from Zorn to Marion substations, the addition of two 345/138 kV transformers at Clear Springs and Marion substations, and reconfiguration of the Hill Country—Elm Creek/Marion and Skyline—Marion/Elm Creek 345 kV double circuit lines.

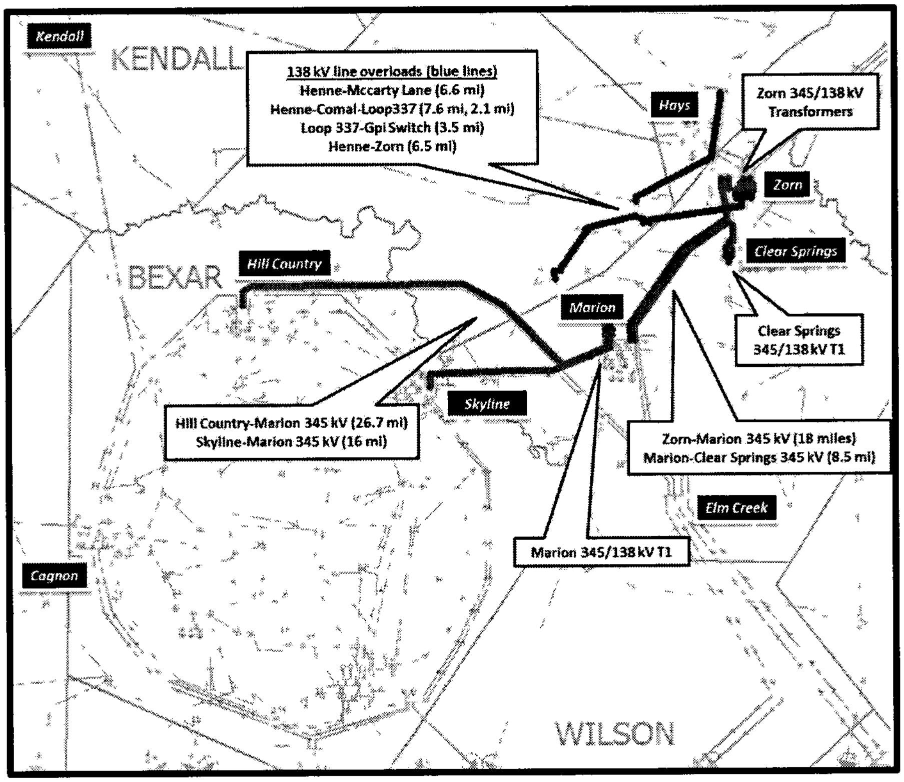

Figure 4.7: System Problems in the San Antonio Area

4.5 Additional Reliability-Driven Planned Projects

Continued growth of load throughout the state is a key driver for transmission improvements in the ERCOT Region. The recently completed 2015 Regional Transmission Plan (RTP) identified more than 60 projects needed to satisfy reliability planning criteria in the 2016 to 2021 timeframe. Twenty-one of these projects were previously identified in prior RTP studies for the ERCOT System. More information on these projects can be found in the 2015 RTP report posted on the ERCOT Market Information System website.

Chapter 5. Projected Constraints

5.1 Panhandle

The Panhandle region of the ERCOT grid, as seen in Figure 5.1, is a prime location for wind generation development. This development is accompanied by potential export limitations due to the operation of wind resources under weak grid conditions (as described in the April 2014 Panhandle Renewable Energy Zone Study Report[14]). As of September 9, 2015, 4,304 MW of wind capacity in the Panhandle satisfy the requirements of ERCOT Planning Guide Section 6.9 (PG 6.9), Addition of Proposed Generation Resources to the Planning Models. The total capacity of Panhandle wind resources with a SGIA exceeds 7,000 MW; another approximately 5,000 MW is under study for future interconnection in the region (see Figure 5.2).

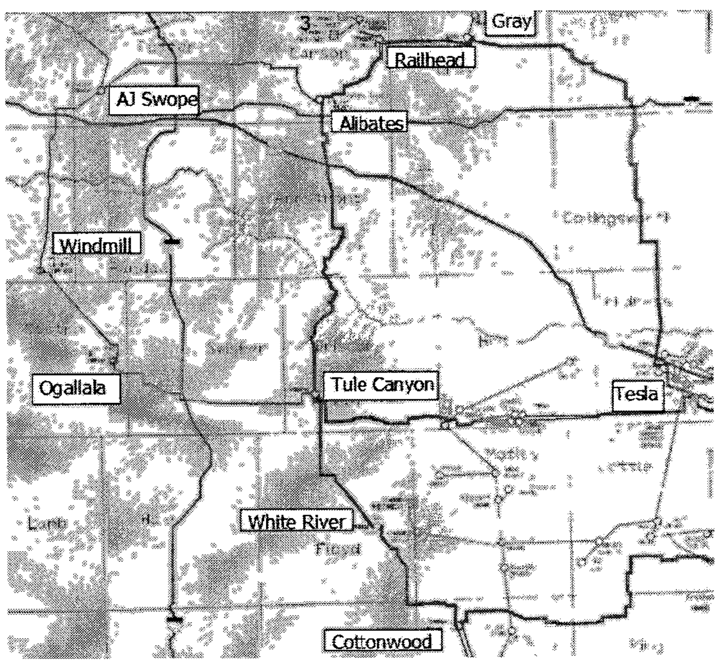

Figure 5.1: Panhandle Area Map

[14] Available at http://www.ercot.com/content/news/presentations/2014/Panhandle%20Renewable%20Energy%20Zone%20Study%20Report.pdf