APPENDIX A

Description of the Methodology for Determining Credit for Energy Efficiency

Attainment Demonstration for the
Dallas/Fort Worth Ozone Nonattainment Area

October 23, 2002 Proposal

Description of Control Measures

Senate Bill 5, passed by the 77th Texas Legislature, requires each political subdivision in non-attainment and near non attainment area to implement energy efficiency measures that reduce electricity consumption by the existing facilities of the political subdivision. 38 counties are affected by this provision of Senate Bill 5, specifically, Bastrop, Bexar, Brazoria, Caldwell, Chambers, Collin, Comal, Dallas, Denton, El Paso , Ellis, Ft. Bend, Galveston, Gregg, Guadalupe, Hardin, Harris, Harrison, Hays, Jefferson, Johnson, Kaufman, Liberty, Montgomery, Nueces, Orange, Parker, Rockwall, Rusk, San Patricio, Smith, Tarrant, Travis, Upshur, Victoria, Waller, Williamson, and Wilson Counties. Each political subdivision is required to establish a goal to reduce the electric consumption by the political subdivision by five percent each year for five years, beginning January 1, 2002. Each political subdivision is required to annually to report to the State Energy Conservation Office, on forms provided by that office, regarding the political subdivision's efforts and progress under this section. The State Energy Conservation Office is required to provide assistance and information to political subdivisions to help the political subdivisions meet the goals set under this section. The expected energy savings from these measures for eight reporting counties in the DFW area are shown in the following Table 1.

Table 1

Entity	County	2001 Use (kWh)	% Anticipated reduction, 2002-2007	2007 Anticipated Use	Reduction (kWh)
City of Allen	Collin	9,559,334	25	7,169,501	2,389,834
City of Blue Ridge	Collin		25	0	0
City of Celina	Collin	773,402	25	580,052	193,351
City of Frisco	Collin	8,208,617	25	6,156,463	2,052,154
City of Plano	Collin	45,185,724	25	33,889,293	11,296,431
City of Prosper	Collin	26,974	25	20,231	6,744
County of Collin	Collin	20,449,920	25	15,337,440	5,112,480
North Texas Municipal Water District	Collin	179,300,000	25	134,475,000	44,825,000
City of Addison	Dallas	8,700,000	25	6,525,000	2,175,000
City of Carrollton	Dallas	6,203,652	25	4,652,739	1,550,913
City of Cedar Hill	Dallas	6,326,684	25	4,745,013	1,581,671
City of Cockrell Hill	Dallas	373,088	25	279,816	93,272
City of Coppell	Dallas		25	0	0
City of Dallas	Dallas	972,457,029	25	729,342,772	243,114,257
City of Farmers Branch	Dallas	11,153,021	25	8,364,766	2,788,255
City of Grand Prairie	Dallas	16,356,995	25	12,267,746	4,089,249
City of Irving	Dallas	51,130,587	25	38,347,940	12,782,647
City of Lancaster	Dallas		25	0	0
City of Mesquite	Dallas		25	0	0
City of Richardson	Dallas	28,873,505	25	21,655,129	7,218,376
City of Rowlett	Dallas	3,483,937	25	2,612,953	870,984
City of Sachse	Dallas	1,497,452	25	1,123,089	374,363
County of Dallas	Dallas	73,149,596	25	54,862,197	18,287,399
Dallas-Fort Worth Airport	Dallas	113,945,502	25	85,459,127	28,486,376
North Texas Tollway Authority	Dallas	11,696,601	25	8,772,451	2,924,150
City of Copper Canyon	Denton		25	0	0
City of Cross Roads	Denton		25	0	0
City of Denton	Denton	32,947,782	25	24,710,837	8,236,946
City of Double Oak	Denton	19,380	25	14,535	4,845
City of Flower Mound	Denton	16,282,485	25	12,211,864	4,070,621
City of Highland Village	Denton		25	0	0
City of Lewisville	Denton	24,345,103	25	18,258,827	6,086,276
City of Pilot Point	Denton	1,566,292	25	1,174,719	391,573
City of Ponder	Denton	352,671	25	264,503	88,168
City of The Colony	Denton	7,741,697	25	5,806,273	1,935,424
City of Trophy Club	Denton		25	0	0
City of Westlake	Denton		25	0	0
Upper Trinity River Water	Denton	11,216,103	25	8,412,077	2,804,026

Entity	County	2001 Use (kWh)	% Anticipated reduction, 2002-2007	2007 Anticipated Use	Reduction (kWh)
District					
City of Midlothian	Ellis	5,040,857	25	3,780,643	1,260,214
City of Milford	Ellis	299,635	25	224,726	74,909
City of Oak Leaf	Ellis		25	0	0
City of Waxahachie	Ellis	14,793,090	25	11,094,818	3,698,273
City of Alvarado	Johnson	2,888,553	25	2,166,415	722,138
City of Burleson	Johnson	3,730,437	25	2,797,828	932,609
City of Venus	Johnson		25	0	0
County of Johnson	Johnson		25	0	0
City of Crandall	Kaufman		25	0	0
City of Grays Prairie	Kaufman		25	0	0
County of Kaufman	Kaufman		25	0	0
City of Hudson Oaks	Parker	419,744	25	314,808	104,936
City of Weatherford	Parker	11,123,377	25	8,342,533	2,780,844
Benbrook Water and Sewer Authority	Tarrant	3,789,190	25	2,841,893	947,298
City of Arlington	Tarrant	82,213,286	25	61,659,965	20,553,322
City of Benbrook	Tarrant	1,707,869	25	1,280,902	426,967
City of Blue Mound	Tarrant		25	0	0
City of Colleyville	Tarrant	3,666,772	25	2,750,079	916,693
City of Crowley	Tarrant		25	0	0
City of Euless	Tarrant	10,345,775	25	7,759,331	2,586,444
City of Everman	Tarrant	543,843	25	407,882	135,961
City of Fort Worth	Tarrant	260,628,659	25	195,471,494	65,157,165
City of Grapevine	Tarrant		25	0	0
City of Hurst	Tarrant	9,473,502	25	7,105,127	2,368,376
City of Keller	Tarrant	1,080,630	25	810,473	270,158
City of Kennedale	Tarrant	3,271,682	25	2,453,762	817,921
City of North Richland Hills	Tarrant		25	0	0
City of Southlake	Tarrant	7,224,084	25	5,418,063	1,806,021
City of Watauga	Tarrant		25	0	0
County of Tarrant	Tarrant		25	0	0
Tarrant Regional Water District	Tarrant	40,521,661	25	30,391,246	10,130,415
Trinity River Authority of Texas, Northern Region	Tarrant	125,230,795	25	93,923,096	31,307,699
Total					**562,829,144**

Senate Bill 7, passed by the 76th Texas Legislature, requires each electric utility to provide, through market-based standard offer programs or limited, targeted, market-transformation programs, incentives sufficient for retail electric providers and competitive energy service providers to acquire additional cost-effective energy efficiency equivalent to at least 10 percent of the electric utility's annual growth in demand. The Public Utility Commission of Texas has issued regulations for this program at §25.181 through 183. Table 2 shows the expected energy savings from this program.

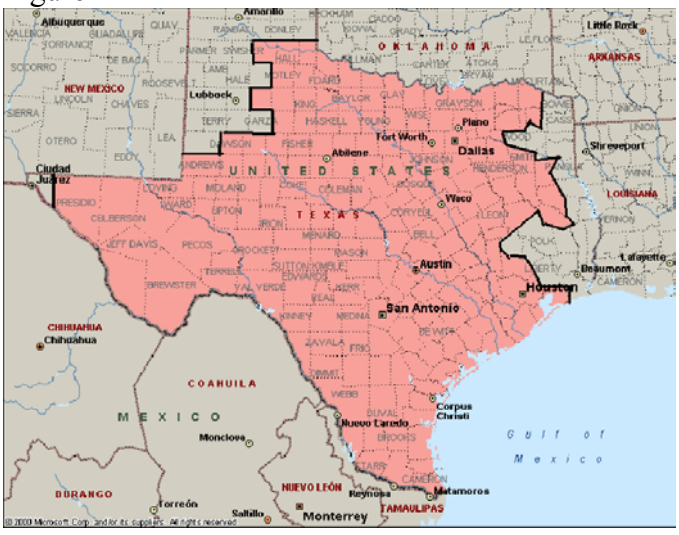
Table 2

Project Category	Projected 2007 MWh Savings from each utility								
	AEP-CPL	AEP-SWEPCO	AEP-WTU	EGSI	Reliant	SPS/Excel	TNMP	TXU-ONCOR	TOTAL
Indus./Lg. Comm. SOP	24,807	8,641	3,415	10,781	73,339	6,813	2,353	167,783	297,932
Res./Sm. Comm. SOP	31,346	6,712	5,662	5,484	16,953	3,320	2,653	32,266	104,396
H-t-R SOP	5,208	1,451	830	3,074	3,322	377	0	14,933	29,195
Load Mgmnt. SOP	0	0	0	0	0	0	0	0	0
Energy Star Home MTP	0	0	0	2,082	10,333	0	356	25,813	38,584
AC Distrib. MTP	0	0	0	0	8,346	1,473	0	32,266	42,085
AC Installer MTP	0	0	0	0	0	0	0	25,813	25,813
Windows MTP	0	0	0	0	0	0	0	22,586	22,586
TOTAL	**61,361**	**16,804**	**9,907**	**21,421**	**112,293**	**11,983**	**5,362**	**321,460**	**560,591**

Summary of NOx Reductions Estimation

The energy savings resulting from the SB7 and SB5 measures are expected to achieve reductions of NOx emissions from electricity generators. This proposed SIP estimates county-wide NOx reductions only within the ERCOT territory. ERCOT represents a bulk electric system located totally within the state of Texas, serves about 85% of Texas' electrical demand (approximately five million customers) and manages the operation of more than 70,000 megawatts of generation and more than 37,000 miles of transmission lines.[1] Figure 1 illustrates the boundary of the ERCOT region[2].

Figure 1

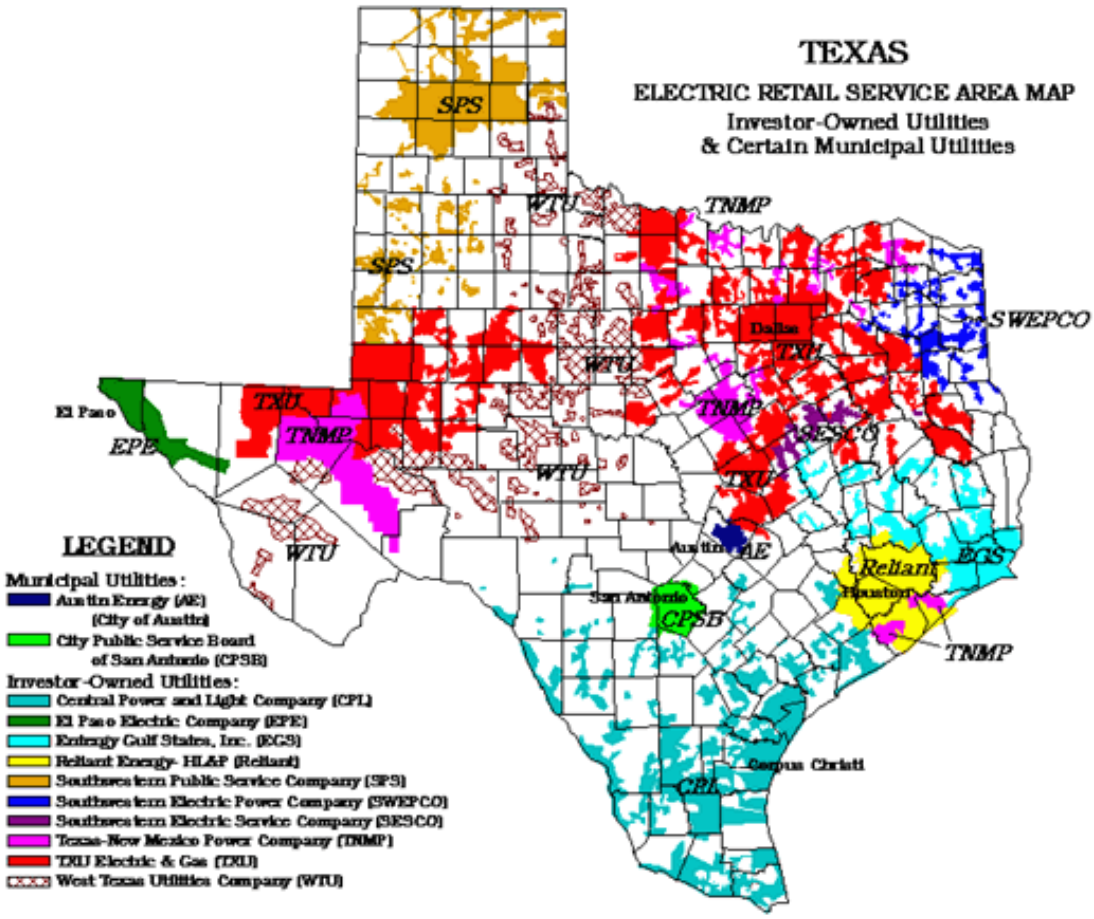


[1] http://www.nerc.com/regional/ercot.html

[2] As of May 17, 20002, this map was published at http://www.ercot.com/Images/NewsRoom/MediaBank/Research/NetworkMap_lg.gif

Within the ERCOT region are several service territories. These are the territories in which electricity service are independently managed. Figure 2 illustrates these service territories.[3]

Figure 2



A methodology has been designed to estimate the NOx emission reductions resulting from the energy savings. The input for the methodology is the expected annual electricity savings (MWh) for 2007 for each service territory. The output of the methodology is county-wide annual emission reductions from electricity generators, which are converted into daily values by dividing the annual value by 365 days. This methodology entails the following steps.

Step 1. Estimate the amount of electricity generation that would be curtailed in each service territory for a given amount of electricity demand savings in a particular service territory.

[3] Source: http://www.puc.state.tx.us/electric/map.cfm

Step 2. Estimate the amount of generation from each plant that would be curtailed for a given amount of generation curtailment in a particular service territory.
Step 3. Combine information from the first two steps togther to estimate the electricity generation reductions from each plant in the ERCOT region for a given amount of electricity demand reduction occurring in a particular service territory.
Step 4. Apply plant specific emission factors to the curtailed generation at each plant, which are the results from step 3.
Step 5. Cumulate the annual emission reductions at each location into county-wide totals.

A large source of data used within this methodology is the EPA's Emissions and Generation Resource Integrated Database (E-GRID) version 2.0. E-GRID is a publicly available database available at http://www.epa.gov/airmarkets/egrid/.
E-GRID is a comprehensive data base of information on the environmental attributes to the U.S. electric power system. E-GRID provides emissions and resource mix data for every power plant, electric generating company, State, and region of the U.S. power grid. At each of these levels, E-GRID reports data on emissions of sulfur dioxide, nitrogen oxide, mercury, and carbon dioxide, as well as power plant operating data such as heat input, generating capacity, and net generation. E-GRID is assembled from a variety of data collected by the EPA, the Energy Information Administration (EIA), and Federal Energy Regulatory Commission (FERC). Major electronic data sources include EPA's Emissions Tracking System/Continuous Emissions Monitoring (ETS/CEM), National Air Pollutant Emission Trends (NET) fossil fuel steam component, EPA Electric Utility Steam Generating Units Hazardous Air Pollutant Emission Study: 1999 Mercury Information Collection Effort Data Base, EIA Forms EIA-759, -767, -860A, -860B, and -861, and FERC Forms FERC-423 and -714.

One assumption incorporated in the method is that no electricity is imported into or exported out of the ERCOT region. In reality, some electric electricity is imported into or exported out of the ERCOT NERC region. However, the amount that is exchanged is relatively small. In 1998, 1,193,479 MWh was imported from the Southwest Power Pool (SPP) and 1,004,568 MWh was exported into SPP, resulting in a net interchange of 188,911 MWh. In comparison, 296,042,502 MWh was generated within the ERCOT region in 1998.[4] The amount of electricity imported into and exported out of the ERCOT region is less than one-half of a percent of the electricity generated within the ERCOT region.

Step 1
The first step estimates how much electricity generation would be curtailed in each service territory for a given amount of electricity demand savings occurring in a particular service territory.

Within the ERCOT region are several power control areas. These power control areas are related to the service territories mentioned above. Electricity flows between these power control areas. The amount of electricity generated in each of these power control areas varies greatly, as well as the fuel sources and emission characteristics of electricity generated. Tables 3 and 4 show 1998 annual

[4]1998 generation, import, export data source is from EPA's Emissions and Generation Resource Integrated Database (E-GRID) version 2.0. http://www.epa.gov/airmarkets/egrid/

electricity generation, the annual average fuel mix, and the annual average emission rates within each of the ERCOT power control areas as reported in E-GRID.

Table 3

Power control area (PCA) name	PCA 1998 annual net generation (MWh)	PCA average 1998 annual NOx emission rate (lbs/MWh)	PCA average 1998 annual SO2 emission rate (lbs/MWh)	PCA average 1998 annual CO2 emission rate (lbs/MWh)
American Electric Power - West (ERCOT)	33,028,932	2.69	1.69	1,475
Austin Energy	3,712,929	1.44	0.01	968
Brownsville Public Utils Board	236,180	0.36	0.00	156
Lower Colorado River Authority	12,037,446	3.29	4.57	2,056
Reliant Energy HL&P	104,265,741	1.88	2.11	1,185
San Antonio Public Service Bd	14,646,928	3.24	3.83	1,887
South Texas Electric Coop Inc	3,239,094	4.61	14.20	2,544
Texas Municipal Power Pool	8,804,340	2.26	1.99	1,444
Texas-New Mexico Power Co	10,258,063	0.92	1.34	1,319
TXU Electric	105,812,850	3.34	6.02	1,480

Step 2

Table 4

	1998 PCA generation resource mix (percent)							
Power control area name	coal	oil	gas	nuclear	hydro	biomass/ wood	wind	other fossil (tires, batteries, chemicals, etc.)
American Electric Power - West (ERCOT)	28.9	0.6	69.7	0.0	0.1	0.0	0.0	0.7
Austin Energy	0.0	1.1	98.9	0.0	0.0	0.0	0.0	0.0
Brownsville Public Utils Board	0.0	0.7	99.3	0.0	0.0	0.0	0.0	0.0
Lower Colorado River Authority	64.4	0.1	30.8	0.0	4.0	0.0	0.7	0.0
Reliant Energy HL&P	27.3	1.2	49.9	20.0	0.0	0.1	0.0	1.5
San Antonio Public Service Bd	64.1	0.0	35.9	0.0	0.0	0.0	0.0	0.0
South Texas Electric Coop Inc	94.1	0.1	1.8	0.0	4.0	0.0	0.0	0.0
Texas Municipal Power Pool	28.5	6.1	62.6	0.0	2.8	0.0	0.0	0.0
Texas-New Mexico Power Co	20.0	0.0	72.2	0.0	0.0	0.4	0.0	7.4
TXU Electric	40.1	0.1	42.6	16.9	0.0	0.2	0.0	0.1

The E-GRID database also contains information about how much electricity was exchanged between each power control area within the ERCOT region in 1998. This information along with the amount of electricity generated within each power control area is used to determine from where electricity originates. For cases where two adjacent power control areas reported different quantities of exchanged electricity, this method relies on the average of the two values. This method also

presumes that the proportions of electricity originating from each power control area in 1998 will remain the same in 2007.

The annual generation and the annual interchange of electricity is configured into simultaneous equations, even though the electricity is not exchanged simultaneously. Table 5 shows the results of the first part of this step using the E-GRID data for the power control areas in ERCOT. Each number represents the percentage of electricity generation originating from the power control area labeled at the top of the column that exists in the power control area labeled at the left of the row. The sum of the numbers across any row equals 100%. Another way of expressing the information in this table is illustrated by the following example for the second row of information: in 1998, of the electricity within the Austin Energy PCA, 1.4% originated from the American Electric Power-West (ERCOT) PCA, 31.9% originated from the Austin Energy PCA, 36.4% originated from the Lower Colorado River Authority PCA, 15.0% originated from the Reliant Energy HL&P PCA, 3.4% originated from the San Antonio Public Service Bd PCA, 0.2% originated from the South Texas Electric Coop Inc PCA, 2.0% originated from the Texas Municipal Power Pool PCA, 0.3% originated from the Texas-New Mexico Power Co PCA, and 9.3% originated from the TXU Electric PCA.

Table 5

Percent of electricity originating from the column labeled PCA within the row labeled PCA.	American Electric Power - West (ERCOT)	Austin Energy	Brownsville Public Utils Board	Lower Colorado River Authority	Reliant Energy HL&P	San Antonio Public Service Bd	South Texas Electric Coop Inc	Texas Municipal Power Pool	Texas-New Mexico Power Co	TXU Electric
American Electric Power - West (ERCOT)	72.0	0.1	0.0	1.0	12.1	2.2	2.1	1.1	0.3	9.2
Austin Energy	1.4	31.9	0.0	36.4	15.0	3.4	0.2	2.0	0.3	9.3
Brownsville Public Utils Board	53.2	0.0	26.1	0.7	9.0	1.6	1.5	0.8	0.2	6.8
Lower Colorado River Authority	2.4	3.6	0.0	63.7	5.1	5.9	0.3	3.2	0.3	15.4
Reliant Energy HL&P	0.5	0.0	0.0	0.6	92.0	0.1	0.1	1.3	1.3	4.0
San Antonio Public Service Bd	0.5	0.1	0.0	1.7	20.9	74.7	0.1	0.4	0.3	1.3
South Texas Electric Coop Inc	14.8	0.0	0.0	0.5	8.4	3.1	49.3	10.4	0.3	13.1
Texas Municipal Power Pool	2.3	0.1	0.0	0.9	5.3	0.3	3.0	41.7	0.7	45.7
Texas-New Mexico Power Co	0.5	0.0	0.0	0.2	6.4	0.0	0.0	0.4	76.7	15.6
TXU Electric	2.6	0.0	0.0	0.9	8.8	0.2	0.2	1.9	1.4	83.9

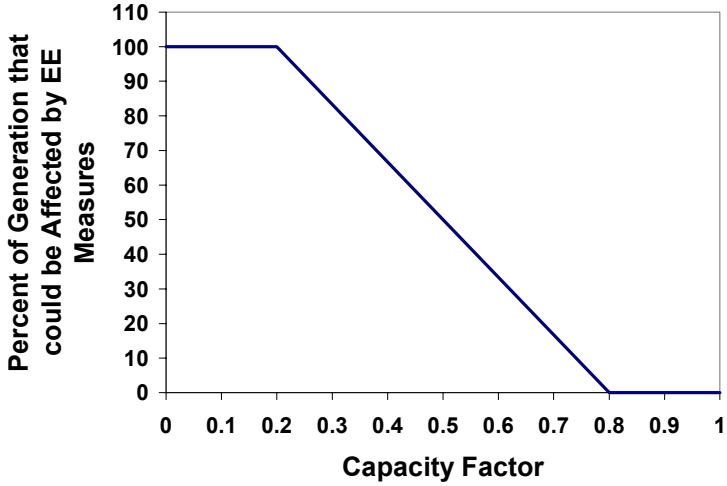
Step 3

This step estimates the location of electricity generation reductions to the plant level within a particular power control area. This step uses E-GRID plant level data for all of the generators in the

ERCOT region. Electric generating units that are expected to be retired by 2007 are removed from the calculation. New Units and expected operating characteristics (annual generation, capacity factor, and emission rates) are added to the E-GRID plant level data.

This step estimates how much of each plant's generation is likely to be affected by energy efficiency measures. Instead of using dispatch modeling, these values are determined by using the plant's fuel type and capacity factor. First, the generation from nuclear and hydroelectric plants are assumed to not be affected by energy efficiency measures. Nuclear units are normally baseload units (among the first units to be dispatched to accommodate electricity demand). Hydroelectric plants are also generally baseload units and generate electricity whenever adequate supplies are available. Capacity factor is a measure of a plant's generation relative to its maximum capacity over a given period of time and is generally a value between 0 and 1. E-GRID lists plant specific capacity factors on an annual basis. In this method, plants that have a capacity factor of 0.8 or greater are considered to be baseload units and none of their generation would be affected by energy efficiency measures. In this method, plants that have a capacity factor of 0.2 or less are considered to be "peaking" units and all of their generation would be affected by energy efficiency measures. Figure 3 illustrates the relationship between capacity factor and how much of each plant's generation could be affected by energy efficiency measures.

Figure 3



Within each power control area, all of the generation that could be affected by energy efficiency measures is summed. Each plant's available generation reductions are then divided by this total amount, expressing the figures as a percent of the power control area total. This procedure presumes that there are no transmission constraints within each power control area.

Table 6 shows units that are expected to be retired by 2007 as reported to EIA under form EIA-411 filed APRIL 2002. Adjustments were made to the 1998 E-GRID data accordingly.

Table 6

Company Name	Plant Name	Prime Mover	Summer Capability, MW	Winter Capability , MW	Retirement Year	Fuel A	NOTE
Bio-Energy Partners	Bio-Energy Partners 1	OT	2.8	3.3	2003	OBG	"baseload" unit - method assumes no reduction from this plant
Reliant Energy	Hiram Clarke 5	GT	13	13	2004	NG	
Reliant Energy	Hiram Clarke 6	GT	13	13	2004	NG	
Reliant Energy	Hiram Clarke GT1	GT	13	13	2004	NG	no generation listed in E-GRID for these units.
Reliant Energy	Hiram Clarke GT2	GT	13	13	2004	NG	
Reliant Energy	Hiram Clarke GT3	GT	13	13	2004	NG	
Reliant Energy	Hiram Clarke GT4	GT	13	13	2004	NG	
Reliant Energy	T H Wharton 51	GT	58	58	2004	NG	
Reliant Energy	T H Wharton 52	GT	58	58	2004	NG	
Reliant Energy	T H Wharton 53	GT	58	58	2004	NG	no generation listed in E-GRID for these units
Reliant Energy	T H Wharton 54	GT	58	58	2004	NG	
Reliant Energy	T H Wharton 55	GT	58	58	2004	NG	
Reliant Energy	T H Wharton 56	GT	58	58	2004	NG	
Reliant Energy	Deepwater 7	ST	178	178	2005	NG	spreadsheet amended so that no reductions are estimated from this plant
Reliant Energy	Webster 3	ST	374	374	2005	NG	spreadsheet amended so that no reductions are estimated from this plant
Reliant Energy	Webster GT1	GT	13	13	2005	NG	
Reliant Energy	Greens Bayou 73	GT	54	54	2006	NG	
Reliant Energy	Greens Bayou 74	GT	54	54	2006	NG	
Reliant Energy	Greens Bayou 81	GT	54	54	2006	NG	these units do not appear in E-GRID
Reliant Energy	Greens Bayou 82	GT	64	64	2006	NG	
Reliant Energy	Greens Bayou 83	GT	64	64	2006	NG	
Reliant Energy	Greens Bayou 84	GT	64	64	2006	NG	
Reliant Energy	P H Robinson 1	ST	461	461	2006	NG	generation and emissions from this unit are removed from spreadsheet
Reliant Energy	Sam Bertron ST1	ST	174	174	2006	NG	generation and emissions from these unit are removed from spreadsheet
Reliant Energy	Sam Bertron ST2	ST	174	174	2006	NG	

Step 4

The information from the first two steps are combined so that the generation reductions for each plant within ERCOT is determined for a given amount of electricity demand savings that is implemented in a particular service territory.

Step 5

Each plant's emission factor for NOx is applied to the generation reduction to determine the emission reduction. E-GRID is the primary source for this step.

Step 6
The final step cumulates the plant level data into countywide totals.

Results

Inputs

Tables 7 and 8 describe the 2007 energy savings projections from the SB5 and SB7 programs that are accounted for in this proposed SIP.

Table 7: SB5 Municipal energy use reductions

Service Territory	2007 MWh reduction
San Antonio Public Service Board	67,071
Reliant	331,074
TNMP	3,627

Table 8: SB7 energy use reductions

Serivce Territory	2007 MWh Savings
AEP West (CPL+WTU)	71268
Reliant	112293
TNMP	5362
TXU-ONCOR	321460

Outputs

Table 9 describes the county wide NOx emission reductions. It is important to note that these NOx emission reduction figures do not account for the presence of a cap and trade program. It is expected that the emission reductions that are associated with a cap and trade program would account for at least a portion of the emission reductions associated with energy savings measures. *Because the cap and trade program prescribes the total amount of NOx that may be emitted from fossil fuel fired electric generating sources regardless of the amount of electricity generated by these sources, there is no way to rely on reductions within the SIP unless a commensurate quantity of allowances are retired.*

Table 9

County	NOx Reductions	
	Pounds per year	Tons per day
ANGELINA	581	0.0008
ATASCOSA	0	0.0000
BASTROP	3,615	0.0050
BEXAR	6,767	0.0093
BOSQUE	0	0.0000
BRAZORIA	24,426	0.0335
BRAZOS	3,735	0.0051
BURNET	0	0.0000
CALHOUN	16,440	0.0225
CAMERON	12,661	0.0173
CHAMBERS	172,440	0.2362
CHEROKEE	43,099	0.0590
COKE	2,816	0.0039
COLEMAN	1,484	0.0020
COLLIN	12,175	0.0167
COMAL	0	0.0000
CROCKETT	12,734	0.0174
DALLAS	212,717	0.2914
DE WITT	0	0.0000
DENTON	5,063	0.0069
FANNIN	70,315	0.0963
FAYETTE	15,835	0.0217
FORT BEND	495,927	0.6794
FREESTONE	90,928	0.1246
FRIO	6,489	0.0089
GALVESTON	195,262	0.2675
GOLIAD	0	0.0000
GONZALES	0	0.0000
GRIMES	7,932	0.0109
GUADALUPE	0	0.0000
HARDEMAN	1,317	0.0018
HARRIS	201,581	0.2761
HASKELL	14,017	0.0192
HAYS	9	0.0000
HENDERSON	12,318	0.0169
HIDALGO	11,424	0.0156
HOOD	91,579	0.1255
HOWARD	1,649	0.0023
HUDSPETH	0	0.0000
HUNT	0	0.0000
JASPER	0	0.0000
JOHNSON	172	0.0002
JONES	12,632	0.0173

County	NOx Reductions	
	Pounds per year	Tons per day
LAMAR	2,250	0.0031
LIMESTONE	22,366	0.0306
LLANO	2,205	0.0030
MATAGORDA	0	0.0000
MAVERICK	0	0.0000
MCLENNAN	166,536	0.2281
MILAM	0	0.0000
MITCHELL	164,015	0.2247
NOLAN	2,128	0.0029
NUECES	65,853	0.0902
PALO PINTO	12,201	0.0167
PARKER	1,027	0.0014
PECOS	215	0.0003
RED RIVER	9,268	0.0127
ROBERTSON	9,379	0.0128
RUSK	27,789	0.0381
SOMERVELL	0	0.0000
STARR	0	0.0000
TARRANT	140,303	0.1922
TAYLOR	495	0.0007
TITUS	41,882	0.0574
TOM GREEN	0	0.0000
TRAVIS	568	0.0008
UPTON	159	0.0002
VAL VERDE	0	0.0000
VICTORIA	28,036	0.0384
WARD	215,749	0.2955
WEBB	5,665	0.0078
WHARTON	2,542	0.0035
WICHITA	651	0.0009
WILBARGER	152	0.0002
WISE	5	0.0000
YOUNG	68,596	0.0940
TOTAL	**2,750,172**	**3.7674**

Co-benefits

In addition to NOx emission benefits, the energy savings will result in emissions reductions of other products of combustion from electric generating units such as sulfur dioxide (SO_2) and carbon dioxide (CO_2) . Although such emission reductions do not have any significant effect on ozone concentrations, they are worth noting. Tables 10 and 11 show the concurrent SO_2 and CO_2 reductions.

Table 10

County	SO2 Reductions (Pounds per year)
ANGELINA	1
ATASCOSA	0
BASTROP	10
BEXAR	4,547
BOSQUE	0
BRAZORIA	216
BRAZOS	17
BURNET	0
CALHOUN	74
CAMERON	35
CHAMBERS	713
CHEROKEE	119
COKE	9
COLEMAN	2
COLLIN	106
COMAL	0
CROCKETT	15
DALLAS	805
DE WITT	0
DENTON	14
FANNIN	333
FAYETTE	27,399
FORT BEND	903,807
FREESTONE	562,221
FRIO	14
GALVESTON	467
GOLIAD	0
GONZALES	0
GRIMES	16,343
GUADALUPE	0
HARDEMAN	3
HARRIS	11,298
HASKELL	26
HAYS	1
HENDERSON	36
HIDALGO	20
HOOD	192
HOWARD	13
HUDSPETH	0
HUNT	0
JASPER	0
JOHNSON	3
JONES	37
LAMAR	17
LIMESTONE	30,945
LLANO	7
MATAGORDA	0
MAVERICK	0
MCLENNAN	223
MILAM	0
MITCHELL	354
NOLAN	16

County	SO2 Reductions (Pounds per year)
NUECES	883
PALO PINTO	36
PARKER	2
PECOS	1
RED RIVER	12
ROBERTSON	30,049
RUSK	93,186
SOMERVELL	0
STARR	0
TARRANT	316
TAYLOR	1
TITUS	196,756
TOM GREEN	0
TRAVIS	3
UPTON	1
VAL VERDE	0
VICTORIA	55
WARD	206
WEBB	20
WHARTON	7
WICHITA	47
WILBARGER	1
WISE	0
YOUNG	89
TOTAL	**1,882,130**

Table 11

County	CO2 Reductions Tons per year
ANGELINA	230
ATASCOSA	0
BASTROP	920
BEXAR	1,896
BOSQUE	0
BRAZORIA	24,033
BRAZOS	1,046
BURNET	0
CALHOUN	6,845
CAMERON	2,897
CHAMBERS	53,030
CHEROKEE	10,938
COKE	753
COLEMAN	30
COLLIN	4,116
COMAL	0
CROCKETT	1,468
DALLAS	43,370
DE WITT	0
DENTON	815
FANNIN	17,885
FAYETTE	5,099
FORT BEND	143,351
FREESTONE	26,715
FRIO	1,534
GALVESTON	46,946
GOLIAD	0
GONZALES	0
GRIMES	2,338
GUADALUPE	0
HARDEMAN	281
HARRIS	58,259
HASKELL	2,512
HAYS	5
HENDERSON	3,296
HIDALGO	1,849
HOOD	15,817
HOWARD	1,203
HUDSPETH	0
HUNT	0
JASPER	0
JOHNSON	300
JONES	3,811

County	CO2 Reductions Tons per year
LAMAR	1,661
LIMESTONE	5,970
LLANO	671
MATAGORDA	0
MAVERICK	0
MCLENNAN	21,949
MILAM	0
MITCHELL	18,647
NOLAN	1,555
NUECES	13,693
PALO PINTO	3,476
PARKER	184
PECOS	121
RED RIVER	1,308
ROBERTSON	6,008
RUSK	8,670
SOMERVELL	0
STARR	0
TARRANT	30,139
TAYLOR	102
TITUS	15,779
TOM GREEN	0
TRAVIS	191
UPTON	92
VAL VERDE	0
VICTORIA	5,160
WARD	15,743
WEBB	2,098
WHARTON	574
WICHITA	475
WILBARGER	3
WISE	0
YOUNG	8,746
TOTAL	**646,603**