

MEMORANDUM

To: Pete Breitenbach
From: Edward Tai and Greg Yarwood
Date: Revised, December 16, 2005
Subject: CAMx results from two Texas EGU scenarios

Two CAMx runs were performed to evaluate the 8-hour ozone impact from adding seven proposed EGUs in Texas, and from eliminating EGUs retired as of August, 2005 for the 2010 future year. The runs were based on the Dallas/Fort Worth August 13-22, 1999 episode using the Run 40 configuration.

The modeling domain is shown in Figure 1, with a model top near 14 km. Inputs included meteorology from MM5 Run 6, which was based on the ETA PBL scheme coupled with the Noah land surface model, and boundary conditions that assigned moderate conditions in the mixed layer over land, and clean conditions over the Gulf and Atlantic, and all areas aloft. A modified version of CAMx 4.03 was used in which several NOx recycling reactions were added to the CB4 mechanism.

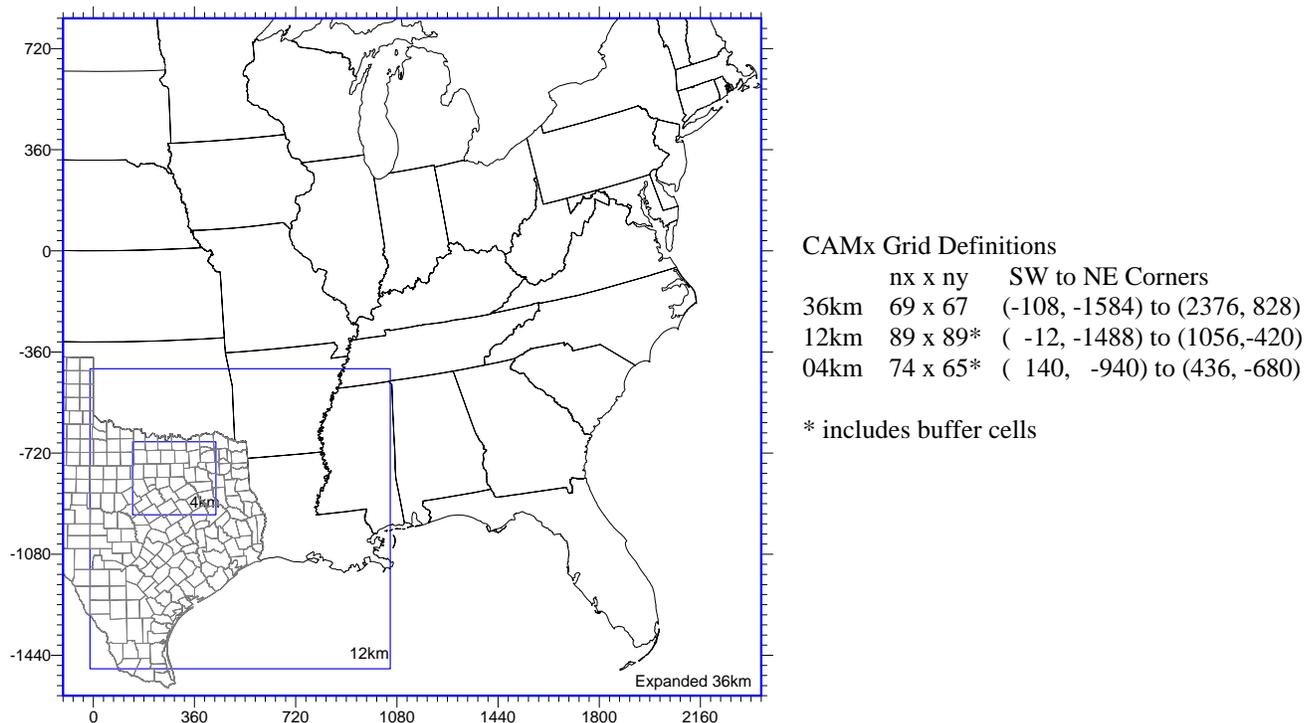


Figure 1. CAMx modeling domain.

Run 40.fy2010.txegu2

The run40.fy2010.txegu2 simulation added 10 point sources from 7 proposed EGUs to the 2010 base case, as listed in Table 1. The location of each EGU is plotted in Figure 2, scaled to the magnitude of each EGU's NOx emissions.

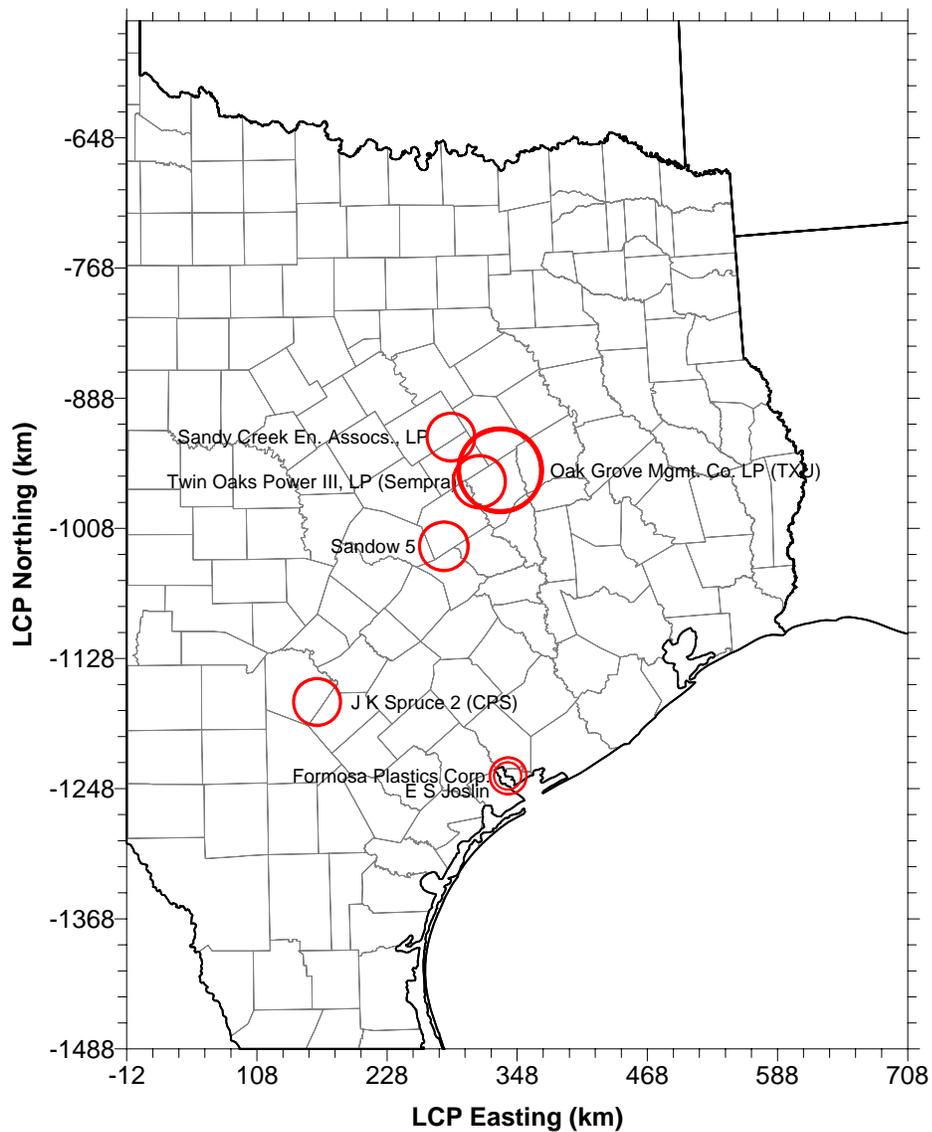
Figure 3 displays spatial plots of the daily maximum 8-hour ozone in the 12 km domain on the left side for each date in the episode (excluding the August 13 and 14 spin-up dates), and the contributions from the 7 EGUs to the daily maximum on the right. The non-attainment areas (NAA) and early action compact (EAC) areas are highlighted.

The majority of the proposed new point sources were located in Central Texas, where the highest 8-hour ozone contributions were found. Contributions up to 11 ppb could be found near or slightly downwind of the Oak Grove EGU, which had the highest NOx emissions, and diminished rapidly further downwind, as only small areas of the Austin EAC, and DFW and Houston/Galveston/Brazoria NAAs received 8-hour ozone of at least 1 ppb. Part of the Austin EAC was 1 ppb higher on all dates except August 18, mainly due to its proximity to the Sandow 5 EGU. In DFW, contributions exceeding 1 ppb were found in the western counties on August 16 and on its southern edge on August 17 – the date with the highest observed ozone in the base year. The proposed EGUs added at least 1 ppb ozone to parts of the HGB NAA on August 20.

The J K Spruce 2 EGU never added more than 1 ppb 8-hour ozone except locally on August 21. The combined stacks at Formosa Plastics and E.S. Joslin always contributed less than 1 ppb, and sometimes resulted in a small local ozone reduction.

Table 1. Emissions of the proposed Texas EGUs for 2010.

EGU	LCPx (km)	LCPy (km)	NOx (tpd)	VOC (tpd)	CO (tpd)
J K Spruce 2 (CPS)	163.447	-1168.084	6.6	0.3	53.8
Formosa Plastics Corp.	339.682	-1236.316	2.0	0.2	5.4
Formosa Plastics Corp.	339.679	-1236.260	2.0	0.2	5.4
E S Joslin	339.178	-1236.270	2.2	0.2	4.8
Sandy Creek En. Assocs. LP	286.888	-923.869	6.9	0.3	29.5
Sandow 5	280.349	-1024.523	3.6	0.2	3.6
Sandow 5	280.349	-1024.523	3.6	0.2	3.6
Oak Grove Mgmt. Co. LP (TXU)	332.257	-954.510	10.3	0.6	60.3
Oak Grove Mgmt. Co. LP (TXU)	332.197	-954.424	10.3	0.6	60.3
Twin Oaks Power III, LP (Sempra)	313.039	-964.875	8.2	0.4	44.6
Total			55.7	3.1	271.1



Proposed Texas EGUs by 2010

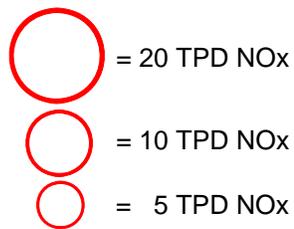


Figure 2. Map of proposed EGUs scaled by daily NOx emission rates.

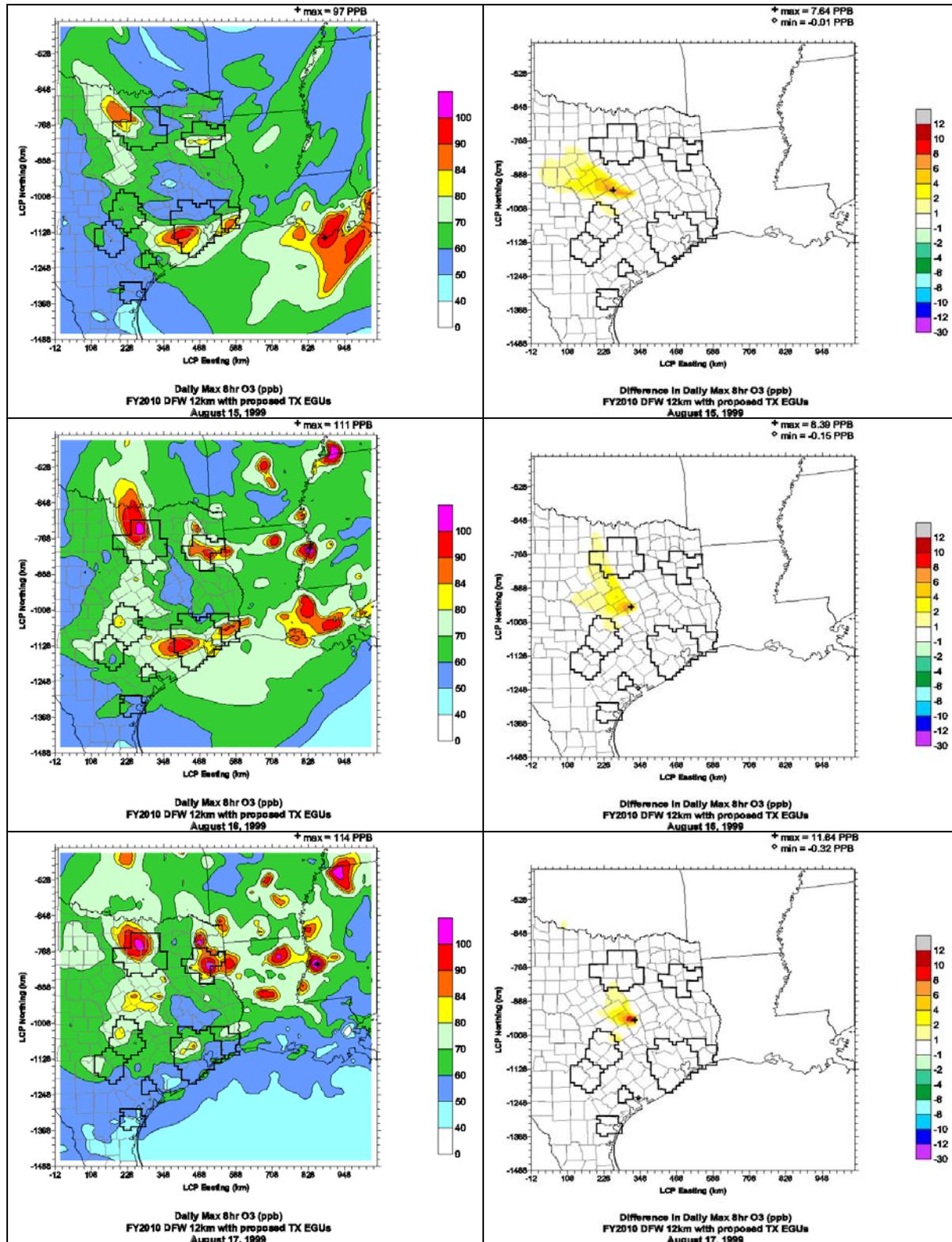


Figure 3. Daily maximum 8-hour ozone in the 12 km domain from Run40.fy2010.txegu2 (left) and contributions from the proposed Texas EGUs to the daily max ozone in 2010 (right).

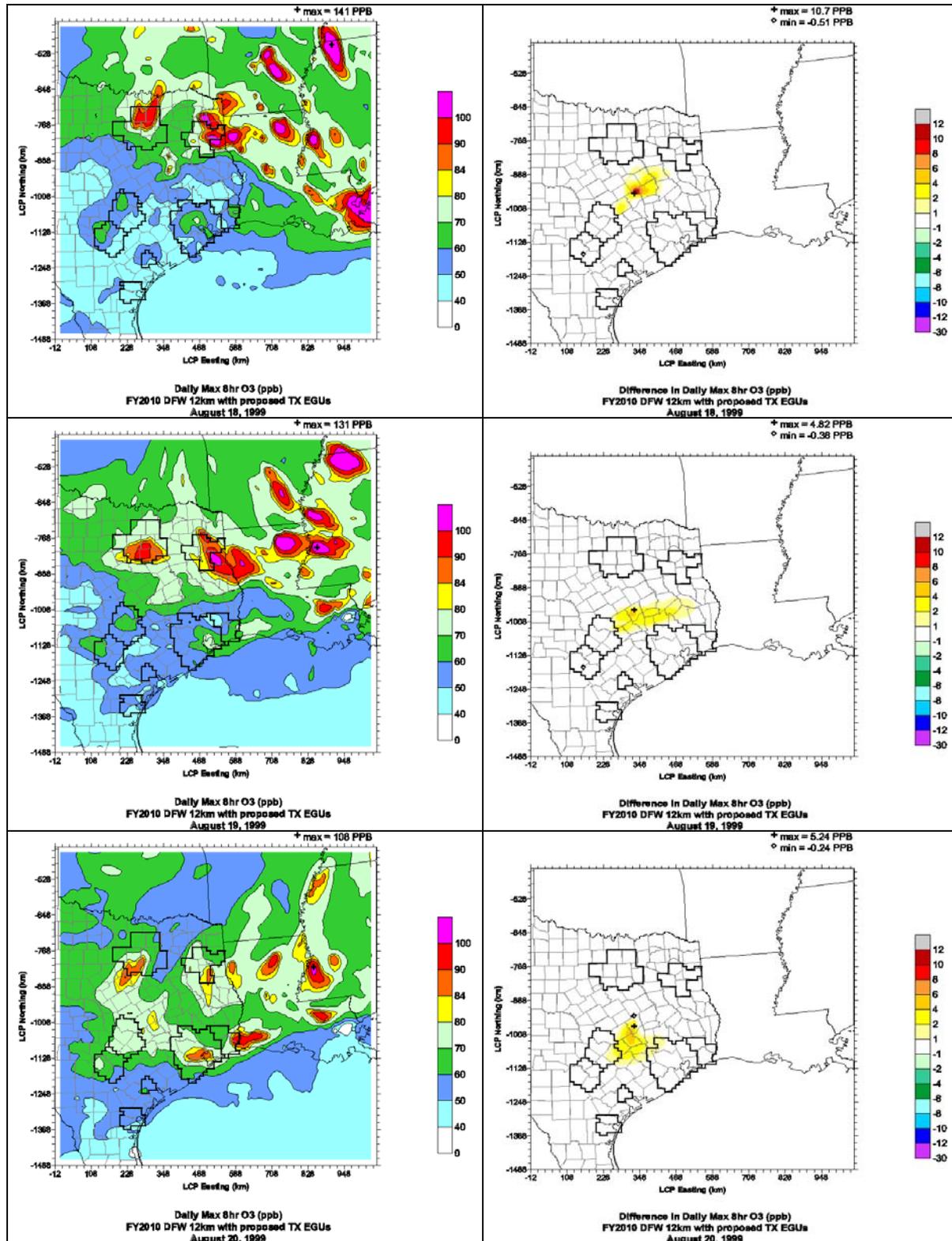


Figure 3. (continued). Daily maximum 8-hour ozone in the 12 km domain from Run40.fy2010.txegu2 (left) and contributions from the proposed Texas EGUs to the daily max ozone in 2010 (right).

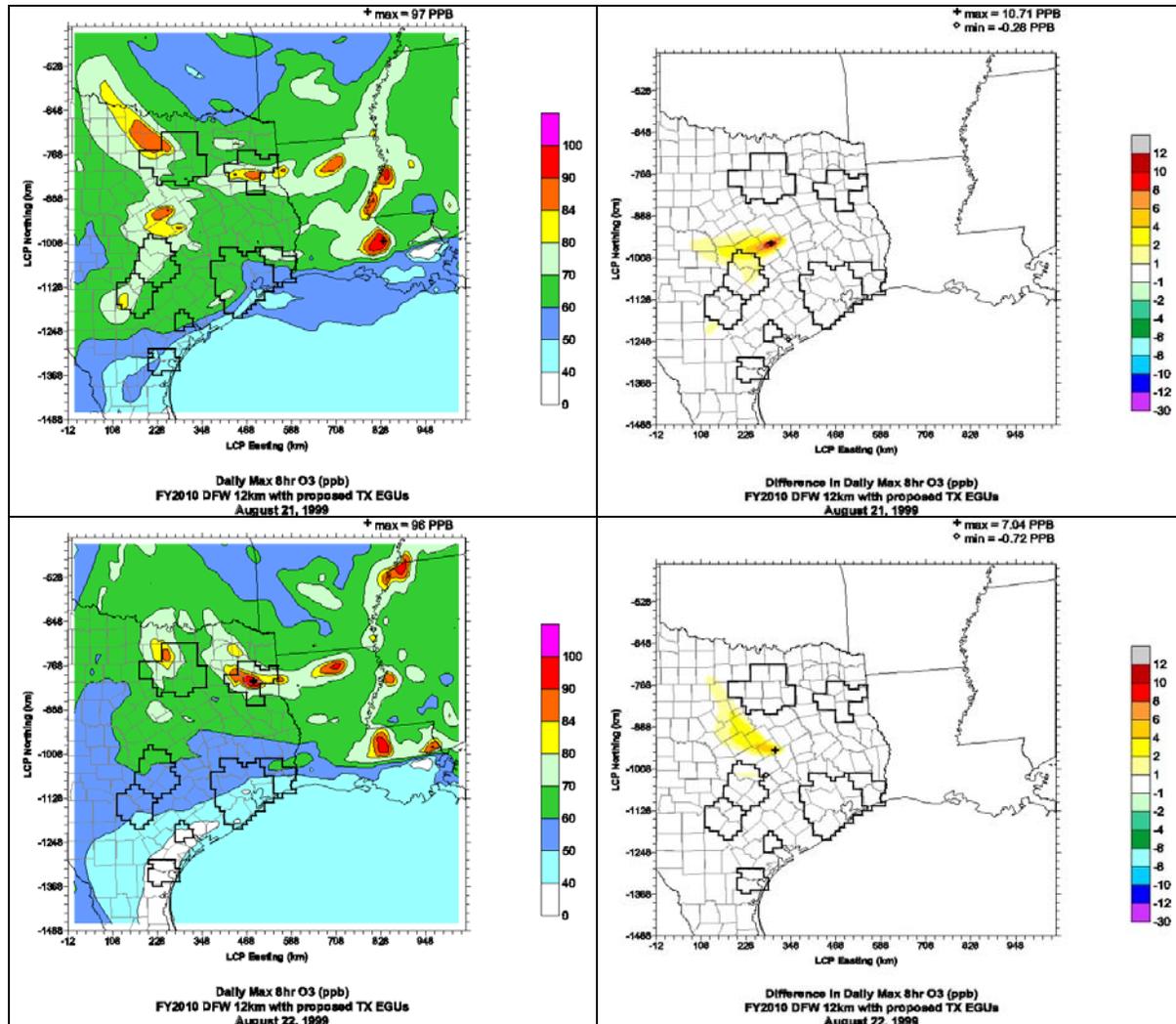
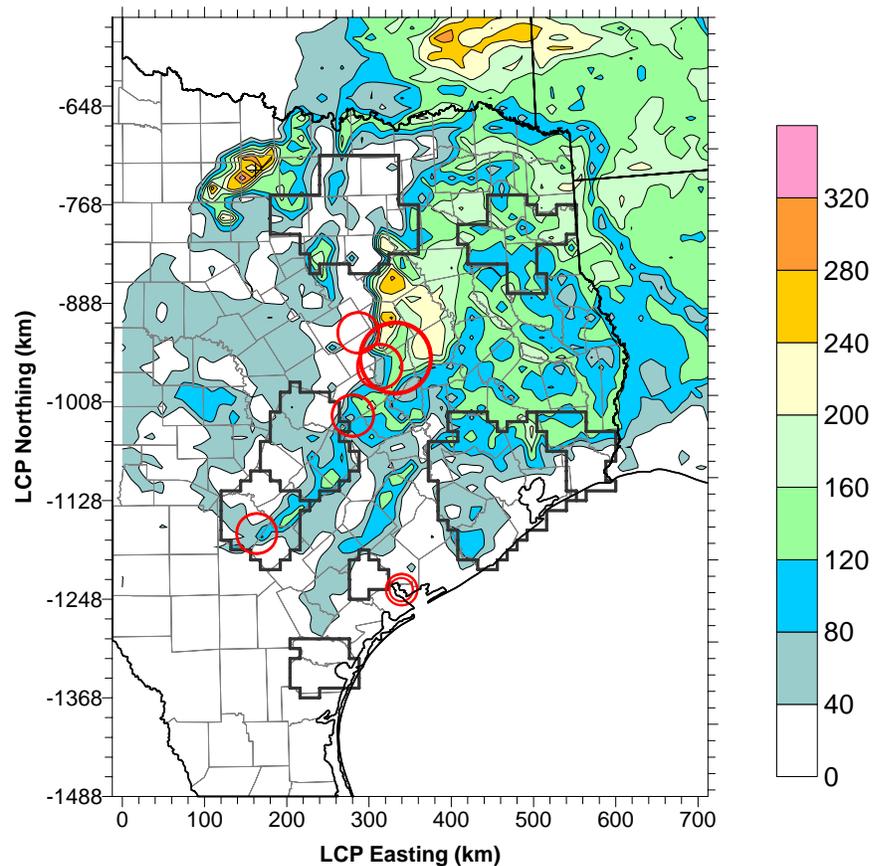


Figure 3. (concluded). Daily maximum 8-hour ozone in the 12 km domain from Run40.fy2010.txegu2 (left) and contributions from the proposed Texas EGUs to the daily max ozone in 2010 (right).

Table 2 lists the episode peak contribution to the daily maximum 8-hour ozone on any date and grid cell within a receptor area when the ozone was at least 70 ppb or 85 ppb. The DFW receptor was in 4 km resolution; the other receptors were in 12 km resolution. In the DFW NAA, the proposed EGUs added as much as 1.3 ppb 8-hour ozone to a grid-cell exceeding 85 ppb. Impacts to other receptors in exceedance were relatively small. When using a lower threshold of 70 ppb, the proposed EGUs impacted Austin the most with a peak increase of 3.4 ppb 8-hour ozone, but did not result in any exceedance grid cells. The proposed EGUs also contributed a peak over 3 ppb to DFW when looking at grid cells at least 70 ppb. The peak contribution to Houston/Galveston/Brazoria was 1.6 ppb when using grid-cells greater than or equal to 70 ppb; the largest contribution was a magnitude lower using grid cells exceeding 85 ppb.

A plot of the proposed EGUs superimposed over the daily isoprene emissions from biogenic sources, shown for August 17 in Figure 4, shows that the Oak Grove EGU is located in an area with somewhat high biogenic VOC emissions, making it more conducive to ozone formation. Biogenic isoprene emissions were also moderate near the Sandow 5 EGU, but lower near the JK Spruce 2 EGU, which might help explain why 8-hour ozone contributions downwind of the Sandow 5 EGU were frequently over 1 ppb, but not downwind of the JK Spruce 2 EGU, which emitted a comparable amount of NO_x (7.2 tpd from Sandow 5 vs. 6.6 tpd from JK Spruce 2). Biogenic emissions were low near the Formosa Plastics and ES Joslin EGUs (6.2 tpd NO_x, combined) and their 8-hour ozone contribution was always less than 1 ppb.



Daily Biogenic Isoprene Emissions (moles/day * 1000)
DFW 12km Biogenics
August 17, 1999

Figure 4. Proposed new EGU locations in relation to daily biogenic isoprene emissions on August 17.

Table 2. Peak 8-hour ozone contributions to each NAA and EAC in Texas from the proposed new EGUs.

Receptor	O3 > 85 ppb	O3 > 70 ppb
Dallas/Fort Worth	1.27	3.05
Houston/Galveston/Brazoria	0.14	1.60
Beaumont/Port Arthur	0.15	0.16
San Antonio	0	0.78
NE Texas	0.27	0.39
Austin	0	3.38
Victoria	0	0.13
Corpus Christi	0	0

Table 3 compares the 2010 8-hour ozone design values at the 9 DFW monitors for the 2010 base case and txegu2 runs, prior to truncating. Values were scaled to the 1999 center-weighted design values. The proposed EGUs added 0.2 ppb ozone to the 2010 future design value at Midlothian, and 0.1 ppb to most other sites. A more detailed table of the design value calculation, including the daily maximum within the 7 by 7 4-km grid cells surrounding each monitor, can be found in Table 4. Contributions to the daily maxima were greatest on August 17 at most sites, ranging from 0.2 ppb at Frisco and Dallas CAMS 63 to 0.7 ppb at Midlothian; Denton was the exception with a 0.4 ppb peak contribution on August 18. Table 5 lists the daily differences for each site.

Table 3. 2010 8-hour ozone design values in Dallas/Fort Worth from the base case and txegu2 runs

2010 8-hour O3 DVs	2010base (ppb)	Txegu2 (ppb)	Difference (ppb): txegu2 - base
Frisco	90.8	90.9	0.1
Dallas C60	88.2	88.3	0.1
Dallas C63	87.6	87.6	0.0
Dallas C402	80.9	81.0	0.1
Denton	88.6	88.7	0.1
Midlothian	84.5	84.7	0.2
Arlington	87.6	87.7	0.1
Fort Worth C13	87.5	87.6	0.1
Fort Worth C17	85.3	85.4	0.1

Table 4. 8-hour ozone design value calculation at all applicable DFW monitoring sites for the txegu2 run.

Design Value Scaling													
Base Case: run40 (1999)													
Site	CurrentDV	990815	990816	990817	990818	990819	990820	990821	990822	Avg	#Days>70		
Frisco	99.7	84.1	108.6	100.4	107.4	88.4	73.1	87.8	93.0	92.8	8		
Dallas C60	92.0	85.9	97.1	99.3	103.2	100.4	77.2	88.0	86.6	92.2	8		
Dallas C63	93.0	85.9	99.7	99.8	106.1	97.7	77.2	88.0	89.2	92.9	8		
Dallas C402	87.3	81.5	92.0	96.5	95.6	107.3	86.1	82.1	82.8	90.5	8		
Denton	101.5	105.9	113.1	110.5	113.8	87.2	76.4	105.9	102.9	102.0	8		
Midlothian	92.5	78.2	85.4	87.0	77.8	114.7	92.1	78.1	77.5	86.4	8		
Arlington	95.0	90.2	98.9	100.3	95.6	106.8	84.4	83.2	89.6	93.6	8		
Fort Worth C13	98.3	98.5	106.0	103.2	105.5	97.1	81.6	93.5	95.2	97.6	8		
Fort Worth C17	96.3	103.8	111.4	110.3	109.1	94.0	80.2	97.6	100.6	100.9	8		
Future Year: run40.fy2010.txegu2													
Site	CurrentDV	990815	990816	990817	990818	990819	990820	990821	990822	Avg	RRF	FutureDV	Truncated
Frisco	99.7	70.0	103.6	103.2	100.1	77.3	67.1	77.4	78.3	84.6	0.912	90.9	90
Dallas C60	92.0	75.0	95.5	103.8	100.4	91.4	83.5	81.2	77.0	88.5	0.959	88.3	88
Dallas C63	93.0	72.8	98.7	103.2	102.1	87.0	80.0	80.0	77.0	87.6	0.942	87.6	87
Dallas C402	87.3	68.6	86.9	93.7	88.0	97.7	89.8	73.9	73.4	84.0	0.928	81.0	81
Denton	101.5	88.6	105.4	109.0	94.0	73.1	65.6	91.1	86.1	89.1	0.874	88.7	88
Midlothian	92.5	70.4	79.0	81.8	72.7	98.9	90.2	70.4	69.2	79.1	0.915	84.7	84
Arlington	95.0	74.2	93.0	94.5	86.6	96.3	89.8	75.8	81.3	86.4	0.923	87.7	87
Fort Worth C13	98.3	82.3	97.7	96.0	91.8	85.0	77.3	82.4	83.1	87.0	0.891	87.6	87
Fort Worth C17	96.3	87.6	100.4	105.4	94.2	80.6	72.2	89.5	85.8	89.5	0.887	85.4	85

Table 5. Contributions to the daily maximum 8-hour ozone within the 7x7 grid cells surrounding each DFW receptor from the proposed EGUs

O3 difference [ppb]	990815	990816	990817	990818	990819	990820	990821	990822
Frisco	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0
Dallas C60	0.0	0.1	0.3	0.0	0.1	0.0	0.0	0.0
Dallas C63	0.0	0.1	0.2	0.1	0.2	0.0	0.0	0.0
Dallas C402	0.0	0.2	0.4	0.1	0.2	0.0	0.0	0.0
Denton	0.0	0.2	0.2	0.4	0.1	0.0	0.0	0.0
Midlothian	0.0	0.3	0.7	0.0	0.1	0.0	0.0	0.0
Arlington	-0.1	0.3	0.5	0.3	0.1	0.0	0.0	0.0
Fort WorthC13	0.0	0.3	0.3	0.3	0.1	0.0	0.0	0.0
Fort WorthC17	0.0	0.2	0.3	0.3	0.1	0.0	0.0	0.0

Run40.fy2010.txegu3

The “txegu3” run is identical to the run40.fy2010.txegu2 run described above, except that 41 elevated point sources across Texas that were retired as of August 2005 were removed. Six other retiring point sources were evaluated and found to be outside the modeling domain or already retired from the 2010 base case inventory. The 41 points, listed in Table 6, represent a 17 tpd NO_x reduction across the state. The location and magnitude of the NO_x reductions are shown in Figure 5. Emissions from co-located sites were aggregated in the plot. Note that some points in West Texas were outside the 12 km domain.

The daily maximum 8-hour ozone and difference from the 2010 base case for each date in the 12 km domain are shown in Figure 6. Impacts from the proposed new and retired EGUs combined had almost the same effect as the proposed new EGUs. The main exceptions were local reductions near the River Crest EGU in Red River County (Northeast Texas), where two co-located stacks each emitting 1.1 tpd NO_x reduced the 8-hour ozone by up to 2 ppb locally when retired, and near the Paint Creek EGU in Haskell County (West Texas), where the 3 tpd NO_x reduction led to a very localized 1 ppb reduction on August 18. The other large, retired EGUs in West Texas were outside the 12 km domain and had no significant impact in the 36 km grid.

The retired EGUs near DFW, Austin, and San Antonio were too small to have any significant impact on 8-hour ozone.

The retired ES Joslin EGU (-1.7tpd NO_x) was located close to the proposed ES Joslin EGU (+2.2 tpd NO_x). Since the proposed new EGU’s impact on 8-hour ozone was less than 1 ppb on all dates (Figure 3), the offsetting effect of the retired EGU is too small to see when comparing Figures 3 and 6.

Table 7 summarizes the episode peak contributions from the proposed new and retired EGUs to the daily maximum ozone for each receptor in Texas, similar to Table 2. Results between the two tables differ by no more than 0.1 ppb, further emphasizing that the retirement of the 41 EGUs had no significant impact on any NAA or EAC area in Texas.

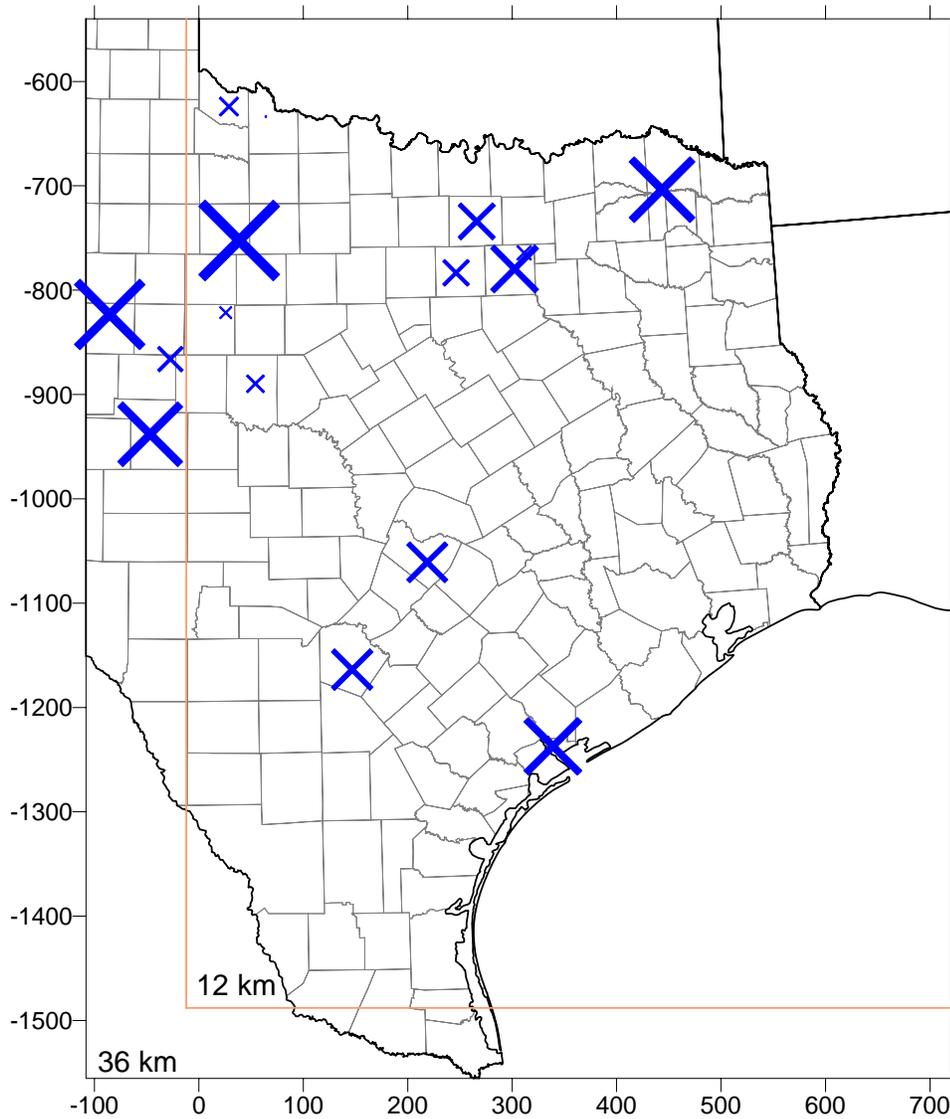
Table 6. Emission reductions from Texas point sources that were retired as of August, 2005.

EGU	LCPx (km)	LCPy (km)	NOx (TPD)	VOC (TPD)	CO (TPD)
Mission Road Unit 3	146.879	-1163.750	0.89	0.01	0.19
ES Joslin Unit 1	339.041	-1237.190	1.72	0.03	1.01
OAK CREEK UNIT 1	-27.279	-866.063	0.34	0.03	0.44
COLEMAN I/C UNIT	54.215	-889.719	0.00	0.00	0.00
COLEMAN I/C UNIT	54.224	-889.708	0.02	0.00	0.00
COLEMAN I/C UNIT	54.206	-889.719	0.04	0.00	0.01
COLEMAN I/C UNIT	54.196	-889.708	0.00	0.00	0.00
COLEMAN I/C UNIT	54.187	-889.708	0.07	0.00	0.02
COLEMAN I/C UNIT	54.187	-889.708	0.02	0.00	0.00
COLEMAN I/C UNIT	54.187	-889.719	0.03	0.00	0.01
Parkdale Units 1,2,3	302.281	-779.640	0.00	0.00	0.00
Parkdale Units 1,2,3	302.281	-779.640	0.00	0.00	0.00
Parkdale Units 1,2,3	302.280	-779.606	0.28	0.02	0.31
Parkdale Units 1,2,3	302.807	-779.365	0.28	0.02	0.31
Parkdale Units 1,2,3	302.362	-779.570	0.31	0.02	0.36
Parkdale Units 1,2,3	302.891	-779.384	0.31	0.02	0.36
C E NEWMAN UNIT 3	311.478	-764.272	0.02	0.00	0.01
C E NEWMAN UNIT 4	311.478	-764.272	0.08	0.00	0.02
C E NEWMAN UNIT 1	311.478	-764.272	0.01	0.00	0.00
C E NEWMAN UNIT 2	311.478	-764.272	0.01	0.00	0.00
SPENCER UNITS 1	266.050	-734.020	0.18	0.01	0.03
SPENCER UNITS 2	266.050	-734.020	0.16	0.00	0.02
SPENCER UNITS 3	266.050	-734.020	0.36	0.01	0.05
LAKE PAULINE UNITS 1 2	28.766	-624.011	0.19	0.00	0.06
PAINT CREEK UNIT 1	38.580	-752.425	0.37	0.01	0.10
PAINT CREEK UNIT 2	38.580	-752.425	0.75	0.01	0.11
PAINT CREEK UNIT 3	38.580	-752.393	0.23	0.01	0.16
PAINT CREEK UNIT 4	38.525	-752.371	2.00	0.03	0.49
MORGAN CREEK UNITS 2	-85.265	-823.305	0.32	0.01	0.10
MORGAN CREEK UNITS 3	-85.238	-833.943	0.33	0.00	0.07
MORGAN CREEK UNITS 4	-85.266	-833.954	1.91	0.02	0.40
RIVER CREST UNIT 1	443.490	-703.692	1.11	0.02	0.32
RIVER CREST UNIT 1	443.490	-703.692	1.11	0.02	0.32
RIVER CREST UNIT 1	444.306	-704.576	0.00	0.00	0.00
NORTH MAIN UNIT 4	246.258	-783.389	0.37	0.03	0.60
ABILENE UNIT 4	25.751	-821.569	0.08	0.00	0.02
San Angelo Power Station	-46.526	-938.100	0.62	0.01	0.03
San Angelo Power Station	-46.526	-938.133	1.54	0.04	0.04
HOLLY STREET UNIT 1	218.762	-1060.850	0.54	0.03	0.13
HOLLY STREET UNIT 2	218.714	-1060.830	0.33	0.03	0.15
VERNON	64.092	-633.632	0.00	0.00	0.00
Total			17.0	0.4	6.3

ENVIRON

Golden Gate Plaza • 101 Rowland Way • Novato, California 94945-5010 USA

Tel: (415) 899-0700 • Fax: (415) 899-0707



Retired Texas EGUs as of August 2005

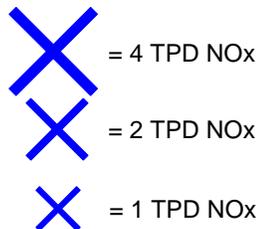


Figure 5. Map of retired Texas EGUs, as of August 2005, scaled by weekday NOx emissions

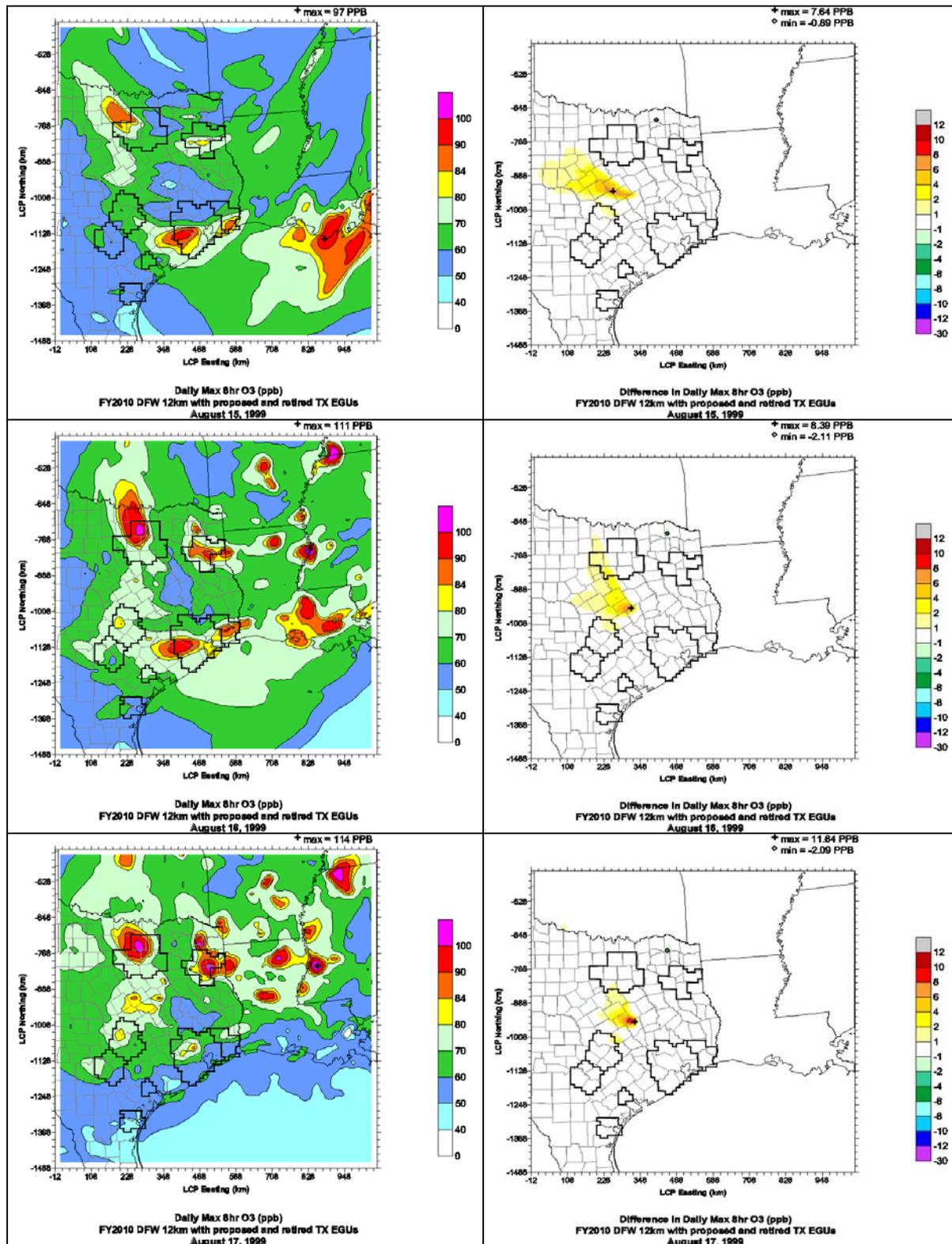


Figure 6. 2010 daily maximum 8-hour ozone in the 12 km domain from Run40.fy2010.txegu3 (left) and differences in the daily max ozone from the proposed and retired EGUs (right).

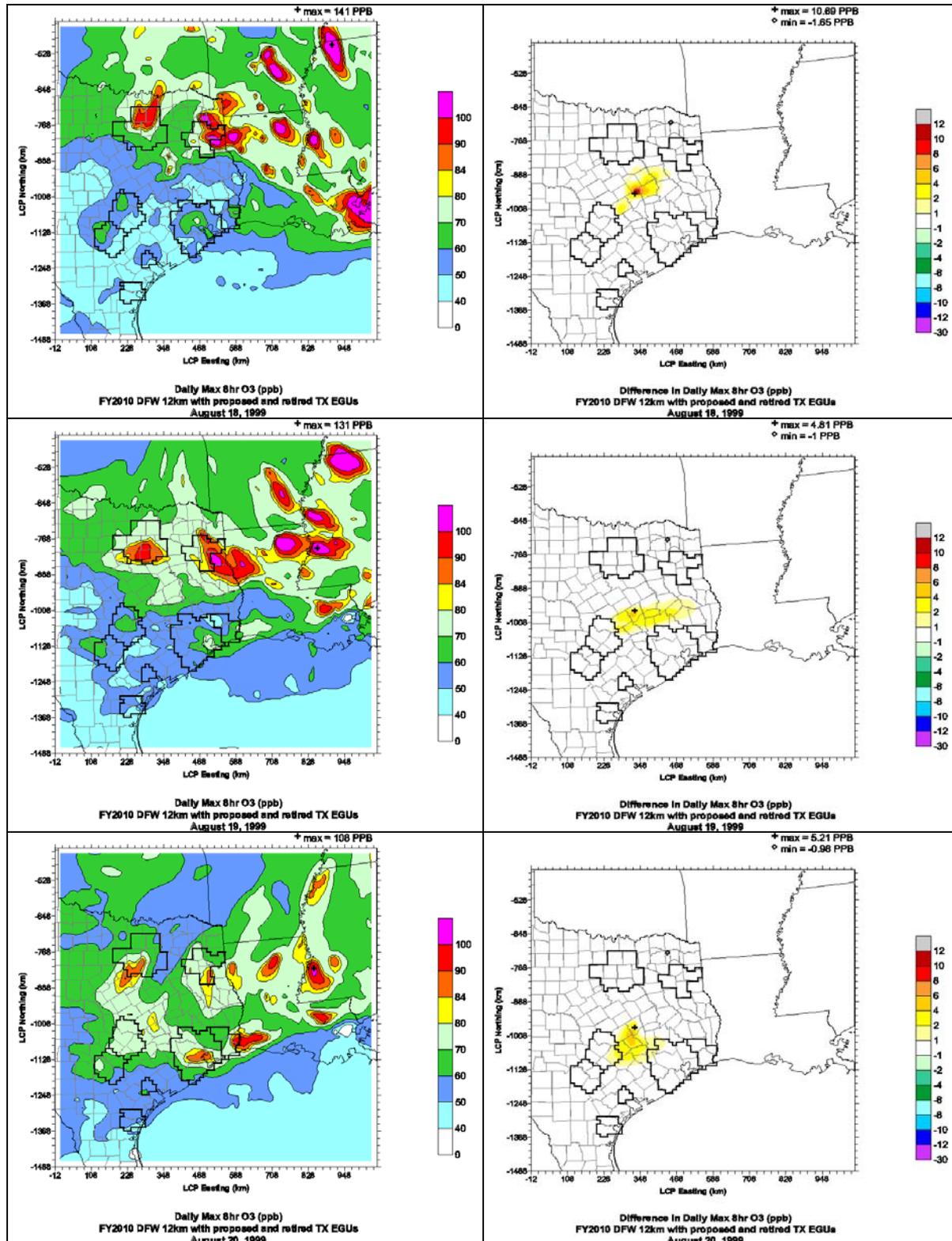


Figure 6. (continued). 2010 daily maximum 8-hour ozone in the 12 km domain from Run40.fy2010.txegu3 (left) and differences in the daily max ozone from the proposed and retired EGUs (right).

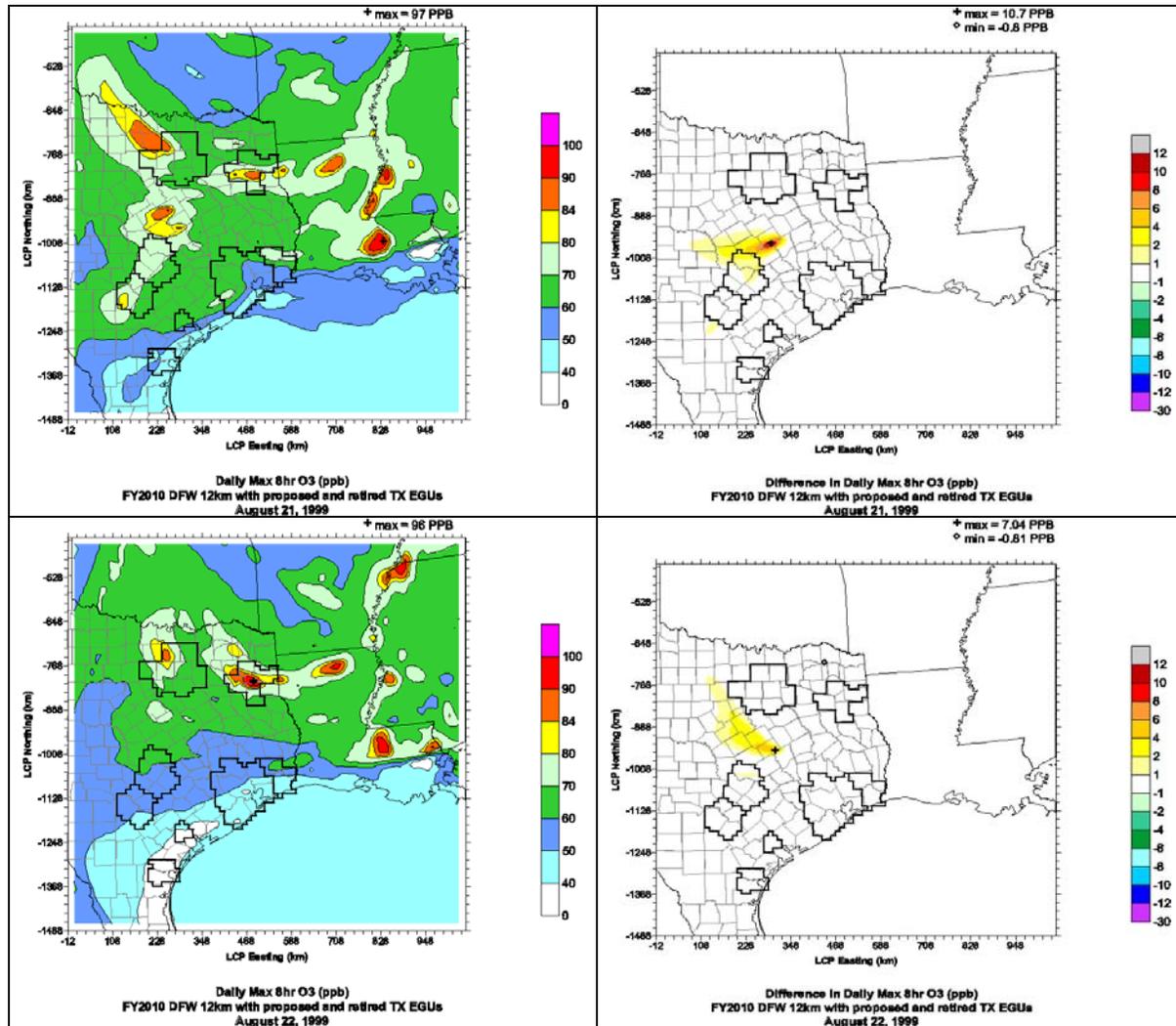


Figure 6. (concluded). 2010 daily maximum 8-hour ozone in the 12 km domain from Run40.fy2010.txegu3 (left) and differences in the daily max ozone from the proposed and retired EGUs (right).

Table 7. 2010 peak 8-hour ozone contributions to each NAA and EAC in Texas from the proposed and retired EGUs.

Receptor	Peak Contribution [ppb] from proposed and retired EGUs		Change in peak contribution from the retired EGUs [ppb]	
	O3 > 85 ppb	O3 > 70 ppb	O3 > 85 ppb	O3 > 70 ppb
Dallas/Fort Worth	1.21	3.05	-0.06	0
Houston/Galveston/Brazoria	0.11	1.58	-0.03	-0.02
Beaumont/Port Arthur	0.14	0.15	-0.01	-0.01
San Antonio	0	0.73	0	-0.05
NE Texas	0.22	0.35	-0.05	-0.04
Austin	0	3.37	0	-0.01
Victoria	0	0.05	0	-0.08
Corpus Christi	0	0	0	0

The 2010 8-hour ozone design values for the base and txegu3 runs are listed in Table 8. The retired EGUs offset some of the increases from the proposed new EGUs (shown in Table 3), as their combined impact resulted in a net change of ± 0.1 ppb at all sites. The 3 southern-most monitoring sites – Arlington, Dallas CAMS402, and Midlothian – had the largest net impact on the future design value, each with the highest daily contribution on August 17 (Table 9). The net impact at Frisco was 0.0 ppb on August 17 and for the future design value. The complete design value calculation for the txegu3 run can be viewed in Table 10.

Table 8. 2010 8-hour ozone design values for the base case and txegu3 runs.

2010 Design Values	2010base [ppb]	txegu3 [ppb]	Difference [ppb] txegu3-base
Frisco	90.8	90.8	0.0
Dallas C60	88.2	88.1	-0.1
Dallas C63	87.6	87.5	-0.1
Dallas C402	80.9	81.0	0.1
Denton	88.6	88.5	-0.1
Midlothian	84.5	84.6	0.1
Arlington	87.6	87.7	0.1
Fort Worth C13	87.5	87.5	0.0
Fort Worth C17	85.3	85.3	0.0

Table 9. Contributions to the daily maximum 8-hour ozone within the 7x7 grid cells surrounding each DFW receptor from the proposed new and retired EGUs

O3 difference from 2010 Base [ppb]	990815	990816	990817	990818	990819	990820	990821	990822
Frisco	0.0	-0.1	0.0	-0.1	0.1	0.0	-0.1	-0.2
Dallas C60	-0.3	0.0	0.1	-0.2	0.1	0.0	-0.2	-0.3
Dallas C63	-0.2	-0.1	0.0	0.0	0.3	0.0	-0.2	-0.4
Dallas C402	-0.1	0.2	0.4	0.1	0.1	0.0	0.0	0.0
Denton	-0.2	0.1	0.1	0.1	-0.4	-0.4	-0.1	-0.1
Midlothian	0.0	0.3	0.7	0.0	0.0	0.0	0.0	0.0
Arlington	-0.1	0.3	0.5	0.2	0.0	0.0	0.0	0.0
Fort Worth C13	0.0	0.2	0.2	0.3	0.0	-0.1	0.0	0.0
Fort Worth C17	-0.3	0.1	0.2	0.3	-0.1	-0.2	-0.1	-0.1

Table 10. 8-hour ozone design value calculation at all applicable DFW monitoring sites for the txegu3 run.

Design Value Scaling													
Base Case: run40													
Site	CurrentDV	990815	990816	990817	990818	990819	990820	990821	990822	Average	#Days>70		
Frisco	99.7	84.1	108.6	100.4	107.4	88.4	73.1	87.8	93.0	92.8	8		
Dallas C60	92.0	85.9	97.1	99.3	103.2	100.4	77.2	88.0	86.6	92.2	8		
Dallas C63	93.0	85.9	99.7	99.8	106.1	97.7	77.2	88.0	89.2	92.9	8		
Dallas C402	87.3	81.5	92.0	96.5	95.6	107.3	86.1	82.1	82.8	90.5	8		
Denton	101.5	105.9	113.1	110.5	113.8	87.2	76.4	105.9	102.9	102.0	8		
Midlothian	92.5	78.2	85.4	87.0	77.8	114.7	92.1	78.1	77.5	86.4	8		
Arlington	95.0	90.2	98.9	100.3	95.6	106.8	84.4	83.2	89.6	93.6	8		
Fort Worth C13	98.3	98.5	106.0	103.2	105.5	97.1	81.6	93.5	95.2	97.6	8		
Fort Worth C17	96.3	103.8	111.4	110.3	109.1	94.0	80.2	97.6	100.6	100.9	8		
Future Year: run40.fy2010.txegu3													
Site	CurrentDV	990815	990816	990817	990818	990819	990820	990821	990822	Average	RRF	FutureDV	Truncated
Frisco	99.7	70.0	103.5	103.0	100.0	77.3	67.1	77.3	78.1	84.5	0.911	90.8	90
Dallas C60	92.0	74.7	95.4	103.6	100.2	91.4	83.5	81.0	76.7	88.3	0.958	88.1	88
Dallas C63	93.0	72.6	98.5	103.0	102.0	87.1	80.0	79.8	76.6	87.5	0.941	87.5	87
Dallas C402	87.3	68.5	86.9	93.7	88.0	97.6	89.8	73.9	73.4	84.0	0.928	81.0	81
Denton	101.5	88.4	105.3	108.9	93.7	72.6	65.2	91.0	86.0	88.9	0.872	88.5	88
Midlothian	92.5	70.4	79.0	81.8	72.7	98.8	90.2	70.4	69.2	79.0	0.915	84.6	84
Arlington	95.0	74.2	93.0	94.5	86.5	96.2	89.8	75.8	81.3	86.4	0.923	87.7	87
Fort Worth C13	98.3	82.3	97.6	95.9	91.8	84.9	77.2	82.4	83.1	86.9	0.891	87.5	87
Fort Worth C17	96.3	87.3	100.3	105.3	94.2	80.4	72.0	89.4	85.7	89.3	0.885	85.3	85

Findings

Four proposed new EGUs in Central Texas – Oak Grove, Twin Oaks Power III, Sandy Creek, and Sandow 5 – accounted for 77% of the additional 55.7 tpd NO_x to be emitted from all proposed new EGUs in Texas, and significantly increased the local 8-hour ozone by as much as 11 ppb on 3 of the 8 episode dates. Their impact further downwind was relatively small, with contributions exceeding 1 ppb on at least one date only in parts of the Austin EAC, and DFW and Houston/Galveston/Brazoria NAAs. The Austin EAC had a high occurrence of contributions greater than 1 ppb due to its proximity to the Sandow 5 EGU, but never resulted in any grid cell exceeding 85 ppb. The proposed EGUs did push at least one grid cell in DFW into exceedance when the proposed EGUs added 1.3 ppb 8-hour ozone.

The proposed EGUs near areas of high biogenic emissions appeared to have a greater impact on 8-hour ozone, particularly the Oak Grove EGU. Perhaps shifting the proposed Oak Grove EGU westward by at least 40 km into a low-isoprene emitted area might alter the VOC/NO_x ratio and mitigate the ozone production in central Texas.

The retired EGUs in Red River and Haskell Counties reduced 8-hour ozone by up to 2 ppb and 1 ppb, respectively, but their impacts were localized. The other retired units were too small to make a significant reduction in ozone.

Design value scaling for all applicable DFW sites for each of the two runs showed that the proposed new EGUs added up to 0.2 ppb 8-hour ozone to the 2010 design value with the greatest impact to the daily maximum on August 17 at most sites. The retired EGUs reduced the impacts from the proposed EGUs, with only the three southernmost receptors – Midlothian, Arlington, and Dallas CAMS402 – netting positive future design value increases of 0.1 ppb each. The net impact at Frisco was negligible.