

“Trued-Up” Sulfur Dioxide  
Inventory for 1990  
From  
Facilities Emitting 100t/y or Greater  
  
And  
  
Results of Running  
the IAS Baseline Forecast Scenario  
with this Emission Inventory

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### Executive Summary

The Western Regional Air Partnership (WRAP) requested a “true-up” of the 1990 sulfur dioxide emission inventory for facilities located within the states of Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah and Wyoming. The outcome of this “true-up” has been to add **40,351 t/y** of sulfur dioxide to the original GCVTC inventory. Put another way, the “trued-up” sulfur dioxide emission inventory for 1990 from facilities with at least 100 t/y and located in the states mentioned above is now **829,204 t/y**. Appendix A provides details of the “true-up.”

In addition, the WRAP requested that the IAS be run using the Baseline Forecast Scenario option for only this subset of the sulfur dioxide inventory (i.e., emissions were included if the sulfur dioxide inventory for the facility was at least 100 t/y). The outcome of this modeling run is that future year sulfur dioxide emissions are projected for the GCVTC states as listed in Table 1, see below. It is noted that the 1990 emission number as listed in Table 1 is given as 829205 t/y rather than 829204 t/y, this 1 t/y difference is due to round-off error.

Table 1. Sulfur dioxide emission inventory projections (t/y) using the IAS BFS for the subset of facilities emitting at least 100 t/y of sulfur dioxide

Year	1990	2000	2010	2020	2030	2040
IAS BFS	829205	742970	673515	651490	581473	406051

The interested reader is referred to Appendices A and B (see following pages) for more detailed information documenting the net changes made and those changes related to the Pechan-Avanti work product.

For completeness, enclosed on a diskette is the audit program and source code relied upon for verifying that the changes reported in Appendix A were made accurately to the GCVTC inventory. The audit program also lists the redistribution of other point source emissions based on the Pechan-Avanti work product.

The emission inventory was developed from a bottom down approach, meaning that facility level data were relied upon to construct the IAS aggregated emission inventory. An off-line Excel program was developed to relate these IAS projections back to the individual facilities. Facility names have been abbreviated in this version due to time constraints. In a future version, the intent is to provide full facility names. Sulfur dioxide emissions (t/y) by decade from 1990-2040 based on this off-line Excel program are provided. This off-line programs tie back within round-off error to the IAS emission projections by IAS region and category.

# Appendix A

## Trued-Up Calculation of Sulfur Dioxide Emissions for 1990

From

Point Source Facilities Emitting  
at least 100 t/y

## Appendix A

### Trued-Up Calculation of Sulfur Dioxide Emissions for 1990 From Point Source Facilities Emitting at least 100 t/y

The starting point of this analysis was the Radian point source emissions database. This database included 1990 sulfur dioxide emissions by unit for facilities located within the states of Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah and Wyoming.

An extraction program was used to limit the output to facilities with emissions of at least 100 t/y. The result of that extraction process was a finding that **788,853 t/y** of sulfur dioxide emissions occurred in 1990 from facilities located in the states mentioned above.

The Radian database represented the starting point. That is to say, the emission inventory for sulfur dioxide by facility was not necessarily representative of 1990. To correct for any emission inventory discrepancies relative to 1990, a “true-up” process was begun. This true-up process has resulted in the sulfur dioxide inventory for 33 facilities being changed, as shown in Table A-1. The net result of these changes has been an increase to the 1990 sulfur dioxide emission inventory by **40351 t/y** for sulfur dioxide. Put another way, the “trued-up” sulfur dioxide emission inventory for 1990 from facilities located in the states mentioned above now equals **829,204 t/y**.

Table A-1. Changes to sulfur dioxide emission inventory by source from GCVTC study to current IAS

							Emission Inventory**		
		IAS	IAS	Facility	Facility	(Tons/yr)			
State	County	Region #	SCC_ID	Name	ID	SCC	GCVTC	True-Up	
OR	Columbia	6	Incobo	Boise Cascade	91849	10200202	455	2454	
OR	Columbia	5	Inngbo	Smurfit News.	N/A	10200601		105	
OR	Columbia	5	Utngas	ENRON***	92520	10100601		103	
OR	Morrow	6	Utcoal	Boardman	N/A	-	8340	5180	
WY	-	8	Utcoal	Naughton	N/A	-	17840	25807	
WY	-	9	Utcoal	Dave Johnston	N/A	-	27274	24448	
WY	-	9	Utcoal	Jim Bridger	N/A	-	20091	28453	
WY	-	9	Utcoal	Wyodak	N/A	-	6665	7554	
NV	Lyon	20	Ptothr	Nevada Cement	32410387	30500622		360	
NV	-	20	Utcoal	SP - Ft. Churchill	-	-	550	356	
NV	-	20	Utcoal	SP - Valmy	-	-	5854	7335	
UT		31	Ptothr	Magnesium Corp.	-	20200102		13.65	
UT		31	Inngbo	Magnesium Corp.	-	20200201		36.05	
UT		31	Ptothr	Magnesium Corp.	-	30399999		54.4	
UT	Salt Lake City	32	Incop2uc	Kennecott Utah	N/A	N/L	30043	29734	
UT	Millard	35	Ptothr	Continental Lime	97759419	30501604		115	
UT	San Juan	38	Ptothr	Unocal	N/A	10200603		1575	
		45	Incoppuc	Asarco	N/A	-	27884	29814	
CO	-	50	Utcoal	Craig	-	-	11475*	11191	
CO	Garfield	51	Ptothr	Unocal Retort	45024	31000405		679	
CO	Garfield	51	Ptothr	Unocal upgrade	450025	30103202		177	
CO	-	52	Utcoal	Platte River	-	-	865*	1025	
CO	Jefferson	53	Ptothr	Gen. Services	59009	10300206		409	
CO	-	53	Utcoal	Cherokee			13362*	12422	
CO	-	53	Utcoal	Pawnee			10374*	10724	
CO	-	53	Utcoal	Valmont	-	-	3158*	3007	
CO	-	54	Utcoal	Arapahoe	-	-	4567*	4997	
CO	-	55	Utcoal	Cameo	-	-	2585*	2259	
CO	-	56	Utcoal	Tristates - NUCLA	-	-	464*	531	
CO	-	58	Utcoal	Commanche	-	-	11963*	12518	
CO	-	58	Utcoal	Col. Spr. - Drake	-	-	4198*	4298	
CO	-	58	Utcoal	Col. Spr. - Nixon	-	-	4577*	6094	
NM	-	60	Utcoal	APS - 4 Corners	-	-	32216	37817	
NM	-	60	Utcoal	PS - San Juan	-	-	24910	31575	
NM	Hidalgo	64	Incoppm	PD Hidalgo	350230003	N/L	34592	41433	
Total							304302	344653.1	

\* Not necessarily as listed in GCVTC, but as reported in 10/28/98 FAX used to update sulfur dioxide emission inventory for Colorado.

\*\* It is noted that the emission inventory numbers as reported are for the whole facility, although emission inventory changes within the IAS were made to specific SCC categories as identified above.

\*\*\* The Radian emission inventory for ENRON is 69 t/y and not zero (as listed above). However, for purposes of this analysis, a value of zero is shown because within the Radian database ENRON is not listed with at least 100 t/y of sulfur dioxide emissions.

## Appendix B

# Audit Trail of Sulfur Dioxide Emission Changes for 1990

Since GCVTC

## Appendix B

### Audit Trail of Sulfur Dioxide Emission Changes for 1990 Since GCVTC

A fortran program called cbepec.for was created to audit/document the emission inventory changes that have been incorporated into the IAS since the GCVTC process. The audit process lists the total sulfur dioxide emissions as they appear in the GCVTC and WRAP "true-up" databases as well as the change in emissions, which equals 40207 t/y. This amount differs from that in Appendix A, because this overall inventory for sulfur dioxide includes emissions from other states (Montana, Texas and Washington) and from Mexico.

```
GCVTC [CBE.DAT FILE]
TOTAL SOX(t/y) = 4179224.
```

```
WRAP "true-up" [CBE2000.DAT FILE]
TOTAL SOX(t/y) = 4219431.
```

```
WRAP - GCVTC
Difference(t/y) = 40207.
```

For the interested reader, Table B-1 lists the incremental changes made since the GCVTC process. The data portion of this table was taken directly from the output file (cbe.out) generated by running the cbe.exe program.

Table B-1. List of Sulfur Dioxide emission changes (t/y) since GCVTC for Arizona

IAS Region	Category	Size	WRAP	GCVTC
41	ptnmpuc	1	140.525	
41	ptothrnc	99	5.801	146.326
43	ptkrftuc	1	1420	
43	ptothrnc	99	53.6	1473.6
45	incoppuc	3	8286.867	6356.867
46	ptothrnc	99	116.936	916.9362
46	ptpmtpuc	1	800	
47	ptnmpuc	1	212.22	
47	ptothrnc	99	1.189	213.409

The changes made to Arizona emission inventory were due in part to Pechan-Avanti work product. Additionally, the emission inventory for Asarco was changed, see Table A-1.

Table B-1. List of Sulfur Dioxide emission changes (t/y) since GCVTC for California

IAS Region	Category	Size	WRAP	GCVTC
10	ptkrftuc	1	937.5	
10	ptothrnc	99	323.22	1260.72
11	ptesc2uc	1	180.7	
11	ptesc3uc	1	12.9	
11	pticibuc	1	416.3	
11	ptincmuc	1	1605.9	
11	ptnmpuc	1	809.313	
11	ptothrnc	99	2417.658	7021.395
11	ptrfnruc	1	1.394	
11	ptsap2uc	1	1577.23	
12	pticibuc	1	385.9	
12	ptnmpuc	1	654.6	
12	ptothrnc	99	929.72	3445.72
12	ptprhtuc	1	1475.8	
13	pticibuc	1	329.4	
13	ptnmpuc	1	714.8	
13	ptothrnc	99	1388.35	6059.75
13	ptprhtuc	1	3319.2	
13	ptrfnruc	1	308	
14	pticibuc	1	92.6	
14	ptincmuc	1	0	
14	ptnmpuc	1	341.7	
14	ptothrnc	99	2757.1	4019.1
14	ptrfnruc	1	506.2	
14	ptsap3uc	1	318.5	
15	Ptincmuc	1	3.853	
15	Ptnmpuc	1	278.7	
15	Ptothrnc	99	745.49	1820.043
15	Ptpmtpuc	1	792	

The changes made to California emission inventory were due to Pechan-Avanti work product only. Thus, only a redistribution of emissions initially categorized as arising from the other point source category (ptothr) was made.

Table B-1. List of Sulfur Dioxide emission changes (t/y) since GCVTC for Colorado

IAS Region	Category	Size	WRAP	GCVTC
50	utcoalsx	3	11191	11474.99
51	ptesc2uc	1	177	
51	ptothrnc	99	107.211	107.2106
51	ptprhtuc	1	679	
52	ptnmpuc	1	622.537	
52	ptothrnc	99	47.301	669.8378
52	utcoalsx	3	1024.986	864.9859
53	ptesc1uc	1	1008	
53	ptesc2uc	1	195.004	
53	ptesncuc	1	220.759	
53	pticibuc	1	861.431	
53	ptnmpuc	1	1071.154	
53	ptothrnc	99	488.579	3435.927
53	utcoaloc	3	10724	21849.15
53	utcoalsx	3	15429	5044.697
54	utcoaloc	3	4997.005	4567.006
55	utcoaloc	3	2258.74	2584.74
56	utcoalsx	3	530.9008	463.9008
58	ptnmpuc	1	2639.304	
58	ptothrnc	99	1468.869	4458.173
58	ptpmpuc	1	350	
58	utcoaloc	3	24284	20736.68
58	utngasoc	3	0	1376.934

The changes made to Colorado emission inventory were due in part to Pechan-Avanti work product. Additionally, emission inventories for eleven utility facilities were changed and emissions from three facilities were added to the data base, see Table A-1.

Table B-1. List of Sulfur Dioxide emission changes (t/y) since GCVTC for Idaho

IAS Region	Category	Size	WRAP	GCVTC
3	pticibuc	1	1819	
3	ptkrftuc	1	1375.5	
3	ptothrnc	99	0	3194.5
7	pticibuc	1	105.8	
7	ptincmuc	1	7543.1	
7	ptnmpuc	1	3766	
7	ptothrnc	99	6.201	19937.9
7	ptsap1uc	1	1338.3	
7	ptsap3uc	1	7178.5	

The changes made to Idaho emission inventory were due to Pechan-Avanti work product only. Thus, only a redistribution of emissions initially categorized as arising from the other point source category (ptothr) was made.

Table B-1. List of Sulfur Dioxide emission changes (t/y) since GCVTC for Nevada

IAS Region	Category	Size	WRAP	GCVTC
20	ptnmpuc	1	526.3	
20	ptothrnc	99	8.9	175.2
20	utcoaloc	3	6036.724	4817.174
20	utcoalsx	3	1298.275	1035.925
20	utliqunc	99	658.8736	852.8736
21	ptnmpuc	1	272.3	
21	ptothrnc	99	163.2	435.5
22	ptnmpuc	1	783	
22	ptothrnc	99	21.41	1288.41
22	ptpmpuc	1	484	

The changes made to Nevada emission inventory were due in part to Pechan-Avanti work product. Additionally, emission inventories for two facilities were changed and emissions from Nevada Cement were added to the data base, see Table A-1.

Table B-1. List of Sulfur Dioxide emission changes (t/y) since GCVTC for New Mexico

IAS Region	Category	Size	WRAP	GCVTC
60	utcoalsx	3	69392	57126
63	ptesc2uc	1	270	
63	ptothrnc	99	105.02	375.02
64	incopppm	3	29774	22933
64	ptothrnc	99	369.8	12556.8
64	ptsap2uc	1	11311	
64	ptsap5uc	1	876	
65	ptesc1uc	1	1988	
65	ptothrnc	99	14.87	2733.02
65	ptrfnruc	1	730.15	

The changes made to New Mexico emission inventory were due in part to Pechan-Avanti work product. Additionally, emission inventories for three facilities were changed, see Table A-1.

Table B-1. List of Sulfur Dioxide emission changes (t/y) since GCVTC for Oregon

IAS Region	Category	Size	WRAP	GCVTC
5	inngbouc	3	1316	1211
5	ptkrftuc	1	1141	
5	ptnmpuc	1	103	
5	ptothrnc	99	1088	6310
5	ptpmpuc	1	3371	
5	ptsmpuc	1	607	
5	utngasoc	3	36	2
6	incobouc	3	2430	8756
6	ptothrnc	99	281	296
6	utcoalloc	3	5180	

The changes made to Oregon emission inventory were due in part to Pechan-Avanti work product. Additionally, the emission inventory for three facilities were changed and emissions from Smurfit New was added to the data base, see Table A-1.

Table B-1. List of Sulfur Dioxide emission changes (t/y) since GCVTC for Utah

IAS Region	Category	Size	WRAP	GCVTC
31	inngbouc	3	90.05	54
31	ptnmpuc	1	904	
31	ptothrnc	99	277.4	1115.35
31	ptrfnruc	1	2	
32	incobouc	3	2915.34	10.53975
32	incop2uc	3	26512.7	26821.7
32	pticibuc	1	512.171	
32	ptothrnc	99	350.219	862.3905
32	utcoalloc	3		2904.8
33	ptcokeuc	1	7847.2	
33	pticibuc	1	248.32	
33	ptothrnc	99	19.54	8227.06
33	ptpmpuc	1	112	
35	pticibuc	1	153.5	
35	ptnmpuc	1	115	
35	ptothrnc	99	4.941	160.821
35	ptpmpuc	1	2.38	
38	ptrhtuc	1	1575	

The changes made to Utah emission inventory were due in part to Pechan-Avanti work product. Additionally, the emission inventory for Kennecott was changed and emissions from Magnesium Corp. (IAS region 31), Continental Lime (IAS region 35), and Unocal (IAS region 38) were added to the data base, see Table A-1.

Table B-1. List of Sulfur Dioxide emission changes (t/y) since GCVTC for Wyoming

IAS Region	Category	Size	WRAP	GCVTC
8	ptcokeuc	1	1194.3	
8	ptothrnc	99	25.656	1219.956
8	utcoaloc	3	21023.64	14591.8
8	utcoalsx	3	4783.357	3320.01
9	ptesc3uc	1	354.8	
9	pticibuc	1	151.96	
9	ptincmuc	1	1107.2	
9	ptnmpuc	1	1218.081	
9	ptothrnc	99	1542.488	7133.721
9	ptrhtuc	1	410.373	
9	ptrfnruc	1	1120.97	
9	ptsap4uc	1	1104.07	
9	ptsrmpuc	1	123.78	
9	utcoaloc	3	25227.37	28053.37
9	utcoalsx	3	46023.68	36772.68

The changes made to Wyoming emission inventory were due in part to Pechan-Avanti work product. Additionally, emission inventories for four utility facilities were changed, see Table A-1.

# Appendix C

## Summary Of Sulfur Dioxide Emission Projections by decade by Facility from 1990-2040

## Appendix C

### Summary Of Sulfur Dioxide Emission Projections by decade by Facility from 1990-2040

The sulfur dioxide emission inventory input to the IAS was developed from a bottom down approach, meaning that facility level data were relied upon to construct the IAS aggregated emissions inventory.

An off-line Excel program has been developed to mimic the IAS function for the individual facilities emitting at least 100 t/y of sulfur dioxide. Tables C-1 through C-2 lists the sulfur dioxide emissions assigned to each facility by decade from 1990-2040 based on this off-line Excel program (**IAS-Offline.xls**). Although the off-line program shows emissions assigned from a facility associated with a particular IAS category (inpere) into either the uncontrolled (uc) or controlled (nx, pm,...) subcategory, there was for some California regions no basis for doing so. While an assignment was made, the IAS forecast for sulfur dioxide emissions in these categories is unaffected by these types of controls/uncontrolled states. Sources assigned to the controlled category (sx) were done appropriately. Facility emissions for other pollutants would be affected by the uc, nx, pm differentiation. As such, this approach while accurate for sulfur dioxide cannot be directly applied to other pollutants without further work.

The Excel spreadsheet lists sulfur dioxide emissions from existing source units and new sources added as economic demand warrants. Table C-1 lists the resulting facility emissions from the existing units of the facility. While a table was constructed to show total emissions, the new source contribution cannot necessarily be associated with a particular facility. Thus it was felt that providing such a table can be misleading, and so it has been left out.

It is noted that in the off-line Excel program, retirement rates and economic growth factors are truncated to three digits behind the decimal place. This was done so that the off-line Excel program would match the IAS output as to projected emissions by IAS region and category. Without making these adjustments, the off-line Excel program projects slightly lower total (existing plus new) emissions than the IAS.

Given that the IAS is the approved method, the facility emissions derived from the off-line Excel program using IAS truncated retirement rates and economic growth factors was considered the appropriate form for display (Table C-1).

**Table C-1. Facility List of Sulfur Dioxide Emissions (t/y) by decade from existing sources**

State	Facility Name	Region	1990	2000	2010	2020	2030	2040
Arizona	AEPCO APACHE GENERATING STATION	47	7044	8009	8696	8696	8696	0
Arizona	APS-CHOLLA POWER PLANT	43	15193	17350	20055	22343	17977	9038
Arizona	ASARCO INCORPORATED	45	29814	25968	22092	18216	14340	10465
Arizona	Atibi	43	8536	7812	7078	6338	5612	4944
Arizona	CHEMSTAR LIME - DOUGLAS PLANT	47	212	185	157	130	102	74
Arizona	CHEMSTAR LIME, NELSON PLANT	41	141	122	104	86	68	49
Arizona	CYPRUS MIAMI MINING CORP	45	5676	4723	3764	2805	1845	1022
Arizona	CYPRUS SIERRITA	46	800	697	593	489	385	281
Arizona	Intermountain	42	803	637	470	304	137	9
Arizona	MAGMA METALS COMPANY-SAN MANUEL SMELTER	46	15900	13849	11782	9715	7648	5581
Arizona	SPRINGERVILLE GENERATING STATION	44	6303	7198	8320	9612	11946	10592
Arizona	SRP - CORONADO GENERATING STATION	44	16277	18588	21486	24822	27636	11369
Arizona	SRP - NAVAJO GENERATING STATION	42	76219	8470	8470	8470	8470	1
Arizona	TUCSON ELECTRIC PWR-IRVINGTON	46	2482	2822	3299	3795	4358	4808
California	Acan	14	149	130	110	91	72	52
California	Anchor	11	119	104	88	73	57	42
California	Arco	14	1919	1524	1128	732	335	31
California	ArcoCQC	14	442	350	257	164	71	0
California	Berry	13	237	175	114	52	0	0
California	Borax	13	523	413	304	194	84	0
California	CAHawSug	11	189	177	166	154	142	130
California	CALIFORNIA PORTLAND CEMENT CO	15	118	93	68	44	19	0
California	CalPort	13	39	31	23	14	6	0
California	Calv	13	286	249	212	175	137	100
California	ChevBitt	13	166	156	146	136	126	116
California	ChevRioBrav	13	101	95	89	82	77	70
California	Chevron	11	1291	1048	805	561	317	127
California	Chevron	12	809	599	389	179	1	0
California	Chevron	14	833	661	488	315	142	9
California	Dairyman	12	212	199	186	174	161	148
California	Exxon	11	4922	3896	2865	1833	802	11
California	Fletcher	14	107	85	62	40	17	0
California	Gaylord	11	263	221	179	137	94	61
California	GenChem	11	206	163	120	77	33	0
California	Guardian	12	546	476	405	334	263	192
California	GWRef	14	232	183	135	86	37	0
California	Hunt	11	174	163	153	142	132	122

State	Facility Name	Region	1990	2000	2010	2020	2030	2040
California	IoneEnergy	11	239	239	239	239	239	239
California	JRSimplot	11	1389	1098	807	515	224	0
California	Kaiser	11	474	375	275	176	76	0
California	KernOil	13	319	280	239	199	159	126
California	LAHaynes	14	366	416	275	275	541	5
California	LAX	14	275	218	160	102	44	0
California	LoneStar	11	250	218	185	153	120	88
California	Louisiana	10	302	239	175	112	49	0
California	Madera	12	108	94	80	66	52	38
California	Masonite	10	102	96	90	83	77	71
California	MichCal	11	271	255	239	222	206	190
California	Mobil	12	304	227	150	72	5	0
California	Mobil	14	256	202	149	95	41	0
California	NAChem	15	183	159	134	109	84	60
California	NatlRefrac	12	243	192	141	90	39	0
California	Newark	11	589	532	474	416	359	301
California	Owens	14	193	168	143	118	93	68
California	OwensBr	11	122	106	90	74	59	43
California	P G & E	12	1217	1197	1196	1196	1196	1196
California	P G & E-MORRO BAY	13	496	495	486	486	486	486
California	PacGas	11	217	225	32	20	9	0
California	PacGasA	11	437	491	0	0	0	0
California	PacGasPit	11	349	375	0	0	0	0
California	PacRef	11	278	220	162	103	45	0
California	PG&E	10	237	237	237	237	237	237
California	Powerine	14	196	155	114	73	31	0
California	Ragu	12	202	186	170	153	137	122
California	RhoneP	11	289	229	168	107	47	0
California	RhoneP	14	319	252	185	118	51	0
California	SantaFe	13	1539	1141	741	342	2	0
California	SCEMandalay	14	213	243	159	159	318	0
California	SCEOrmond	14	334	382	250	250	499	0
California	SDGEncina	16	989	1130	0	0	0	0
California	SDGSouthBay	16	458	523	0	0	0	0
California	Shell	11	2790	2209	1625	1040	456	8
California	Shell	12	144	106	69	32	0	0
California	Shell	14	778	622	465	308	151	30
California	ShellKern	13	294	220	146	72	9	8

01/26/2000

State	Facility Name	Region	1990	2000	2010	2020	2030	2040
California	Sierra	11	816	767	718	667	618	568
California	Sierra-Pacific	10	135	126	118	109	101	92
California	Simpson	10	1021	865	708	551	395	269
California	SJ	13	337	289	242	194	146	107
California	SoCalAlam	14	373	418	274	274	542	3
California	SoCalEd	14	109	122	79	79	158	0
California	SoCalEdb	14	345	395	258	258	516	0
California	SoCalEdison	15	182	196	170	170	374	0
California	Stockton	11	197	185	173	161	150	138
California	Swepi	13	775	575	374	173	2	0
California	SWPort	15	108	94	80	66	52	38
California	Texaco	13	471	382	293	203	114	44
California	Texaco	14	0	0	0	0	0	0
California	TEXACO, INC	12	100	75	50	25	3	0
California	Texacoa	14	156	123	91	58	25	0
California	Texacob	14	548	435	322	209	95	8
California	Tosco	11	7661	6083	4497	2911	1326	108
California	TriValley	11	118	111	104	97	90	83
California	Ultramar	14	341	270	198	126	55	0
California	UNION CHEMICALS	11	1606	1270	933	596	259	0
California	UNION MOLYCORP	15	792	690	587	484	381	278
California	UnionChem	14	209	165	122	78	34	0
California	UNITED STATES TUNGSTEN CORP.	12	123	116	108	101	94	86
California	Unocal	14	724	575	426	276	127	12
California	UNOCAL CHEM DIV-UNOCAL CORP	13	3034	2400	1763	1126	489	0
California	UnocalCorp	11	584	474	363	252	141	55
California	UnocalSM	13	647	546	444	343	241	151
California	Unocalx	13	159	118	77	35	0	0
California	USPipe	11	127	100	74	47	20	0
California	Whittier	13	347	257	167	77	0	0
California	WNewportOil	14	297	280	261	243	225	207
Colorado	CF AND I STEEL, L.P.	58	353	307	262	216	170	124
Colorado	Cherokee	53	12422	14136	2910	1430	0	0
Colorado	Commanche	58	12518	14823	17249	15708	15708	0
Colorado	CONOCO INC. - DENVER REFINERY	53	2336	1848	1357	867	376	0
Colorado	CoorsBrewing	53	2675	2517	2356	2193	2035	1872
Colorado	CoorsGlass	53	159	138	117	96	76	55
Colorado	CORefining	53	632	500	367	234	102	0

State	Facility Name	Region	1990	2000	2010	2020	2030	2040
Colorado	Drake	58	4298	5089	4797	2697	2697	0
Colorado	Gen Services	53	409	385	360	335	311	286
Colorado	HOLNAM INC.	52	623	542	461	380	299	219
Colorado	HOLNAM INC. PORTLAND PLANT	58	4069	3430	2786	2143	1500	926
Colorado	LANDMARK PETROLEUM INC	55	157	124	91	58	25	0
Colorado	MetroWaste	53	134	106	78	50	22	0
Colorado	Nixon	58	6094	6096	6094	6094	6094	971
Colorado	Pawnee	53	10724	12204	12326	12326	12326	12326
Colorado	PLATTE RIVER POWER AUTHORITY - RAWHIDE	52	1025	1166	1192	1192	1192	1192
Colorado	PUBLIC SERVICE COMPANY - ARAPAHOE	54	4997	1629	932	0	0	0
Colorado	PUBLIC SERVICE COMPANY - CAMEO	55	2259	2571	0	0	0	0
Colorado	PUBLIC SERVICE COMPANY - HAYDEN	51	11277	12833	1296	1296	460	0
Colorado	SWPortCement	53	967	838	708	578	448	321
Colorado	TRI-STATE GENERATION - CRAIG	50	11191	12735	13013	13013	13013	5789
Colorado	TRI-STATE GENERATION - NUCLA	56	531	531	531	531	531	531
Colorado	Unocal Retort	51	679	503	327	150	0	0
Colorado	Unocal Upgrade	51	177	140	103	66	28	0
Colorado	Valmont	53	3007	3422	3889	2730	0	0
Colorado	WestSugarCo.	53	267	247	226	206	185	166
Colorado	WestSugarCo.2	53	320	299	278	256	235	214
Colorado	WN CLARK 1	58	1376	1630	0	0	0	0
Idaho	AMALGAMATED SUGAR BX127 TW.FALLS 83301	3	599	563	528	491	456	419
Idaho	AMALGAMATED SUGAR BX250 NAMPA ID. 83651	3	1008	949	888	827	767	706
Idaho	AMALGAMATEDSUGARCOBOX3000PAULIDAHO83347	3	608	572	535	498	463	425
Idaho	Ash Grove Cement	7	790	688	585	483	380	277
Idaho	BEKER INDUSTRIES BX37 CONDA ID. 83230	7	1338	1059	778	497	215	0
Idaho	DOE - INEL IDAHO FALLS IDAHO 83407	3	928	873	818	761	706	650
Idaho	FMC Corp	7	2976	2592	2205	1818	1431	1045
Idaho	IDAHO SUPREME POTATO BX246 FIRTH 83236	7	106	100	93	87	81	74
Idaho	JRSIMPLOT BOX912 POCATELLO IDAHO 83201	7	7181	5680	4172	2664	1156	0
Idaho	MONSANTO BOX816 SODASPRINGS IDAHO 82376	7	7543	5967	4383	2798	1214	0
Idaho	MtHome	3	196	184	173	161	149	137
Idaho	POTLATCH CORP BX1010 LEWISTON ID 83501	3	1379	1092	802	513	224	3
Nevada	BASIC INCORPORATED (PREMIER SVCS.)	21	272	237	202	166	131	96
Nevada	CHEMSTAR APEX	22	783	682	580	478	377	275
Nevada	HAWTHORNE ARMY AP	21	115	91	67	43	19	0
Nevada	INDEPENDENCE - BIG SPRINGS	20	166	145	123	102	80	58
Nevada	Nevada Cement	20	360	314	267	220	173	126

State	Facility Name	Region	1990	2000	2010	2020	2030	2040
Nevada	NEVADA POWER COMPANY-CLARK	22	519	519	519	520	521	518
Nevada	NEVADA POWER COMPANY-REID GARDNER	22	1349	1730	1730	1730	681	337
Nevada	NEVADA POWER COMPANY-SUNRISE	22	384	384	384	385	386	384
Nevada	SIERRA PACIFIC POWER COMPANY-FT CHURCHIL	20	356	354	351	351	351	351
Nevada	SIERRA PACIFIC POWER-TRACY	20	309	308	307	307	307	307
Nevada	SIERRA PACIFIC POWER/NORTH VALMY	20	7335	8809	9352	9574	9574	9574
Nevada	SOUTHERN CALIFORNIA EDISON-MOHAVE	22	40325	55239	8286	8286	8286	1
Nevada	TITANIUM METALS	22	484	422	359	296	233	170
New Mexico	AMOCO PRODUCTION/EMPIRE ABO PLANT__126M2	65	700	554	407	260	113	0
New Mexico	ARIZONA PUBLIC SERV//4 CORNERS_____GF	60	37817	37817	37817	37817	11723	0
New Mexico	BLOOMFIELD REF CO/BLOOMFIELD REF 402M4	60	676	535	393	251	109	0
New Mexico	CITATION/ANTELOPE RDG GAS PLANT_PSD623M1	65	291	230	169	108	47	0
New Mexico	CONOCO/BELL LAKE 2 WELL #6_____604M3	65	129	121	114	106	98	90
New Mexico	CONOCO/MALJAMAR GAS PLANT_____319M2	65	3573	3362	3148	2930	2719	2501
New Mexico	ENRON GAS PROC. CO./HOBBS GAS PLANT_39M1	65	274	258	242	225	209	192
New Mexico	FEAGAN ENERGY, INC._____627	65	240	190	139	89	39	0
New Mexico	GAS COMPANY OF NM/INDIAN HILLS PLNT__GF	65	900	847	793	738	685	630
New Mexico	GIANT REFINING CO./CINIZA REFINERY_633M1	61	1346	1064	782	499	217	0
New Mexico	GPM GAS CORP./ARTESIA PLANT_____434M5	65	1459	1154	848	541	235	0
New Mexico	GPM GAS CORP./LEE PLANT_____276M1	65	818	647	475	303	132	0
New Mexico	GPM GAS CORP/EUNICE GAS PLANT_____44M5	65	1988	1573	1155	738	320	0
New Mexico	J. L. DAVIS/DENTON PLANT_____65M2	65	385	362	339	316	293	270
New Mexico	MARATHON OIL/INDIAN BASIN_____PSD295M2	65	1460	1155	848	542	235	0
New Mexico	NAVAJO REFINING/ARTESIA REFINERY__195M5	65	1549	1225	900	575	249	0
New Mexico	PHELPS DODGE MINING/HIDALGO SMELTER_59M1	64	41433	35155	28836	22518	16199	10451
New Mexico	PHELPS DODGE/CHINO MINES_____376M1/298M1	64	28058	24369	20650	16933	13215	9541
New Mexico	PLAINS ELECTRIC/ESCALANTE STATION__285M2	61	692	777	796	796	796	796
New Mexico	PUBLIC SERVICE CO. NM/SAN JUAN GEN__63M1	60	31575	33968	41170	41170	20832	1376
New Mexico	RATON PUBLIC SERVICE COMPANY_____GF	63	387	0	0	0	0	0
New Mexico	SID RICHARDSON GASOLINE CO./JAL #3_1092	65	1206	954	701	447	194	0
New Mexico	TEXACO USA/EUNICE SOUTH GAS PLANT__278M3	65	4019	3179	2336	1493	649	3
New Mexico	TEXACO/BUCKEYE GASOLINE PLANT_____60	65	2329	2192	2052	1910	1772	1630
New Mexico	TEXACO/EUNICE NORTH GAS PLANT_____57M1	65	673	532	391	250	108	0
New Mexico	TRANSWESTERN PIPE/HUBER GAS PLANT_____222	65	221	175	128	82	36	0
New Mexico	TRANSWESTERN PIPELINE/YATES PLANT___1M3	65	962	905	847	789	732	673
New Mexico	WARREN PETROLEUM CO/VADA PLANT_____203M1	65	1204	1133	1061	987	916	843
New Mexico	WARREN PETROLEUM/BLUITT PLANT_____563	63	270	214	157	100	43	0
New Mexico	WARREN PETROLEUM/EUNICE GAS PLANT__67M2	65	3285	2598	1909	1219	529	0

State	Facility Name	Region	1990	2000	2010	2020	2030	2040
New Mexico	WARREN PETROLEUM/MONUMENT PLANT___110M1	65	1460	1155	848	542	235	0
New Mexico	WARREN PETROLEUM/SAUNDERS PLANT___315M1	65	913	859	805	749	695	639
New Mexico	WESTERN GAS PROCESSORS/SAN JUAN RIVER_GF	60	5475	4331	3181	2031	881	0
New Mexico	YATES PETROLEUM/PATHFINDER AMINE PL___848	65	227	214	200	186	173	159
Oregon	290041	5	1008	949	888	827	767	706
Oregon	350013	6	189	171	153	135	117	101
Oregon	392125	5	600	523	445	367	289	211
Oregon	398850	5	202	190	178	166	154	141
Oregon	398866	5	119	112	105	98	91	83
Oregon	430471	5	396	362	327	292	258	226
Oregon	475398	5	125	99	73	46	20	0
Oregon	511851	5	3340	2909	2475	2041	1607	1172
Oregon	511876	5	103	90	76	63	50	36
Oregon	512028	5	180	169	159	148	137	126
Oregon	512050	5	246	231	217	202	187	172
Oregon	51850	5	127	120	112	104	97	89
Oregon	650001	5	423	338	252	166	80	13
Oregon	70004	5	331	262	192	123	53	0
Oregon	Amalgamated	6	594	535	474	414	354	302
Oregon	Boardman	6	5180	11329	12670	14302	16188	16188
Oregon	Boise Cascade	5	2454	2249	2042	1833	1627	1438
Oregon	Enron	5	103	107	2	2	5	0
Oregon	International Paper	5	874	814	752	690	630	571
Oregon	Pope & Talbot	5	483	401	319	236	154	89
Oregon	Smurfit	5	105	99	93	86	80	74
Utah	AMOCO	32	6701	5300	3893	2486	1079	0
Utah	Bonanza	34	583	678	678	678	678	678
Utah	BRIGHAM YOUNG UNIV.	33	248	234	219	204	189	174
Utah	BRUSH-WELLMAN	35	161	150	140	129	119	108
Utah	Chevron	31	2424	1918	1409	899	390	0
Utah	Continental Lime	35	115	100	85	70	55	40
Utah	FlyingJ	31	312	247	181	116	50	0
Utah	GENEVA STEEL	33	8120	6453	4778	3103	1428	138
Utah	Holnam	31	911	794	675	557	438	320
Utah	Hunter	36	5524	6164	6164	6164	6164	2151
Utah	INTERMOUNTAIN	35	3503	3767	3767	3767	3767	3767
Utah	KENNECOTT	32	29734	3908	3529	3148	2772	2406
Utah	LDS Hospital	32	330	310	290	270	251	231

State	Facility Name	Region	1990	2000	2010	2020	2030	2040
Utah	Magnesium Corp	31	104	88	71	55	38	25
Utah	PACIFICORP CARBON	34	5883	2377	2377	0	0	0
Utah	PACIFICORP HUNTINGTON	36	13179	14426	14426	14426	14426	0
Utah	PHILLIPS PETROLEUM	31	5672	4487	3295	2104	913	0
Utah	Univ.Utah	32	183	172	161	150	139	128
Utah	Unocal	38	1575	1167	758	348	0	0
Wyoming	Amer Colloid	9	212	168	123	79	34	0
Wyoming	AMOCO Elk Basin	9	1096	764	506	314	168	0
Wyoming	AMOCO Ref	9	1153	761	477	291	172	0
Wyoming	AMOCO Whitney Canyon	9	5984	5631	5272	4907	4553	4188
Wyoming	Bentonite	9	192	167	142	117	92	67
Wyoming	Chevron	9	836	705	573	440	308	203
Wyoming	CO Interstate	9	522	491	459	427	396	364
Wyoming	DAVE JOHNSTON	9	24448	26009	26009	18847	4962	0
Wyoming	EXXON SHUTE CREEK I	8	1078	908	737	565	395	258
Wyoming	FMC COKING PLANT	8	1194	945	694	443	192	0
Wyoming	FMC Trona	9	4795	4512	4224	3932	3649	3356
Wyoming	FRONTIER OIL & REFIN	9	1521	995	618	376	227	0
Wyoming	Gen Chem	9	4196	3948	3697	3441	3193	2937
Wyoming	Holly	9	374	352	329	306	283	260
Wyoming	JIM BRIDGER	9	28453	30665	30665	30665	30665	0
Wyoming	Koch Sulfur Products	9	1104	873	641	410	178	0
Wyoming	LARAMIE RIVER	9	7009	8444	8444	8444	8444	8170
Wyoming	LittleAmerica	9	1899	1291	853	568	391	123
Wyoming	Marathon	9	663	525	385	246	107	0
Wyoming	MtnCement	9	1020	888	756	623	491	358
Wyoming	NEIL SIMPSON 5	9	779	829	829	0	0	0
Wyoming	Osage	9	3008	0	0	0	0	0
Wyoming	PACIFICORP NAUGHTON POWER PLAN	8	25807	10093	10093	10093	5315	0
Wyoming	SF Phosphate	9	577	457	336	214	93	0
Wyoming	Sinclair	9	5917	4656	3575	2657	1858	1082
Wyoming	Snyder Oil	9	2010	1892	1771	1648	1530	1407
Wyoming	Sweetwater	9	933	738	542	346	150	0
Wyoming	Texaco	9	192	152	112	71	31	0
Wyoming	Texas Gulf	9	475	446	416	385	356	326
Wyoming	Union Pac Brady	9	415	308	201	94	3	3
Wyoming	UW CENTRL HEAT PLANT	9	152	143	134	125	116	106
Wyoming	WY Ref	9	630	431	285	186	122	31

<b>State</b>	<b>Facility Name</b>	<b>Region</b>	<b>1990</b>	<b>2000</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>
Wyoming	WYODAK 1	9	7554	7554	7554	7554	7554	0
<b>Total</b>			<b>829205</b>	<b>707555</b>	<b>596753</b>	<b>536371</b>	<b>418749</b>	<b>190867</b>