

IAS Update

Changes in and Current Sulfur Dioxide Emission Inventory

by,

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1.0 Introduction

The IAS database is being used by the Western Regional Air Partnership (WRAP) to establish a regional cap on future year (2000, 2010, 2040) allowable sulfur dioxide emissions rates for point sources in the west. The future year emission rates obtained for sulfur dioxide as reported in this study by state and source category were obtained by running the IAS using the baseline forecast scenario (BFS) option. It is noted that the Western Regional Air Partnership (WRAP) is the successor organization to the Grand Canyon Visibility Transport Commission (GCVTC), which was commissioned by the USEPA to study the role of pollutant emissions on visibility at 16 class I areas along the Colorado Plateau. One purpose of this document is to report on changes made to the sulfur dioxide emission inventory since 1996, when it was used in the Grand Canyon Visibility Transport Commissions (GCVTC).

2.0 Changes made to Sulfur Dioxide emission inventory

Table 2-1 lists those changes that were made to the sulfur dioxide emission inventory in the IAS. The information not listed in bold within this table was supplied by Mike George of the Arizona Department of Environmental Quality (AZDEQ). As the headings indicate, all changes are listed by state, county, facility name, facility ID, SCC, emissions used previously in the Grand Canyon Visibility Transport Commission work, and new emission values provided by states. Additional information, as listed in bold, show the specific IAS region and IAS SCC_ID category assignments applied to each of these sources. The interested reader can verify the accuracy of these assignments by referring to the IAS User's Guide. Page A-1 of the IAS User's Guide shows the location of all IAS Regions. Pages E-3 through E-5 of the IAS User's Guide provides a listing of the point source matches to be used to associate an SCC code with an IAS SCC_ID category.

Two complications were encountered while implementing these changes. The complications involved two Oregon "new" sources. The identities of these sources and the complications that arose as well as the solution are as follows:

- a) Emissions from Globe Metallurgical, Oregon were re-assigned from the industrial chemical category (Table 2-1) to the other point source category (Table 2-2). This re-assignment is considered acceptable for the following reasons:
 - i) the current IAS shows no industrial chemical category for this region and the work involved in adding this source category to this region in the IAS is prohibitive at present
 - ii) the level of sulfur dioxide controls on this source are currently unknown

- iii) hence it is consistent with existing technological information to reassign these emissions to the other point source category which places no emission controls on sources in future years
- b) Emissions from Boardman were re-assigned to western (Table 2-2) from eastern Oregon (Table 2-1) and to utility natural gas (Table 2-2) from utility coal (Table 2-1). This change is considered appropriate for the purpose of this analysis, because it maintains the source of emissions within the utility category which for Oregon is projected to increase and within the same state.

Table 2-2 summarizes the information in Table 2-1. As noted above, items in bold within Table 2-2 denotes changes made relative to the initial assumptions that make up the information contained in Table 2-1. It is noted that these changes are in-line with the level of certainty known about these sources at time of processing.

Table 2-1. Changes to sulfur dioxide emission inventory

State	County	Initial IAS Region #	Initial IAS SCC_ID	Facility Name	Facility ID	SCC	Emission Inventory (Tons/yr)	
							GCVTC	New-90
OR	N/A	5	inchem	Globe Metallur.	N/A	30101301		600
OR	N/A	5	incobo	Boise Cascade	N/A	10200202		2454
OR	N/A	5	inngbo	Smurfit News.	N/A	10200601		105
OR	N/A	5	utngas	ENRON	N/A	10100601		103
OR*	Morrow	6	utcoal	Boardman	N/A	-		5180
CA	San Joaquin	11	ptothr	Owens Illinois	17	30501402		183
CA	Los Angeles	14	inpere	Arco	800012	30600201		1920
CA	Los Angeles	14	inpere	Mobil Oil	800089	30600201		256
CA	Los Angeles	14	inpere	Shell Oil	800115	30600201		778
CA	Los Angeles	14	inpere	Texaco Refining	800223	30600201		546
CA	Los Angeles	14	inpere	Ultramar	800026	30600201		341
CA	Los Angeles	14	inpere	Union Oil	800144	30600201		724
CA	Los Angeles	14	inpere	Powerine Oil	800103	30600201	2943	195
CA	Los Angeles	14	ptothr	LA City DWP	800074	10300602		366
CA	Los Angeles	14	ptothr	Rhone-Poulenc	800131	30101202		319
CA	Los Angeles	14	ptothr	SCE	18763	10300602		345
CA	Orange	14	ptothr	SCE	800126	10300602		109
CA	Los Angeles	14	ptothr	SCE	800125	10300602		372
CA	Los Angeles	14	ptothr	Texaco Refining	800222	30102301		156
CA	Los Angeles	14	ptothr	Union Chem	800143	30102301		209
CA	San Bernardino	15	ptothr	Swern Portland	70000005	30500606		108
CA	San Bernardino	15	ptothr	Union Molycorp	70000364	30301101		792
CA	San Diego	16	ptothr	SDG&E Co.	72	10300602		457
NV	Lyon	20	ptothr	Nevada Cement	32410387	30500622		360
NV*	-	20	utcoal	SP - Ft. Churchill	-	-	550	356
NV*	-	20	utcoal	SP - Valmy	-	-	5854	7335
NV	Mineral	21	ptothr	Hawthorne Army	97110117	10300501		115
UT	Salt Lake City	32	incop2uc	Kennecott Utah	N/A	N/L	30043	29734
UT	N/A	32	inoipr	Unocal	N/A	31000199		1575
UT	N/A	32	ptothr	Continental Lime	N/A	30500622		115
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*	-	56	utcoal	Tristates - NUCLA	-	-	464	531
CO*	-	58	utcoal	Col. Spr. - Drake	-	-	4198	4296
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	incopppm	PD Hidalgo	350230003	N/L	34592	41433
Total							141212	180244

* - Recent updates to sulfur dioxide emission inventory (March 1998).

Table 2-2. Implementation of changes to the sulfur dioxide emission inventory within the IAS

State	Final IAS Region #	Final IAS SCC_ID	Emission Inventory (Tons/yr)		Increase	
			GCVTC	New-90		
OR	5	ptothrnc	0	600	600	
	6	incobouc	0	2454	2454	
	5	inngbouc	0	105	105	
	5	utngasoc	0	103	103	
	*	5	utngasoc	0	5180	5180
CA	11	ptothrnc	0	183	183	
	14	inpereuc	2943	4760	1817	
	14	ptothrnc	0	1876	1876	
	15	ptothrnc	0	900	900	
	16	ptothrnc	0	457	457	
NV	20	ptothrnc	0	360	360	
*	20	utliqunc	550	356	-194	
*	20	utcoalloc	4817	6035.65	1218.65	
*	20	utcoalsx	1037	1299.35	262.35	
	21	ptothrnc	0	115	115	
UT	32	incop2uc	30043	29734	-309	
	32	ptothrnc	0	1575	1575	
	32	ptothrnc	0	115	115	
CO	51	ptothrnc	0	856	856	
	*	52	utcoalsx	865	1025	160
		53	ptothrnc	0	409	409
	*	56	utcoalsx	464	531	67
	*	58	utcoalloc	8775	10390	1615
NM*	60	utcoalsx	57126	69392	12266	
	64	incopppm	34592	41433	6841	
Total			141212	180244	39032	

* - Recent updates to sulfur dioxide emission inventory (March 1998).

3.0 Sulfur dioxide emissions in the region for 1990, 2000, 2010, 2020, 2030, and 2040

Baseline 1990 emissions of sulfur dioxide and the IAS baseline forecast projections for the years 2000, 2010, 2020, 2030, and 2040 are illustrated below and presented in tables within Appendix A. The projected changes in emissions as illustrated in the figures below incorporate planned effects of the CAAA on future emission levels.

3.1 Region

As shown in Figure 3-1, total emissions for the region (Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, and Wyoming) are predicted to decline by 14% between 1990 and 2000, remain fairly flat from the year 2000 to 2030 and decline again in 2040. Emissions in 2040 are projected to decline by 24% relative to 1990.

To better understand these projected changes, the overall emission projections were broken down into six key emission sectors, and they are:

- Area source emissions, which are projected to increase by about 10% from 1990 to 2040.
- In 1990, electric utility emissions accounted for 40% of all sulfur dioxide emissions in the region. Electric utility emissions are expected to decline by 17% between 1990 and 2000, and continue declining thereafter. By 2040, emissions from this sector are expected to be about 70% less than in 1990 and represent 15% of all projected emissions in the region.
- Industrial point sources emissions are projected to decline by 50% from 1990 to 2040.
- Industrial area source emissions are projected to steadily increase. By 2040, emissions from this sector are projected to increase by 50% relative to 1990.
- The fastest growing sector of emissions is other point sources. By 2040, this sector is expected to be the largest source of emissions, account for 35% of all emissions, and show a net increase in emissions of 150% relative to 1990.
- Transportation emissions are expected to decline by 50% between 1990 and 2000. Thereafter, emissions are projected to rise. The net result is that by 2040, emissions from this sector are projected to decline by 20% relative to 1990 but increase by 60% relative to 2000.

Subsequent figures in this section depict the 1990 and IAS projections of sulfur dioxide emissions in 2000, 2010, 2020, 2030, and 2040 for each state in the region.

IAS Baseline Scenario - Region

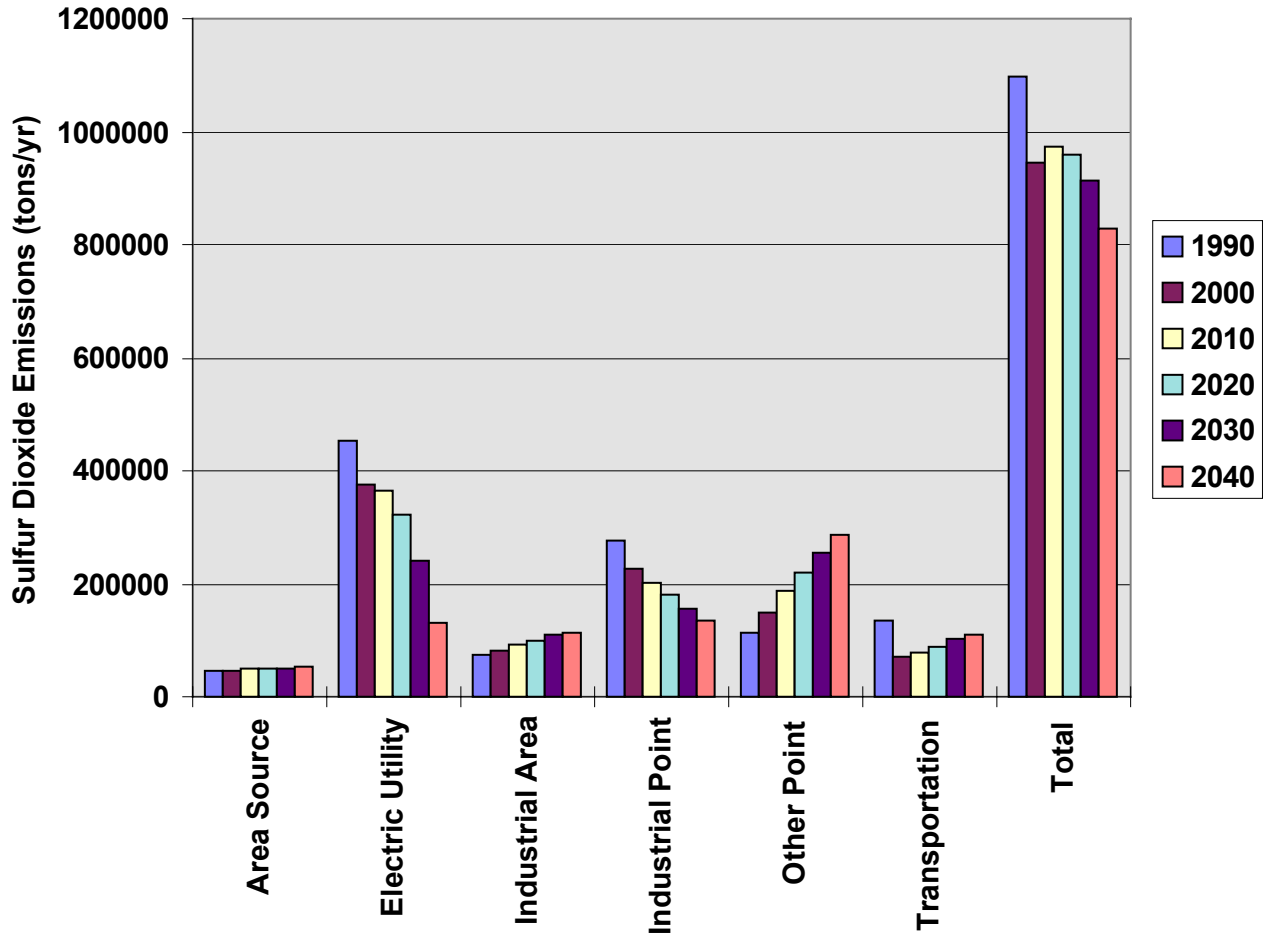
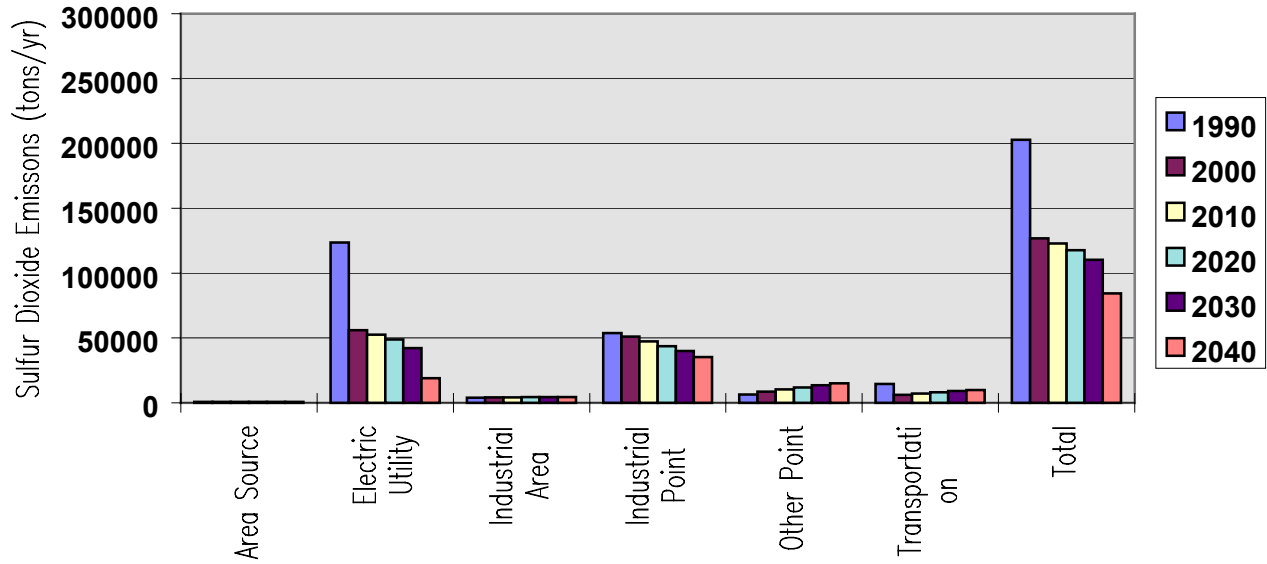
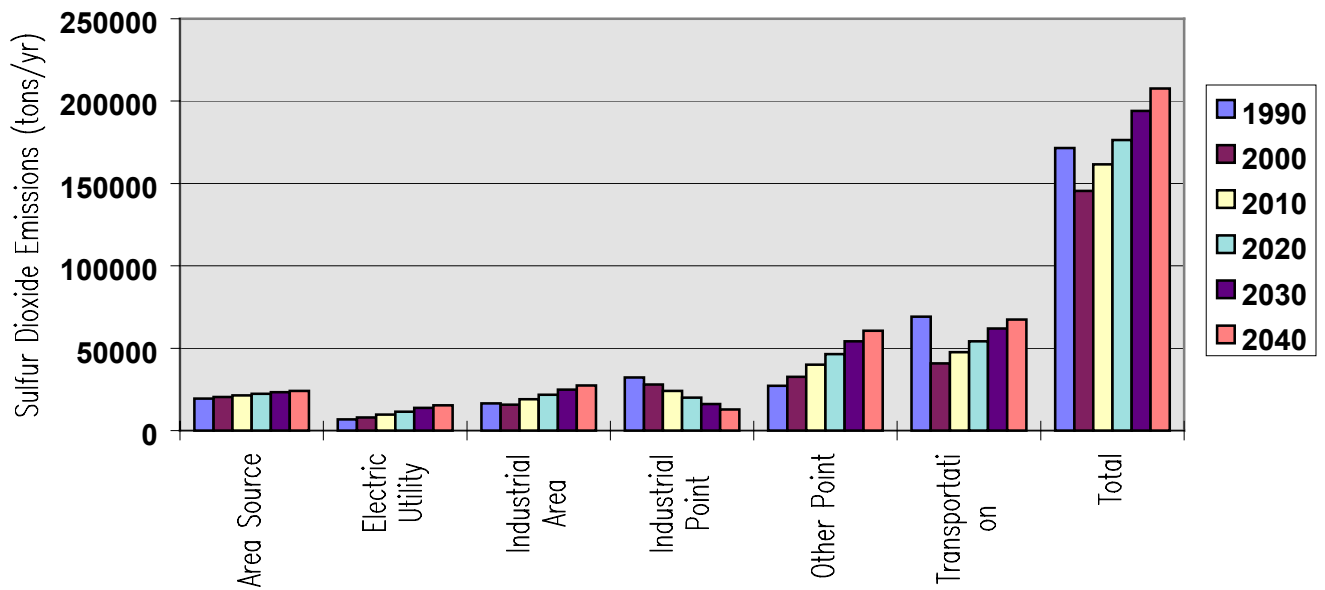


Figure 3-1. Total emissions for the region

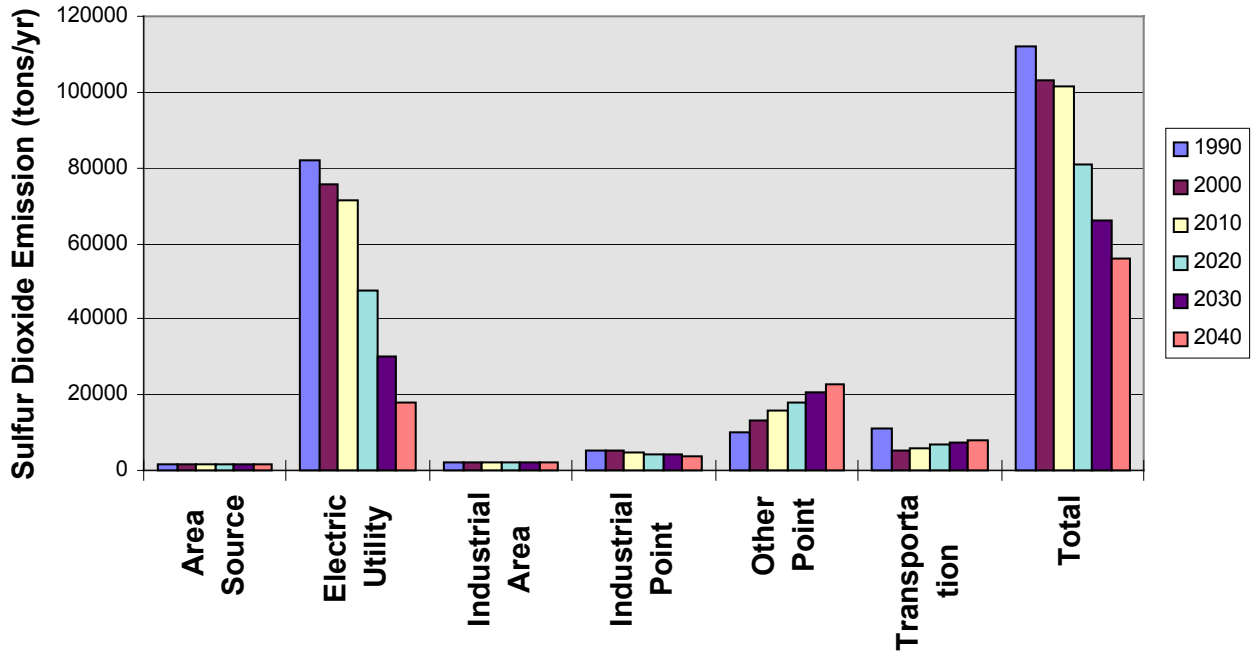
IAS Baseline Scenario - Arizona



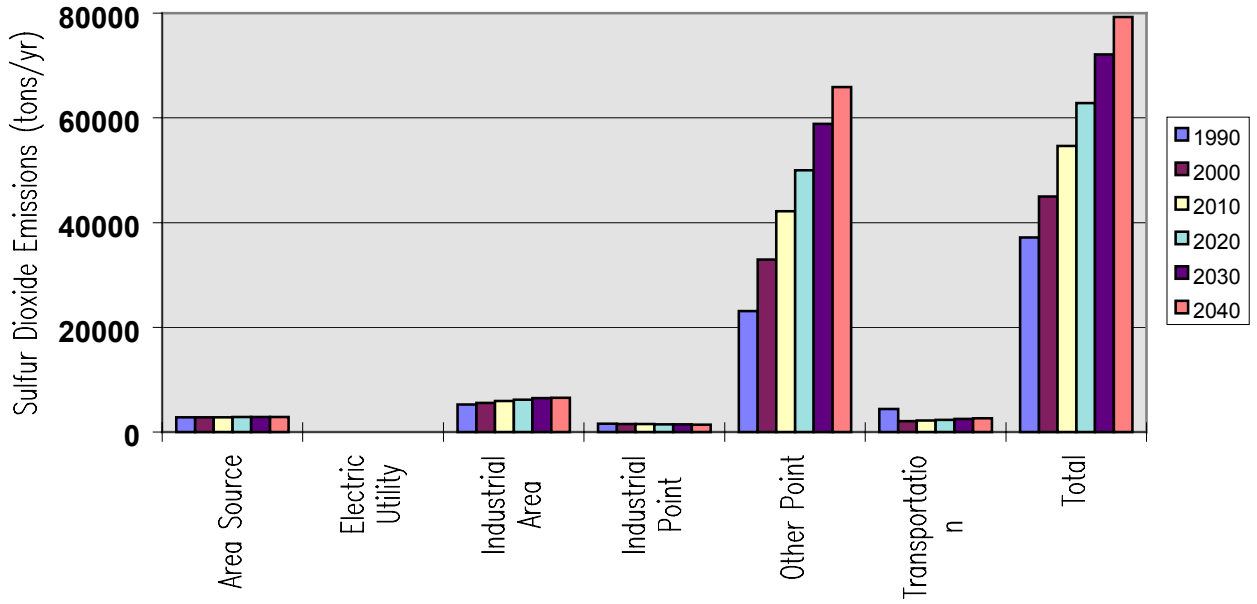
IAS Baseline Scenario - California



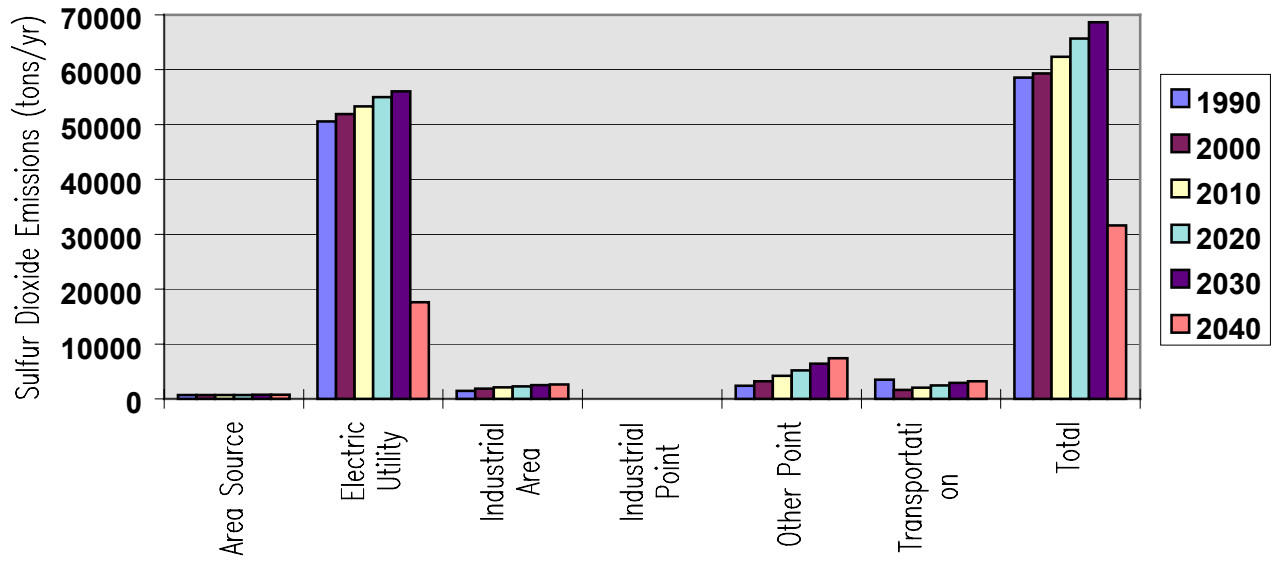
IAS Baseline Scenario - Colorado



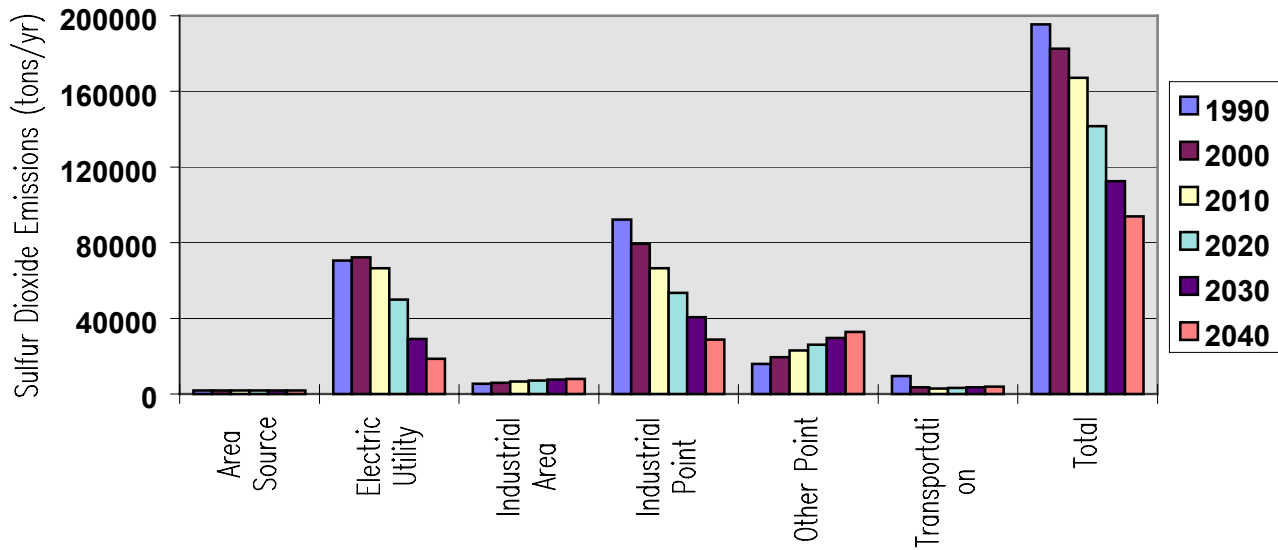
IAS Baseline Scenario - Idaho



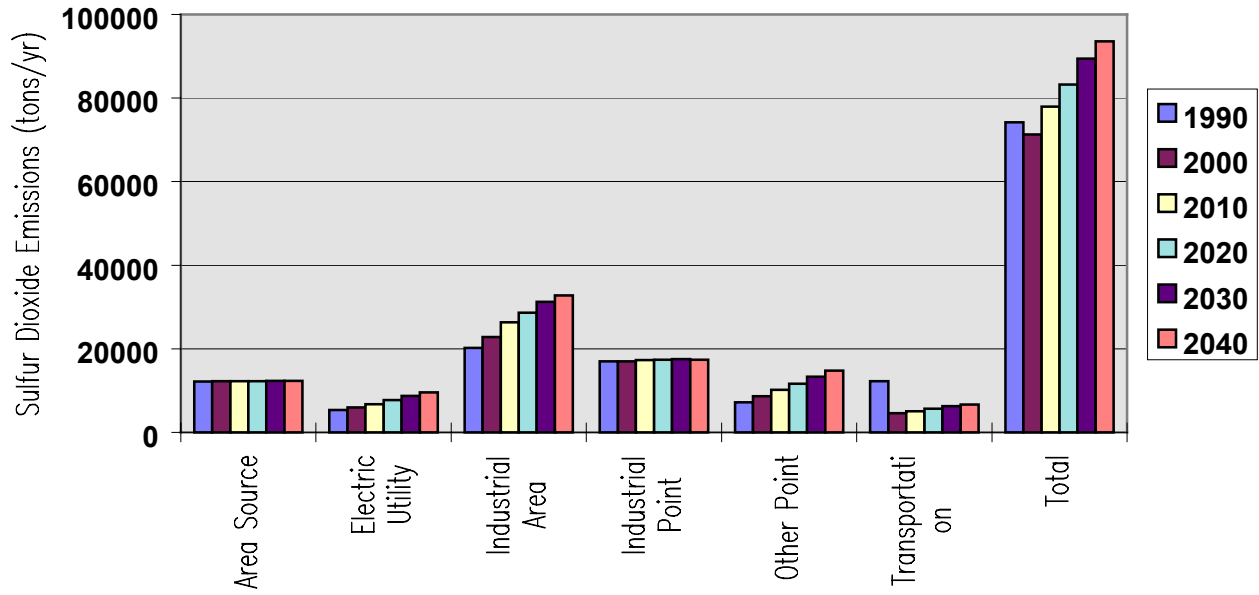
IAS Baseline Scenario - Nevada



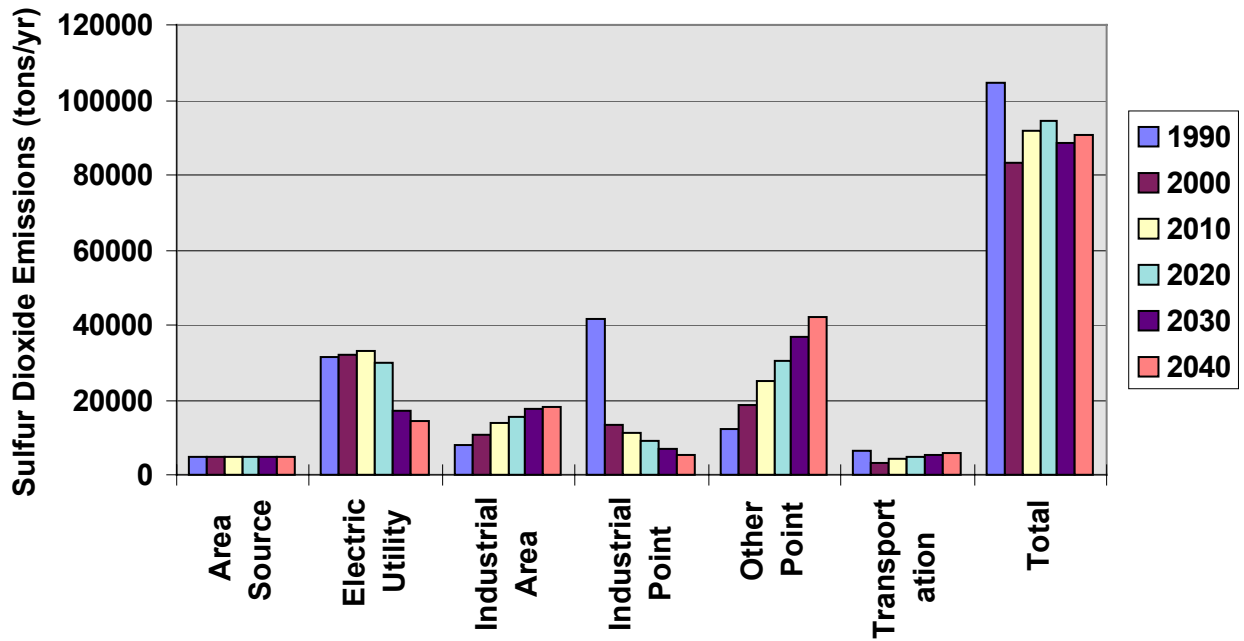
IAS Baseline Scenario - New Mexico



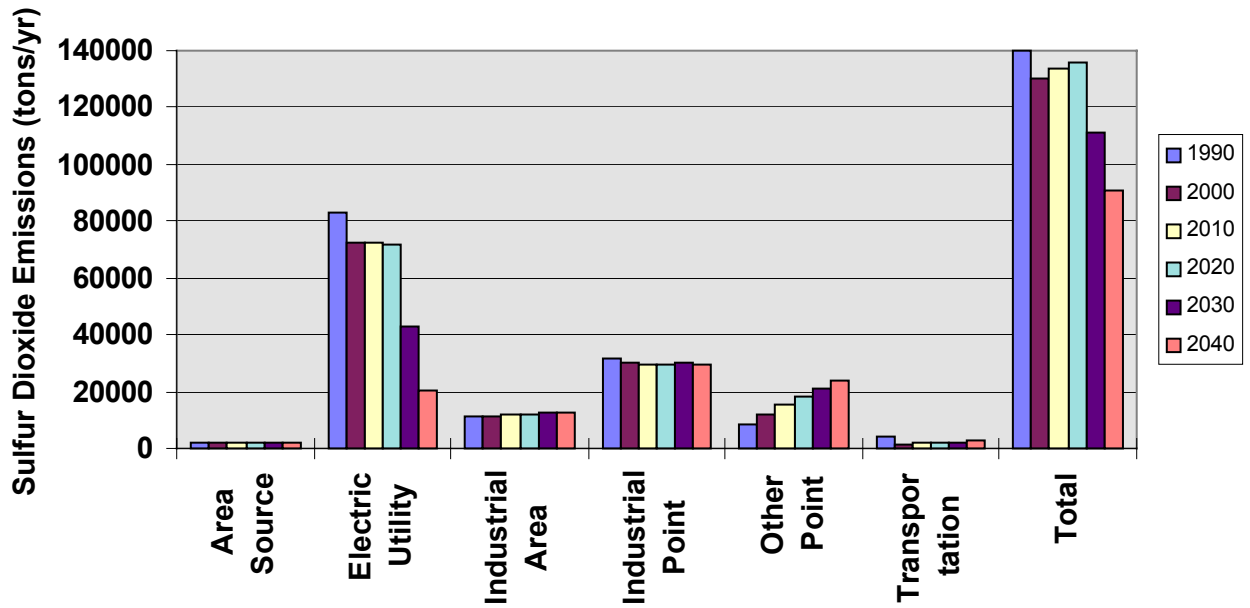
IAS Baseline Scenario - Oregon



IAS Baseline Scenario - Utah



IAS Baseline Scenario - Wyoming



4.0 Point source sulfur dioxide emissions in the region for 1990, 2000, 2010, 2020, 2030 and 2040

Baseline 1990 emissions of sulfur dioxide and the IAS baseline forecast projections for the years 2000, 2010, 2020, 2030, and 2040 for point sources are illustrated below and presented in tables within Appendix C. The projected changes in emissions as illustrated below incorporate planned effects of the CAAA on future emission levels.

4.1 Region

As shown in Figure 4-1, total emissions for the region (Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, and Wyoming) are predicted to decline by 11% between 1990 and 2000, remain fairly flat from the year 2000 to 2020 and decline again in 2030 and 2040. Emissions in 2040 are projected to decline by 34% relative to 1990. Figure 4-2 illustrates this same result but as a function of IAS SCC_IDs. For brevity, all emissions from the same source category were combined together for this presentation. This means that sources with different controls (e.g., unknown, no, SO_x, NO_x, particulate, and other) were combined together. The interested reader is referred to Appendix D for a comparison of these IAS SCC_IDs to traditional SCC descriptions.

As shown in Figure 4-3, when the other point source category is removed, point source emissions are projected to decrease substantially between 1990 and 2040. The decline in emissions is equal to 18% between 1990 and 2000, and 63% between 1990 and 2040.

Subsequent figures in this section depict the 1990 and IAS projections of sulfur dioxide emissions from point sources by IAS category in 2000, 2010, 2020, 2030, and 2040 for each state in the region.

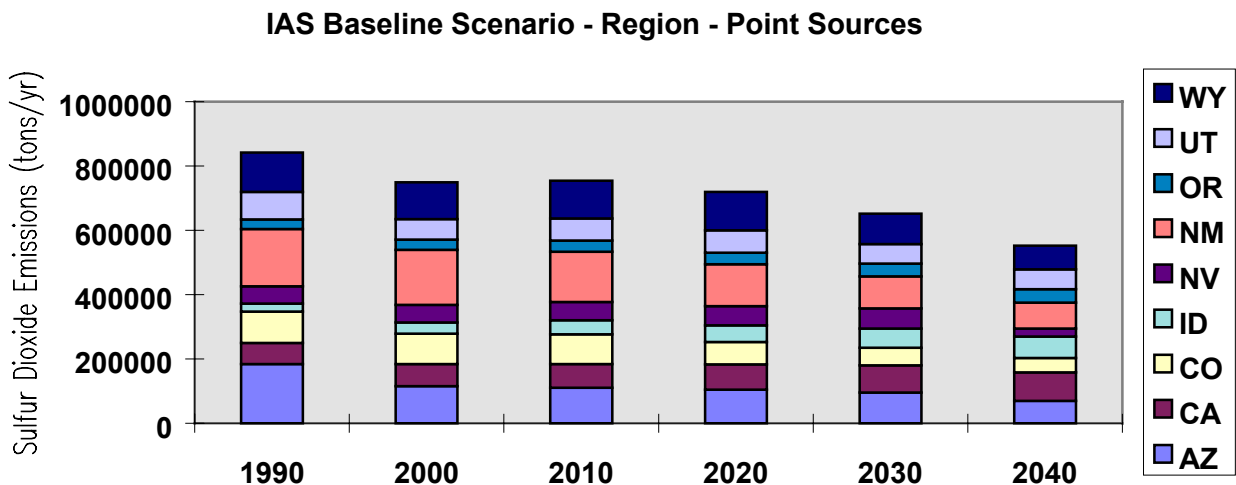


Figure 4-1. Total point source emissions for the region

IAS Baseline Scenario - Region - Point Sources

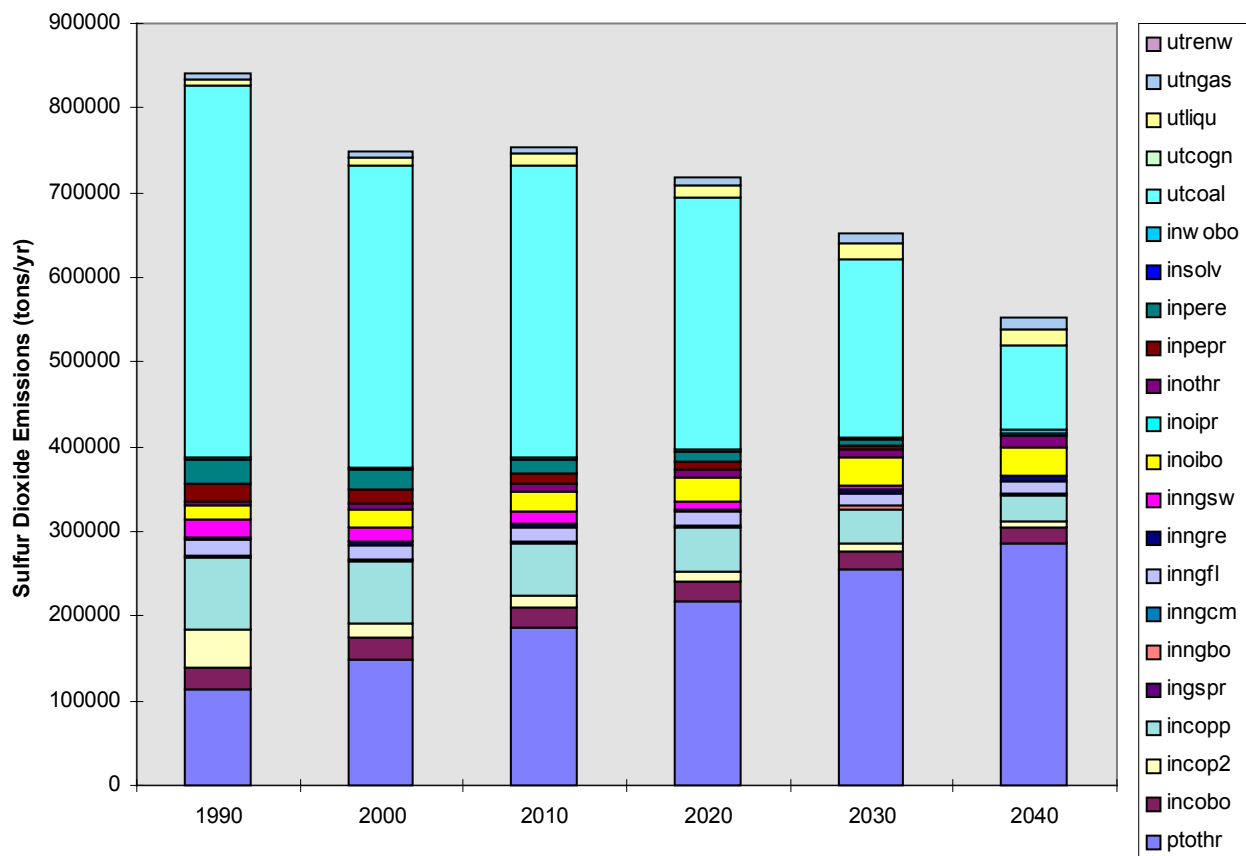


Figure 4-2. Total point source emissions for the region as a cumulative total of emissions from individual IAS emission categories

IAS Baseline Scenario - Region - Point Sources excluding Other Point Sources

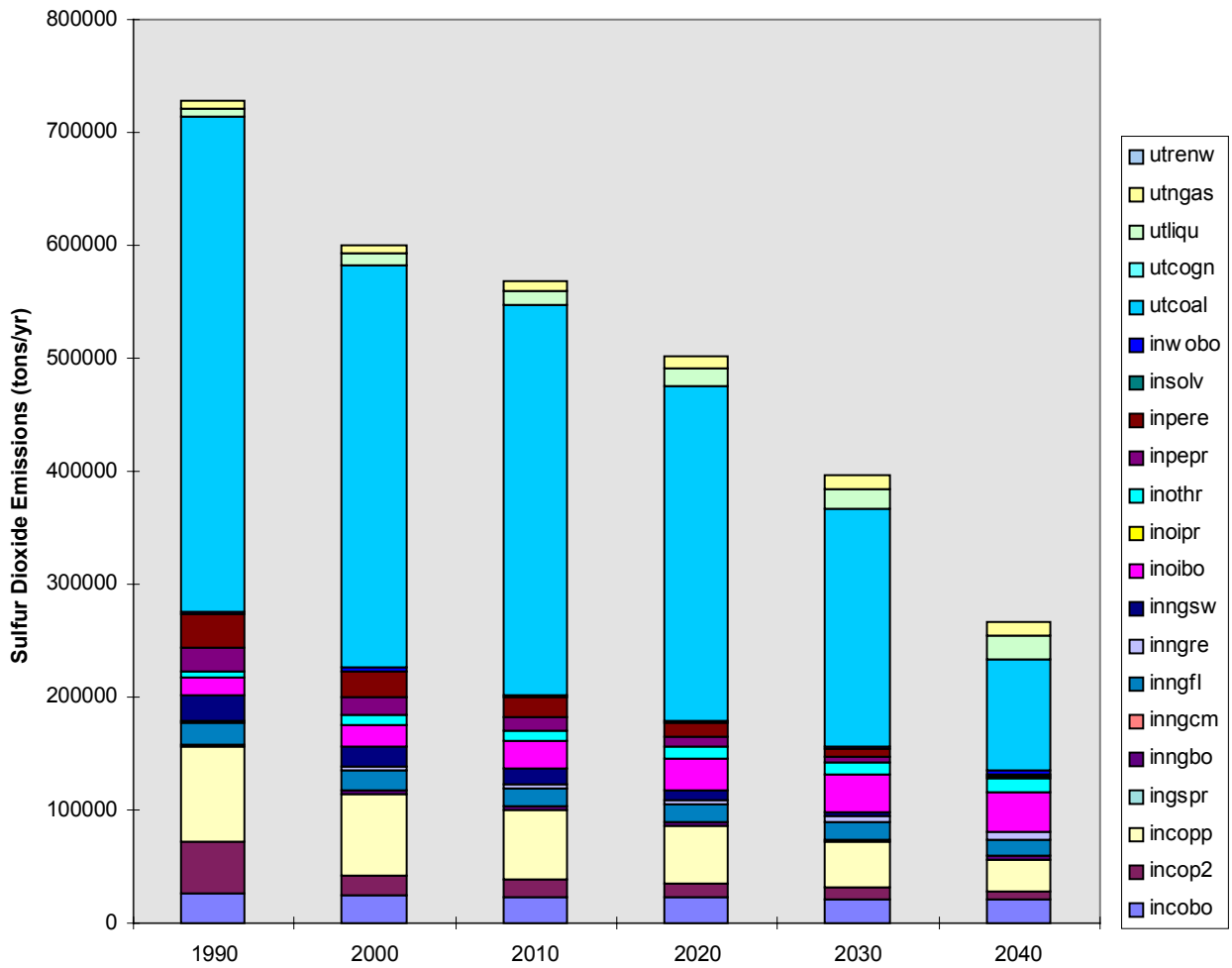
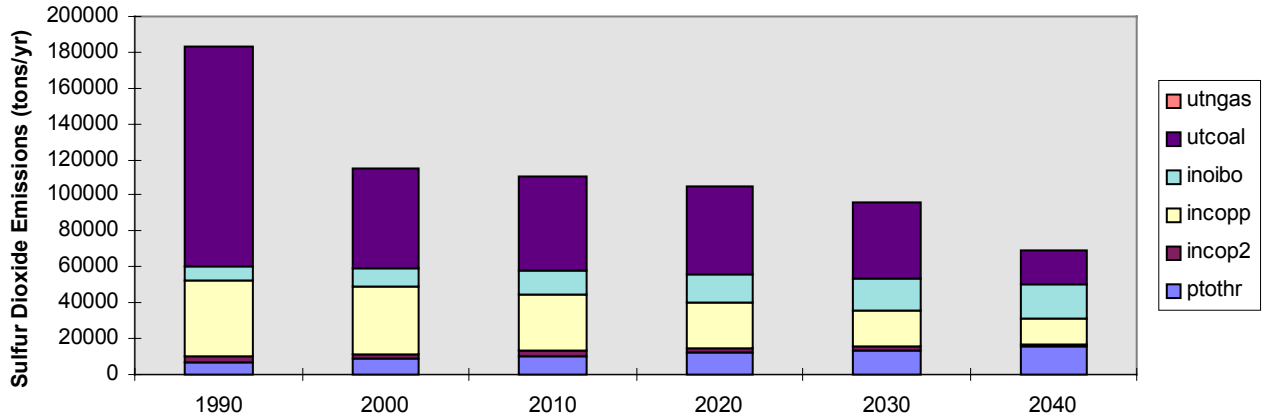
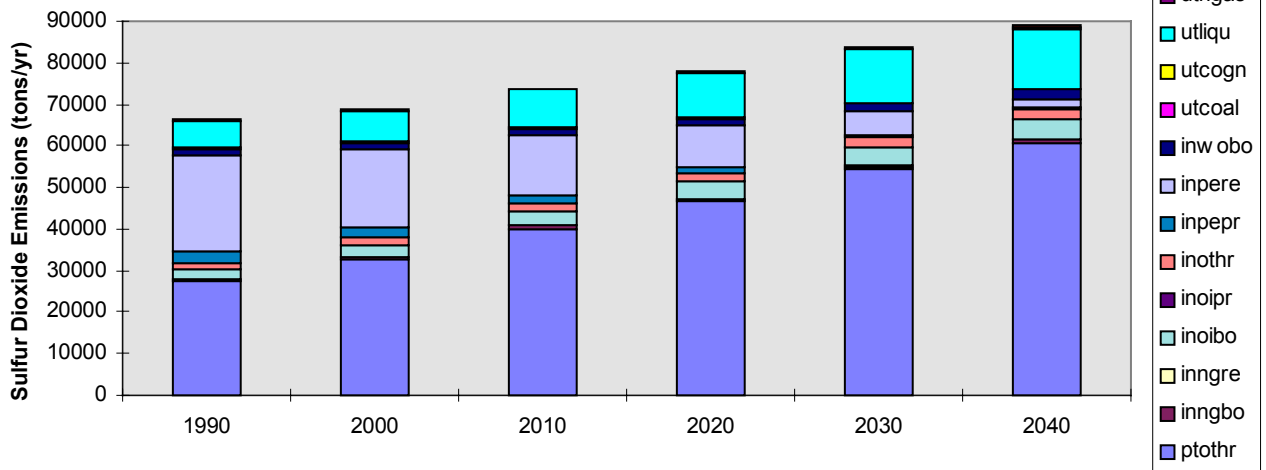


Figure 4-3. Total point source emissions (excluding the other point source category). The cumulative total is based on emissions from individual IAS SCC categories

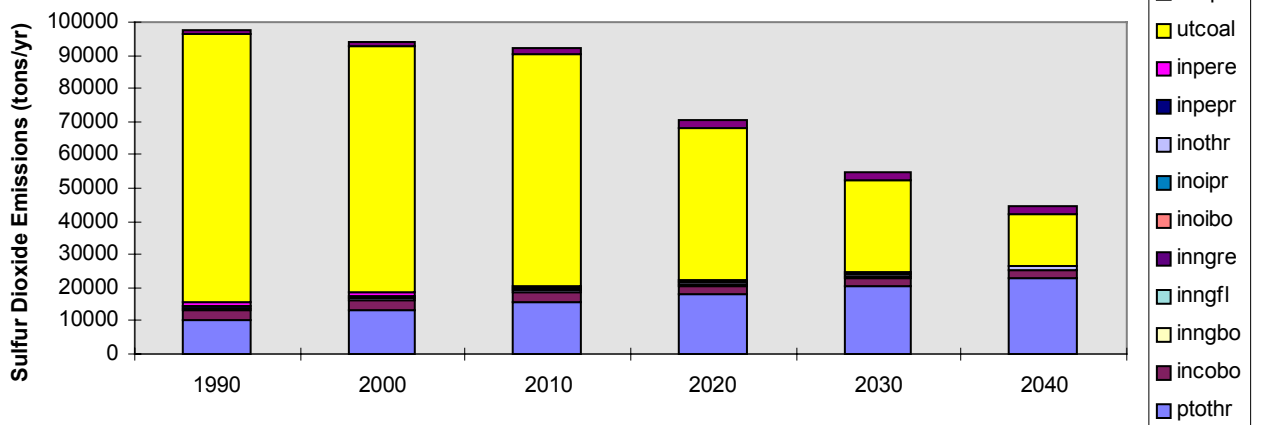
IAS Baseline Scenario - Arizona - Point Sources



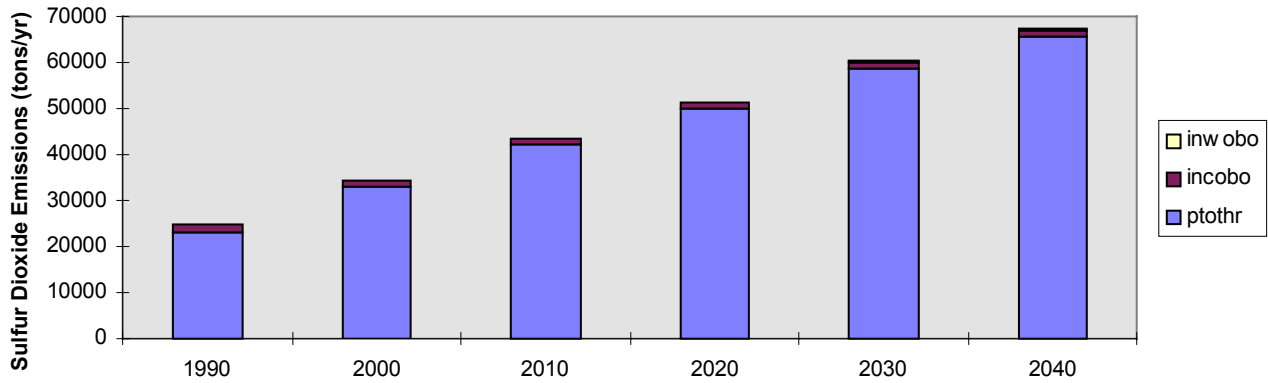
IAS Baseline Scenario - California - Point Sources



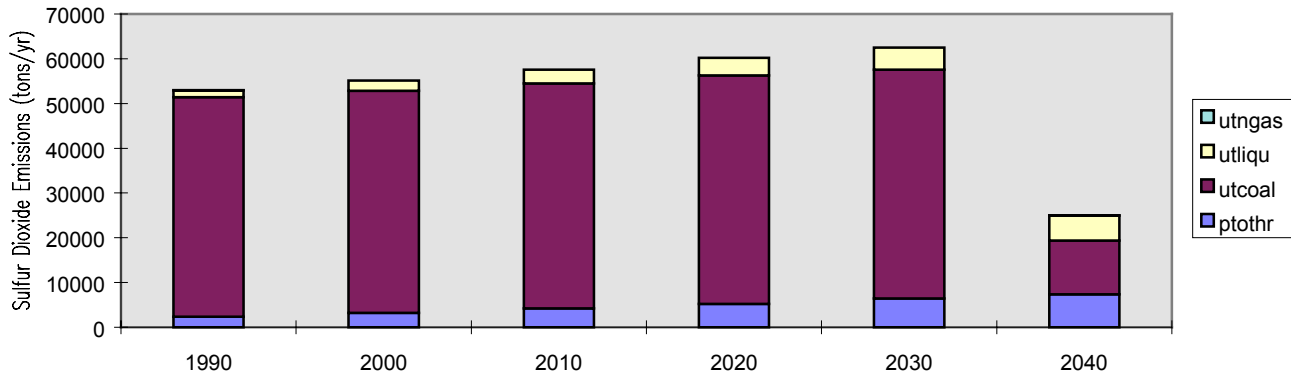
IAS Baseline Scenario - Colorado - Point Sources



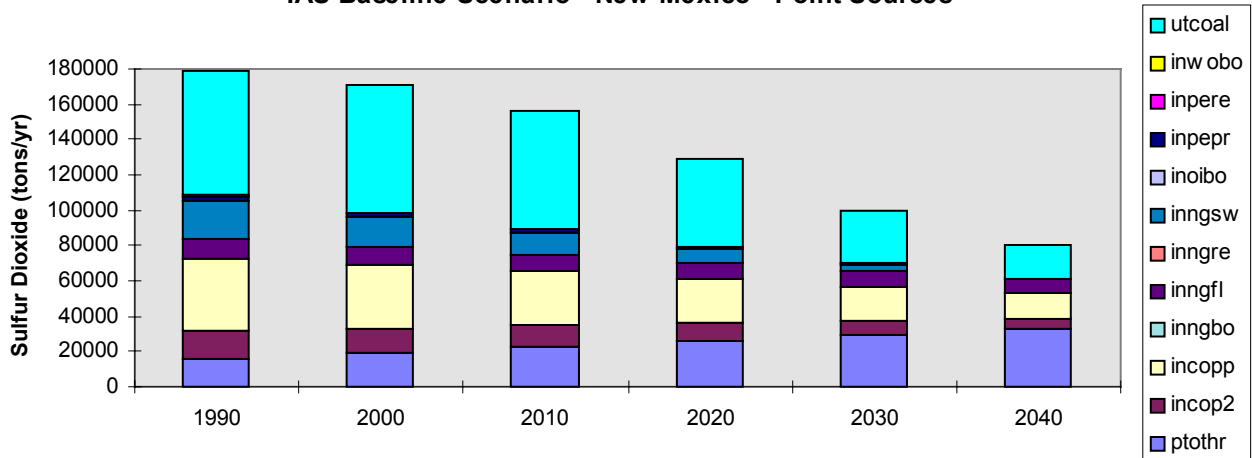
IAS Baseline Scenario - Idaho - Point Sources



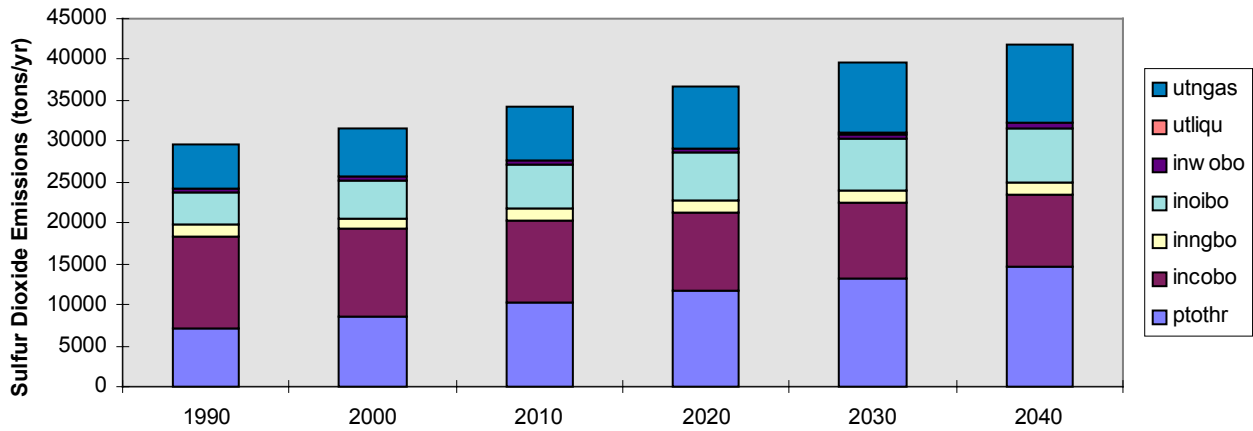
IAS Baseline Scenario - Nevada



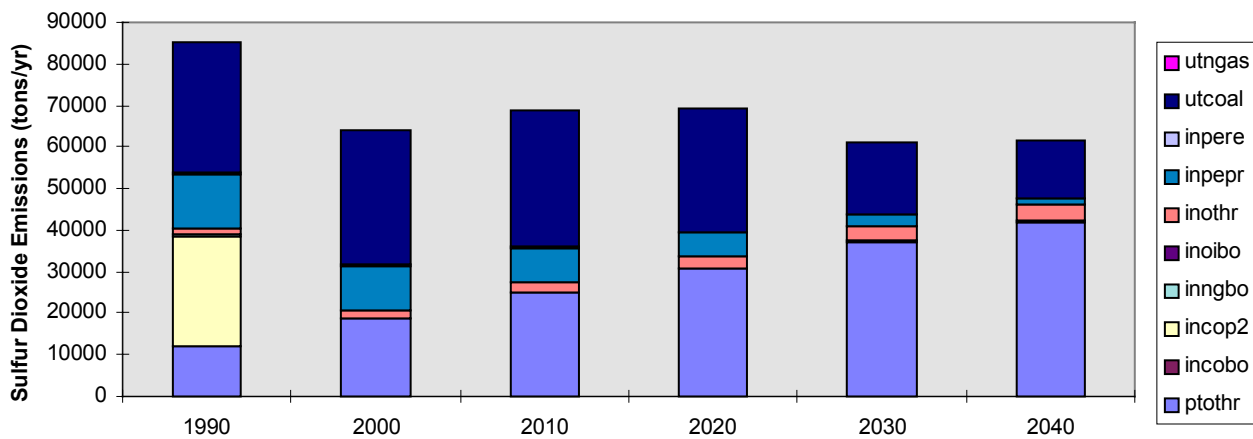
IAS Baseline Scenario - New Mexico - Point Sources



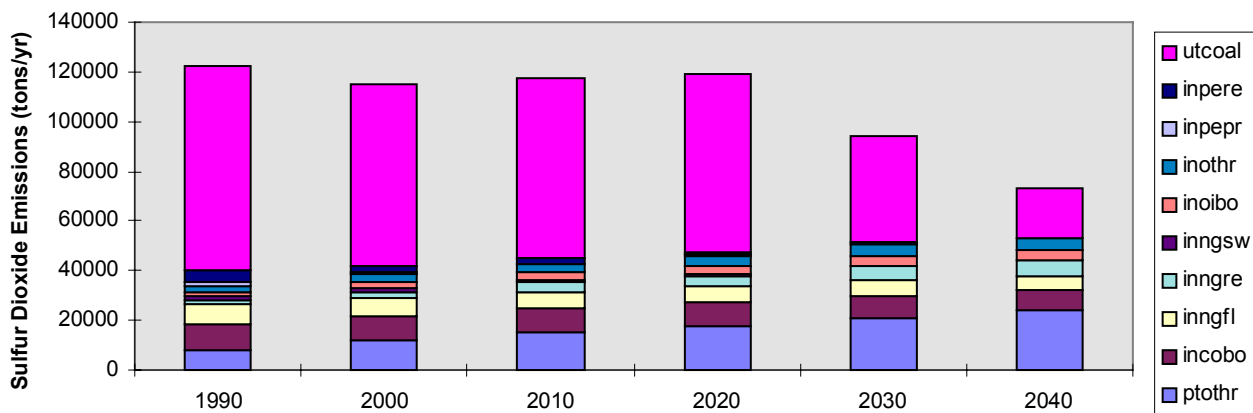
IAS Baseline Scenario - Oregon - Point Sources



IAS Baseline Scenario - Utah - Point Sources



IAS Baseline Scenario - Wyoming - Point Sources



Appendix A

Tables of Regional and State IAS Baseline Scenario Emission Inventories

Table A-1. Regional Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	46240	47256	48497	49606	50741	51524
Electric Utility	453343	374584	365872	322211	239746	132338
Industrial Area	74140	80449	91787	100013	109197	114637
Industrial Point	275401	225562	202459	178936	156673	134520
Other Point	112859	149543	185975	218020	255082	285115
Transportation	134855	69406	78718	89348	101355	109710
Total	1096839	946800	973310	958134	912794	827843

Table A-2. Arizona Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	715	753	787	816	843	857
Electric Utility	123545	55932	52672	48964	42160	18887
Industrial Area	3894	4073	4246	4318	4409	4403
Industrial Point	53805	51063	47454	43645	39999	35240
Other Point	6355	8657	10470	11948	13675	15143
Transportation	14600	6262	7179	8071	9099	9800
Total	202913	126740	122808	117761	110183	84329

Table A-3. California Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	19482	20324	21407	22346	23350	24073
Electric Utility	6858	8036	9632	11533	13734	15378
Industrial Area	16580	15739	18943	21676	24843	27399
Industrial Point	32166	28019	24170	20059	16052	12883
Other Point	27267	32681	40003	46500	54186	60581
Transportation	69171	40727	47539	54193	61925	67407
Total	171524	145527	161694	176305	194088	207720

Table A-4. Colorado Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	1552	1582	1608	1643	1670	1680
Electric Utility	82188	75699	71308	47806	30046	17858
Industrial Area	2012	2089	2146	2153	2173	2155
Industrial Point	5346	5070	4726	4363	4031	3739
Other Point	10221	13338	15903	18152	20737	22945
Transportation	10952	5341	5905	6680	7419	7832
Total	112271	103119	101597	80796	66076	56208

Table A-5. Idaho Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	2816	2830	2836	2845	2847	2848
Electric Utility	0	0	0	0	0	0
Industrial Area	5230	5544	5917	6182	6495	6566
Industrial Point	1593	1553	1523	1484	1455	1401
Other Point	23132	32964	42147	49966	58849	65858
Transportation	4375	2091	2219	2339	2491	2606
Total	37146	44981	54642	62816	72138	79279

Table A-6. Nevada Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	691	704	717	729	741	746
Electric Utility	50576	51898	53321	55023	56053	17624
Industrial Area	1448	1838	2077	2288	2521	2650
Industrial Point	0	0	0	0	0	0
Other Point	2374	3236	4219	5206	6436	7389
Transportation	3479	1657	2046	2451	2908	3194
Total	58568	59334	62379	65697	68659	31603

Table A-7. New Mexico Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	1828	1855	1884	1911	1933	1943
Electric Utility	70479	72206	66442	49949	29152	18587
Industrial Area	5428	5932	6551	7034	7588	7913
Industrial Point	92285	79420	66470	53507	40570	28765
Other Point	15894	19518	22951	26003	29659	32758
Transportation	9543	3634	2846	3173	3566	3862
Total	195457	182565	167144	141578	112467	93829

Table A-8. Oregon Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	12197	12229	12252	12286	12312	12322
Electric Utility	5352	5984	6754	7712	8745	9569
Industrial Area	20187	22811	26323	28604	31229	32783
Industrial Point	16991	16966	17317	17368	17557	17418
Other Point	7206	8654	10218	11638	13317	14772
Transportation	12256	4624	5044	5640	6264	6690
Total	74189	71269	77910	83248	89424	93554

Table A-9. Utah Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	4753	4770	4794	4814	4829	4839
Electric Utility	31606	32209	33138	29719	17099	14285

Industrial Area	8166	10890	13611	15519	17347	18219
Industrial Point	41729	13127	11071	9013	7062	5577
Other Point	12056	18590	24843	30565	36972	41886
Transportation	6482	3385	4069	4718	5382	5854
Total	104793	82971	91526	94348	88692	90660

Table A-10. Wyoming Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Area Source	2206	2210	2212	2216	2216	2217
Electric Utility	82739	72620	72604	71505	42757	20151
Industrial Area	11195	11531	11973	12240	12593	12549
Industrial Point	31485	30344	29729	29497	29949	29496
Other Point	8354	11904	15220	18044	21252	23783
Transportation	3998	1684	1871	2083	2301	2465
Total	139977	130293	133610	135585	111068	90661

Appendix B

Tables of Regional and State IAS Baseline Scenario Point Source Emission Inventories

Table B-1. Regional Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	453343	374584	365872	322211	239746	132338
Industrial Point	275401	225562	202459	178936	156673	134520
Other Point	112859	149543	185975	218020	255082	285115
Total	841604	749689	754307	719167	651501	551972

Table B-2. Arizona Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	123545	55932	52672	48964	42160	18887
Industrial Point	53805	51063	47454	43645	39999	35240
Other Point	6355	8657	10470	11948	13675	15143
Total	183705	115652	110597	104556	95833	69270

Table B-3. California Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	6858	8036	9632	11533	13734	15378
Industrial Point	32166	28019	24170	20059	16052	12883
Other Point	27267	32681	40003	46500	54186	60581
Total	66291	68737	73804	78091	83971	88842

Table B-4. Colorado Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	82188	75699	71308	47806	30046	17858
Industrial Point	5346	5070	4726	4363	4031	3739
Other Point	10221	13338	15903	18152	20737	22945
Total	97755	94107	91938	70320	54814	44541

Table B-5. Idaho Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	0	0	0	0	0	0
Industrial Point	1593	1553	1523	1484	1455	1401
Other Point	23132	32964	42147	49966	58849	65858
Total	24725	34516	43670	51450	60304	67259

Table B-6. Nevada Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	50576	51898	53321	55023	56053	17624
Industrial Point	0	0	0	0	0	0
Other Point	2374	3236	4219	5206	6436	7389
Total	52950	55135	57540	60229	62490	25013

Table B-7. New Mexico Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	70479	72206	66442	49949	29152	18587
Industrial Point	92285	79420	66470	53507	40570	28765
Other Point	15894	19518	22951	26003	29659	32758
Total	178658	171144	155863	129460	99380	80110

Table B-8. Oregon Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	5352	5984	6754	7712	8745	9569
Industrial Point	16991	16966	17317	17368	17557	17418
Other Point	7206	8654	10218	11638	13317	14772
Total	29549	31604	34289	36718	39619	41760

Table B-9. Utah Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	31606	32209	33138	29719	17099	14285
Industrial Point	41729	13127	11071	9013	7062	5577
Other Point	12056	18590	24843	30565	36972	41886
Total	85392	63926	69052	69297	61133	61748

Table B-10. Wyoming Baseline Scenario Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
Electric Utility	82739	72620	72604	71505	42757	20151
Industrial Point	31485	30344	29729	29497	29949	29496
Other Point	8354	11904	15220	18044	21252	23783
Total	122578	114868	117553	119046	93958	73430

Appendix C

Tables of Regional and State IAS Baseline Scenario Emission Inventories for Point Sources

Table C-1. Regional Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
incobo	25606	24560	23632	22602	21675	20525
incop2	45744	16759	14258	11757	9255	6754
incopp	84419	73529	62554	51580	40605	29631
ingspr	12	12	12	12	12	12
inngbo	2186	2256	2498	2709	2947	3090
inngcm	5	5	5	5	5	5
inngfl	18874	17872	16852	15816	14814	13778
inngre	2163	2830	3646	4484	5435	6127
inngsw	22488	17812	13113	8414	3715	112
inoibo	15552	20563	25081	28830	32872	35088
inoipr	109	114	120	127	133	141
inothr	5941	7270	8344	9435	10802	11955
inpepr	20070	16096	12231	8474	4793	1895
inpere	30187	23746	17768	12195	6915	2584
insolv	3	3	4	5	5	6
inwobo	2042	2134	2340	2492	2688	2815
ptothr	112859	149543	185975	218020	255082	285115
utcoal	438350	356827	344746	297059	210071	99259
utcogn	11	12	14	16	18	20
utliqu	7981	9874	12196	14924	18047	20344
utngas	6853	7699	8718	9980	11341	12417
utrenw	149	171	200	232	269	297
TOTAL	841604	749689	754307	719167	651501	551972

Table C-2. Arizona Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
incop2	3350	2918	2482	2047	1611	1176
incopp	43345	37753	32119	26484	20849	15214
inoibo	7099	10380	12839	15099	17522	18833
ptothr	6355	8657	10470	11948	13675	15143
utcoal	123516	55898	52633	48918	42108	18829
utngas	25	29	34	39	45	49
TOTAL	183705	115652	110597	104556	95833	69270

Table C-3. California Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
inngbo	583	637	718	785	862	907
inngre	56	70	87	103	121	135
inoibo	2189	2745	3404	3880	4370	4638
inoipr	77	83	89	95	102	109
inothr	1451	1586	1789	1989	2237	2454
inpepr	2962	2402	1843	1282	721	293
inpere	23344	18934	14526	10106	5688	2312
inwobo	1483	1542	1696	1802	1934	2019
ptothr	27267	32681	40003	46500	54186	60581
utcoal	261	262	263	264	265	266
utcogn	11	12	14	16	18	20
utliqu	6328	7463	9003	10839	12965	14552
utngas	118	138	166	198	235	263
utrenw	140	160	186	216	250	276
TOTAL	66291	68737	73804	78091	83971	88842

Table C-4. Colorado Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
incobo	2848	2699	2563	2421	2288	2144
inngbo	91	106	117	125	134	139
inngfl	13	12	11	11	10	9
inngre	12	15	17	19	21	23
inoibo	170	206	236	255	275	288
inoipr	32	32	32	32	32	32
inothr	430	578	658	738	838	924
inpepr	435	353	271	189	107	43
inpere	1312	1065	817	569	321	131
ptothr	10221	13338	15903	18152	20737	22945
utcoal	80779	74095	69486	45713	27666	15255
utliqu	24	28	31	36	41	45
utngas	1385	1576	1790	2056	2339	2558
TOTAL	97755	94107	91938	70320	54814	44541

Table C-5. Idaho Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
incobo	1519	1472	1434	1388	1349	1289
inwobo	73	80	87	95	105	110
ptothr	23132	32964	42147	49966	58849	65858
TOTAL	24725	34516	43670	51450	60304	67259

Table C-6. Nevada Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
ptothr	2374	3236	4219	5206	6436	7389
utcoal	49007	49580	50233	51055	51103	11976
utliqu	1560	2306	3073	3949	4928	5623
utngas	8	10	13	15	18	20
TOTAL	52950	55135	57540	60229	62490	25013

Table C-7. New Mexico Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
incop2	15881	13832	11768	9703	7639	5574
incopp	41074	35775	30436	25096	19757	14417
inngbo	20	22	24	25	27	29
inngfl	10896	10317	9729	9131	8552	7954
inngre	74	84	96	108	122	133
inngsw	21322	16888	12433	7978	3522	107
inoibo	77	84	93	100	108	112
inpepr	2525	2050	1573	1096	618	252
inpere	312	254	195	136	77	31
inwobo	96	105	115	125	137	143
ptothr	15894	19518	22951	26003	29659	32758
utcoal	70471	72197	66432	49938	29139	18573
TOTAL	178658	171144	155863	129460	99380	80110

Table C-8. Oregon Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
incobo	11210	10672	10170	9633	9140	8589
inngbo	1325	1292	1403	1503	1614	1683
inoibo	4068	4597	5305	5764	6293	6606
inwobo	388	406	440	468	510	540
ptothr	7206	8654	10218	11638	13317	14772
utliqu	67	75	85	97	109	120
utngas	5285	5909	6670	7616	8636	9450
TOTAL	29549	31604	34289	36718	39619	41760

Table C-9. Utah Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
incobo	44	42	40	38	36	34
incop2	26513	9	8	6	5	4
inngbo	162	194	230	265	302	324
inoibo	16	25	33	39	45	48
inothr	1543	1937	2381	2829	3379	3822
inpepr	12916	10487	8046	5604	3163	1292
inpere	535	434	333	232	131	53
ptothr	12056	18590	24843	30565	36972	41886
utcoal	31577	32175	33097	29668	17036	14213
utngas	29	34	42	51	63	72
TOTAL	85392	63926	69052	69297	61133	61748

Table C-10. Wyoming Baseline Scenario - Point Source Emission Inventory (tons/yr)

Sector	1990	2000	2010	2020	2030	2040
incobo	9974	9665	9415	9113	8854	8461
inngfl	7965	7542	7112	6675	6252	5815
inngre	2017	2656	3441	4247	5163	5827
inngsw	1159	918	676	434	191	6
inoibo	1932	2526	3169	3691	4257	4561
inothr	2511	3161	3508	3869	4336	4743
inpepr	1232	805	499	303	184	15
inpere	4684	3058	1897	1152	698	56
ptothr	8354	11904	15220	18044	21252	23783
utcoal	82738	72619	72602	71502	42754	20147
TOTAL	122578	114868	117553	119046	93958	73430

Appendix D

Point Source Matching SCC to IAS SCC_IDs

Table D-1. Point Source Matching SCC to IAS SCC_IDs

SCC_ID	SCC_Description
aicobouc	Bituminous & Pulverized Coal Boilers With Unknown Control
aigaspuc	All Gasoline Processes With Unknown Control
aingbouc	Natural Gas, Total: Boilers & IC Engine With Unknown Control
ainrdluc	Off-Highway Vehicle Diesel, Ind. Equip. With Unknown Control
aiogp2uc	Oil & Gas Production, Petroleum With Unknown Control
aiogpruc	Oil & Gas Production, Petroleum With Unknown Control
aioibouc	Distillate Oil, Total: Boilers & IC With Unknown Control
aipetruc	Petroleum Refineries: General With Unknown Control
aisolvuc	Industrial Solvents With Unknown Control
aragpruc	Agricultural Production - Livestock With Unknown Control
arbioguc	Natural Sources Biogenic With Unknown Control
arcsoluc	Misc. Commercial Solvent Use With Unknown Control
argeoguc	Natural Sources Geogenic With Unknown Control
arfiluc	Landfills With Unknown Control
armisanc	Miscellaneous Area Source With No Control
arnrdluc	Large Off-HWY Vehicle Diesel With Unknown Control
arnrdsuc	Small Off-HWY Vehicle Diesel With Unknown Control
arnrgluc	Large Off-HWY Vehicle Gasoline With Unknown Control
arnrgsuc	Small Off-HWY Vehicle Gasoline With Unknown Control
arobrnc	Open Burning With Unknown Control
arothrnc	Area Source Other with No Control
arpvruc	Paved Road Dust With Unknown Control
arrsoluc	Misc. Consumer Solvent Use With Unknown Control
arrwoduc	Residential Wood Combustion With Unknown Control
arsarcuc	Architectural Surface Coating With Unknown Control
arupvduc	Unpaved Road Dust With Unknown Control
arwfirec	Wildfires With Unknown Control
inagpepm	Industrial All Gasoline Processes With PM Control
inagpeuc	Industrial All Gasoline Processes With Unknown Control
inchemnx	Industrial Chemicals and Allied Products With NOX Control
inchemuc	Industrial Chemicals and Allied Products With Unknown Control
incobonx	Industrial Coal Boilers With NOX Control
incobopm	Industrial Coal Boilers With PM Control
incobouc	Industrial Coal Boilers With Unknown Control
incop2pm	Industrial Copper Smelters - Fugitive With PM Control
incop2uc	Industrial Copper Smelters - Fugitive With Unknown Control
incoppnx	Industrial Copper Smelters - Captured With NOX Control
incoppm	Industrial Copper Smelters - Captured With PM Control
incoppuc	Industrial Copper Smelters - Captured With Unknown Control
ingsrprpm	Industrial Natural Gas Production Other With PM Control
ingspruc	Industrial Natural Gas Production Other With Unknown Control
inngbonx	Industrial Natural Gas Boilers With NOX Control
inngbopm	Industrial Natural Gas Boilers With PM Control
inngbouc	Industrial Natural Gas Boilers With Unknown Control
SCC_ID	SCC_Description
inngcmnx	Industrial Natural Gas Production, Compressors With NOX Control

inngcmpm	Industrial Natural Gas Production, Compressors With PM Control
inngcmuc	Industrial Natural Gas Production, Compressors With Unknown Control
inngflnx	Industrial Natural Gas Production, Flares With NOX Control
inngflpm	Industrial Natural Gas Production, Flares With PM Control
inngfluc	Industrial Natural Gas Production, Flares With Unknown Control
inngrenx	Industrial Natural Gas Reciprocating With NOX Control
inngrepm	Industrial Natural Gas Reciprocating With PM Control
inngreuc	Industrial Natural Gas Reciprocating With Unknown Control
inngswpm	Industrial Natural Gas Production, Gas Sweetening With PM Control
inngswuc	Industrial Natural Gas Production, Gas Sweetening With Unknown Control
inoibonx	Industrial Oil Boilers With NOX Control
inoibopm	Industrial Oil Boilers With PM Control
inoibouc	Industrial Oil Boilers With Unknown Control
inoipruc	Industrial Oil Production With Unknown Control
inorchpm	Industrial Other Miscellaneous, Organic Chemical With PM Control
inorchuc	Industrial Other Miscellaneous, Organic Chemical With Unknown Control
inothrnc	Industrial Other Combustion With No Control
inpeprnx	Industrial Petroleum Process Fuel Use With NOX Control
inpeprpm	Industrial Petroleum Process Fuel Use With PM Control
inpepruc	Industrial Petroleum Process Fuel Use With Unknown Control
inperenx	Industrial Petroleum Refineries With NOX Control
inperepm	Industrial Petroleum Refineries With PM Control
inpereuc	Industrial Petroleum Refineries With Unknown Control
insolvnx	Industrial Solvent Use With NOX Control
insolvpm	Industrial Solvent Use With PM Control
insolvuc	Industrial Solvent Use With Unknown Control
inwobonx	Industrial Wood Boilers With NOX Control
inwobopm	Industrial Wood Boilers With PM Control
inwobouc	Industrial Wood Boilers With Unknown Control
ptothrnc	Point Source Other with No Control
traviauc	Commercial and General Aviation Aircraft With Unknown Control
trdplduc	Diesel Powered Light Duty Cars/Trucks With Unknown Control
trdpmvuc	Diesel Powered Medium/Heavy Vehicles With Unknown Control
trgplduc	Gasoline Powered Light Duty Cars/Trucks With Unknown Control
trgpmduc	Gasoline Powered Medium Trucks With Unknown Control
trmariuc	Commercial Marine Vessels With Unknown Control
trailuc	Railroad Locomotives With Unknown Control
utcoaloc	Utility Coal Combustion With Other Control
utcoalsx	Utility Coal Combustion With SOX Control
utcognnc	Utility Cogeneration With No Control
utliqunc	Utility Liquid Fuels With No Control
utngasnx	Utility Gas Combustion With NOX Control
utngasoc	Utility Gas Combustion Other Control
utrenwnc	Utility Renewables With No Control
