Appendix J

Cost and Economic Analysis Methodology

A. Estimated Vehicle Costs

The costs used for estimating new and used vehicles prices are shown in Table 1.

Table 1: Vehicle $/hp Cost by Vehicle Type (Ages 0 to 64) (Machinery Trader, 2006)

Equipment Type	Vehicle Age (Years)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Bore/Drill Rigs	1501	1091	905	793	715	658	612	576	546	520	497	478	461
Cranes	625	601	578	557	536	515	496	477	459	442	425	409	394
Crawler Tractors (Dozer)	1497	1068	885	775	698	639	591	550	515	484	457	432	409
Excavators	1053	956	869	790	717	652	592	538	489	444	404	367	333
Graders	758	724	691	660	630	602	575	549	524	501	478	457	436
Off-Highway Tractors	500	354	289	250	224	204	189	177	167	158	151	144	139
Off-Highway Trucks	596	559	524	492	461	433	406	381	357	335	314	295	276
Other Construction Equipment	1000	707	577	500	447	408	378	354	333	316	302	289	277
Pavers	1205	1072	954	848	755	671	597	531	473	420	374	333	296
Paving Equipment	1205	1072	954	848	755	671	597	531	473	420	374	333	296
Rollers	1073	794	666	587	533	492	460	434	413	394	378	364	352
Rough Terrain Forklifts	875	688	597	537	491	455	425	398	375	354	335	317	301
Rubber Tired Dozers	1172	1070	977	892	815	744	680	621	567	518	473	432	395
Rubber Tired Loaders	797	750	705	663	624	587	552	519	488	459	432	407	382
Scrapers	1093	1016	944	877	814	756	703	653	606	563	523	486	452
Skid Steer Loaders	462	434	408	383	360	339	318	299	281	264	248	233	219
Surfacing Equipment	1073	794	666	587	533	492	460	434	413	394	378	364	352
Tractors/Loaders/Backhoes	713	671	632	595	560	528	497	468	440	415	390	368	346
Trenchers	509	485	462	440	419	400	381	363	346	330	314	299	285

Equipment Type	Vehicle Age (Years)											
	13	14	15	16	17	18	19	20	21	22	23	24
Bore/Drill Rigs	445	431	419	407	396	387	378	369	361	354	347	341
Cranes	379	365	351	338	325	313	301	290	279	268	258	248
Crawler Tractors (Dozer)	389	370	352	336	320	306	293	280	268	257	247	237
Excavators	303	275	250	227	207	188	170	155	141	128	116	106
Graders	417	398	380	363	347	331	316	302	288	275	263	251
Off-Highway Tractors	134	129	125	121	118	115	112	109	107	104	102	100
Off-Highway Trucks	259	243	228	214	201	188	177	166	155	146	137	128
Other Construction Equipment	267	258	250	243	236	229	224	218	213	209	204	200
Pavers	263	234	208	185	165	147	130	116	103	92	82	73
Paving Equipment	263	234	208	185	165	147	130	116	103	92	82	73
Rollers	341	331	321	313	305	298	292	286	280	274	269	265
Rough Terrain Forklifts	287	273	261	249	238	228	218	209	201	193	186	179
Rubber Tired Dozers	360	329	301	274	251	229	209	191	174	159	145	133
Rubber Tired Loaders	360	338	318	299	282	265	249	234	220	207	195	183
Scrapers	419	390	362	336	312	290	270	250	233	216	201	186
Skid Steer Loaders	206	194	182	171	161	151	142	133	125	118	111	104
Surfacing Equipment	341	331	321	313	305	298	292	286	280	274	269	265
Tractors/Loaders/Backhoes	326	307	289	272	256	241	227	214	201	190	179	168
Trenchers	272	259	247	235	224	214	204	194	185	176	168	160

Equipment Type	Vehicle Age (Years)												
	24	25	26	27	28	29	30	31	32	33	34	35	36
Bore/Drill Rigs	341	335	329	323	318	313	309	304	300	296	292	288	285
Cranes	248	239	230	221	213	205	197	190	183	176	169	163	157
Crawler Tractors (Dozer)	237	228	219	211	203	195	188	182	175	169	164	158	153
Excavators	106	96	87	79	72	65	59	54	49	45	41	37	33
Graders	251	240	229	219	209	200	191	182	174	166	159	151	145
Off-Highway Tractors	100	98	96	94	93	91	90	88	87	86	85	83	82
Off-Highway Trucks	128	120	113	106	99	93	87	82	77	72	68	63	60
Other Construction Equipment	200	196	192	189	186	183	180	177	174	171	169	167	164
Pavers	73	65	58	51	46	40	36	32	29	25	23	20	18
Paving Equipment	73	65	58	51	46	40	36	32	29	25	23	20	18
Rollers	265	260	256	252	248	245	241	238	235	232	229	226	223
Rough Terrain Forklifts	179	172	166	160	155	150	145	140	136	131	127	124	120
Rubber Tired Dozers	133	121	111	101	92	84	77	70	64	59	54	49	45
Rubber Tired Loaders	183	173	162	153	144	135	127	120	112	106	99	94	88
Scrapers	186	173	161	149	139	129	120	111	103	96	89	83	77
Skid Steer Loaders	104	98	92	86	81	76	72	67	63	59	56	53	49
Surfacing Equipment	265	260	256	252	248	245	241	238	235	232	229	226	223
Tractors/Loaders/Backhoes	168	158	149	140	132	124	117	110	104	98	92	87	82
Trenchers	160	152	145	138	132	126	120	114	109	104	99	94	90

Equipment Type	Vehicle Age (Years)											
	37	38	39	40	41	42	43	44	45	46	47	48
Bore/Drill Rigs	281	278	274	271	268	265	263	260	257	255	252	250
Cranes	151	145	140	134	129	124	120	115	111	107	103	99
Crawler Tractors (Dozer)	148	143	139	135	131	127	123	120	116	113	110	107
Excavators	30	28	25	23	21	19	17	16	14	13	12	11
Graders	138	132	126	120	115	110	105	100	96	91	87	83
Off-Highway Tractors	81	80	79	78	77	76	75	75	74	73	72	71
Off-Highway Trucks	56	52	49	46	43	41	38	36	33	31	29	28
Other Construction Equipment	162	160	158	156	154	152	151	149	147	146	144	143
Pavers	16	14	13	11	10	9	8	7	6	6	5	4
Paving Equipment	16	14	13	11	10	9	8	7	6	6	5	4
Rollers	221	218	216	213	211	209	207	205	203	201	199	198
Rough Terrain Forklifts	117	114	111	108	105	102	100	98	95	93	91	89
Rubber Tired Dozers	41	37	34	31	28	26	24	22	20	18	16	15
Rubber Tired Loaders	83	78	73	69	65	61	57	54	51	48	45	42
Scrapers	72	66	62	57	53	49	46	43	40	37	34	32
Skid Steer Loaders	46	44	41	39	36	34	32	30	28	27	25	23
Surfacing Equipment	221	218	216	213	211	209	207	205	203	201	199	198
Tractors/Loaders/Backhoes	77	72	68	64	60	57	54	50	47	45	42	40
Trenchers	85	81	78	74	70	67	64	61	58	55	53	50

Equipment Type	Vehicle Age (Years)											
	49	50	51	52	53	54	55	56	57	58	59	60
Bore/Drill Rigs	248	245	243	241	239	237	235	233	231	230	228	226
Cranes	95	92	88	85	82	79	76	73	70	67	65	62
Crawler Tractors (Dozer)	105	102	99	97	95	92	90	88	86	85	83	81
Excavators	10	9	8	7	7	6	5	5	4	4	4	3
Graders	80	76	73	69	66	63	60	58	55	53	50	48
Off-Highway Tractors	71	70	69	69	68	67	67	66	66	65	65	64
Off-Highway Trucks	26	24	23	21	20	19	18	17	16	15	14	13
Other Construction Equipment	141	140	139	137	136	135	134	132	131	130	129	128
Pavers	4	3	3	3	2	2	2	2	2	1	1	1
Paving Equipment	4	3	3	3	2	2	2	2	2	1	1	1
Rollers	196	194	193	191	189	188	186	185	184	182	181	180
Rough Terrain Forklifts	88	86	84	83	81	80	78	77	76	74	73	72
Rubber Tired Dozers	14	13	11	10	10	9	8	7	7	6	6	5
Rubber Tired Loaders	40	37	35	33	31	29	28	26	24	23	22	20
Scrapers	30	27	25	24	22	20	19	18	16	15	14	13
Skid Steer Loaders	22	21	19	18	17	16	15	14	13	13	12	11
Surfacing Equipment	196	194	193	191	189	188	186	185	184	182	181	180
Tractors/Loaders/Backhoes	37	35	33	31	29	28	26	24	23	22	20	19
Trenchers	48	46	44	41	40	38	36	34	33	31	30	28

Equipment Type	Vehicle Age (Years)			
	61	62	63	64
Bore/Drill Rigs	224	223	221	219
Cranes	60	58	56	53
Crawler Tractors (Dozer)	79	78	76	75
Excavators	3	3	3	2
Graders	46	44	42	40
Off-Highway Tractors	64	63	63	62
Off-Highway Trucks	12	11	11	10
Other Construction Equipment	127	126	125	124
Pavers	1	1	1	1
Paving Equipment	1	1	1	1
Rollers	178	177	176	175
Rough Terrain Forklifts	71	70	69	68
Rubber Tired Dozers	5	4	4	4
Rubber Tired Loaders	19	18	17	16
Scrapers	12	11	11	10
Skid Steer Loaders	10	10	9	9
Surfacing Equipment	178	177	176	175
Tractors/Loaders/Backhoes	18	17	16	15
Trenchers	27	26	24	23

B. Other Retrofit Costs

When calculating the statewide costs, additional costs due to retrofits were also incorporated. These costs included:

- Electricity costs due to plug-in (active) retrofits
- Maintenance costs due to yearly filter cleanings required
- Fuel costs associated with the 2% fuel penalty per retrofit

1. Electricity Costs

Table 2: Average Retail Price of Electricity to Ultimate (Industrial Sector) for California (EIA, 2007a)

Year	2006	2005
Retail Price (Cents per kW-H)	9.58	9.65

From Table 2, the average electricity rate for the industrial[1] sector is approximately $0.10 per kW-hr.

If it takes 15 kW-hr to regenerate a plug-in filter (Cleaire, 2007), then the cost per regeneration will be $1.44. If the filter is regenerated 3 times a week every week for a year, the yearly cost of electricity for a plug-in filter will be $217. If 70% of the vehicles retrofitted are active systems (and will incur electricity costs), then the total electricity costs for the statewide fleet will be approximately $144,284,000.

2. Maintenance Costs

The estimated number of retrofits in the statewide fleet per year is shown in Table 3.

[1] Industrial sector: An energy-consuming sector that consists of all facilities and equipment used for producing, processing, or assembling goods. The industrial sector encompasses the following types of activity: manufacturing (NAICS codes 31-33); agriculture, forestry, fishing and hunting (NAICS code 11); mining, including oil and gas extraction (NAICS code 21); and construction (NAICS code 23). Overall energy use in this sector is largely for process heat and cooling and powering machinery, with lesser amounts used for facility heating, air conditioning, and lighting. Fossil fuels are also used as raw material inputs to manufactured products. *Note:* This sector includes generators that produce electricity and/or useful thermal output primarily to support the above-mentioned industrial activities (EIA, 2007b).

Table 3: Number of Retrofits in Statewide Fleet

Calendar Year	Retrofits in Statewide Fleet
2010	35,412
2011	60,443
2012	91,002
2013	93,953
2014	105,193
2015	108,744
2016	107,521
2017	99,350
2018	91,245
2019	80,352
2020	87,244
2021	97,593
2022	91,749
2023	84,169
2024	82,980
2025	82,980
2026	82,661
2027	82,661
2028	81,983
2029	81,731
2030	80,599

It is assumed that a small percentage of retrofits will leave the state fleet starting in 2016 (six years after the first retrofits are installed). This reduction in retrofits occurs because of the turnover of vehicles with retrofits installed. It is also expected that after 2025, the number of retrofits slowly decrease as older vehicles are replaced.

Assuming that each retrofit will require the $400/year maintenance cost (ARB, 2006a), the total statewide costs due to retrofit maintenance was calculated using Equation 1

Equation 1: Total Maintenance Costs = Σ [maintenance cost/year per vehicle x # of vehicles in the state retrofitted x NPV (for each year)]

The total maintenance costs for the statewide fleet is $379,087,000.

3. Fuel Costs

The statewide fleet uses approximately 300,000,000[2] gallons of diesel fuel per year at an average cost of $2.76[3] per gallon (DOE, 2007). Assuming that each vehicle uses the same amount of fuel, using an average statewide vehicle population of 213,928 (2015 estimate population), each vehicle uses approximately 1,402 gallons of diesel fuel per year. If 2% fuel penalty is used (ARB, 2006a), for every vehicle with a retrofit, 14.02 extra gallons of diesel will be used every year the retrofit is operating on the vehicle. At a price of $2.76 per gallon, this means a cost of $77 per year per vehicle with a retrofit will occur. Total statewide costs due to retrofit costs were calculated using Equation 2.

Equation 2: Total Fuel Costs = Σ [fuel cost/year per vehicle x # of vehicles in the state retrofitted x NPV (for each year)]

The total statewide cost due to increased fuel consumption is $70,316,000.

C. Cost for Reporting

For small fleets, initial reporting will cost between $0 and $400 (a full day needed to compile fleet data). This assumes a cost of $50/hr for either work time lost, or a hired consultant. For medium/larger fleets, the cost will be between $400 and $5,500 (assuming approximately two weeks to compile larger fleet data.

For estimating the total statewide costs, the number of fleets present in the state was estimated using responses from the 2005 ARB Off-road survey. In the survey, 497 fleets reported approximately 11,803 vehicles. Assuming that the distribution of fleets is the same as the distribution of vehicles in the ARB OFFROAD2007 model, the number of fleets was scaled by Equation 3.

Equation 3: Fleets in State = Fleets Reported x (Vehicles in State/Vehicles Reported)

Since there are approximately 180,000 vehicles (in 2005) in the statewide fleet (ARB, 2006b), the estimated number of fleets, assuming a 2% growth rate, will be 8000 in 2009.

Small fleets are expected to be approximately 67% of the fleet population; therefore, there are 5,400 small fleets and 2,600 medium/large fleets in California.

[2] Calculated with assumptions outlined in Chapter 9
[3] Average price of California No 2 Diesel since January 2005.

Equation 4: Fleet initial reporting costs = # of fleets x average initial reporting costs x NPV (2009)

In 2006 dollars, the statewide cost for initial reporting is shown in Table 4.

Table 4: Initial Reporting Costs

Fleet Type	Cost (2006 $)
Small fleet	$987,000
Medium/Large fleet	$6,723,000
Total cost for initial reporting	$7,710,000

The annual reporting costs for small fleets will be approximately $200 per fleet per year, assuming that a half a day is lost updating the fleet in the ARB reporting system. For a medium/large fleet, the cost is estimated to be $400 per fleet per year, assuming that a full day is lost updating the fleet in the ARB reporting system. The total cost per year for small fleet reporting will be the number of fleets multiplied by $200, or $1,076,000. For a medium/large fleet, the cost per year will be the number of fleets multiplied by $400, or $1,060,000.

The reporting costs over the life of the regulation were calculated using Equation 5, assuming that for all fleets reporting ends in 2030.

Equation 5: Total annual reporting cost = Σ [Annual reporting cost x NPV (for every year of reporting)]

The total annual reporting cost over the life of the regulation is shown in Table 5.

Table 5: Total Annual Reporting Costs

Fleet Type	Cost (2006 $)
Small fleet	$11,914,000
Medium/Large fleet	$11,737,000
Total cost for annual reporting	$23,651,000

The total costs for reporting are the initial and annual reporting costs in 2006 dollars (Table 6).

Table 6: Total Reporting Costs

Fleet Type	Cost (2006 $)
Small fleet	$12,902,000
Medium/Large fleet	$18,459,000
Total cost for reporting	$31,361,000

D. ROE Analysis

The equation for the annual cost is shown in Equation 6.

Equation 6: Annual cost = NPV x CRF x Accelerated Turnover Cost[4]

Where: NPV = Net Present Value
CRF = Capital Recovery Factor

The CRF used was for 10 years (expecting the emissions benefits to be over at least a 10 year period.

E. Statewide Cost Calculations

Statewide, there are three different types of fleets that will experience different costs:

- Medium/Large fleets - The full cost of compliance, assuming ½ the cost for retrofits and ½ the cost for turnover.
- Small fleets – Only the retrofit cost of compliance.
- Captive attainment area fleets – Since the targets are more stringent than the targets for small fleets, it is expected that these fleets will do some turnover (only about ½ the turnover as the medium/large fleets); therefore, the cost will be approximately ¾ the cost of medium/large fleet compliance.

Table 7 show the high and low $/hp compliance cost by age for small, medium/large, and captive attainment area fleets. For captive area attainment fleets, ¾ of the cost of medium/large fleets was used. These base compliance costs do not include reporting or additional retrofit costs (such as electric costs for active filters, annual cleaning costs, and fuel penalty costs).

Table 7: $/hp Base Compliance Costs for Statewide Fleets

Fleet Type	Low Costs (2006 $/hp)	High Costs (2006 $/hp)
Small	$47	$55
Medium/Large	$76	$89
Captive Attainment Area	$57	$67

The total hp for the statewide was estimated to be 28,819,027 for the statewide fleet (ARB 2006b). Since horsepower for the statewide fleet increases over time, the estimated total horsepower in 2015 was used as an average horsepower value. Assuming that small fleets are 4% of the hp in the statewide fleet (ARB, 2005), the total horsepower of small fleets is 1,440,951. From the ARB

[4] Accelerated turnover cost found in Chapter 11.

OFFROAD 2007 model, it was found that attainment counties are approximately 4% of the population. Assuming that these counties also have 4% of the statewide horsepower, captive attainment area fleets will contain approximately 856,293 hp.

The results of multiplying the horsepower for each fleet type by the high and low $/hp costs from Table 7 are shown in Table 8. These total costs include the base costs, plus initial reporting costs, total annual reporting costs, and retrofit maintenance costs.

Table 8: Total Statewide Compliance Costs (2006$)

Low	High	Average
$3,005,572,684	$3,376,170,252	$3,190,871,468

F. Local Government Fleet Calculations

The total costs for local government fleets were calculated using the same costs as the total statewide fleet estimates (Table 7). Small fleets correspond to those local fleets that have under 1500 hp, and local government fleets in low population counties. Medium fleets are all other fleets that are not in low population or captive attainment area counties.

The total horsepower for each fleet type was calculated using the 2003 TIAX survey. The total horsepower reported is shown in Table 9.

Table 9: Horsepower Reported in TIAX 2003 Survey

Fleet Type	Horsepower
Low population county	48,154
Captive attainment county	9,260
Local government (medium fleet)	235,809
Total Local Government	293,223

The 2003 TIAX survey had a response rate of 31%, therefore, to represent the statewide local government horsepower, each of the horsepower totals in Table 9 were scaled upward (divided by 0.31). The estimated statewide local government horsepower is shown in Table 10.

Table 10: Statewide Local Government Horsepower

Fleet Type	Horsepower
Low population county	155,335
Captive attainment county	29,871
Local government (medium fleet)	760,674
Total Local Government	945,881

The total statewide costs for local government fleets were then computed in the same way as the total statewide costs estimates.

The total costs (in 2006 $) and 2006 $/hp costs for the local government fleets who completed the 2003 TIAX survey are shown in Table 11.

Table 11: Total Costs (2006 $) and 2006 $/hp Costs for Local Government Fleets Represented in the 2003 TIAX Survey

Fleet Reported	Total Horsepower	Average Model Year	2006 $/hp Cost	Total 2006 $ Cost
ALPINE COUNTY	88	1983	$66	$5,821
AMADOR COUNTY PUBLIC WORKS	1980	1981	$66	$130,971
ANDERSON-COTTONWOOD IRRIGATION DISTRICT	400	1989	$66	$26,459
BARD WATER DISTRICT	1035	1983	$116	$119,713
BEAR VALLEY COMMUNITY SERVICES DISTRICT	66	1989	$116	$7,634
BELLA VISTA WATER DISTRICT	362	1997	$116	$41,871
BIG BEAR CITY COMMUNITY SERVICES DISTRICT	585	1988	$116	$67,664
BIG BEAR MUNICIPAL WATER DISTRICT	216	1990	$116	$24,984
BUENA VISTA WATER DISTRICT	1297	1987	$116	$150,018
CALAVERAS COUNTY WATER DISTRICT	8696		$66	$575,214

CARMICHAEL WATER DISTRICT	235	1997	$116	$27,181
CHOWCHILLA WATER DISTRICT	365	1991	$116	$42,218
CITRUS HEIGHTS WATER DISTRICT	286	1993	$116	$33,080
CITY AND COUNTY OF SAN FRANCISCO CENTRAL SHOPS	5572	1994	$116	$644,485
CITY OF AUBURN	175	1971	$116	$20,241
CITY OF BEAUMONT	350	1976	$116	$40,483
CITY OF BREA/MAINTENANCE SERVICES	280	1994	$116	$32,386
CITY OF CHINO HILLS	1402	1987	$116	$162,162
CITY OF CORNING	234	1996	$66	$15,478
CITY OF DAVIS	2307	1994	$116	$266,839
CITY OF ENCINITAS	345	1998	$116	$39,904
CITY OF FONTANA/PUBLIC SERVICE DEPARTMENT	766	1994	$116	$88,599
CITY OF FORT BRAGG	337	1983	$66	$22,292
CITY OF FOUNTAIN VALLEY	947	1993	$116	$109,535
CITY OF FULLERTON	558	1996	$116	$64,541
CITY OF GILROY	945	1988	$116	$109,303
CITY OF GREENFIELD	545	1987	$116	$63,037
CITY OF HANFORD	971	1988	$116	$112,311

CITY OF IMPERIAL BEACH	843	1986	$116	$97,506
CITY OF LANCASTER	116	1987	$116	$13,417
CITY OF LOMA LINDA	932	1987	$116	$107,800
CITY OF LONG BEACH	16050	1991	$116	$1,856,423
CITY OF LOS ANGELES FLEET SERVICES	46963	1993	$116	$5,431,976
CITY OF LOS BANOS, PUBLIC WORKS	720	1983	$116	$83,279
CITY OF MADERA PUBLIC WORKS	1904	1988	$116	$220,226
CITY OF MENLO PARK	206	2000	$116	$23,827
CITY OF MORGAN HILL	160	1994	$116	$18,506
CITY OF NEWARK	244	2001	$116	$28,222
CITY OF NOVATO	296	1991	$116	$34,237
CITY OF OAKLAND	1351	1991	$116	$156,263
CITY OF PALM DESERT	228	1993	$116	$26,372
CITY OF PALO ALTO	4700	1993	$116	$543,626
CITY OF PERRIS	142	1993	$116	$16,424
CITY OF PLACENTIA	417	1993	$116	$48,232
CITY OF RANCHO CUCAMONGA	562	1996	$116	$65,004
CITY OF SAN CARLOS	325	1990	$116	$37,591
CITY OF SAN DIEGO	3291	1995	$116	$380,654
CITY OF SAN JACINTO	330	1997	$116	$38,169
CITY OF SAN LEANDRO	1292	1990	$116	$149,439

CITY OF SAN MARINO/PARKS & PUBLIC WORKS	742	1977	$116	$85,823
CITY OF SAN RAFAEL	563	1992	$116	$65,119
CITY OF SANTA CRUZ	3148	1991	$87	$272,773
CITY OF SHASTA LAKE	297	1989	$87	$25,735
CITY OF SOLEDAD	225	1998	$116	$26,025
CITY OF SOUTH LAKE TAHOE	6163	1990	$116	$712,843
CITY OF STOCKTON	4981	1990	$116	$576,127
CITY OF TAFT	335	1991	$116	$38,748
CITY OF THOUSAND OAKS	1348	1992	$116	$155,916
CITY OF TULARE	3073	1993	$116	$355,439
CITY OF UKIAH	390	1986	$66	$25,797
CITY OF VICTORVILLE	180	1989	$116	$20,820
CITY OF VISALIA	265	1992	$116	$30,651
CITY OF WESTMINSTER	279	1987	$116	$32,271
CONSOLIDATED IRRIGATION DISTRICT	624	1989	$116	$72,175
COUNTY OF LASSEN	7025	1978	$66	$464,682
COUNTY OF MADERA ROAD DEPT	228	1980	$116	$26,372
COUNTY OF MODOC	3012	1982	$66	$199,235
COUNTY OF MONTEREY	2701	1983	$87	$234,041
COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT	9678	1987	$116	$1,119,406

COUNTY OF SACRAMENTO	3725	1994	$116	$430,852
COUNTY OF SAN BERNARDINO	291	1978	$116	$33,659
COUNTY OF TEHAMA	220	1980	$66	$14,552
DEPARTMENT OF PUBLIC WORKS/COUNTY OF SAN LUIS OBIS	4010	1994	$116	$463,817
EL DORADO COUNTY DEPT. OF TRANS. AND MAINT.	3762	1989	$116	$435,132
FRESNO IRRIGATION DISTRICT	2007	1976	$116	$232,140
HOUSING AUTHORITY OF THE COUNTY OF TULARE	274	1986	$116	$31,692
JAMES IRRIGATION DISTRICT	715	1989	$116	$82,700
JURUPA COMMUNITY SERVICES DISTRICT	150	1992	$116	$17,350
KERN COUNTY WATER AGENCY	335	1968	$116	$38,748
KERN DELTA WATER DISTRICT	490	1984	$116	$56,676
LAKE COUNTY	1716	1986	$66	$113,508
LAKE COUNTY SOLID WASTE DIVISION-LANDFILL	2575	1985	$66	$170,328
LAKE HEMET MUNICIPAL WATER DISTRICT	1653	1980	$116	$191,194

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS	27781	1993	$116	$3,213,290
LOWER TULE RIVER IRRIGATION DISTRICT	1562	1986	$116	$180,669
MENDOCINO COUNTY DEPT. OF TRANSPORTATIO N	750	1977	$66	$49,610
MESA CONSOLIDATED WATER DISTRICT	300	1990	$116	$34,700
METROLINK	2356	1996	$116	$272,507
MINTER FIELD AIRPORT DISTRICT	290	1975	$116	$33,543
MONO CO. PUBLIC WORKS	4585	1993	$116	$530,324
MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY	3114	1993	$87	$269,827
MOULTON NIGUEL WATER DISTRICT	204	1992	$116	$23,596
NEVADA IRRIGATION DISTRICT	1275	1995	$66	$84,337
OAKDALE IRRIGATION DISTRICT	1393	1989	$116	$161,121
ORANGE COVE IRRIGATION DISTRICT	597	1984	$116	$69,052
PALO VERDE IRRIGATION DISTRICT	3651	1979	$116	$422,293

PALOMAR COMMUNITY COLLEGE	239	1994	$116	$27,644
PLACER COUNTY DEPARTMENT OF PUBLIC WORKS	10921	1980	$116	$1,263,178
POTTER VALLEY IRRIGATION DISTRICT	142	1988	$66	$9,393
RAMONA MUNICIPAL WATER DISTRICT	530	1988	$116	$61,302
RANCHO CALIF WATER DISTRICT	280	1990	$116	$32,386
RICHVALE IRRIGATION DISTRICT	416	1994	$116	$48,117
RIVERSIDE COUNTY FLOOD CONTROL	1619	1996	$116	$187,262
RIVERSIDE COUNTY WASTE MANAGEMENT DEPARTMENT	16404	1992	$116	$1,897,369
RUNNING SPRINGS WATER DISTRICT	390	1993	$116	$45,109
SACRAMENTO MUNICIPAL UTILITY DISTRICT	9002	1989	$116	$1,041,216
SAN BENITO COUNTY PUBLIC WORKS	1399	1985	$66	$92,540
SANTA ANA CITY	1631	1996	$116	$188,650
SANTA CLARA VALLEY TRANSPORTATIO N AUTHORITY	319	1989	$116	$36,897

SANTA CLARA VALLEY WATER DISTRICT	812	1995	$116	$93,920
SOUTH TAHOE PUBLIC UTILITY DISTRICT	1603	1993	$66	$106,034
SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT	152	1989	$116	$17,581
SUTTER EXTENSION WATER DISTRICT	332	1994	$116	$38,401
TOWN OF TRUCKEE	5330	1990	$66	$352,563
TOWN OF YUCCA VALLEY	176	1979	$116	$20,357
TRINITY COUNTY GENERAL SERVICES	190	1994	$66	$12,568
TRUCKEE-DONNER PUBLIC UTILITY DISTRICT	1443	1995	$66	$95,450
TUOLUMNE COUNTY	3137	1981	$66	$207,503
TUOLUMNE UTILITIES DISTRICT	210	1986	$66	$13,891
TWENTYNINE PALMS WATER DISTRICT	1069	1989	$116	$123,646
VALLECITOS WATER DISTRICT	986	1992	$116	$114,046
VISTA IRRIGATION DISTRICT	1074	1991	$116	$124,224
WASTEWATER TREATMENT	120	1995	$116	$13,880

WESTERN CANAL WATER DISTRICT	174	1998	$66	$11,510
WHEELER RIDGE-MARICOPA WATER STORAGE DISTRICT	190	2000	$116	$21,976

G. State Government Fleet Calculations

The total costs for state government fleets were calculated using the same costs as the total statewide fleet estimates (Table 8). It was assumed that most state government fleets will be medium/large fleets.

The total horsepower for state government fleets was determined using the 2003 TIAX survey. The total horsepower reported is shown in Table 12.

Table 12: Horsepower Reported in TIAX 2003 Survey

Fleet Type	Horsepower
Total State Government	142,985

The TIAX 2003 had a response rate of 31%, therefore, to represent the statewide state government horsepower, the horsepower total in Table 12 was scaled upward (divided by 0.31).

The estimated total state government horsepower in the statewide fleet is shown in Table 13.

Table 13: Statewide State Government Horsepower

Fleet Type	Horsepower
Total State Government	461,242

The total statewide costs for local government fleets were then computed in the same way as the total statewide costs estimates.

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