

APPENDIX B
REGIONAL ANALYSES

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APPENDIX B

REGIONAL ANALYSES

Implementing the new strategies in the plan would benefit all regions of California, because virtually every area has emissions from at least one of the goods movement sectors and needs further reductions to ensure clean, healthful air every day. The areas with the highest ports and goods movement activity would realize the greatest benefits from this plan. Our third goal for this plan, to “continue reducing emissions until community impacts are mitigated and air quality standards are met,” includes a regional element since compliance with air quality standards is determined region by region.

Most of California’s urban areas need additional reductions over the next 5 to 15 years or so to meet the federal 8-hour ozone standard, while South Coast and San Joaquin Valley need further actions to comply with the federal PM_{2.5} standards as well. Large urban regions like the Bay Area and San Diego that are very close to the federal ozone standard will need further NO_x and ROG reductions to meet the more health-protective State ozone and particulate standards. And all areas of California would experience benefits from reduced diesel PM emissions and the associated health risk.

ARB staff has estimated the emission and health benefits of implementing the strategies discussed in this plan in five metropolitan regions that are heavily-impacted by goods movement emissions.

- South Coast (Air Basin), home to the State’s largest international ports.
- San Joaquin Valley (Air Basin), home to Interstate 5 and Highway 99 and a source of substantial export commodities.
- San Francisco Bay Area (Air Basin), home to the Ports of Oakland and San Francisco.
- San Diego County, which has overland border crossings and a growing seaport.
- Sacramento Region, home to the State’s largest rail switchyard and major interstate highways.

Other regions may be highly impacted by some of the goods movement sectors. For example, Santa Barbara and Ventura Counties receive significant offshore pollution from ships in transit, while the eastern desert has extensive truck and locomotive through traffic to Phoenix, Las Vegas, and points beyond.

The tables in Appendix B show projected emissions from ports and goods movement in the five, heavily-impacted regions. For each region, we show the emissions from each sector, by pollutant, with the existing programs (measures adopted through October 2005) and with the benefits of full implementation of the plan strategies. The tables focus on the same set of analysis years as the rest of the plan – 2001, 2005, 2010, 2015, and 2020.

Following the emission tables, we show the benefits of full implementation of plan strategies in reducing the health impacts from ports and goods movement pollution, as well as the economic valuation of those health impacts avoided.

Please note that since these regional tables breakdown statewide emission values by sector, some of the resulting values are less than 0.05 tons per day. Since these values are rounded off to one decimal place, they appear as 0.0 on the tables.

Table B-1
South Coast
Emissions from Ports and Goods Movement
with Benefits of All Measures Adopted as of October, 2005
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	2.4	4.0	5.2	6.3	7.8
Harbor Craft	1.0	1.0	0.8	0.5	0.5
Cargo Handling Equipment	0.6	0.5	0.4	0.3	0.1
Trucks	9.1	7.6	5.2	3.0	1.5
Locomotives	1.0	1.0	0.9	0.9	1.0
Total	14.1	14.1	12.5	11.0	10.9
NOx					
Ships	30.0	46.6	59.0	71.2	85.4
Harbor Craft	21.3	19.2	15.1	11.4	9.9
Cargo Handling Equipment	15.0	13.5	11.6	8.2	4.5
Trucks	147.0	154.7	131.0	96.0	69.9
Locomotives	42.7	34.2	21.0	24.7	27.4
Total	256.0	268.2	237.7	211.5	197.1
ROG					
Ships	0.6	1.1	1.4	1.7	2.0
Harbor Craft	2.1	1.9	1.6	1.2	1.0
Cargo Handling Equipment	1.8	1.4	0.8	0.6	0.5
Trucks	15.7	15.1	12.1	8.5	6.6
Locomotives	2.7	2.6	2.5	2.6	2.7
Total	22.9	22.1	18.4	14.6	12.8
SOx					
Ships	20.0	31.9	41.7	51.5	64.4
Harbor Craft	0.1	0.1	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	1.0	1.1	0.2	0.2	0.2
Locomotives	1.3	1.4	0.2	0.0	0.0
Total	22.4	34.5	42.1	51.7	64.6

Table B-2
South Coast
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	2.4	4.0	2.5	1.3	1.4
Harbor Craft	1.0	1.0	0.6	0.3	0.3
Cargo Handling Equipment	0.6	0.5	0.3	0.1	0.0
Trucks	9.1	7.6	4.1	2.2	1.2
Locomotives	1.0	1.0	0.8	0.4	0.2
Total	14.1	14.1	8.3	4.3	3.1
NOx					
Ships	30.0	46.6	46.5	28.3	22.8
Harbor Craft	21.3	19.2	11.0	7.7	5.7
Cargo Handling Equipment	15.0	13.5	8.8	4.3	2.2
Trucks	147.0	154.7	121.8	89.7	60.8
Locomotives	42.7	34.2	19.1	14.7	7.6
Total	256.0	268.2	207.2	144.7	99.1
ROG					
Ships	0.6	1.1	1.4	1.7	2.0
Harbor Craft	2.1	1.9	1.2	0.8	0.6
Cargo Handling Equipment	1.8	1.4	0.8	0.6	0.3
Trucks	15.7	15.1	12.1	8.5	6.6
Locomotives	2.7	2.6	2.2	1.3	0.5
Total	22.9	22.1	17.7	12.9	10.0
SOx					
Ships	20.0	31.9	11.9	4.2	4.3
Harbor Craft	0.1	0.1	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	1.0	1.1	0.2	0.2	0.2
Locomotives	1.3	1.4	0.2	0.0	0.0
Total	22.5	34.5	12.3	4.4	4.5

Table B-3
South Coast
Emissions from Ports and Goods Movement
Plan Summary
(tons per day)

Pollutant		Year		
		2010	2015	2020
Diesel PM	Emissions with Existing Program	12.5	11.0	10.9
	Reductions from New Strategies	-4.2	-6.7	-7.8
	Emissions with Plan	8.3	4.3	3.1
	Percent Reduction	33.6	60.9	71.6
NOx	Emissions with Existing Program	237.7	211.5	197.1
	Reductions from New Strategies	-30.5	-66.8	-98.0
	Emissions with Plan	207.2	144.7	99.1
	Percent Reduction	12.8	31.6	49.7
ROG	Emissions with Existing Program	18.4	14.6	12.8
	Reductions from New Strategies	-0.7	-1.7	-2.8
	Emissions with Plan	17.7	12.9	10.0
	Percent Reduction	3.6	11.6	21.5
SOx	Emissions with Existing Program	42.1	51.7	64.6
	Reductions from New Strategies	-29.8	-47.3	-60.1
	Emissions with Plan	12.3	4.4	4.5
	Percent Reduction	70.8	91.4	93.1

Table B-4
South Coast
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Pollutant	Year					Percent Reduction 2001-2020
	2001	2005	2010	2015	2020	
Diesel PM	14.1	14.0	8.3	4.3	3.1	78%
NOx	256.1	268.2	207.2	144.6	99.1	61%
ROG	22.9	22.1	17.7	12.9	10.0	56%
SOx	22.5	34.6	12.3	4.5	4.5	80%

Table B-5
South Coast
Health Benefits and Economic Value of Plan Strategies in Year 2020

Health Outcome	Cases Avoided in 2020	Uncertainty Range ² (cases per year)	Value in 2020 (in millions)	Uncertainty Range ³ (in millions)
Premature Death	400	120 to 690	1,800	420 to 4,300
Hospital Admissions (respiratory causes)	210	120 to 290	4.4	1.9 to 7.7
Hospital Admissions (cardiovascular causes)	150	100 to 230	3.9	1.8 to 7.6
Asthma and Other Lower Respiratory Symptoms	12,000	4,500 to 18,000	0.12	0.03 to 0.24
Acute Bronchitis	950	-230 to 2,000	0.22	-0.04 to 0.61
Work Loss Days	68,000	58,000 to 79,000	8.1	5.1 to 12
Minor Restricted Activity Days	530,000	350,000 to 720,000	18	8.7 to 30
School Absence Days	94,000	38,000 to 150,000	5.5	1.6 to 11

¹ Does not include the reduction in contributions from particle sulfate formed from SOx emissions, which is being addressed with several ongoing emissions, measurement, and modeling studies.

² Range reflects uncertainty in health concentration-response functions, but not in emissions or exposure estimates. A negative value as a lower bound of the uncertainty range is not meant to imply that exposure to pollutants is beneficial; rather, it is a reflection of the adequacy of the data used to develop these uncertainty range estimates.

³ Range reflects statistically combined uncertainty in concentration-response functions and economic values, but not in emissions or exposure estimates.

Table B-6
San Joaquin Valley
Emissions from Ports and Goods Movement
with Benefits of All Measures Adopted as of October, 2005
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	0.0	0.0	0.1	0.1	0.1
Harbor Craft	0.0	0.0	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	10.4	8.3	5.0	2.7	1.6
Locomotives	0.6	0.7	0.6	0.6	0.6
Total	11.0	9.0	5.7	3.4	2.3
NOx					
Ships	0.3	0.5	0.6	0.7	1.0
Harbor Craft	0.9	0.8	0.6	0.5	0.4
Cargo Handling Equipment	0.6	0.6	0.5	0.4	0.2
Trucks	185.9	190.8	138.5	96.5	69.1
Locomotives	29.9	23.1	19.6	20.3	21.0
Total	217.6	215.8	159.8	118.4	91.7
ROG					
Ships	0.0	0.0	0.0	0.0	0.0
Harbor Craft	0.1	0.1	0.1	0.0	0.0
Cargo Handling Equipment	0.1	0.1	0.0	0.0	0.0
Trucks	16.1	15.2	11.3	8.2	6.3
Locomotives	1.6	1.6	1.5	1.5	1.5
Total	17.9	17.0	12.9	9.7	7.8
SOx					
Ships	0.2	0.3	0.4	0.6	0.8
Harbor Craft	0.0	0.0	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	1.5	1.5	0.2	0.2	0.2
Locomotives	0.8	0.7	0.1	0.0	0.0
Total	2.5	2.5	0.7	0.8	1.0

Table B-7
San Joaquin Valley
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	0.0	0.0	0.1	0.0	0.0
Harbor Craft	0.0	0.0	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	10.4	8.3	3.9	1.8	1.2
Locomotives	0.6	0.7	0.6	0.3	0.1
Total	11.0	9.0	4.6	2.1	1.3
NOx					
Ships	0.3	0.5	0.4	0.2	0.1
Harbor Craft	0.9	0.8	0.4	0.4	0.2
Cargo Handling Equipment	0.6	0.6	0.4	0.2	0.1
Trucks	185.9	190.8	129.6	87.0	65.2
Locomotives	29.9	23.1	18.4	9.5	4.0
Total	217.6	215.8	149.2	97.3	69.6
ROG					
Ships	0.0	0.0	0.0	0.0	0.0
Harbor Craft	0.1	0.1	0.1	0.0	0.0
Cargo Handling Equipment	0.1	0.1	0.0	0.0	0.0
Trucks	16.1	15.2	11.3	8.2	6.3
Locomotives	1.6	1.6	1.4	0.8	0.3
Total	17.9	17.0	12.8	9.0	6.6
SOx					
Ships	0.2	0.3	0.0	0.1	0.0
Harbor Craft	0.0	0.0	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	1.5	1.5	0.2	0.2	0.2
Locomotives	0.8	0.7	0.1	0.0	0.0
Total	2.5	2.5	0.3	0.3	0.2

Table B-8
San Joaquin Valley
Emissions from Ports and Goods Movement
Plan Summary
(tons per day)

Pollutant		Year		
		2010	2015	2020
Diesel PM	Emissions with Existing Program	5.7	3.4	2.3
	Reductions from New Strategies	-1.1	-1.3	-1.0
	Emissions with Plan	4.6	2.1	1.3
	Percent Reduction	19.8	38.9	43.5
NOx	Emissions with Existing Program	159.8	118.4	91.7
	Reductions from New Strategies	-10.6	-21.1	-22.1
	Emissions with Plan	149.2	97.3	69.6
	Percent Reduction	6.6	17.8	24.1
ROG	Emissions with Existing Program	12.9	9.7	7.8
	Reductions from New Strategies	-0.1	-0.7	-1.2
	Emissions with Plan	12.8	9.0	6.6
	Percent Reduction	0.7	7.4	15.4
SOx	Emissions with Existing Program	0.7	0.8	1.0
	Reductions from New Strategies	-0.4	-0.5	-0.8
	Emissions with Plan	0.3	0.3	0.2
	Percent Reduction	55.1	58.9	79.0

Table B-9
San Joaquin Valley
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Pollutant	Year					Percent Reduction 2001-2020
	2001	2005	2010	2015	2020	
Diesel PM	11.1	9.1	4.5	2.1	1.2	89%
NOx	217.6	215.7	149.1	97.4	69.6	68%
ROG	17.9	16.9	12.8	9.0	6.6	63%
SOx	2.5	2.5	0.2	0.3	0.2	92%

Table B-10
San Joaquin Valley
Health Benefits and Economic Value of Plan Strategies in Year 2020

Health Outcome	Cases Avoided in 2020	Uncertainty Range ² (cases per year)	Value in 2020 (in millions)	Uncertainty Range ³ (in millions)
Premature Death	30	10 to 60	170	39 to 400
Hospital Admissions (respiratory causes)	40	20 to 60	0.83	0.036 to 1.5
Hospital Admissions (cardiovascular causes)	10	7.0 to 20	0.29	0.13 to 0.56
Asthma and Other Lower Respiratory Symptoms	980	380 to 1,600	0.01	0.003 to 0.02
Acute Bronchitis	80	-20 to 180	0.02	-0.003 to 0.05
Work Loss Days	4,800	4,000 to 5,500	0.57	0.36 to 0.83
Minor Restricted Activity Days	73,000	34,000 to 120,000	2.4	0.84 to 4.9
School Absence Days	24,000	9,600 to 38,000	1.4	0.41 to 2.8

¹ Does not include the reduction in contributions from particle sulfate formed from SOx emissions, which is being addressed with several ongoing emissions, measurement, and modeling studies.

² Range reflects uncertainty in health concentration-response functions, but not in emissions or exposure estimates. A negative value as a lower bound of the uncertainty range is not meant to imply that exposure to pollutants is beneficial; rather, it is a reflection of the adequacy of the data used to develop these uncertainty range estimates.

³ Range reflects statistically combined uncertainty in concentration-response functions and economic values, but not in emissions or exposure estimates.

Table B-11
San Francisco Bay Area
Emissions from Ports and Goods Movement
with Benefits of All Measures Adopted as of October, 2005
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	1.4	1.7	2.2	2.9	3.8
Harbor Craft	1.3	1.4	1.1	0.8	0.7
Cargo Handling Equipment	0.1	0.1	0.1	0.1	0.0
Trucks	3.0	2.6	1.6	0.8	0.4
Locomotives	0.3	0.3	0.3	0.3	0.3
Total	6.1	6.1	5.3	4.9	5.2
NOx					
Ships	17.2	20.8	26.2	33.2	41.7
Harbor Craft	26.7	25.4	21.6	17.6	16.4
Cargo Handling Equipment	3.7	3.3	2.9	2.0	1.1
Trucks	56.2	60.1	45.3	31.7	23.8
Locomotives	16.1	13.0	10.7	12.2	12.9
Total	119.9	122.6	106.7	96.7	95.9
ROG					
Ships	0.5	0.6	0.7	0.9	1.2
Harbor Craft	2.7	2.6	2.3	1.8	1.7
Cargo Handling Equipment	0.4	0.3	0.2	0.1	0.1
Trucks	7.5	7.1	4.9	3.3	2.6
Locomotives	0.9	0.9	0.8	0.8	0.8
Total	12.0	11.5	8.9	6.9	6.4
SOx					
Ships	10.6	13.1	16.9	21.8	28.4
Harbor Craft	0.1	0.1	0.1	0.1	0.1
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	0.4	0.5	0.1	0.1	0.1
Locomotives	0.3	0.2	0.0	0.0	0.0
Total	11.4	13.9	17.1	22.0	28.6

Table B-12
San Francisco Bay Area
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	1.4	1.7	1.4	0.9	1.0
Harbor Craft	1.3	1.4	0.8	0.5	0.4
Cargo Handling Equipment	0.1	0.1	0.1	0.1	0.0
Trucks	3.0	2.6	1.3	0.6	0.3
Locomotives	0.3	0.3	0.3	0.1	0.0
Total	6.1	6.1	3.9	2.2	1.7
NOx					
Ships	17.2	20.8	22.3	16.1	13.6
Harbor Craft	26.7	25.4	15.8	11.8	9.5
Cargo Handling Equipment	3.7	3.3	2.2	1.1	0.6
Trucks	56.2	60.1	42.5	29.7	21.8
Locomotives	16.1	13.0	9.9	5.7	2.4
Total	119.9	122.6	92.7	64.4	47.9
ROG					
Ships	0.5	0.6	0.7	0.9	1.2
Harbor Craft	2.7	2.6	1.7	1.3	1.0
Cargo Handling Equipment	0.4	0.3	0.2	0.1	0.1
Trucks	7.5	7.1	4.9	3.3	2.6
Locomotives	0.9	0.9	0.7	0.4	0.1
Total	12.0	11.5	8.2	6.0	5.0
SOx					
Ships	10.6	13.1	6.6	2.4	2.5
Harbor Craft	0.1	0.1	0.1	0.1	0.1
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	0.4	0.5	0.1	0.1	0.1
Locomotives	0.3	0.2	0.0	0.0	0.0
Total	11.4	13.9	6.8	2.6	2.7

Table B-13
San Francisco Bay Area
Emissions from Ports and Goods Movement
Plan Summary
(tons per day)

Pollutant		Year		
		2010	2015	2020
Diesel PM	Emissions with Existing Program	5.3	4.9	5.2
	Reductions from New Strategies	-1.4	-2.7	-3.5
	Emissions with Plan	3.9	2.2	1.7
	Percent Reduction	26.7	54.6	66.1
NOx	Emissions with Existing Program	106.7	96.7	95.9
	Reductions from New Strategies	-14.0	-32.3	-48.0
	Emissions with Plan	92.7	64.4	47.9
	Percent Reduction	13.1	33.4	50.0
ROG	Emissions with Existing Program	8.9	6.9	6.4
	Reductions from New Strategies	-0.7	-0.9	-1.4
	Emissions with Plan	8.2	6.0	5.0
	Percent Reduction	7.9	13.0	21.9
SOx	Emissions with Existing Program	17.1	22.0	28.6
	Reductions from New Strategies	-10.3	-19.4	-25.9
	Emissions with Plan	6.8	2.6	2.7
	Percent Reduction	60.3	88.3	90.5

Table B-14
San Francisco Bay Area
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Pollutant	Year					Percent Reduction 2001-2020
	2001	2005	2010	2015	2020	
Diesel PM	6.2	6.1	3.9	2.2	1.9	69%
NOx	119.9	122.7	92.7	64.4	48.0	60%
ROG	12.0	11.5	8.3	5.9	5.0	58%
SOx	11.5	13.9	6.8	2.6	2.7	77%

Table B-15
San Francisco Bay Area
Health Benefits and Economic Value of Plan Strategies in Year 2020

Health Outcome	Cases Avoided in 2020	Uncertainty Range ² (cases per year)	Value in 2020 (in millions)	Uncertainty Range ³ (in millions)
Premature Death	100	30 to 170	460	100 to 1,100
Hospital Admissions (respiratory causes)	30	20 to 50	0.71	0.32 to 1.2
Hospital Admissions (cardiovascular causes)	40	30 to 60	1.0	0.48 to 2.0
Asthma and Other Lower Respiratory Symptoms	2,200	860 to 3,600	0.02	0.007 to 0.05
Acute Bronchitis	190	-40 to 410	0.04	-0.008 to 0.12
Work Loss Days	17,000	14,000 to 20,000	2.0	1.3 to 2.9
Minor Restricted Activity Days	110,000	83,000 to 130,000	3.6	2.0 to 5.6
School Absence Days	9,300	3,800 to 15,000	0.54	0.16 to 1.1

¹ Does not include the reduction in contributions from particle sulfate formed from SOx emissions, which is being addressed with several ongoing emissions, measurement, and modeling studies.

² Range reflects uncertainty in health concentration-response functions, but not in emissions or exposure estimates. A negative value as a lower bound of the uncertainty range is not meant to imply that exposure to pollutants is beneficial; rather, it is a reflection of the adequacy of the data used to develop these uncertainty range estimates.

³ Range reflects statistically combined uncertainty in concentration-response functions and economic values, but not in emissions or exposure estimates.

Table B-16
San Diego County
Emissions from Ports and Goods Movement
with Benefits of All Measures Adopted as of October, 2005
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	0.7	0.9	1.4	2.2	3.6
Harbor Craft	0.5	0.5	0.4	0.3	0.2
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	1.6	1.4	0.9	0.6	0.4
Locomotives	0.0	0.0	0.0	0.0	0.0
Total	2.8	2.8	2.7	3.1	4.2
NOx					
Ships	7.7	10.4	15.0	22.8	36.2
Harbor Craft	10.8	9.7	7.7	5.4	4.7
Cargo Handling Equipment	0.8	0.7	0.6	0.4	0.2
Trucks	27.5	29.1	23.1	18.4	16.0
Locomotives	1.4	1.4	1.2	1.7	1.8
Total	48.2	51.3	47.6	48.7	58.9
ROG					
Ships	0.2	0.3	0.4	0.6	1.0
Harbor Craft	1.1	1.0	0.8	0.6	0.5
Cargo Handling Equipment	0.1	0.1	0.0	0.0	0.0
Trucks	3.4	3.2	2.3	1.6	1.5
Locomotives	0.1	0.1	0.1	0.1	0.1
Total	4.9	4.7	3.6	2.9	3.1
SOx					
Ships	5.1	7.0	10.6	16.6	27.3
Harbor Craft	0.0	0.0	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	0.2	0.2	0.0	0.0	0.0
Locomotives	0.0	0.0	0.0	0.0	0.0
Total	5.3	7.2	10.6	16.6	27.3

Table B-17
San Diego County
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	0.7	0.9	0.5	0.3	0.4
Harbor Craft	0.5	0.5	0.3	0.2	0.1
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	1.6	1.4	0.7	0.5	0.3
Locomotives	0.0	0.0	0.0	0.0	0.0
Total	2.8	2.8	1.5	1.0	0.8
NOx					
Ships	7.7	10.4	11.4	7.4	7.3
Harbor Craft	10.8	9.7	5.7	3.7	2.7
Cargo Handling Equipment	0.8	0.7	0.4	0.2	0.1
Trucks	27.5	29.1	21.7	17.1	15.5
Locomotives	1.4	1.4	1.2	0.8	0.3
Total	48.2	51.3	40.4	29.2	25.9
ROG					
Ships	0.2	0.3	0.4	0.6	1.0
Harbor Craft	1.1	1.0	0.6	0.4	0.3
Cargo Handling Equipment	0.1	0.1	0.0	0.0	0.0
Trucks	3.4	3.2	2.3	1.6	1.5
Locomotives	0.1	0.1	0.1	0.1	0.0
Total	4.9	4.7	3.4	2.7	2.8
SOx					
Ships	5.1	7.0	2.2	0.9	0.9
Harbor Craft	0.0	0.0	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	0.2	0.2	0.0	0.0	0.0
Locomotives	0.0	0.0	0.0	0.0	0.0
Total	5.3	7.2	2.2	0.9	0.9

Table B-18
San Diego County
Emissions from Ports and Goods Movement
Plan Summary
(tons per day)

Pollutant		Year		
		2010	2015	2020
Diesel PM	Emissions with Existing Program	2.7	3.1	4.2
	Reductions from New Strategies	-1.2	-2.1	-3.4
	Emissions with Plan	1.5	1.0	0.8
	Percent Reduction	44.4	68.3	79.9
NOx	Emissions with Existing Program	47.6	48.7	58.9
	Reductions from New Strategies	-7.2	-19.5	-33.0
	Emissions with Plan	40.4	29.2	25.9
	Percent Reduction	15.1	40.0	56.0
ROG	Emissions with Existing Program	3.6	2.9	3.1
	Reductions from New Strategies	-0.2	-0.2	-0.3
	Emissions with Plan	3.4	2.7	2.8
	Percent Reduction	5.4	7.0	8.7
SOx	Emissions with Existing Program	10.6	16.6	27.3
	Reductions from New Strategies	-8.4	-15.7	-26.4
	Emissions with Plan	2.2	0.9	0.9
	Percent Reduction	79.1	94.4	96.7

Table B-19
San Diego County
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Pollutant	Year					Percent Reduction 2001-2020
	2001	2005	2010	2015	2020	
Diesel PM	2.9	2.8	1.6	0.9	0.9	69%
NOx	48.3	51.4	40.3	29.2	25.8	47%
ROG	4.9	4.6	3.4	2.8	2.7	45%
SOx	5.3	7.2	2.2	0.9	0.9	83%

Table B-20
San Diego County
Health Benefits and Economic Value of Plan Strategies in Year 2020

Health Outcome	Cases Avoided in 2020	Uncertainty Range ² (cases per year)	Value in 2020 (in millions)	Uncertainty Range ³ (in millions)
Premature Death	120	40 to 210	560	130 to 1,300
Hospital Admissions (respiratory causes)	50	30 to 70	1.1	0.48 to 1.8
Hospital Admissions (cardiovascular causes)	50	30 to 70	1.2	0.58 to 2.4
Asthma and Other Lower Respiratory Symptoms	3,000	1,200 to 4,900	0.03	0.009 to 0.06
Acute Bronchitis	250	-60 to 550	0.06	-0.01 to 0.16
Work Loss Days	20,000	17,000 to 23,000	2.4	1.5 to 3.5
Minor Restricted Activity Days	140,000	100,000 to 180,000	4.7	2.5 to 7.5
School Absence Days	19,000	7,600 to 30,000	1.1	0.33 to 2.2

¹ Does not include the reduction in contributions from particle sulfate formed from SOx emissions, which is being addressed with several ongoing emissions, measurement, and modeling studies.

² Range reflects uncertainty in health concentration-response functions, but not in emissions or exposure estimates. A negative value as a lower bound of the uncertainty range is not meant to imply that exposure to pollutants is beneficial; rather, it is a reflection of the adequacy of the data used to develop these uncertainty range estimates.

³ Range reflects statistically combined uncertainty in concentration-response functions and economic values, but not in emissions or exposure estimates.

Table B-21
Sacramento Region*
Emissions from Ports and Goods Movement
with Benefits of All Measures Adopted as of October, 2005
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	0.0	0.0	0.0	0.0	0.0
Harbor Craft	0.1	0.1	0.1	0.1	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	2.0	1.7	1.0	0.6	0.3
Locomotives	0.3	0.3	0.3	0.3	0.3
Total	2.4	2.1	1.4	1.0	0.6
NOx					
Ships	0.2	0.2	0.2	0.2	0.3
Harbor Craft	1.8	1.6	1.3	1.0	0.9
Cargo Handling Equipment	0.1	0.1	0.1	0.0	0.0
Trucks	35.4	37.8	27.7	19.8	14.7
Locomotives	13.4	10.4	8.6	9.3	9.7
Total	50.9	50.1	37.9	30.3	25.6
ROG					
Ships	0.0	0.0	0.0	0.0	0.0
Harbor Craft	0.2	0.2	0.1	0.1	0.1
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	4.1	4.0	2.8	2.0	1.6
Locomotives	0.7	0.6	0.6	0.6	0.6
Total	5.0	4.8	3.5	2.7	2.3
SOx					
Ships	0.1	0.1	0.1	0.2	0.2
Harbor Craft	0.0	0.0	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	0.3	0.3	0.0	0.0	0.0
Locomotives	0.5	0.5	0.1	0.0	0.0
Total	0.9	0.9	0.2	0.2	0.2

* All of Sacramento and Yolo Counties, plus Eastern Solano, Western Placer and Western El Dorado Counties. Does not include the portion of Southern Sutter County in the federal 8-hour ozone nonattainment area

Table B-22
Sacramento Region*
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Sector	Year				
	2001	2005	2010	2015	2020
Diesel PM					
Ships	0.0	0.0	0.0	0.0	0.0
Harbor Craft	0.1	0.1	0.1	0.1	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	2.0	1.7	0.8	0.4	0.3
Locomotives	0.3	0.3	0.3	0.2	0.1
Total	2.4	2.1	1.2	0.7	0.4
NOx					
Ships	0.2	0.2	0.1	0.0	0.1
Harbor Craft	1.8	1.6	0.9	0.6	0.5
Cargo Handling Equipment	0.1	0.1	0.1	0.0	0.0
Trucks	35.4	37.8	26.1	18.1	14.3
Locomotives	13.4	10.4	8.3	4.5	1.8
Total	50.9	50.1	35.5	23.2	16.7
ROG					
Ships	0.0	0.0	0.0	0.0	0.0
Harbor Craft	0.2	0.2	0.1	0.1	0.1
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	4.1	4.0	2.8	2.0	1.6
Locomotives	0.7	0.6	0.6	0.3	0.1
Total	5.0	4.8	3.5	2.4	1.8
SOx					
Ships	0.1	0.1	0.0	0.1	0.1
Harbor Craft	0.0	0.0	0.0	0.0	0.0
Cargo Handling Equipment	0.0	0.0	0.0	0.0	0.0
Trucks	0.3	0.3	0.0	0.0	0.0
Locomotives	0.5	0.5	0.1	0.0	0.0
Total	0.9	0.9	0.1	0.1	0.1

* All of Sacramento and Yolo Counties, plus Eastern Solano, Western Placer and Western El Dorado Counties. Does not include the portion of Southern Sutter County in the federal 8-hour ozone nonattainment area

Table B-23
Sacramento Region*
Emissions from Ports and All Goods Movement
Plan Summary
(tons per day)

Pollutant		Year		
		2010	2015	2020
Diesel PM	Emissions with Existing Program	1.4	1.0	0.6
	Reductions from New Strategies	-0.2	-0.3	-0.2
	Emissions with Plan	1.2	0.7	0.4
	Percent Reduction	14.3	34.5	32.6
NOx	Emissions with Existing Program	37.9	30.3	25.6
	Reductions from New Strategies	-2.4	-7.1	-8.9
	Emissions with Plan	35.5	23.2	16.7
	Percent Reduction	6.3	23.4	34.9
ROG	Emissions with Existing Program	3.5	2.7	2.3
	Reductions from New Strategies	0.0	-0.3	-0.5
	Emissions with Plan	3.5	2.4	1.8
	Percent Reduction	0.0	12.4	21.6
SOx	Emissions with Existing Program	0.2	0.2	0.2
	Reductions from New Strategies	-0.1	-0.1	-0.1
	Emissions with Plan	0.1	0.1	0.1
	Percent Reduction	54.6	48.4	51.6

* All of Sacramento and Yolo Counties, plus Eastern Solano, Western Placer and Western El Dorado Counties. Does not include the portion of Southern Sutter County in the federal 8-hour ozone nonattainment area

Table B-24
Sacramento Region*
Emissions from Ports and Goods Movement
with Full Implementation of Plan Strategies
(tons per day)

Pollutant	Year					Percent Reduction 2001-2020
	2001	2005	2010	2015	2020	
Diesel PM	2.3	2.1	1.2	0.7	0.4	83%
NOx	50.8	50.1	35.4	23.1	16.6	67%
ROG	5.0	4.7	3.5	2.3	1.7	66%
SOx	0.9	0.9	0.1	0.1	0.1	89%

* All of Sacramento and Yolo Counties, plus Eastern Solano, Western Placer and Western El Dorado Counties. Does not include the portion of Southern Sutter County in the federal 8-hour ozone nonattainment area.

Table B-25
Sacramento Region*
Health Benefits and Economic Value of Plan Strategies in Year 2020

Health Outcome	Cases Avoided in 2020	Uncertainty Range ² (cases per year)	Value in 2020 (in millions)	Uncertainty Range ³ (in millions)
Premature Death	20	5 to 30	69	16 to 160
Hospital Admissions (respiratory causes)	10	8 to 20	0.30	0.13 to 0.52
Hospital Admissions (cardiovascular causes)	5	3 to 7	0.12	0.06 to 0.23
Asthma and Other Lower Respiratory Symptoms	300	120 to 480	0.003	0.0009 to 0.006
Acute Bronchitis	30	-6 to 60	0.006	-0.001 to 0.02
Work Loss Days	1,800	1,500 to 2,000	0.21	0.13 to 0.30
Minor Restricted Activity Days	22,000	12,000 to 33,000	0.74	0.29 to 1.4
School Absence Days	8,800	3,600 to 14,000	0.51	0.15 to 1.0

¹ Does not include the reduction in contributions from particle sulfate formed from SOx emissions, which is being addressed with several ongoing emissions, measurement, and modeling studies.

² Range reflects uncertainty in health concentration-response functions, but not in emissions or exposure estimates. A negative value as a lower bound of the uncertainty range is not meant to imply that exposure to pollutants is beneficial; rather, it is a reflection of the adequacy of the data used to develop these uncertainty range estimates.

³ Range reflects statistically combined uncertainty in concentration-response functions and economic values, but not in emissions or exposure estimates.

* All of Sacramento and Yolo Counties, plus Eastern Solano, Western Placer and Western El Dorado Counties. Does not include the portion of Southern Sutter County in the federal 8-hour ozone nonattainment area