

Appendix L – Denver International Airport Emission Inventory

DRAFT

SUMMARY OF 2001
CONSTRUCTION EMISSIONS
AND
EMISSION FORECASTS AT
DENVER INTERNATIONAL
AIRPORT

Prepared for
Denver International Airport



November 27, 2000

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TABLE OF CONTENTS

Section 1	Introduction	1-1
Section 2	Motor Vehicle Forecasts.....	2-1
Section 3	Emission Forecasts	3-1
	3.1 Aircraft and GSE.....	3-1
	3.2 Interzonal Traffic	3-1
	3.3 Stationary Sources	3-1
	3.4 Miscellaneous Sources.....	3-2
	3.5 Construction Activities	3-2

List of Tables

Table 3-1	Emission Inventory Growth Factors	3-3
Table 3-2	Year 2000 Construction Emissions.....	3-4

List of Appendices

Appendix A	PM ₁₀ Emission Forecast
Appendix B	SO ₂ Emission Forecast
Appendix C	NO _x Emission Forecast
Appendix D	VOC Emission Forecast
Appendix E	CO Emission Forecast

The primary purpose of this document is to describe the methodology used to forecast each of the emission categories listed in the 1998 Emission Inventory for Denver International Airport (June 2000). Additional information used in developing these emission forecasts was taken from the annual project construction emissions inventories prepared for 1999 and 2000 Projects (*Emission Estimates and Conformity Determinations for 1999 [and 2000] Projects*), and the February 14, 2000 Air Quality Report prepared for the Worldport project.

These emission forecasts will assist the airport in comparing actual growth to projected growth and will assist in the event that conformity determinations are required for airport development projects.

A brief description of the motor vehicle forecasts provided by the Denver Regional Council of Governments (DRCOG) is presented in Section Two. A description of the emission forecasting methodology is presented in Section Three.

The Denver Regional Council of Governments (DRCOG) prepares motor vehicle traffic forecasts for the entire Denver metropolitan area including DIA. These traffic forecasts are updated periodically as new roads are added to the roadway network, as new projects are developed, and as needed for regional planning purposes. The Air Pollution Control Division (APCD) uses DRCOG's motor vehicle forecast as a key input into the State Implementation Plan (SIP) development process.

In order to ensure that the most recent traffic data for DIA are included in the regional motor vehicle forecasts, DIA has agreed to conduct an annual peak month traffic count (typically in July and/or August) and provide the data to DRCOG and the FAA. Conducting these annual counts will allow DIA to monitor traffic associated with airport growth and new development projects.

The 1998 Emission Inventory for DIA serves as the basis for these emission forecasts. To the extent possible, the 1998 Inventory represented an actual inventory of emissions from each of the source categories. Considerable effort was expended in order to collect data on actual fuel use and actual activity in 1998. However, the use of actual activity in a given year may not be appropriate for developing forecasts of future activity. This section describes the methodology used to develop the emissions forecasts using base-year activity where appropriate.

Table 3-1 contains a summary of the methodologies used to develop the base-year inventory and the future year emission projections. These methodologies are described in more detail below.

3.1 AIRCRAFT AND GSE

Aircraft and Ground Support Equipment (GSE) emissions in the 1998 emission inventory are based on actual aircraft landing and takeoff activity for 1998. GSE data was collected through an extensive GSE survey. Emissions for the years 2005 and 2015 were projected using the airport's Master Plan forecasts using the EDMS model. Emissions for the intervening years are interpolated from the 2005 and 2015 forecasts.

3.2 INTERZONAL TRAFFIC

Base-year emissions from Rental Car Shuttles and Employee and Public Shuttle Buses were determined from a study of Interzonal Traffic conducted by HNTB as part of the Master Plan update. Emissions from these two categories were projected using growth in passenger enplanements.

Base-year emissions from the City Fleet and snowplows were estimated based on actual 1998 fuel use. Future year emissions from this category were projected using growth in aircraft operations. DRCOG is in the process of incorporating interzonal traffic on DIA property into their regional traffic model. Therefore, it will no longer be necessary for DIA to track interzonal traffic as a separate emission category. Future year emissions from interzonal traffic are presented for informational purposes only and to provide continuity with the base-year inventory.

3.3 STATIONARY SOURCES

Base-year emissions from the central plant engines and boilers, and miscellaneous natural gas sources at the airport were based on actual 1998 fuel use provided by Public Service Company. Base-year emissions from other stationary sources at the airport were based on best available estimates and documentation of permitted emissions.

Since a new permit for emission sources controlled by the City and County of Denver (permit number 99DE0142) was recently issued by the APCD (June 2000), DIA staff decided that future year emissions for these sources would be best represented by the permitted emissions. Therefore, future emissions from the central plant engines, boilers, and Denver-owned emergency generators, paint booth, gasoline tank AST-1, and the two waste incinerators will be projected using the emissions listed in Permit 99DE0142. Emissions from the additional miscellaneous natural gas sources, diesel-fueled sources and the rental car refueling facilities that are not controlled by Denver will be projected using passenger enplanements. Finally, the

aircraft fuel tank farm, airline maintenance paint booths, and other miscellaneous tenant equipment will be projected using aircraft operations, since the emissions are most closely related to growth in aircraft.

Emissions from new stationary sources which are projected to be constructed at the airport will be added to the forecast in the expected year of operation.

3.4 MISCELLANEOUS SOURCES

Base-year emissions from miscellaneous sources on airport property including oil & gas, and agricultural operations were estimated based on 1998 levels of oil & gas and agricultural production. Future year emissions from these sources were assumed to remain constant. However, it should be noted that some of these other activities (and associated emissions) will likely be precluded in the future as the airport expands.

3.5 CONSTRUCTION ACTIVITIES

In 1998, two major construction projects were initiated at the airport. These projects included construction of the 78th Avenue Employee Parking Lot and the South Cargo Apron. Base-year construction emissions were calculated based on these two projects.

Future construction activity at the airport is estimated based on both the 1998 inventory and the *Emission Estimates and Conformity Determination for 2000 Projects* document. In 1999, construction activity was projected to be approximately equivalent to the 1998 activity. However, construction emissions in the year 2000 were projected to be substantially greater than the base-year emissions. Therefore, a new construction emission inventory for the year 2000 was prepared. Construction emissions for 2000 were based on emission estimates for projects expected to be constructed in 2000, plus 20% to account for small projects for which emissions were not quantified. Table 3-2 shows the expected emissions from construction activity in 2000.

In future years when runway construction occurs, construction activity could be substantially greater than construction activity in the year 2000. Therefore, in order to accommodate expected peaks in construction activity, year 2000 emissions were doubled for 2001 and subsequent years. Although this level of activity is not expected in each future year, these projections should accommodate worst-case construction years. Emissions associated with worst-case construction years will be evaluated in the SIP.

Emission forecasts for PM-10, SO₂, NO_x, VOC, and CO are presented in Appendix A.

**Table 3-1
EMISSION INVENTORY GROWTH FACTORS**

Category	Sub-category	1998 Base-year	Future Year Growth Factor
Aircraft		1998 Activity	EDMS Projections
GSE		1998 Activity	EDMS Projections
Interzonal Traffic	Rental Car Shuttles	Est. 1998 Activity	Enplanements
	Employee/Public Shuttle Buses	Est. 1998 Activity	Enplanements
	City Fleet & Plows	1998 Fuel use	Aircraft Operations
Stationary Sources	Central Plant Engines	Actual 1998 Fuel use	Permitted Emissions
	Central Plant Boilers	Actual 1998 Fuel use	Permitted Emissions
	Misc. sources on Permit 99DE0142	Not a separate category in 1998 inventory	Permitted Emissions
	Misc. NG sources	Actual 1998 Fuel use	Enplanements
	Diesel-fueled sources	Est. Permitted Emissions	Enplanements
	Rental Car Refueling	Est. Permitted Emissions	Enplanements
	Others - including paint booths and fuel tank farm	Est. Permitted Emissions	Aircraft Operations
	New Stationary Sources	Not applicable to 1998 Inventory	Based on project-specific estimates
Miscellaneous Sources	Oil & Gas Production	Est. based on production	Constant
	Oil & Gas Well Construction	Assume 5 new wells/year	Constant
	Agricultural Operations	Est. based on land area	Constant
Construction Activities		1998 Actual construction activity	1999 emissions = Base-year activity 2000 emissions = Actual 2000 project emissions Subsequent years = 2x year 2000 emissions

**TABLE 3-2
YEAR 2000 CONSTRUCTION EMISSIONS**

Purpose & Need	Project Name	Total Emissions (tons)				Notes	Project-level Conformity
		PM-10	SO ₂	NOx	VOC		
Taxiway Movement Efficiencies	Taxiway EA	8.67	6.53	49.88	16.07	16.73	below de minimus
	TOTAL (Taxiways):	8.67	6.53	49.88	16.07	16.73	
Roadway Traffic Efficiencies	Pikes Peak Lot Expansion	5.61	2.16	22.71	39.82	8.52	below de minimus
	Roadway Improvements	1.78	1.01	10.85	10.60	4.30	
	Comm. Vehicle Lot Exp.	0.38	0.34	3.59	1.07	1.39	
	TOTAL (Roadways):	7.77	3.51	37.15	51.49	14.21	
Runway Throughputs	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cargo Improvements	WorldPort (Cargo)	9.10	5.88	52.36	17.77	18.81	below de minimus
	Fedex Expansion	2.51	1.37	14.69	5.77	5.81	
	UPS and BAX Empl. Lots	0.47	0.34	3.59	1.92	1.39	
	Cargo Ramp Control Tower	N/Q	N/Q	N/Q	N/Q	N/Q	
	Deice Pad D Improvements	N/Q	N/Q	N/Q	N/Q	N/Q	
	TOTAL (Cargo):	12.07	7.58	70.64	25.45	26.01	
Facility Improvements	Fire Training Area (ARFF)	1.57	0.23	2.48	2.35	0.90	below de minimus
	Sewer Line - to Tower Rd.	2.22	0.62	6.78	0.83	2.59	
	Wetlands Mitigation	1.83	0.53	5.68	0.67	2.17	
	Detention Pond T-239	10.02	1.97	20.61	2.45	9.55	
	Hayesmount Det. Pond	8.75	1.97	20.61	2.45	9.55	
	Sand Storage Buildings	N/Q	N/Q	N/Q	N/Q	N/Q	
	Ind. Waste Containment	N/Q	N/Q	N/Q	N/Q	N/Q	
	Central Plant Expansion	N/Q	N/Q	N/Q	N/Q	N/Q	
	TOTAL (Facil. Improv.):	24.40	5.33	56.15	8.76	24.77	
	Collateral Projects	WorldPort (Commercial)	6.70	4.18	41.65	8.85	
Hertz Expansion		1.89	0.97	10.39	21.83	4.05	
Rental Car Level 5 Exp.		N/Q	N/Q	N/Q	N/Q	N/Q	
Landscaping		N/Q	N/Q	N/Q	N/Q	N/Q	
TOTAL (Collateral):		8.59	5.16	52.04	30.68	19.32	
20.0% Small Project Contingency	PROJECT TOTAL FOR YR 2000	61.50	28.11	265.87	132.45	101.04	
	TOTAL FOR YR 2000	73.80	33.73	319.04	158.94	121.24	
	Total for future years (2x)	147.60	67.45	638.08	317.87	242.49	

Note: Annual totals are provided for informational purposes only. Conformity determinations are made on a purpose and need basis.
 Note: Projects that are not quantified are expected to have minimal air quality impacts.

YEAR 2001 CONSTRUCTION EMISSIONS

Purpose & Need	Project Name	Total Emissions (tons)				Notes	Project-level Conformity
		PM-10	SO ₂	NOx	VOC		
Taxiway Movement Efficiencies	Deice Pad C-2 Construction	6.56	2.53	34.34	3.39	11.96	below de minimus
	TOTAL (Taxiways):	6.56	2.53	34.34	3.39	11.96	
Roadway Traffic Efficiencies	Roadway Improvements	1.78	1.01	10.85	10.60	4.30	below de minimus
	Mod 4 West Parking Garage	3.62	3.01	37.49	5.74	11.73	
	TOTAL (Roadways):	5.40	4.02	48.34	16.34	16.03	
Runway Throughputs	Sixth Runway (Earthwork)	89.15	8.43	90.61	11.30	41.02	below de minimus
Cargo Improvements	Fedex Expansion	2.51	1.37	14.69	5.77	5.81	below de minimus
	Cargo Ramp Control Tower	N/Q	N/Q	N/Q	N/Q	N/Q	
	Deice Pad D Improvements	N/Q	N/Q	N/Q	N/Q	N/Q	
	TOTAL (Cargo):	2.51	1.37	14.69	5.77	5.81	
Facility Improvements	Fire Training Area (ARFF)	1.57	0.23	2.48	2.35	0.90	below de minimus
	Ind. Waste Containment	1.95	0.36	3.89	0.45	1.62	
	Central Plant Expansion	N/Q	N/Q	N/Q	N/Q	N/Q	
	Contaminated Snow Dump	N/Q	N/Q	N/Q	N/Q	N/Q	
	TOTAL (Facil. Improv.):	3.52	0.60	6.37	2.80	2.52	
Collateral Projects	On-Airport Hotel	2.74	1.75	22.40	6.36	7.46	below de minimus
	Rental Car Level 5 Exp.	N/Q	N/Q	N/Q	N/Q	N/Q	
	TOTAL (Collateral):	2.74	1.75	22.40	6.36	7.46	
Terminal & Concourses	United Expansion (Conc. A)	2.29	1.15	20.84	1.55	6.25	below de minimus
	United Expansion (Conc. B)	1.15	0.58	10.42	0.77	3.12	
	Mod 3 East - Check-in Area	N/Q	N/Q	N/Q	N/Q	N/Q	
	TOTAL (Terminal & Conc.):	3.44	1.73	31.25	2.32	9.37	
	PROJECT TOTAL FOR YR 2001	113.33	20.42	248.01	48.28	94.16	
20.0% Small Project Contingency	22.67	4.08	49.60	9.66	18.83		
TOTAL FOR YR 2001	135.99	24.50	297.61	57.94	113.00		
Total for future years (2x)	271.98	49.01	595.22	115.87	225.99		

Note: Annual totals are provided for informational purposes only. Conformity determinations are made on a purpose and need basis.

Note: Projects that are not quantified are expected to have minimal air quality impacts.

Appendix A
PM-10 Emission Forecast

DENVER INTERNATIONAL AIRPORT
PM-10 Emission Forecasts by Inventory Category

Sub-category	2008	2009	2010	2011	2012	2013	2014	2015
	Interpol.	Interpol.	Forecast	Interpol.	Interpol.	Interpol.	Interpol.	Forecast
Aircraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Standard GSE	25.27	25.80	26.33	26.85	27.38	27.91	28.43	28.96
United Expansion GSE	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Rental Car Shuttles	2.74	2.84	2.95	3.05	3.14	3.24	3.35	3.45
Employee/Public Shuttle Buses	4.15	4.31	4.47	4.61	4.76	4.91	5.07	5.23
City Fleet & Flows	3.90	4.01	4.12	4.21	4.31	4.40	4.50	4.60
Central Plant Engines	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Plant Boilers	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71
Misc. Denver Sources	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Misc. NG sources	6.17	6.41	6.66	6.87	7.09	7.31	7.54	7.78
Diesel-fueled sources	1.11	1.16	1.20	1.24	1.28	1.32	1.36	1.40
Rental Car Refueling	---	---	---	---	---	---	---	---
Others - including paint booths and fuel tank farm	2.59	2.66	2.73	2.79	2.86	2.92	2.98	3.05
NEW STATIONARY SOURCES								
Fire Fighter Training	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70
Worldport	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
On-Airport Hotel	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Oil & Gas Production	---	---	---	---	---	---	---	---
Oil & Gas Well Construction	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Agricultural Operations	47.51	47.51	47.51	47.51	47.51	47.51	47.51	47.51
Construction Activities	271.98	271.98	271.98	271.98	271.98	271.98	271.98	271.98
	376.16	377.42	378.69	379.86	381.04	382.25	383.47	384.71

**DENVER INTERNATIONAL AIRPORT
PM-10 Emission Forecasts by Inventory Category**

Sub-category	1998 PM10 Emissions	1999 Interpol.	2000 Forecast	2001 Interpol.	2002 Interpol.	2003 Interpol.	2004 Interpol.	2005 Forecast	2006 Interpol.	2007 Interpol.
Aircraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Standard GSE	15.47	16.64	17.82	18.99	20.17	21.34	22.52	23.69	24.22	24.74
United Expansion GSE	--	--	--	--	0.28	0.56	0.84	1.12	1.40	1.40
Rental Car Shuttles	1.77	1.85	1.94	2.03	2.13	2.23	2.33	2.45	2.54	2.64
Employee/Public Shuttle Buses	2.68	2.81	2.93	3.07	3.22	3.37	3.53	3.70	3.85	3.99
City Fleet & Plows	2.70	2.83	2.96	3.08	3.20	3.33	3.46	3.59	3.69	3.80
Central Plant Engines	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Plant Boilers	1.69	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71
Misc. Denver Sources	N/A	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Misc. NG sources	3.99	4.18	4.37	4.58	4.80	5.02	5.26	5.51	5.72	5.94
Diesel-fueled sources	0.72	0.75	0.79	0.83	0.87	0.91	0.95	0.99	1.03	1.07
Rental Car Refueling	----	----	----	----	----	----	----	----	----	----
Others - including paint booths and fuel tank farm	1.79	1.88	1.96	2.04	2.12	2.20	2.29	2.38	2.45	2.52
NEW STATIONARY SOURCES										
Fire Fighter Training	N/A	N/A	N/A	5.70	5.70	5.70	5.70	5.70	5.70	5.70
Worldport	N/A	N/A	N/A	0.14	0.14	0.14	0.14	0.14	0.14	0.14
On-Airport Hotel	N/A	N/A	N/A	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Oil & Gas Production	----	----	----	----	----	----	----	----	----	----
Oil & Gas Well Construction	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Agricultural Operations	47.51	47.51	47.51	47.51	47.51	47.51	47.51	47.51	47.51	47.51
Construction Activities	23.57	23.57	73.80	135.99	271.98	271.98	271.98	271.98	271.98	271.98
	102.79	105.46	157.51	227.46	365.60	367.79	370.02	372.27	373.73	374.94

Notes: Emissions for construction activities for the years 2000 and 2001 represent calculated "actual" emissions.
Emissions from construction for the years 2002 through 2015 equal 2 times year 2001 emissions to account for unforeseen projects.

DENVER INTERNATIONAL AIRPORT
SO2 Emission Forecasts by Inventory Category

Sub-category	1998 SO2 Emissions	1999 Interpol.	2000 Forecast	2001 Interpol.	2002 Interpol.	2003 Interpol.	2004 Interpol.	2005 Forecast	2006 Interpol.	2007 Interpol.
Aircraft	112.30	119.86	127.42	134.98	142.53	150.09	157.65	165.21	172.25	179.28
United Expansion Aircraft	---	---	---	---	1.46	2.92	4.38	5.84	7.30	7.30
Standard GSE	9.58	10.35	11.13	11.90	12.68	13.45	14.23	15.00	15.39	15.78
United Expansion GSE	---	---	---	---	0.17	0.34	0.51	0.68	0.85	0.85
Rental Car Shuttles	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28
Employee/Public Shuttle Buses	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.57
City Fleet & Plows	2.47	2.59	2.71	2.81	2.93	3.04	3.16	3.29	3.38	3.47
Central Plant Engines	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Central Plant Boilers	0.07	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69
Misc. Denver Sources	N/A	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Misc. NG sources	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.28	0.29	0.30
Diesel-fueled sources	4.66	4.88	5.10	5.35	5.60	5.87	6.15	6.44	6.69	6.94
Rental Car Refueling	---	---	---	---	---	---	---	---	---	---
Others - including paint booths and fuel tank farm	---	---	---	---	---	---	---	---	---	---
NEW STATIONARY SOURCES										
Fire Fighter Training	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worldport	N/A	N/A	N/A	0.03	0.03	0.03	0.03	0.03	0.03	0.03
On-Airport Hotel	N/A	N/A	N/A	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Oil & Gas Production	---	---	---	---	---	---	---	---	---	---
Oil & Gas Well Construction	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
Agricultural Operations	---	---	---	---	---	---	---	---	---	---
Construction Activities	19.50	19.50	33.73	67.46	67.46	67.46	67.46	67.46	67.46	67.46
	149.96	161.37	184.31	226.81	237.18	247.57	257.98	268.41	277.85	285.67

Notes: Emissions for construction activities for the year 2000 represent calculated "actual" emissions.
Emissions from construction for the years 2001 through 2015 equal 2 times year 2000 emissions to account for unforeseen projects.

**DENVER INTERNATIONAL AIRPORT
SO2 Emission Forecasts by Inventory Category**

Sub-category	2008		2009		2010		2011		2012		2013		2014		2015		
	Interpol.	Forecast	Interpol.	Forecast	Interpol.	Forecast	Interpol.	Forecast	Interpol.	Forecast	Interpol.	Forecast	Interpol.	Forecast	Interpol.	Forecast	
Aircraft	186.32	193.35	193.35	200.39	207.43	214.46	221.50	228.53	235.57								
United Expansion Aircraft	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.30								
Standard GSE	16.18	16.57	16.96	17.35	17.74	18.14	18.53	18.92									
United Expansion GSE	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85									
Rental Car Shuttles	0.29	0.31	0.32	0.33	0.34	0.35	0.36	0.37									
Employee/Public Shuttle Buses	0.59	0.61	0.63	0.65	0.67	0.70	0.72	0.74									
City Fleet & Plows	3.57	3.67	3.77	3.86	3.94	4.03	4.12	4.21									
Central Plant Engines	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03									
Central Plant Boilers	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69									
Misc. Denver Sources	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08									
Misc. NG sources	0.31	0.32	0.33	0.34	0.36	0.37	0.38	0.39									
Diesel-fueled sources	7.21	7.48	7.77	8.02	8.28	8.54	8.81	9.09									
Rental Car Refueling	----	----	----	----	----	----	----	----									
Others - including paint booths and fuel tank farm	----	----	----	----	----	----	----	----									
NEW STATIONARY SOURCES																	
Fire Fighter Training	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
Worldport	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03									
On-Airport Hotel	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02									
Oil & Gas Production	----	----	----	----	----	----	----	----									
Oil & Gas Well Construction	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58									
Agricultural Operations	----	----	----	----	----	----	----	----									
Construction Activities	67.46	67.46	67.46	67.46	67.46	67.46	67.46	67.46									
	293.51	301.36	309.22	317.02	324.83	332.65	340.49	348.33									

DENVER INTERNATIONAL AIRPORT
NOx Emission Forecasts by Inventory Category

Sub-category	1998 NOx Emissions	1999 Interpol.	2000 Forecast	2001 Interpol.	2002 Interpol.	2003 Interpol.	2004 Interpol.	2005 Forecast	2006 Interpol.	2007 Interpol.
Aircraft (General Plan)	2,691.80	2,900.92	3,110.04	3,319.16	3,528.28	3,737.40	3,946.52	4,155.64	4,389.71	4,623.78
United Expansion Aircraft	---	---	---	---	39.00	78.00	117.00	156.00	195.00	195.00
Standard GSE (General Plan)	397.55	430.71	463.87	497.03	530.20	563.36	596.52	629.68	645.65	661.61
United Expansion GSE	---	---	---	---	6.83	13.66	20.49	27.32	34.15	34.15
Rental Car Shuttles	75.71	79.31	82.91	86.85	90.99	95.32	99.85	104.61	108.63	112.80
Employee/Public Shuttle Buses	54.44	57.03	59.62	62.45	65.42	68.54	71.80	75.22	78.11	81.11
City Fleet & Plows	154.92	162.36	169.81	176.54	183.54	190.81	198.38	205.24	211.98	217.88
Central Plant Engines	7.62	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30
Central Plant Boilers	10.02	18.30	18.30	18.30	18.30	18.30	18.30	18.30	18.30	18.30
Misc. Denver Sources	N/A	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40
Misc. NG sources	33.23	34.81	36.39	38.12	39.93	41.84	43.83	45.91	47.68	49.51
Diesel-fueled sources	23.24	24.34	25.45	26.66	27.93	29.26	30.65	32.11	33.34	34.63
Rental Car Refueling	---	---	---	---	---	---	---	---	---	---
Others - including paint booths and fuel tank farm	---	---	---	---	---	---	---	---	---	---
NEW STATIONARY SOURCES										
Fire Fighter Training	N/A	N/A	N/A	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Worldport	N/A	N/A	N/A	4.52	4.52	4.52	4.52	4.52	4.52	4.52
On-Airport Hotel	N/A	N/A	N/A	2.26	2.26	2.26	2.26	2.26	2.26	2.26
Oil & Gas Production	---	---	---	---	---	---	---	---	---	---
Oil & Gas Well Construction	6.85	6.85	6.85	6.85	6.85	6.85	6.85	6.85	6.85	6.85
Agricultural Operations	---	---	---	---	---	---	---	---	---	---
Construction Activities	130.94	130.94	319.04	638.08	638.08	638.08	638.08	638.08	638.08	638.08
	3,586.32	3,873.28	4,319.97	4,904.69	5,209.99	5,516.05	5,822.91	6,130.59	6,442.11	6,708.34
										17.65

Notes: Emissions for construction activities for the year 2000 represent calculated "actual" emissions.
Emissions from construction for the years 2001 through 2015 equal 2 times year 2000 emissions to account for unforeseen projects.

**DENVER INTERNATIONAL AIRPORT
NOx Emission Forecasts by Inventory Category**

2008 Interpol.	2009 Interpol.	2010 Forecast	2011 Interpol.	2012 Interpol.	2013 Interpol.	2014 Interpol.	2015 Forecast
4,857.85	5,091.92	5,325.99	5,560.05	5,794.12	6,028.19	6,262.26	6,496.33
195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00
677.58	693.55	709.52	725.48	741.45	757.42	773.38	789.35
34.15	34.15	34.15	34.15	34.15	34.15	34.15	34.15
117.14	121.64	126.32	130.33	134.46	138.73	143.14	147.68
84.23	87.47	90.83	93.71	96.89	99.76	102.92	106.19
223.94	230.17	236.57	241.83	247.21	252.71	258.34	264.08
21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30
18.30	18.30	18.30	18.30	18.30	18.30	18.30	18.30
6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40
51.41	53.39	55.44	57.20	59.02	60.89	62.82	64.82
35.96	37.34	38.77	40.01	41.28	42.59	43.94	45.33
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-----	-----	-----	-----	-----	-----	-----	-----
0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52
2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26
-----	-----	-----	-----	-----	-----	-----	-----
6.85	6.85	6.85	6.85	6.85	6.85	6.85	6.85
-----	-----	-----	-----	-----	-----	-----	-----
638.08	638.08	638.08	638.08	638.08	638.08	638.08	638.08
6,975.12	7,242.49	7,510.46	7,775.64	8,041.25	8,307.31	8,573.82	8,840.81
							22.76

Appendix D
VOC Emission Forecast

DENVER INTERNATIONAL AIRPORT
VOC Emission Forecasts by Inventory Category

Sub-category	1998 VOC Emissions	1999 Interpol.	2000 Forecast	2001 Interpol.	2002 Interpol.	2003 Interpol.	2004 Interpol.	2005 Forecast	2006 Interpol.	2007 Interpol.
	Aircraft (General Plan)	375.60	404.07	432.55	461.02	489.49	517.96	546.44	574.91	578.38
United Expansion Aircraft	---	---	---	---	2.16	4.32	6.48	8.64	10.80	10.80
Standard GSE (General Plan)	115.57	125.11	134.66	144.20	153.75	163.29	172.84	182.38	188.66	194.93
United Expansion GSE	---	---	---	---	1.92	3.84	5.76	7.68	9.60	9.60
Rental Car Shuttles	18.28	19.15	20.02	20.97	21.97	23.01	24.11	25.26	26.23	27.24
Employee/Public Shuttle Buses	0.55	0.58	0.60	0.63	0.66	0.69	0.73	0.76	0.79	0.82
City Fleet & Plows	55.30	57.96	60.61	63.02	65.62	68.11	70.81	73.62	75.67	77.77
Central Plant Engines	7.62	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30
Central Plant Boilers	0.34	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18
Misc. Denver Sources	N/A	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
Misc. NG sources	1.75	1.83	1.92	2.01	2.10	2.20	2.31	2.42	2.51	2.61
Diesel-fueled sources	0.84	0.88	0.92	0.96	1.01	1.06	1.11	1.16	1.21	1.25
Rental Car Refueling	43.25	45.31	47.36	49.62	51.98	54.45	57.04	59.76	62.05	64.44
Others - including paint booths and fuel tank farm	56.08	58.77	61.47	63.91	66.44	69.07	71.81	74.66	76.73	78.87
NEW STATIONARY SOURCES										
Fire Fighter Training	N/A	N/A	N/A	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Worldport	N/A	N/A	N/A	0.72	0.72	0.72	0.72	0.72	0.72	0.72
On-Airport Hotel	N/A	N/A	N/A	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Oil & Gas Production	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10
Oil & Gas Well Construction	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Agricultural Operations	---	---	---	---	---	---	---	---	---	---
Construction Activities	109.17	109.17	158.94	317.88	317.88	317.88	317.88	317.88	317.88	317.88
	802.47	866.63	962.85	1,169.84	1,220.50	1,271.53	1,322.94	1,374.75	1,396.14	1,413.69
										3.83

Notes: Emissions for construction activities for the year 2000 represent calculated "actual" emissions.
Emissions from construction for the years 2001 through 2015 equal 2 times year 2000 emissions to account for unforeseen projects.

DENVER INTERNATIONAL AIRPORT
VOC Emission Forecasts by Inventory Category

Sub-category	2008 Interpol.	2009 Interpol.	2010 Forecast	2011 Interpol.	2012 Interpol.	2013 Interpol.	2014 Interpol.	2015 Forecast
Aircraft (General Plan)	585.33	588.80	592.27	595.74	599.21	602.69	606.16	609.63
United Expansion Aircraft	10.80	10.80	10.80	10.80	10.80	10.80	10.80	10.80
Standard GSE (General Plan)	201.21	207.48	213.76	220.04	226.31	232.59	238.86	245.14
United Expansion GSE	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
Rental Car Shuttles	28.28	29.37	30.50	31.47	32.47	33.50	34.56	35.66
Employee/Public Shuttle Buses	0.85	0.88	0.92	0.95	0.98	1.01	1.04	1.07
City Fleet & Plows	79.94	82.16	84.45	86.33	88.25	90.21	92.21	94.27
Central Plant Engines	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30
Central Plant Boilers	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18
Misc. Denver Sources	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
Misc. NG sources	2.71	2.81	2.92	3.01	3.11	3.21	3.31	3.41
Diesel-fueled sources	1.30	1.35	1.40	1.45	1.49	1.54	1.59	1.64
Rental Car Refuelling	66.92	69.49	72.16	74.45	76.81	79.25	81.77	84.36
Others - including paint booths and fuel tank farm	81.06	83.32	85.64	87.54	89.49	91.48	93.52	95.60
NEW STATIONARY SOURCES								
Fire Fighter Training	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Worldport	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
On-Airport Hotel	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Oil & Gas Production	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10
Oil & Gas Well Construction	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Agricultural Operations	---	---	---	---	---	---	---	---
Construction Activities	317.88	317.88	317.88	317.88	317.88	317.88	317.88	317.88
	1,431.50	1,449.58	1,467.92	1,484.88	1,502.03	1,519.38	1,536.93	1,554.69
								4.16

**DENVER INTERNATIONAL AIRPORT
CO Emission Forecasts by Inventory Category**

Sub-category	1998 CO	1999	2000	2001	2002	2003	2004	2005	2006	2007
	Emissions	Interpol.	Forecast	Interpol.	Interpol.	Interpol.	Interpol.	Forecast	Interpol.	Interpol.
Aircraft	2,164.20	2,351.80	2,539.41	2,727.01	2,914.61	3,102.21	3,289.82	3,477.42	3,674.95	3,872.48
United Expansion Aircraft	---	---	---	---	24.20	48.40	72.60	96.80	121.00	121.00
Standard GSE	3,637.04	3,872.06	4,207.09	4,542.11	4,877.14	5,212.16	5,547.19	5,882.21	6,109.60	6,336.99
United Expansion GSE	---	---	---	---	54.72	109.44	164.16	218.88	273.60	273.60
Rental Car Shuttles	58.83	61.63	64.42	67.49	70.70	74.07	77.59	81.28	84.41	87.65
Employee/Public Shuttle Buses	25.59	26.81	28.02	29.36	30.75	32.22	33.75	35.36	36.72	38.13
City Fleet & Plows	233.36	244.57	255.79	265.92	276.47	287.42	298.82	310.66	319.31	328.19
Central Plant Engines	17.15	47.93	47.93	47.93	47.93	47.93	47.93	47.93	47.93	47.93
Central Plant Boilers	7.54	18.14	18.14	18.14	18.14	18.14	18.14	18.14	18.14	18.14
Misc. Denver Sources	N/A	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Misc. NG sources	6.98	7.31	7.64	8.01	8.39	8.79	9.20	9.64	10.01	10.40
Diesel-fueled sources	9.06	9.49	9.92	10.39	10.89	11.41	11.95	12.52	13.00	13.50
Rental Car Refueling	---	---	---	---	---	---	---	---	---	---
Others - including paint booths and fuel tank farm	---	---	---	---	---	---	---	---	---	---
NEW STATIONARY SOURCES										
Fire Fighter Training	N/A	N/A	N/A	21.11	21.11	21.11	21.11	21.11	21.11	21.11
Worldport	N/A	N/A	N/A	0.90	0.90	0.90	0.90	0.90	0.90	0.90
On-Airport Hotel	N/A	N/A	N/A	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Oil & Gas Production	---	---	---	---	---	---	---	---	---	---
Oil & Gas Well Construction	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72
Agricultural Operations	---	---	---	---	---	---	---	---	---	---
Construction Activities	45.43	45.43	121.24	242.48	242.48	242.48	242.48	242.48	242.48	242.48
	6,110.90	6,692.70	7,307.12	7,988.82	8,606.40	9,224.65	9,843.61	10,463.31	10,981.12	11,420.47

Notes: Emissions for construction activities for the year 2000 represent calculated "actual" emissions.
Emissions from construction for the years 2001 through 2015 equal 2 times year 2000 emissions to account for unforeseen projects.

DENVER INTERNATIONAL AIRPORT
CO Emission Forecasts by Inventory Category

Sub-category	2008	2009	2010	2011	2012	2013	2014	2015
	Interpol.	Interpol.	Forecast	Interpol.	Interpol.	Interpol.	Interpol.	Forecast
Aircraft	4,070.01	4,267.54	4,465.07	4,662.59	4,860.12	5,057.65	5,255.18	5,452.71
United Expansion Aircraft	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00
Standard GSE	6,564.38	6,791.77	7,019.16	7,246.55	7,473.94	7,701.33	7,928.72	8,156.11
United Expansion GSE	273.60	273.60	273.60	273.60	273.60	273.60	273.60	273.60
Rental Car Shuttles	91.02	94.52	98.15	101.27	104.49	107.80	111.22	114.75
Employee/Public Shuttle Buses	39.59	41.11	42.70	44.05	45.45	46.89	48.38	49.92
City Fleet & Plows	337.32	346.71	356.35	364.28	372.38	380.67	389.14	397.79
Central Plant Engines	47.93	47.93	47.93	47.93	47.93	47.93	47.93	47.93
Central Plant Boilers	18.14	18.14	18.14	18.14	18.14	18.14	18.14	18.14
Misc. Denver Sources	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Misc. NG sources	10.80	11.21	11.64	12.01	12.40	12.79	13.19	13.61
Diesel-fueled sources	14.02	14.56	15.12	15.60	16.09	16.60	17.13	17.67
Rental Car Refueling	---	---	---	---	---	---	---	---
Others - including paint booths and fuel tank farm	---	---	---	---	---	---	---	---
NEW STATIONARY SOURCES								
Fire Fighter Training	21.11	21.11	21.11	21.11	21.11	21.11	21.11	21.11
Worldport	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
On-Airport Hotel	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Oil & Gas Production	---	---	---	---	---	---	---	---
Oil & Gas Well Construction	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72
Agricultural Operations	---	---	---	---	---	---	---	---
Construction Activities	242.48	242.48	242.48	242.48	242.48	242.48	242.48	242.48
	11,860.27	12,300.55	12,741.32	13,179.49	13,618.00	14,056.87	14,496.10	14,935.70