

APPENDIX C

AIR QUALITY IMPACT MODEL

Existing PM10 Emissions (2004)

Vehicle Emissions

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ^a	PM10 Emissions (kg/day)
74,051	23.76	1759

Residential Wood Burning Device Emissions

Wood Burning Appliance Type	Number ^b	Emission Factor (lbs/ton burned) ^c	Tons burned/Day ^d	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	492	34.6	0.021	329	81
Fireplace-Resident	56	34.6	0.024	381	11
Conventional Stove/Insert	263	30.6	0.026	357	47
Certified I Stove/Insert	177	19.8	0.024	214	38
Certified II Stove/Insert	6607	15.4	0.021	146	965
Pellet	0	4.2	0.026	49	0

CALCULATED IMPACTS (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	9.7
Stoves/Inserts	110.4
Road Dust	3.7
Tailpipe	5.6
Background	5.0
Total	134

Road Dust-Dominated Design Day

Fireplaces	5.6
Stoves/Inserts	63.6
Road Dust	68.5
Tailpipe	0.0
Background	5.0
Total	143

Notes

- a) 34% control from street sweeping, per AQMP p F-4.
- b) Calculations assume 50% compliance with curtailment for fireplaces and conventional stoves (conservative assumption)
- c) Emission Factors for Stoves derived from EPA AP-42 Residential Wood Stoves Table 1.10-1
Emission Factors for Fireplace derived from EPA AP-42 External Combustion Sources Table 1.9-1
- d) From Town survey results, as reported in AQMP Table 3.4

Project PM10 Emissions (2024)

Unmitigated

Vehicle Emissions

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ^a	PM10 Emissions (kg/day)
128,270	23.76	3048

Residential Wood Burning Device Emissions

Wood Burning Appliance Type	Number ^b	Emission Factor (lbs/ton burned) ^c	Tons burned/Day ^d	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	34.6	0.021	329	8
Fireplace-Resident	6	34.6	0.024	381	1
Conventional Stove/Insert	26	30.6	0.026	357	5
Certified I Stove/Insert	177	19.8	0.024	214	19
Certified II Stove/Insert	7662	15.4	0.021	146	559
Pellet ^e	77	4.2	0.026	49	4

CALCULATED IMPACTS (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	1.0
Stoves/Inserts	61.7
Road Dust	6.4
Tailpipe	9.7
Background	5.0
Total	84

Road Dust-Dominated Design Day

Fireplaces	0.6
Stoves/Inserts	35.6
Road Dust	118.6
Tailpipe	0.0
Background	5.0
	160

Notes

- a) 34% control from street sweeping, per AQMP p F-4.
- b) Calculations assume 50% compliance with "No Burn" days for all wood burning [GBVAPCD Rule 431] (conservative)
- c) Emission Factors for Stoves derived from EPA AP-42 Residential Wood Stoves Table 1.10-1
Emission Factors for Fireplace derived from EPA AP-42 External Combustion Sources Table 1.9-1
- d) From Town survey results, as reported in AQMP Table 3.4
- e) As no data exists regarding the number of pellet stoves in the Town, a conservative assumption was used.

Project PM10 Emissions (2024)

Mitigated

Vehicle Emissions

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ^a	PM10 Emissions (kg/day)
106,600	23.76	2533

Residential Wood Burning Device Emissions

Wood Burning Appliance Type	Number ^b	Emission Factor (lbs/ton burned) ^c	Tons burned/Day ^d	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	34.6	0.021	329	8
Fireplace-Resident	6	34.6	0.024	381	1
Conventional Stove/Insert	26	30.6	0.026	357	5
Certified I Stove/Insert	177	19.8	0.024	214	19
Certified II Stove/Insert	7662	15.4	0.021	146	559
Pellet ^e	77	4.2	0.026	49	4

CALCULATED IMPACTS (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	1.0
Stoves/Inserts	61.7
Road Dust	5.3
Tailpipe	8.0
Background	5.0
Total	81

Road Dust-Dominated Design Day

Fireplaces	0.6
Stoves/Inserts	35.6
Road Dust	98.6
Tailpipe	0.0
Background	5.0
	140

Notes

- a) 34% control from street sweeping, per AQMP p F-4.
- b) Calculations assume 50% compliance with "No Burn" days for all wood burning [GBVAPCD Rule 431] (conservative)
- c) Emission Factors for Stoves derived from EPA AP-42 Residential Wood Stoves Table 1.10-1
Emission Factors for Fireplace derived from EPA AP-42 External Combustion Sources Table 1.9-1
- d) From Town survey results, as reported in AQMP Table 3.4
- e) As no data exists regarding the number of pellet stoves in the Town, a conservative assumption was used.

Existing GP PM10 Emissions (2024)

Unmitigated

Vehicle Emissions

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ^a	PM10 Emissions (kg/day)
123,868	23.76	2943

Residential Wood Burning Device Emissions

Wood Burning Appliance Type	Number ^b	Emission Factor (lbs/ton burned) ^c	Tons burned/Day ^d	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	34.6	0.021	329	8
Fireplace-Resident	6	34.6	0.024	381	1
Conventional Stove/Insert	26	30.6	0.026	357	5
Certified I Stove/Insert	177	19.8	0.024	214	19
Certified II Stove/Insert	7662	15.4	0.021	146	559
Pellet ^e	77	4.2	0.026	49	4

CALCULATED IMPACTS (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	1.0
Stoves/Inserts	61.7
Road Dust	6.2
Tailpipe	9.3
Background	5.0
Total	83

Road Dust-Dominated Design Day

Fireplaces	0.6
Stoves/Inserts	35.6
Road Dust	114.5
Tailpipe	0.0
Background	5.0
	156

Notes

- a) 34% control from street sweeping, per AQMP p F-4.
- b) Calculations assume 50% compliance with "No Burn" days for all wood burning [GBVAPCD Rule 431] (conservative)
- c) Emission Factors for Stoves derived from EPA AP-42 Residential Wood Stoves Table 1.10-1
Emission Factors for Fireplace derived from EPA AP-42 External Combustion Sources Table 1.9-1
- d) From Town survey results, as reported in AQMP Table 3.4
- e) As no data exists regarding the number of pellet stoves in the Town, a conservative assumption was used.

Existing GP PM10 Emissions (2024)

Mitigated

Vehicle Emissions

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ^a	PM10 Emissions (kg/day)
106,600	23.76	2533

Residential Wood Burning Device Emissions

Wood Burning Appliance Type	Number ^b	Emission Factor (lbs/ton burned) ^c	Tons burned/Day ^d	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	34.6	0.021	329	8
Fireplace-Resident	6	34.6	0.024	381	1
Conventional Stove/Insert	26	30.6	0.026	357	5
Certified I Stove/Insert	177	19.8	0.024	214	19
Certified II Stove/Insert	7662	15.4	0.021	146	559
Pellet	77	4.2	0.026	49	4

CALCULATED IMPACTS (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	1.0
Stoves/Inserts	61.7
Road Dust	5.3
Tailpipe	8.0
Background	5.0
Total	81

Road Dust-Dominated Design Day

Fireplaces	0.6
Stoves/Inserts	35.6
Road Dust	98.6
Tailpipe	0.0
Background	5.0
	140

Notes

- a) 34% control from street sweeping, per AQMP p F-4.
- b) Calculations assume 50% compliance with "No Burn" days for all wood burning [GBVAPCD Rule 431] (conservative)
- c) Emission Factors for Stoves derived from EPA AP-42 Residential Wood Stoves Table 1.10-1
Emission Factors for Fireplace derived from EPA AP-42 External Combustion Sources Table 1.9-1
- d) From Town survey results, as reported in AQMP Table 3.4
- e) As no data exists regarding the number of pellet stoves in the Town, a conservative assumption was used.

Workforce/Affordable Housing Alternative
PM10 Emissions (2024)

Unmitigated

Vehicle Emissions

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ^a	PM10 Emissions (kg/day)
126,357	23.76	3002

Residential Wood Burning Device Emissions

Wood Burning Appliance Type	Number ^b	Emission Factor (lbs/ton burned) ^c	Tons burned/Day ^d	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	34.6	0.021	329	8
Fireplace-Resident	6	34.6	0.024	381	1
Conventional Stove/Insert	26	30.6	0.026	357	5
Certified I Stove/Insert	177	19.8	0.024	214	19
Certified II Stove/Insert	7741	15.4	0.021	146	565
Pellet ^e	78	4.2	0.026	49	4

CALCULATED IMPACTS (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	1.0
Stoves/Inserts	62.3
Road Dust	6.3
Tailpipe	9.5
Background	5.0
Total	84

Road Dust-Dominated Design Day

Fireplaces	0.6
Stoves/Inserts	35.9
Road Dust	116.8
Tailpipe	0.0
Background	5.0
Total	158

Notes

- a) 34% control from street sweeping, per AQMP p F-4.
- b) Calculations assume 50% compliance with "No Burn" days for all wood burning [GBVAPCD Rule 431] (conservative)
- c) Emission Factors for Stoves derived from EPA AP-42 Residential Wood Stoves Table 1.10-1
Emission Factors for Fireplace derived from EPA AP-42 External Combustion Sources Table 1.9-1
- d) From Town survey results, as reported in AQMP Table 3.4
- e) As no data exists regarding the number of pellet stoves in the Town, a conservative assumption was used.

Workforce/Affordable Housing Alternative
PM10 Emissions (2024)

Mitigated

Vehicle Emissions

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ^a	PM10 Emissions (kg/day)
106,600	23.76	2533

Residential Wood Burning Device Emissions

Wood Burning Appliance Type	Number ^b	Emission Factor (lbs/ton burned) ^c	Tons burned/Day ^d	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	34.6	0.021	329	8
Fireplace-Resident	6	34.6	0.024	381	1
Conventional Stove/Insert	26	30.6	0.026	357	5
Certified I Stove/Insert	177	19.8	0.024	214	19
Certified II Stove/Insert	7741	15.4	0.021	146	565
Pellet ^e	78	4.2	0.026	49	4

CALCULATED IMPACTS (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	1.0
Stoves/Inserts	62.3
Road Dust	5.3
Tailpipe	8.0
Background	5.0
Total	82

Road Dust-Dominated Design Day

Fireplaces	0.6
Stoves/Inserts	35.9
Road Dust	98.6
Tailpipe	0.0
Background	5.0
	140

Notes

- a) 34% control from street sweeping, per AQMP p F-4.
- b) Calculations assume 50% compliance with "No Burn" days for all wood burning [GBVAPCD Rule 431] (conservative)
- c) Emission Factors for Stoves derived from EPA AP-42 Residential Wood Stoves Table 1.10-1
Emission Factors for Fireplace derived from EPA AP-42 External Combustion Sources Table 1.9-1
- d) From Town survey results, as reported in AQMP Table 3.4
- e) As no data exists regarding the number of pellet stoves in the Town, a conservative assumption was used.

Reduced Development Alternative
PM10 Emissions (2024)

Unmitigated

Vehicle Emissions

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ^a	PM10 Emissions (kg/day)
116,871	23.76	2777

Residential Wood Burning Device Emissions

Wood Burning Appliance Type	Number ^b	Emission Factor (lbs/ton burned) ^c	Tons burned/Day ^d	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	34.6	0.021	329	8
Fireplace-Resident	6	34.6	0.024	381	1
Conventional Stove/Insert	26	30.6	0.026	357	5
Certified I Stove/Insert	177	19.8	0.024	214	19
Certified II Stove/Insert	7599	15.4	0.021	146	555
Pellet ^e	76	4.2	0.026	49	4

CALCULATED IMPACTS (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	1.0
Stoves/Inserts	61.2
Road Dust	5.8
Tailpipe	8.8
Background	5.0
Total	82

Road Dust-Dominated Design Day

Fireplaces	0.6
Stoves/Inserts	35.3
Road Dust	108.1
Tailpipe	0.0
Background	5.0
	149

Notes

- a) 34% control from street sweeping, per AQMP p F-4.
- b) Calculations assume 50% compliance with "No Burn" days for all wood burning [GBVAPCD Rule 431] (conservative)
- c) Emission Factors for Stoves derived from EPA AP-42 Residential Wood Stoves Table 1.10-1
Emission Factors for Fireplace derived from EPA AP-42 External Combustion Sources Table 1.9-1
- d) From Town survey results, as reported in AQMP Table 3.4
- e) As no data exists regarding the number of pellet stoves in the Town, a conservative assumption was used.

Reduced Development Alternative
PM10 Emissions (2024)
Mitigated

Vehicle Emissions

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ^a	PM10 Emissions (kg/day)
106,600	23.76	2533

Residential Wood Burning Device Emissions

Wood Burning Appliance Type	Number ^b	Emission Factor (lbs/ton burned) ^c	Tons burned/Day ^d	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	34.6	0.021	329	8
Fireplace-Resident	6	34.6	0.024	381	1
Conventional Stove/Insert	26	30.6	0.026	357	5
Certified I Stove/Insert	177	19.8	0.024	214	19
Certified II Stove/Insert	7599	15.4	0.021	146	555
Pellet ^e	76	4.2	0.026	49	4

CALCULATED IMPACTS (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	1.0
Stoves/Inserts	61.2
Road Dust	5.3
Tailpipe	8.0
Background	5.0
Total	81

Road Dust-Dominated Design Day

Fireplaces	0.6
Stoves/Inserts	35.3
Road Dust	98.6
Tailpipe	0.0
Background	5.0
	139

Notes

- a) 34% control from street sweeping, per AQMP p F-4.
- b) Calculations assume 50% compliance with "No Burn" days for all wood burning [GBVAPCD Rule 431] (conservative)
- c) Emission Factors for Stoves derived from EPA AP-42 Residential Wood Stoves Table 1.10-1
Emission Factors for Fireplace derived from EPA AP-42 External Combustion Sources Table 1.9-1
- d) From Town survey results, as reported in AQMP Table 3.4
- e) As no data exists regarding the number of pellet stoves in the Town, a conservative assumption was used.

Mobile

Criteria Pollutant Emissions (Tons/Yr)						
<i>tailpipe and break (see details in next sheet)</i>						
	VMT	NOx	VOC	PM10	CO	SOx
Existing	74,051	22.4	4.2	10.4	52.0	0.2
Project	128,270	38.9	7.2	18.0	90.0	0.4
Change	54,219	16	3	8	38	0.2
<i>cinders (see details in provided sheet)</i>						
Change						102

Stationary

Criteria Pollutant Emissions (Tons/Yr)						
		NOx	VOC	PM10	CO	SOx
URBEMIS		18.87	137.69	49.17	314.38	0.97

Project delta		NOx	VOC	PM10	CO	SOx
Mobile		16	3	110	38	0.2
Stationary		19	138	49	314	1.0
Total	tpy	35	141	159	352	1.1
Mono County 2005	tpy	978	2,873	14,155	19,206	110
Percent increase		4%	5%	1%	2%	1%

Plan	VMT	Year	
Existing (Current)	74,051 miles	2004	Note: EMFAC2007 for 25 mph, Mono County fleet mix
Project	128,270 miles	2024	

Tail Pipe Emissions Factors

CO

Plan	VMT (mi/day)	Emission Factor (g/mi)	Emission Factor (lbs/mi)	Mass (lbs/day)	Mass (Tons/day)	Mass (tons/year)	Delta (tpy)
Existing (Current)	74,051	1.744	3.84E-03	284.72	0.14	51.96	
Project	128,270	1.744	3.84E-03	493.18	0.25	90.01	38.04

NOx

Plan	VMT (mi/day)	Emission Factor (g/mi)	Emissions Factor (lbs/mi)	Mass (lbs/day)	Mass (Tons/day)	Mass (tons/year)	Delta (tpy)
Existing (Current)	74,051	0.753	1.66E-03	122.93	0.06	22.43	
Project	128,270	0.753	1.66E-03	212.94	0.11	38.86	16.43

ROG

Plan	VMT (mi/day)	Emission Factor (g/mi)	Emissions Factor (lbs/mi)	Mass (lbs/day)	Mass (Tons/day)	Mass (tons/year)	Delta (tpy)
Existing (Current)	74,051	0.14	3.09E-04	22.86	1.14E-02	4.17E+00	
Project	128,270	0.14	3.09E-04	39.59	1.98E-02	7.23E+00	3.05

SOx

Plan	VMT (mi/day)	Emissions Factor (lbs/mi)	Mass (lbs/day)	Mass (Tons/day)	Mass (tons/year)	Delta (tpy)	
Existing (Current)	74,051	0.007	1.54E-05	1.14	5.71E-04	2.09E-01	
Project	128,270	0.007	1.54E-05	1.98	9.90E-04	3.61E-01	0.15

PM10

Plan	VMT (mi/day)	Mass (lbs/day)	Mass (Tons/day)	Mass (tons/year)	Delta (tpy)
Per AQMP, page 3-6	66,300	51.04	2.55E-02	9.31E+00	
Existing (Current)	74,051	57.01	2.85E-02	1.04E+01	
Project	128,270	98.75	4.94E-02	1.80E+01	7.62

Winter Season Fugitive Dust Calculation Assumptions

PM10 Emissions (Tons/Yr)							
	g/VKT ^a	Max delta VKT	kg/day	Days/yr ^b	lb/day	lb/yr	tpy
<u>cinders</u>	14.8	88,884	1,314	26	2897	75319	
		44,442	657	52	1448	75319	
		22,221	329	74	724	53592	
				152		204230	102

Notes:

- a) per AQMP, p.3-5. 22.4 g/vkt x 0.66 (34% control efficiency)
- b) per AQMP, Table 2.2 p.2-6. Winter Season = 152 days/yr;
Max historical exceedances = 26 days/yr. Assumption regarding non-peak days.

Title : Mammoth 2007 Rerun
 Version : Emfac2007 V2.3 Nov 1 2006
 Run Date : 2007/05/04 09:26:02
 Scen Year: 2024 -- All model years in the range 1980 to 2024 selected
 Season : Annual
 Area : Mono

 Year: 2024 -- Model Years 1980 to 2024 Inclusive -- Annual
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Mono County
 Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Total Organic Gases Temperature: 40F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.117	0.228	0.283	2.807	0.000	5.557	0.686
10	0.077	0.152	0.191	1.550	0.000	4.234	0.415
15	0.054	0.107	0.135	0.758	0.000	3.393	0.246
20	0.039	0.079	0.101	0.446	0.000	2.859	0.169
25	0.030	0.061	0.078	0.380	0.000	2.531	0.140
30	0.024	0.050	0.064	0.325	0.000	2.353	0.120
35	0.021	0.042	0.054	0.280	0.000	2.298	0.107
40	0.018	0.038	0.048	0.245	0.000	2.356	0.099
45	0.017	0.036	0.045	0.219	0.000	2.535	0.095
50	0.017	0.035	0.043	0.203	0.000	2.862	0.097
55	0.018	0.036	0.044	0.195	0.000	3.392	0.103
60	0.019	0.039	0.047	0.197	0.000	4.220	0.117
65	0.022	0.044	0.052	0.207	0.000	5.510	0.139

Pollutant Name: Carbon Monoxide Temperature: 40F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	1.342	2.569	2.752	6.283	0.000	28.723	3.294
10	1.210	2.279	2.349	3.998	0.000	24.231	2.652
15	1.098	2.041	2.052	2.536	0.000	21.286	2.203
20	1.001	1.844	1.823	1.824	0.000	19.437	1.918
25	0.917	1.678	1.642	1.596	0.000	18.441	1.744
30	0.843	1.538	1.495	1.441	0.000	18.198	1.612
35	0.779	1.419	1.374	1.343	0.000	18.721	1.514
40	0.722	1.318	1.274	1.291	0.000	20.144	1.450
45	0.672	1.233	1.192	1.281	0.000	22.759	1.419
50	0.629	1.163	1.126	1.311	0.000	27.102	1.428
55	0.591	1.106	1.076	1.382	0.000	34.125	1.490
60	0.559	1.062	1.042	1.498	0.000	45.527	1.628
65	0.531	1.035	1.028	1.669	0.000	64.406	1.885

Pollutant Name: Oxides of Nitrogen Temperature: 40F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.164	0.396	0.709	7.962	0.000	1.495	1.584
10	0.142	0.338	0.608	5.904	0.000	1.432	1.217
15	0.126	0.296	0.536	4.494	0.000	1.392	0.963
20	0.113	0.265	0.485	3.737	0.000	1.368	0.820
25	0.104	0.242	0.450	3.420	0.000	1.360	0.753
30	0.097	0.225	0.428	3.162	0.000	1.364	0.700
35	0.092	0.215	0.417	2.961	0.000	1.381	0.661
40	0.089	0.209	0.417	2.817	0.000	1.408	0.636
45	0.088	0.207	0.426	2.732	0.000	1.447	0.623
50	0.088	0.210	0.447	2.706	0.000	1.497	0.624
55	0.090	0.217	0.482	2.743	0.000	1.560	0.640
60	0.094	0.230	0.534	2.847	0.000	1.638	0.671
65	0.101	0.250	0.610	3.026	0.000	1.732	0.722

Pollutant Name: Carbon Dioxide Temperature: 40F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	943.581	1185.447	1705.995	3456.705	0.000	265.609	1551.934
10	713.155	896.205	1253.385	2848.940	0.000	221.500	1205.138
15	559.441	703.256	964.820	2355.335	0.000	190.286	961.905
20	455.497	572.782	776.627	2001.825	0.000	168.356	795.298
25	384.921	484.191	652.457	1875.202	0.000	153.415	700.260
30	337.602	424.794	571.056	1771.510	0.000	144.042	633.884
35	307.309	386.769	519.880	1688.947	0.000	139.442	589.027
40	290.321	365.445	491.683	1626.527	0.000	139.318	561.470
45	284.648	358.324	482.713	1583.765	0.000	143.833	548.989
50	289.643	364.594	491.825	1560.531	0.000	153.656	550.880
55	305.876	384.970	520.235	1557.015	0.000	170.113	567.828
60	335.242	421.831	571.797	1573.777	0.000	195.462	602.039
65	381.337	479.692	653.933	1611.923	0.000	233.416	657.714

Pollutant Name: Sulfur Dioxide Temperature: 40F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.033	0.000	0.003	0.015
10	0.007	0.009	0.012	0.027	0.000	0.003	0.012
15	0.005	0.007	0.009	0.022	0.000	0.002	0.009
20	0.004	0.006	0.007	0.019	0.000	0.002	0.008

Pollutant Name: PM10 - Break Wear
Humidity: 50%

Temperature: 40F Relative

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.013	0.013	0.013	0.025	0.000	0.006	0.014
10	0.013	0.013	0.013	0.025	0.000	0.006	0.014
15	0.013	0.013	0.013	0.025	0.000	0.006	0.014
20	0.013	0.013	0.013	0.025	0.000	0.006	0.014
25	0.013	0.013	0.013	0.025	0.000	0.006	0.014
30	0.013	0.013	0.013	0.025	0.000	0.006	0.014
35	0.013	0.013	0.013	0.025	0.000	0.006	0.014
40	0.013	0.013	0.013	0.025	0.000	0.006	0.014
45	0.013	0.013	0.013	0.025	0.000	0.006	0.014
50	0.013	0.013	0.013	0.025	0.000	0.006	0.014
55	0.013	0.013	0.013	0.025	0.000	0.006	0.014
60	0.013	0.013	0.013	0.025	0.000	0.006	0.014
65	0.013	0.013	0.013	0.025	0.000	0.006	0.014

Pollutant Name: Gasoline - mi/gal
Humidity: 50%

Temperature: 40F Relative

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.358	7.420	5.010	3.487	0.000	27.142	7.746
10	12.379	9.814	6.771	5.242	0.000	32.671	10.225
15	15.777	12.506	8.808	7.457	0.000	38.053	13.011
20	19.375	15.357	11.020	10.041	0.000	42.910	15.958
25	22.927	18.170	13.249	12.798	0.000	46.848	18.863
30	26.141	20.716	15.301	15.438	0.000	49.503	21.485
35	28.721	22.760	16.964	17.626	0.000	50.578	23.577
40	30.407	24.097	18.049	19.047	0.000	49.896	24.922
45	31.021	24.585	18.426	19.482	0.000	47.434	25.374
50	30.494	24.170	18.047	18.860	0.000	43.346	24.879
55	28.884	22.897	16.961	17.281	0.000	37.973	23.490
60	26.361	20.900	15.300	14.987	0.000	31.809	21.358
65	23.180	18.380	13.253	12.302	0.000	25.427	18.700

Pollutant Name: Diesel - mi/gal
Humidity: 50%

Temperature: 40F Relative

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.116	29.133	19.626	3.166	0.000	0.000	4.897
10	29.116	29.133	19.626	3.654	0.000	0.000	5.338
15	29.116	29.133	19.626	4.259	0.000	0.000	5.886
20	29.116	29.133	19.626	4.895	0.000	0.000	6.462
25	29.116	29.133	19.626	5.170	0.000	0.000	6.711
30	29.116	29.133	19.626	5.433	0.000	0.000	6.949
35	29.116	29.133	19.626	5.673	0.000	0.000	7.166

40	29.116	29.133	19.626	5.876	0.000	0.000	7.349
45	29.116	29.133	19.626	6.029	0.000	0.000	7.488
50	29.116	29.133	19.626	6.122	0.000	0.000	7.572
55	29.116	29.133	19.626	6.148	0.000	0.000	7.596
60	29.116	29.133	19.626	6.105	0.000	0.000	7.557
65	29.116	29.133	19.626	5.997	0.000	0.000	7.459

```

Title      : Mammoth 2007 Rerun
Version    : Emfac2007 V2.3 Nov 1 2006
Run Date   : 2007/05/04 09:26:02
Scen Year  : 2024 -- All model years in the range 1980 to 2024 selected
Season     : Annual
Area       : Mono
*****
Year: 2024 -- Model Years 1980 to 2024 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

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County Average                               Mono                               County
Average

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Table 2: Starting Emissions (grams/trip)

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Pollutant Name: Total Organic Gases      Temperature: 40F Relative
Humidity: ALL

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Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.031	0.050	0.096	0.175	0.000	1.712	0.100
10	0.061	0.098	0.190	0.341	0.000	2.026	0.172
20	0.117	0.188	0.368	0.647	0.000	2.638	0.307
30	0.169	0.269	0.536	0.917	0.000	3.229	0.431
40	0.215	0.343	0.694	1.151	0.000	3.799	0.545
50	0.256	0.409	0.840	1.350	0.000	4.347	0.647
60	0.293	0.467	0.976	1.514	0.000	4.735	0.736
120	0.373	0.576	1.398	0.876	0.000	3.897	0.830
180	0.191	0.305	0.878	0.930	0.000	2.847	0.529
240	0.203	0.323	0.933	0.981	0.000	3.032	0.561
300	0.214	0.341	0.988	1.032	0.000	3.214	0.593
360	0.225	0.358	1.042	1.080	0.000	3.392	0.624
420	0.236	0.375	1.096	1.127	0.000	3.567	0.655
480	0.246	0.392	1.149	1.172	0.000	3.738	0.685
540	0.257	0.409	1.202	1.215	0.000	3.907	0.715
600	0.267	0.425	1.255	1.257	0.000	4.071	0.744
660	0.277	0.441	1.307	1.297	0.000	4.233	0.772
720	0.287	0.457	1.358	1.335	0.000	4.391	0.800

Pollutant Name: Carbon Monoxide Temperature: 40F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.432	0.698	1.581	4.068	0.000	4.744	1.252
10	0.851	1.374	3.121	7.971	0.000	6.912	2.418
20	1.650	2.662	6.080	15.282	0.000	11.001	4.635
30	2.399	3.865	8.877	21.931	0.000	14.759	6.696
40	3.097	4.982	11.514	27.918	0.000	18.187	8.602
50	3.744	6.015	13.990	33.245	0.000	21.284	10.353
60	4.341	6.962	16.304	37.910	0.000	24.051	11.948
120	6.062	9.295	22.453	14.764	0.000	28.446	12.803
180	3.138	4.965	9.750	15.196	0.000	12.757	6.904
240	3.359	5.300	10.546	15.642	0.000	14.123	7.361
300	3.558	5.602	11.252	16.102	0.000	15.369	7.776
360	3.735	5.872	11.866	16.576	0.000	16.494	8.148
420	3.889	6.110	12.390	17.064	0.000	17.499	8.478
480	4.021	6.315	12.823	17.567	0.000	18.384	8.767
540	4.131	6.488	13.166	18.084	0.000	19.149	9.013
600	4.218	6.628	13.417	18.615	0.000	19.793	9.216
660	4.283	6.737	13.579	19.161	0.000	20.318	9.378
720	4.325	6.813	13.649	19.720	0.000	20.721	9.497

Pollutant Name: Oxides of Nitrogen Temperature: 40F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.101	0.198	1.048	0.353	0.000	0.193	0.402
10	0.110	0.217	1.103	0.532	0.000	0.240	0.444
20	0.128	0.252	1.202	0.847	0.000	0.322	0.518
30	0.143	0.281	1.287	1.103	0.000	0.390	0.580
40	0.155	0.304	1.360	1.301	0.000	0.444	0.630
50	0.164	0.322	1.418	1.441	0.000	0.484	0.667
60	0.170	0.334	1.463	1.522	0.000	0.509	0.693
120	0.183	0.362	1.602	1.569	0.000	0.521	0.747
180	0.202	0.398	1.652	1.563	0.000	0.523	0.779
240	0.201	0.395	1.639	1.554	0.000	0.514	0.773
300	0.199	0.391	1.618	1.543	0.000	0.503	0.764
360	0.196	0.385	1.590	1.528	0.000	0.490	0.752
420	0.192	0.377	1.553	1.510	0.000	0.475	0.737
480	0.187	0.367	1.508	1.489	0.000	0.457	0.718
540	0.181	0.356	1.455	1.465	0.000	0.437	0.697
600	0.174	0.343	1.393	1.438	0.000	0.415	0.672
660	0.167	0.329	1.324	1.408	0.000	0.391	0.644
720	0.159	0.312	1.247	1.374	0.000	0.364	0.612

Pollutant Name: Carbon Dioxide Temperature: 40F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.021	14.896	21.196	2.580	0.000	13.892	14.795
10	13.587	16.922	24.071	5.147	0.000	16.112	17.003
20	17.205	21.570	30.671	10.236	0.000	20.469	21.988
30	21.472	27.014	38.405	15.269	0.000	24.715	27.731
40	26.387	33.254	47.271	20.244	0.000	28.850	34.232
50	31.951	40.290	57.271	25.162	0.000	32.874	41.491
60	38.163	48.122	68.404	30.023	0.000	36.787	49.508
120	88.159	110.457	157.075	51.064	0.000	54.393	111.555
180	100.164	125.587	178.583	60.329	0.000	58.512	126.970
240	112.129	140.646	199.992	69.046	0.000	62.389	142.264
300	124.054	155.633	221.302	77.217	0.000	66.025	157.438
360	135.937	170.550	242.512	84.841	0.000	69.419	172.493
420	147.780	185.395	263.622	91.918	0.000	72.572	187.428
480	159.581	200.169	284.633	98.448	0.000	75.482	202.243
540	171.342	214.872	305.545	104.432	0.000	78.152	216.938
600	183.062	229.503	326.357	109.869	0.000	80.579	231.514
660	194.742	244.064	347.069	114.759	0.000	82.765	245.970
720	206.380	258.553	367.682	119.102	0.000	84.710	260.305

Pollutant Name: Sulfur Dioxide
Humidity: ALL

Temperature: 40F Relative

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.001	0.001	0.000	0.001	0.000
40	0.000	0.000	0.001	0.001	0.000	0.001	0.000
50	0.000	0.000	0.001	0.001	0.000	0.001	0.001
60	0.000	0.001	0.001	0.001	0.000	0.001	0.001
120	0.001	0.001	0.002	0.001	0.000	0.001	0.001
180	0.001	0.001	0.002	0.001	0.000	0.001	0.001
240	0.001	0.001	0.002	0.001	0.000	0.001	0.001
300	0.001	0.002	0.002	0.001	0.000	0.001	0.002
360	0.001	0.002	0.003	0.001	0.000	0.001	0.002
420	0.001	0.002	0.003	0.001	0.000	0.001	0.002
480	0.002	0.002	0.003	0.001	0.000	0.001	0.002
540	0.002	0.002	0.003	0.001	0.000	0.001	0.002
600	0.002	0.002	0.003	0.001	0.000	0.001	0.002
660	0.002	0.002	0.004	0.001	0.000	0.001	0.003
720	0.002	0.003	0.004	0.001	0.000	0.001	0.003

Pollutant Name: PM10
Humidity: ALL

Temperature: 40F Relative

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
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5	0.001	0.001	0.001	0.000	0.000	0.007	0.001
10	0.001	0.002	0.002	0.001	0.000	0.006	0.002
20	0.002	0.003	0.003	0.001	0.000	0.005	0.003
30	0.003	0.005	0.005	0.002	0.000	0.004	0.004
40	0.004	0.007	0.006	0.002	0.000	0.004	0.006
50	0.005	0.008	0.007	0.003	0.000	0.003	0.007
60	0.006	0.009	0.009	0.003	0.000	0.003	0.008
120	0.010	0.015	0.014	0.004	0.000	0.006	0.013
180	0.011	0.017	0.015	0.004	0.000	0.009	0.014
240	0.012	0.018	0.017	0.004	0.000	0.011	0.016
300	0.013	0.020	0.018	0.005	0.000	0.013	0.017
360	0.014	0.021	0.019	0.005	0.000	0.015	0.018
420	0.014	0.022	0.020	0.005	0.000	0.016	0.018
480	0.015	0.023	0.021	0.005	0.000	0.018	0.019
540	0.015	0.023	0.021	0.005	0.000	0.019	0.020
600	0.015	0.024	0.022	0.005	0.000	0.019	0.020
660	0.016	0.024	0.022	0.005	0.000	0.020	0.020
720	0.016	0.024	0.022	0.006	0.000	0.020	0.020

Title : Mammoth 2007 Rerun
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2007/05/04 09:26:02
Scen Year: 2024 -- All model years in the range 1980 to 2024 selected
Season : Annual
Area : Mono

Year: 2024 -- Model Years 1980 to 2024 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Mono County
Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Total Organic Gases Temperature: 40F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.026	0.045	0.027	0.004	0.000	0.056	0.034
10	0.048	0.083	0.050	0.007	0.000	0.104	0.062
20	0.082	0.141	0.084	0.011	0.000	0.177	0.106
30	0.104	0.181	0.108	0.014	0.000	0.227	0.136
40	0.113	0.195	0.116	0.015	0.000	0.246	0.146

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : Mammoth 2007 Rerun
 Version : Emfac2007 V2.3 Nov 1 2006
 Run Date : 2007/05/04 09:26:02
 Scen Year: 2024 -- All model years in the range 1980 to 2024 selected
 Season : Annual
 Area : Mono

Year: 2024 -- Model Years 1980 to 2024 Inclusive -- Annual
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Mono County
 Average

Table 5a: Partial Day Diurnal Loss Emissions

(grams/hour)

Pollutant Name: Total Organic Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
40	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Title : Mammoth 2007 Rerun
 Version : Emfac2007 V2.3 Nov 1 2006
 Run Date : 2007/05/04 09:26:02
 Scen Year: 2024 -- All model years in the range 1980 to 2024 selected
 Season : Annual
 Area : Mono

Year: 2024 -- Model Years 1980 to 2024 Inclusive -- Annual
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Mono County
 Average

Table 5b: Multi-Day Diurnal Loss Emissions

(grams/hour)

Pollutant Name: Total Organic Gases Temperature: ALL Relative Humidity: ALL

Temp

degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
40	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Title : Mammoth 2007 Rerun
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2007/05/04 09:26:02
Scen Year: 2024 -- All model years in the range 1980 to 2024 selected
Season : Annual
Area : Mono

Year: 2024 -- Model Years 1980 to 2024 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Mono County
Average

Table 6a: Partial Day Resting Loss Emissions
(grams/hour)

Pollutant Name: Total Organic Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
40	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Title : Mammoth 2007 Rerun
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2007/05/04 09:26:02
Scen Year: 2024 -- All model years in the range 1980 to 2024 selected
Season : Annual
Area : Mono

Year: 2024 -- Model Years 1980 to 2024 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Mono County
Average

Table 6b: Multi-Day Resting Loss Emissions
(grams/hour)

Pollutant Name: Total Organic Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
40	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Title : Mammoth 2007 Rerun
 Version : Emfac2007 V2.3 Nov 1 2006
 Run Date : 2007/05/04 09:26:02
 Scen Year: 2024 -- All model years in the range 1980 to 2024 selected
 Season : Annual
 Area : Mono

 Year: 2024 -- Model Years 1980 to 2024 Inclusive -- Annual
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Mono County Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.183	0.512	0.136	0.155	0.000	0.013	1.000
%TRIP	0.167	0.480	0.243	0.092	0.000	0.018	1.000
%VEH	0.187	0.542	0.142	0.065	0.000	0.064	1.000

Title : Mammoth 2007 Rerun
 Version : Emfac2007 V2.3 Nov 1 2006
 Run Date : 2007/05/04 09:26:02
 Scen Year: 2024 -- All model years in the range 1980 to 2024 selected
 Season : Annual
 Area : Mono

 Year: 2024 -- Model Years 1980 to 2024 Inclusive -- Annual
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average
Average

Mono

County

Table 8: Evaporative Running Loss Emissions

(grams/minute)

Pollutant Name: Total Organic Gases Temperature: 40F Relative
Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.407	0.380	0.063	0.000	0.004	0.271
2	0.008	0.207	0.193	0.032	0.000	0.037	0.139
3	0.009	0.142	0.134	0.022	0.000	0.055	0.097
4	0.011	0.112	0.106	0.017	0.000	0.065	0.077
5	0.012	0.094	0.089	0.014	0.000	0.072	0.065
10	0.015	0.059	0.058	0.009	0.000	0.085	0.043
15	0.016	0.049	0.049	0.007	0.000	0.089	0.037
20	0.016	0.046	0.047	0.006	0.000	0.092	0.035
25	0.017	0.044	0.046	0.006	0.000	0.093	0.034
30	0.017	0.044	0.046	0.006	0.000	0.093	0.034
35	0.017	0.044	0.046	0.006	0.000	0.093	0.034
40	0.017	0.044	0.046	0.006	0.000	0.093	0.034
45	0.017	0.044	0.046	0.006	0.000	0.093	0.034
50	0.016	0.044	0.046	0.006	0.000	0.092	0.034
55	0.016	0.044	0.046	0.006	0.000	0.092	0.034
60	0.016	0.044	0.046	0.006	0.000	0.092	0.034

MammothURBEMIS
URBEMIS 2002 For windows 8.7.0

File Name: V:\AQNOISE DIVISION\Active
Projects\Mammoth\Spreadsheets\All pollutants\mammoth with project AREA.urb
Project Name: Mammoth - Project
Project Location: Mountain Counties and Rural Counties

SUMMARY REPORT
(Tons/Year- Winter)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10
TOTALS (tpy, unmitigated)	137.56	18.89	313.84	0.97	49.17

URBEMIS 2002 For windows 8.7.0

File Name: V:\AQNOISE DIVISION\Active
Projects\Mammoth\Spreadsheets\All pollutants\mammoth with project AREA.urb
Project Name: Mammoth - Project
Project Location: Mountain Counties and Rural Counties

DETAIL REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10
Natural Gas	1.00	13.08	6.94	0.00	0.02
Hearth	54.61	5.77	304.61	0.96	49.14
Landscaping	0.31	0.04	2.29	0.01	0.01
Consumer Prdcts	61.06	-	-	-	-
Architectural Coatings	20.58	-	-	-	-
TOTALS (tpy, unmitigated)	137.56	18.89	313.84	0.97	49.17

Changes made to the default values for Area

- The wood stove percentage changed from 35 to 44.
- The wood fireplace percentage changed from 10 to 1.
- The cords of wood burned in wood stoves per year changed from 1.48 to 2.5.
- The days of use for wood stoves changed from 82 to 100.
- The fireplace cords of wood burned changed from 1.48 to 2.
- The days of use for wood fireplace changed from 82 to 100.
- The natural gas fireplace days/yr for single family changed from 90 to 100.
- The natural gas fireplace days/yr for multi-family changed from 90 to 100.
- The landscape year changed from 2005 to 2020.



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MEMORANDUM

TO: File

FROM: Dr. Clay Postlethwaite

DATE: September 26, 2005

SUBJECT: Air Quality Impact Model

Violations of the federal 24-hour PM_{10} standard were recorded in the Town in the late 1980s. As a result, the Air Quality Management Plan (AQMP) (Ono et al. 1990) was developed to improve air quality in the Town and bring the monitored air quality back into compliance with the federal standard.

Ono et al. (1990) analyzed the particulate material captured in the Town's PM_{10} monitor to determine the primary sources of particulate emissions. They determined that the primary sources of PM_{10} emissions were wood burning and traction materials (cinders) placed on winter roads that become finely ground and entrained in the atmosphere by motor vehicles. Further analysis demonstrated that violations of the NAAQS could occur on days when the majority of the PM_{10} was derived from wood smoke, as well as on days when road dust was the primary source. Ono et al. (1990) employed two design days to reflect these two scenarios. The model scaled the impacts from the estimated emissions of wood smoke and vehicle-derived dust to the monitored contributions of each source in both scenarios. They then used a roll back calculation to determine what degree of emission reduction was necessary to achieve compliance with the standard.

In this analysis, the AQMP design day model was used to first compare existing monitored air quality in the Town with model's predictions for the current estimated wood stove usage and VMT for a winter Saturday. Table 1 presents the input data and the modeled impacts. The model inputs for the calculation include VMT data from LSC (2004) and wood burning appliance data extrapolated from Ono et al.'s original assumptions and scaled to the current housing inventory. The emission factors are the same as employed by Ono et al and assumes a mandatory ban on wood burning is in effect for non-EPA approved appliances. The wood burning ban is modeled as a 50 percent decrease in emissions from the affected sources. The model predicts peak air quality impacts of $142.4 \mu\text{g}/\text{m}^3$ on a road dust dominated emission day. The highest monitored value in the last four years was $134 \mu\text{g}/\text{m}^3$, suggesting that model is still valid.

Air quality impacts from the Project and alternatives were modeled using VMT developed by LSC (2004, 2005) for each alternative. The wood burning appliance input values were based on the assumption that new single family dwellings will each have one wood burning appliance and that no new multi-family units will have them.

One of the results of the AQMP was the woodstove replacement program which required the removal of non-certified wood burning appliances upon the sale of a dwelling. The owner is generally allowed to replace the old appliance with an EPA-certified unit. Ono et al (1990) used their wood stove and fireplace inventory and extrapolated the growth of the community and an assumed rate of stove replacement rate of 90 percent to develop a wood burning appliance inventory for 2005. For this analysis, it was assumed that 90 percent of remaining conventional wood stoves, fireplaces, and inserts will be replaced with EPA-certified units by 2024.

The APCD is proposing a series of control measures to help the Town attain the state PM_{10} standard as directed by SB656. Those measures are expected to be adopted and are not considered mitigation measures for the Project or the alternatives. Two measures have direct implications to the Town and the model. First, the APCD will no longer exempt EPA-approved appliances from the solid fuel burn bans to be implemented during periods of poor air quality. The great majority of wood burning stoves are EPA-approved now, therefore banning the ever-diminishing minority of units is having little beneficial impact. As a result, the model assumes a 50 percent control of all wood burning appliances. Second, the APCD is requiring the Town or its contractors to purchase PM_{10} certified street sweepers for use in the Town as they expand or replace equipment. The certified equipment is more efficient than the sweeper tested by the Town in the 1990s. Therefore the model assumes a slightly (18 percent) greater control efficiency.

Tables 2 through 5 present the modeled impacts from buildout of the Project and the alternatives. Each table first presents the modeled impacts based on the mitigation strategies of street sweeping and burn bans, and also presents the modeled impacts mitigated by a VMT limit of 106,600. The complete solid-fuel burn ban is a option available to the Town in the existing ordinances, and the VMT limit is a stated goal in the municipal code. The model predicts that the implementation of these additional measures will allow the buildout of the four alternatives and maintain compliance with federal PM_{10} standard.

Under Project Alternative, the daily VMT could exceed 106,600 without producing a modeled violation of the federal standard. The model predicts compliance with the federal standard up to a daily VMT of 130,000 (Table 6).

Table 1. Modeled Air Quality Impacts for Current Conditions

Vehicle Emissions

2004

Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ¹	PM10 Emissions (kg/day)
77577	23.76	1843

¹Assumes 34% control from street sweeping

Residential Wood Stove Emissions

2004

Wood Burning Appliance Type	Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	492	266	65
Fireplace-Resident	56	308	9
Conventional Stove/Insert	263	285	37
Certified I Stove/Insert	177	171	30
Certified II Stove/Insert	6607	142.5	941

Mandatory curtailment (50 percent control) included.

CURRENT CALCULATED IMPACTS FROM DESIGN DAYS (ugm³)

Wood-Burning Dominated Design Day		Road Dust-Dominated Design D	
Fireplaces	7.9	Fireplaces	4.5
Stoves/inserts	106.2	Stoves/inserts	61.2
Road Dust	3.9	Road Dust	71.7
Tailpipe	5.9	Tailpipe	0.0
Background	5.0	Background	5.0
Total²	128.7		142.4

²The Federal 24 hour PM₁₀ standard is 150 ug/m³.

Table 2. Air Quality Model Impacts for the No Action Alternative

Vehicle Emissions

Unmitigated		
Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ¹	PM10 Emissions (kg/day)
154,471	21.6	3337

Mitigated		
Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ¹	PM10 Emissions (kg/day)
106,600	21.6	2303

¹Assumes 40% control from street sweeping

Residential Wood Stove Emissions

Unmitigated			
Wood Burning Appliance Type	Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	266	7
Fireplace-Resident	6	308	1
Conventional Stove/Insert	26	285	4
Certified I Stove/Insert	177	171	15
Certified II Stove/Insert	7739	142.5	551

Mitigated		
Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
50	266	7
6	308	1
26	285	4
177	171	15
7739	142.5	551

Mandatory curtailment (50 percent control) included per SB666.

CALCULATED IMPACTS AT BUILDOUT (ugm³)

Wood-Burning Dominated Design Day

Fireplaces	0.8
Stoves/Inserts	60.0
Road Dust	7.0
Tailpipe	11.7
Background	5.0
Total²	84.4

MITIGATED CALCULATED IMPACTS AT BUILDOUT (ugm³)

Wood-Burning Dominated Design Day

Fireplaces	0.8
Stoves/Inserts	60.0
Road Dust	4.8
Tailpipe	8.0
Background	5.0
Total²	78.7

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.6
Road Dust	129.8
Tailpipe	0.0
Background	5.0
Total	169.9

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.6
Road Dust	89.6
Tailpipe	0.0
Background	5.0
Total	129.6

²The Federal 24 hour PM₁₀ standard is 150 ug/m³.

Table 3. Air Quality Model Impacts for the Project Alternative

Vehicle Emissions

Unmitigated		
Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ¹	PM10 Emissions (kg/day)
159,961	21.6	3455

Mitigated		
Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ¹	PM10 Emissions (kg/day)
106,600	21.6	2303

¹Assumes 40% control from street sweeping

Residential Wood Stove Emissions

Unmitigated			
Wood Burning Appliance Type	Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	266	7
Fireplace-Resident	6	308	1
Conventional Stove/Insert	26	285	4
Certified I Stove/Insert	177	171	15
Certified II Stove/Insert	7739	142.5	561

Mitigated		
Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
50	266	7
6	308	1
26	285	4
177	171	15
7739	142.5	561

Mandatory curtailment (50 percent control) included per SB656.

CALCULATED IMPACTS AT BUILDOUT (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	0.8
Stoves/Inserts	60.0
Road Dust	7.2
Tailpipe	12.1
Background	5.0
Total²	85.1

MITIGATED CALCULATED IMPACTS AT BUILDOUT (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	0.8
Stoves/Inserts	60.0
Road Dust	4.8
Tailpipe	8.0
Background	5.0
Total²	78.7

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.6
Road Dust	134.4
Tailpipe	0.0
Background	5.0
	174.5

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.6
Road Dust	89.6
Tailpipe	0.0
Background	5.0
	129.6

²The Federal 24 hour PM₁₀ standard is 150 ug/m³.

Table 4. Air Quality Model Impacts for the Work Force/Affordable Housing Alternative**Vehicle Emissions****Unmitigated**

	PM10 Emission Factor (g/vmt) ¹	PM10 Emissions (kg/day)
Vehicle Miles Travelled	21.6	3404

Mitigated

	PM10 Emission Factor (g/vmt) ¹	PM10 Emissions (kg/day)
Vehicle Miles Travelled	21.6	2303

¹Assumes 40% control from street sweeping**Residential Wood Stove Emissions****Unmitigated**

Wood Burning Appliance Type	Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	266	7
Fireplace-Resident	6	308	1
Conventional Stove/Insert	26	285	4
Certified I Stove/Insert	177	171	15
Certified II Stove/Insert	7819	142.5	557

Mitigated

Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
50	266	7
6	308	1
26	285	4
177	171	15
7819	142.5	557

Mandatory curtailment (50 percent control) included per SB666.

CALCULATED IMPACTS AT BUILDOUT (ug/m³)**Wood-Burning Dominated Design Day**

Fireplaces	0.8
Stoves/Inserts	60.6
Road Dust	7.1
Tailpipe	11.9
Background	5.0
Total²	85.4

MITIGATED CALCULATED IMPACTS AT BUILDOUT (ug/m³)**Wood-Burning Dominated Design Day**

Fireplaces	0.8
Stoves/Inserts	60.6
Road Dust	4.8
Tailpipe	8.0
Background	5.0
Total²	79.3

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.9
Road Dust	132.4
Tailpipe	0.0
Background	5.0
	172.8

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.9
Road Dust	89.6
Tailpipe	0.0
Background	5.0
	130.0

²The Federal 24 hour PM₁₀ standard is 150 ug/m³.

Table 5. Air Quality Model Impacts for the Reduced Development Alternative

Vehicle Emissions

Unmitigated		
Vehicle Miles Travelled	PM10 Emission Factor (g/Vmt) ¹	PM10 Emissions (kg/day)
145,745	21.6	3148

Mitigated		
Vehicle Miles Travelled	PM10 Emission Factor (g/Vmt) ¹	PM10 Emissions (kg/day)
106,600	21.6	2303

¹Assumes 40% control from street sweeping

Residential Wood Stove Emissions

Unmitigated			
Wood Burning Appliance Type	Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	266	7
Fireplace-Resident	6	308	1
Conventional Stove/Insert	26	285	4
Certified I Stove/Insert	177	171	15
Certified II Stove/Insert	7739	142.5	551

Mitigated		
Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
50	266	7
6	308	1
26	285	4
177	171	15
7739	142.5	551

Mandatory curtailment (50 percent control) included per SB665.

CALCULATED IMPACTS AT BUILDOUT (ugm³)

Wood Burning Dominated Design Day

Fireplaces	0.8
Stoves/Inserts	60.0
Road Dust	6.6
Tailpipe	11.0
Background	5.0
Total²	83.4

MITIGATED CALCULATED IMPACTS AT BUILDOUT (ugm³)

Wood Burning Dominated Design Day

Fireplaces	0.8
Stoves/Inserts	60.0
Road Dust	4.8
Tailpipe	8.0
Background	5.0
Total²	78.7

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.6
Road Dust	122.5
Tailpipe	0.0
Background	5.0
Total	162.5

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.6
Road Dust	89.6
Tailpipe	0.0
Background	5.0
Total	129.6

²The Federal 24 hour PM₁₀ standard is 150 ug/m³.

Table 6. Air Quality Model Impacts for the Project Alternative with 130,000 VMT

Vehicle Emissions

Unmitigated		
Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ¹	PM10 Emissions (kg/day)
159,961	21.6	3455

Mitigated		
Vehicle Miles Travelled	PM10 Emission Factor (g/vmt) ¹	PM10 Emissions (kg/day)
130,000	21.6	2808

¹Assumes 40% control from street sweeping

Residential Wood Stove Emissions

Unmitigated			
Wood Burning Appliance Type	Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
Fireplace-Visitor	50	266	7
Fireplace-Resident	6	308	1
Conventional Stove/Insert	26	285	4
Certified I Stove/Insert	177	171	15
Certified II Stove/Insert	7739	142.5	551

Mitigated		
Number	PM10 Emission Factor (g/day/stove)	PM10 Emissions (kg/day)
50	266	7
6	308	1
26	285	4
177	171	15
7739	142.5	551

Mandatory curtailment (50 percent control) included per SB656.

CALCULATED IMPACTS AT BUILDOUT (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	0.8
Stoves/Inserts	60.0
Road Dust	7.2
Tailpipe	12.1
Background	5.0
Total	85.1

MITIGATED CALCULATED IMPACTS AT BUILDOUT (ug/m³)

Wood-Burning Dominated Design Day

Fireplaces	0.8
Stoves/Inserts	60.0
Road Dust	5.9
Tailpipe	9.8
Background	5.0
Total	81.5

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.6
Road Dust	134.4
Tailpipe	0.0
Background	5.0
Total	174.5

Road Dust-Dominated Design Day

Fireplaces	0.5
Stoves/Inserts	34.6
Road Dust	109.3
Tailpipe	0.0
Background	5.0
Total	149.3

⁴The Federal 24 hour PM₁₀ standard is 150 ug/m³.