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COMMUNITY PLANNING ASSOCIATION

of Southwest Idaho

Northern Ada County Transportation Conformity Demonstration of Communities in Motion

Report No. 07-2006

THIS DOCUMENT IS SUBMITTED TO THE U.S. DEPARTMENT OF TRANSPORTATION IN FULFILLMENT OF THE REQUIREMENTS OF THE 1990 CLEAN AIR ACT AMENDMENTS (CAAA), THE FEDERAL TRANSPORTATION AIR QUALITY CONFORMITY RULES (40CFR93), AND THE STATE OF IDAHO ADMINISTRATIVE CODE ON TRANSPORTATION CONFORMITY (IDAPA 58-01.01.563-574).

COMPASS
COMMUNITY PLANNING ASSOCIATION
of Southwest Idaho

RESOLUTION NO. 11-2006

FOR THE PURPOSE OF APPROVING THE AIR QUALITY CONFORMITY FINDING AND ADOPTING *Communities in Motion* AS THE REGIONAL LONG-RANGE TRANSPORTATION PLAN

WHEREAS, the Community Planning Association has been designated by the Governor of Idaho as the Metropolitan Planning Organization (MPO) responsible for transportation planning in Northern Ada County and the Nampa Urbanized Area;

WHEREAS, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU) and Title 23 Part 450 and Title 49 Part 5303 of the Code of Federal Regulations require MPOs to prepare Regional Long-Range Transportation Plans covering a period of at least 20 years;

WHEREAS, the 1990 Clean Air Act Amendment requires all Regional Long-Range Transportation Plans in nonattainment areas demonstrate conformity to applicable state implementation plans for air quality improvements;

WHEREAS, the Community Planning Association of Southwest Idaho has performed an Air Quality Conformity Demonstration and has concluded the recommended plan does meet requirements of the State Implementation Plan for particulate matter and carbon monoxide;

WHEREAS, the SAFETEA-LU and 23 United States Code Section 134 require the projects contained in the Regional Long-Range Transportation Plans to be financially constrained, which condition has been demonstrated in *Communities in Motion*; and

WHEREAS, a public comment period was held for *Communities in Motion* meeting the requirements of SAFETEA-LU.

NOW, THEREFORE, BE IT RESOLVED, that the Community Planning Association Board approves the finding that *Communities in Motion* conforms to relevant provisions of the State Implementation Plan for Idaho and hereby adopts *Communities in Motion* as the Regional Long-Range Transportation Plan.

BE IT FURTHER RESOLVED, that the Community Planning Association of Southwest Idaho Board of Directors authorizes the submittal of this amended plan to the appropriate local, state, and federal agencies for their consideration.

Dated this 21st day of August 2006.

APPROVED:

By: _____
Tammy de Weerd, Chair
Community Planning Association Board

ATTEST:

By: _____
Matthew J. Stoll, Executive Director
Community Planning Association

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TABLE OF CONTENTS

FOREWORD

The federal government mandates that any transportation projects using federal funds or deemed to be "regionally significant" in nonattainment and maintenance areas cannot contribute to a degradation of air quality (40CFR93). Thus, transportation plans must "conform" to air quality plans. Transportation conformity is demonstrated when a nonattainment or maintenance area can show, within the applicable guidelines and regulations, that planned transportation projects listed in a transportation program or plan will not cause or contribute to exceedances of the Environmental Protection Agency's (EPA's) health based air quality standards. A finding of nonconformance would prevent the implementation of certain federally funded and/or regionally significant transportation projects.

Only EPA's criteria pollutants are subject to conformity analyses. One of two tests is used in a conformity demonstration:

> Build/No Build: Conceptually, this process is rather simple; estimate the amount of a given pollutant emitted in a region before the programmed projects are built (No Build Scenario) and after construction (Build Scenario). If the emissions from the Build Scenario are equal to or less than the emissions from the No Build Scenario, conformity has been demonstrated. This test is used for nonattainment or maintenance areas when motor vehicle emissions budgets are not established.
>
> Budget: State air quality implementation or maintenance plans for nonattainment or maintenance areas will often have maximum limits on the amounts of pollutants that transportation related sources emit. These maximum emissions limits on transportation related sources are known as "budgets". A transportation conformity budget test consists of a comparison between regional emissions estimates that include the impacts associated with planned transportation projects to the established budget. If the budget is not exceeded by the emissions estimate, then conformity has been demonstrated.

This document contains the information and analyses necessary for the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) to make a transportation conformity finding for the Northern Ada County portions of *Communities in Motion* - the long range transportation plan for a six county region in Southwest Idaho.

SUMMARY

A transportation air quality conformity demonstration with budget tests was developed for the Ada County portions of the *Communities in Motion* pursuant to 40CFR93. *Communities in Motion* is the long range transportation plan for a six county region in Southwest Idaho that includes the counties of Ada, Canyon, Payette, Gem, Boise, and Elmore. EPA's MOBILE6 emissions model and COMPASS' most current travel demand model were used to estimate pollutant emissions from transportation sources. The Northern Ada County Interagency Consultation Committee on Transportation Conformity (ICC) approved the modeling methodologies and assumptions used in the regional emissions analyses including the Ada County transportation model networks. Additionally, COMPASS' Transportation Model Advisory Committee (TMAC) approved the calibrated travel demand model used. Demographic assumptions and forecasts used in this demonstration were developed from the *Communities in Motion* endorsed growth scenario ("Community Choices").

The *Northern Ada County PM_{10} SIP Maintenance Plan and Redesignation Request* contains motor vehicle emissions budgets for three pollutants: coarse particulate matter (PM_{10}), oxides of nitrogen (NO_X), and volatile organic compounds (VOCs). Emissions budget tests, as required by 40CFR93.118, demonstrate conformity of the Ada County portions of *Communities in Motion* and the FY2006-2010 Northern Ada County TIP through the year 2030.

The Carbon Monoxide (CO) Limited Maintenance Plan (*Limited Maintenance Plan and Request for Redesignation to Attainment for the Northern Ada County Carbon Monoxide Not-Classified Nonattainment Area*) does not contain any motor vehicle emissions budgets. This is because, per the Environmental Protection Agency (EPA), areas under a "Limited Maintenance Plan" are not required to conduct regional emissions analyses to demonstrate conformity. However, COMPASS conducts a CO emissions analysis as requested by the Idaho Department of Environmental Quality (IDEQ) to aid in the regional air quality planning. COMPASS is committed to working through the ICC to identify and implement mitigation measures that will counteract CO emissions increases resulting from anticipated improvements to the regional transportation system should they be requested by IDEQ.

I. INTRODUCTION

Community Planning Association

The Community Planning Association of Southwest Idaho (COMPASS) is an association of governments in Ada and Canyon Counties, Idaho. It provides transportation planning and a host of other planning and community services to its member agencies and the general public. Since 1977, COMPASS, formerly known as Ada Planning Association, has been designated as the Metropolitan Planning Organization (MPO) for Northern Ada County. In April of 2003, COMPASS was designated as the MPO for the Nampa Urbanized Area, located in neighboring Canyon County. The agency's service area covers the cities of Boise, Caldwell, Eagle, Garden City, Kuna, Meridian, Middleton, Nampa, and Star.

Area's Designations

Coarse Particulate Matter (PM_{10})

Northern Ada County is designated as a maintenance area in attainment of the 24-hour PM_{10} National Ambient Air Quality Standard (NAAQS) and an attainment area for the annual PM_{10} standard. Appendix A shows the extents of the maintenance area boundaries. The last non-agricultural based exceedance of the 24-hour PM_{10} NAAQS occurred in 1991. Prior to March 12, 1999, Northern Ada County was designated as a nonattainment area for PM_{10}. However, on that date the EPA Administrator signed a revocation of Northern Ada County's nonattainment designation based on changes made to the PM_{10} NAAQS. This ruling was challenged in the Ninth District Circuit Court. On January 31, 2001, the U.S. Department of Justice approved a settlement agreement for the Idaho Clean Air Force et al. v. EPA et al. lawsuit. A major component of the settlement agreement required the Idaho Department of Environmental Quality to update Northern Ada County's PM_{10} State Implementation Plan (SIP). In September of 2003, the EPA approved the *Northern Ada County PM_{10} SIP Maintenance Plan and Redesignation Request*.

Commonly, past exceedances of the 24-hour PM_{10} NAAQS in Northern Ada County occur during sever wintertime air stagnation events. These events, known as atmospheric inversions, are caused when cold, stagnant air is held close to the valley floor by warmer air aloft. During these events, particulates form in the atmosphere out of such gaseous pollutants as NO_X and VOC. Thus, both NO_X and VOC are considered precursors of PM_{10}. As a result, the PM_{10} maintenance plan contains approved PM_{10}, NO_X, and VOC motor vehicle emissions budgets.

Carbon Monoxide (CO)

Additionally, Northern Ada County is designated as a maintenance area in attainment of the carbon monoxide (CO) NAAQS. This area has not experienced a violation of the CO NAAQS since 1987. The Idaho Department of Environmental Quality (IDEQ) submitted the *Limited Maintenance Plan and Request for Redesignation to Attainment for the Northern Ada County Carbon Monoxide Not-Classified Nonattainment Area* to the EPA in December 2001. The EPA approved the Limited Maintenance Plan and subsequently redesignated the area in December 2002. Maintenance areas under a limited maintenance plan are not required to demonstrate their transportation programs or long-range transportation plans conform through a regional emissions analysis. Therefore, there are no applicable CO motor vehicle emissions budgets established for Northern Ada County.

Rules

As described previously, the *Northern Ada County PM_{10} SIP Maintenance Plan and Redesignation Request* (PM_{10} Maintenance Plan) establishes motor vehicle emissions budgets for PM_{10}, NO_x and VOC. Therefore, to satisfy transportation conformity requirements established by 40CFR93.118, budget tests must be performed for *Communities in Motion*. Budget tests are satisfied when regional emissions estimates of the TIP or transportation plan are less than or equal to "budgets" established by state implementation plans (SIPs) and/or air quality maintenance plans.

EPA guidance related to "Limited Maintenance Plans" eliminates the regional emissions analysis requirements with regard to CO for Northern Ada County's transportation programs and long-range plans conformity demonstrations:

> *"…in areas with approved limited maintenance plans, Federal actions requiring conformity determinations under the transportation*

conformity rule could be considered to satisfy the budget test required in section 93.118, 93.119, and 93.120 of the rule." 1

Therefore CO motor vehicle emissions budget tests are not federally required for Northern Ada County. However, IDEQ requires COMPASS conduct a build/no build analysis of its programs and long-range plans in order to facilitate good air quality planning. If the results of this analysis show an unacceptable increase in CO emissions, IDEQ may choose to require mitigation measures.

Interagency Consultation

Idaho Administrative Code (IDAPA 58.01.01.567) requires nonattainment and maintenance areas establish an interagency consultation committee on transportation conformity. The Northern Ada County Interagency Consultation Committee (ICC) approved the assumptions and methodologies employed in the development of the *Communities in Motion* regional emissions analysis of Northern Ada County on November 30, 2005. The approved assumptions and methodologies are listed in Appendices D and E. Final project lists for the regional emissions analyses were approved by the ICC on February 23, 2006. A complete listing of the ICC requirements can be found in Idaho Administrative Code (IDAPA 58.01.01.563-574).

Budget Test

A budget test is a comparison of emissions estimates to an established limit (or budget) for motor vehicles. As per 40CFR93.118(b), budget tests must be preformed for:

> "…each year for which the applicable … implementation plan specifically establishes motor vehicle emissions budget(s), for the last year of the transportation plan's forecast period, and for any intermediate years as necessary so that the years for which consistency is demonstrated are no more than ten years apart…"

The Northern Ada County PM_{10} Maintenance Plan established motor vehicle emissions budgets for the years 1999, 2010, and 2015. Thus, budget tests were performed for:

- 2006 - The base year of the FY2006-2010 TIP
- 2010 - The last year of the TIP and budget year
- 2015 - Budget year
- 2025 - An intermediate analysis year, as there can be no more than 10 year between analysis years
- 2030 - The *Communities in Motion* horizon year

Regionally Significant Projects

Regional emissions analyses, for the purposes of demonstrating transportation conformity of a TIP or long-range plan, must include all regionally significant and/or federally funded projects in the nonattainment or maintenance area.

40CFR93.101 defines a regionally significant project as:

> *"… a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel."*

The State of Idaho Administrative Code (IDAPA 58.01.01.566) further defines a regionally significant project as:

> "A transportation project, other than an exempt project, that is on a facility which serves regional transportation needs… and would normally be included in the modeling of a metropolitan area's transportation network, including, at a minimum:

[1] Page 42 of the *Limited Maintenance Plan and Request for Redesignation to Attainment for the Northern Ada County Carbon Monoxide Not-Classified Nonattainment Area*

a. All principal arterial highways;
b. All fixed guideway transit facilities that offer an alternative to regional highway travel; and
c. Any other facilities determined to be regionally significant through Section 570, interagency consultation."

Regionally Significant Roadway Project Definition
On January 30, 2002, the ICC developed the following definition of a "Regionally Significant" project:

"A transportation project in Ada County, Idaho is designated 'Regionally Significant' if:

(a) the project is for the improvement of either:
(i) a principal arterial or higher functional classification; or
(ii) a minor arterial which will have a twenty (20) year projected traffic volume of at least 45,000 vehicles a day after completion of the project; and

(b) the project will add at least one new continuous vehicular lane which either:
(i) extends from one intersecting principal or minor arterial to another intersecting principal or minor arterial; or
(ii) in the case of an interstate, extends from the on ramp of one interstate interchange to a point beyond the off ramp of the next adjacent interstate interchange.

Despite these definitions, the ICC maintains discretionary authority in interpreting and applying them to the area's transportation programs, plans, and projects. For the purposes of this conformity determination, all applicable roadway projects, despite their significance, were included in the travel demand model networks.

Regionally Significant Transit Project Definition
On August 31, 2005, the Northern Ada County Interagency Consultation Committee on Air Quality Conformity adopted the following definition of a "Regionally Significant" transit project:

"A transit project in Ada County, Idaho is designated 'Regionally Significant' if the transit project:

(a) Has the potential to change the vehicle demand of an existing roadway classified as a principal arterial or higher by 400 vehicles per hour, or 4,000 vehicles per weekday; and

(b) Is a transit service or facility that provides services to (or connects) at a minimum:

(i) Two counties and;

(ii) Three incorporated cities;

Exempt Projects
Pursuant to 40CFR93.126 (Exempt Projects), certain projects listed in a long-range transportation plan or TIP may proceed even in the absence of a conformity finding/demonstration. Exempt projects include highway safety or mass transit projects, landscaping projects, roadway rehabilitation and repair, transportation enhancement projects, and transportation planning activities that do not lead directly to construction. However, the exempt projects listed in 40CFR93.126 are not considered exempt if the ICC concludes that they may have an adverse impact on air quality.

In addition, 40CFR93.127 (Projects Exempt from Regional Emissions Analyses) considers projects, such as intersection signalization, changes in alignment, bus terminals, and transit transfer points, exempt from regional emissions analyses. However, these projects must demonstrate project-level conformity. As with the types of exempt projects listed in 40CFR93.126, the projects listed in 40CFR93.127 may not be considered exempted if the ICC concludes them to have an adverse impact on air quality.

Transportation Control Measures

As per 40CFR93.113(c), in order for a TIP or long range transportation plan to be conforming, it cannot interfere with the implementation of any transportation control measures (TCMs). There are no TCMs requiring implementation in either the *Northern Ada County PM_{10} SIP Maintenance Plan and Redesignation Request* or *Limited Maintenance Plan and Request for Redesignation to Attainment for the Northern Ada County Carbon Monoxide Not-Classified Nonattainment Area*. Therefore, *Communities in Motion* meets the requirements of 40CFR93.113(c).

II. EMISSIONS ESTIMATION

Emissions Analysis Assumptions and Tools

This air quality conformity demonstration is based upon vehicle miles of travel (VMT) estimates produced using COMPASS' travel demand model and emissions factors generated using the latest version of EPA's MOBILE6 emissions model (MOBILE 6.2). A regional emission analysis was conducted as described below.

COMPASS' Travel Demand Model

The travel demand model provides estimates of average weekday traffic (ADT) for each link of a given transportation network based on current and future demographic/growth assumptions. In addition to ADT, the travel demand model produces daily VMT forecasts; congested network speeds, and other data relevant to regional emissions analyses. COMPASS utilizes Citilab's Cube/Voyager software to run the regional model. COMPASS' travel demand model is regularly maintained and updated to include all completed roadway projects. Future-year model networks include anticipated widening and new roadway projects, regardless of significance or exemption status. Transportation network components include interstates, principal arterials, minor arterials, most collectors, and select local roads in Ada and Canyon Counties. For emissions analysis purposes only, future expressways are categorized as arterials or interstates, based on the amount of access anticipated. The ICC approves the used of the future-year model networks for inclusion in the regional emissions analyses.

COMPASS' travel demand modeling activities are performed under the review of the Transportation Model Advisory Committee (TMAC), a technical committee formed by the COMPASS Board of Directors. TMAC is made up of local experts, technical staff from COMPASS' member agencies, and local traffic engineers from both the public and private sectors. Along with COMPASS staff, TMAC works to periodically calibrate and validate the travel demand model to reflect the actual travel patterns and behaviors in the Treasure Valley. COMPASS' current travel demand model is calibrated and validated to 2002 conditions. Appendix C provides more information on COMPASS' travel demand model.

Demographic Data

The COMPASS Board adopts the official population and employment projections for the Treasure Valley based on a preferred growth scenario. COMPASS' Demographic Advisory Committee (DAC) is composed of demographers, developers, and representatives from local industries and governments. DAC develops the population and employment projections used by the travel demand model to generate ADT and VMT forecasts.

Demographic data for *Communities in Motion* were developed based on a COMPASS Board approved growth scenario. The scenario, "Community Choices" combines modest land use intensification/densification along transportation corridors with additional employment and population growth in outlying communities. Less suburban residential development is anticipated in this growth scenario. With more infill development (and thus increased densities) in the corridor areas, this scenario consumes less land by 2030 than the current development trend.

Data for the interim analysis years of 2010, 2015, and 2025 were developed using a 2006 base year estimate and the 2030 "Community Choices" growth scenario as endpoints. Professional judgment was then used to estimate and allocate the interim year growth to traffic analysis zones (TAZs). The DAC approved these interim year forecast and TAZ allocations on January 26, 2006.

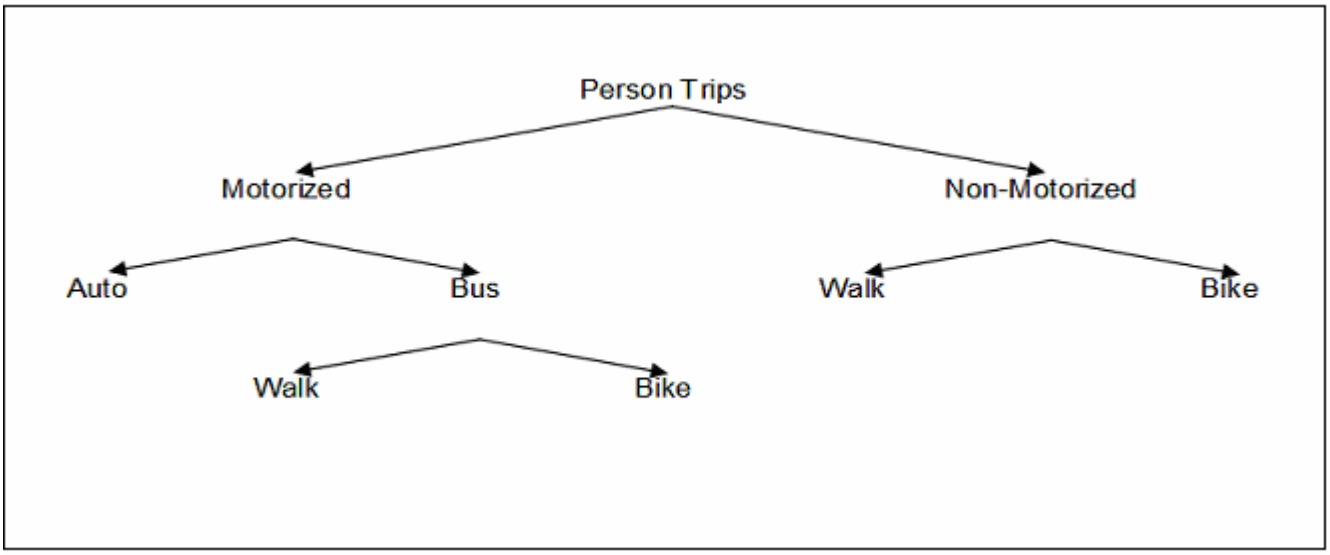
Roadway Network Assumptions

The projects used in the regional emissions analysis for *Communities in Motion* are derived from the plan itself, Ada County Highway District's FY2003 Capital Improvement Plan and current Five Year Work Program (FY2007-2011), and the Idaho Transportation Department's FY2006-2010 State Transportation Improvement Program (STIP). Roadway projects were placed into analysis (or budget) year networks based information contained in the above sources. In the event a project was given a construction date in multiple documents, the earliest date was assigned as given by the STIP, followed by the Five Year Work Program, FY2003 Capital Improvement Plan, and *Communities in Motion*. Unfunded (UF) or preliminary development (PD) projects were treated as if they had an implied 2030 construction date attached. Tables II-1, II-5, II-9, II-13, and II-17 provide more detailed information on the roadway projects used to build the model networks.

Transit Service Assumptions

Regional impacts from access to the area's transit system were included in the emissions analysis. This was done within COMPASS' travel demand model using a "mode choice" model. A "mode choice" model is the third step in a traditional 4-step travel demand model, such as the one maintained by COMPASS. It takes estimates of person trips and tries to predict the mode of travel the trip will use. **Figure II-1** shows the motorized modes available to the travel demand model for assignment. Non-motorized trips are not assigned to a network.

FIGURE II-1: COMPASS Model Travel Modes



Transit trips are assigned to a transit network input into the travel demand model. *Communities in Motion* does not include any funded improvements to the region's transit system. Therefore, only the transit system as it exists today is assumed to be available in 2030 and included in the regional emissions analysis. The current system includes:

- 15 routes and approximately 688 stops with headways between 30-60 minutes in the Boise/Garden City service area.
- One Nampa/Caldwell route with headways varying between 30 and 60 minutes.
- Three inter-county routes (between Ada and Canyon Counties) with 30-60 minute headways during the am/pm peak periods and 2-3 hour headways during off peak periods.

Chapter Three of Communities in Motion contains more general information on the region's current transit system. For more specific info on the routes and schedules used to model the transit system, visit Valley Regional Transit's website: http://www.valleyride.org/infopage.htm.

Emissions Modeling

COMPASS uses EPA's MOBILE6 emissions model to estimate the air quality impacts associated with current and future

roadway networks. MOBILE (version 6.2) is the most current emissions model approved by the EPA. EPA's MOBILE6 model uses data input about the area's climate, elevation and vehicle emissions testing program(s) along with information on roadway network speeds to develop emission factors for specified air pollutants. These emission factors are applied to VMT forecasts from the travel demand model to develop motor vehicle emission estimates for regional emissions analyses. Most of the methodologies and assumptions used in this demonstration are consistent with those used for the PM_{10} Maintenance Plan Emissions Inventory. Thus, average weekday VMT were used to estimate PM_{10} emissions and average daily VMT (i.e., average VMT of weekday and weekend traffic volumes) were used to estimate CO, NO_x, and VOC emissions. Appendix D lists the MOBILE6.2 modeling assumption approved by ICC for use in this demonstration. Appendices F through J list the MOBILE6.2 model input and output files used to conduct the regional emissions analyses.

Specific emissions factors were developed to estimate the Canyon County vehicle contribution to Ada County's VMT. MOBILE6 emission factors for Canyon County vehicles are different than those for Ada County because of Ada's vehicle inspection and maintenance program. According to COMPASS' 2002 Household Travel Survey[2], 32.2% of Canyon County residents commute into Ada County for work. In order to accurately represent and forecast the emissions of the vehicle fleet that drives on Ada County roadways, total emissions were increased to account for the Canyon County vehicles. Appendix E demonstrates how this was accomplished.

Road Dust

Paved road dust makes up the vast majority of PM_{10} emissions from on-road transportation sources. Emissions factors for both paved road and unpaved road dust were calculated using the methodology developed in the *Treasure Valley Road Dust Study: Final Report*[3]. This methodology uses the roadway's setting (i.e., urban vs. rural), speed, and the time of year to develop an emissions factor. Emissions were calculated for each roadway link in COMPASS' travel demand model network. Appendix D demonstrates how the road dust emissions factors were calculated.

Particulate Matter (PM_{10}), Oxides of Nitrogen (NO_X), and Volatile Organic Compounds (VOC)

2006 Baseline Scenario

The baseline scenario uses 2006 population and employment estimates with the anticipated 2006 roadway network (the currently built roadway network and those applicable roadway projects expected to be open to the motoring public by December 31, 2006). 2006 demographics were estimated using census data, building permit data (from 2000 to 2005), preliminary plat data for both counties (as of April 2005), and 2005 employment estimates. **Table II-1** provides a list of applicable roadway projects used in the 2006 baseline model network to estimate PM_{10}, NO_x, and VOC emissions. *Note: The numbers in the "No." column are for reference only.*

Table II-1: Projects in 2006 Baseline Scenario

No.	Project	Location	Number of Lanes	Regionally Significant?	Federal Aid?	Exempt?	Key No.*
1.	Locust Grove Rd	Franklin Rd – Fairview Ave	5	No	No	No	RD054
2.	Locust Grove Rd Overpass	Overland Rd – Franklin Rd	5	No	Yes	No	F201-01/ 8048
3.	Maple Grove Rd	Franklin Rd - Fairview Ave	5	No	Yes	No	F040/ 7192
4.	Maple Grove Rd Extension	McMillan Rd – Chinden Blvd	5	No	No	No	RD066
5.	Overland Rd	Cloverdale Rd – Five Mile Rd	5	Yes - +45K ADT	No	No	RD036/RD202-53

[2] *2002 Treasure Valley Transportation Survey, Final Report*, February 2003. Compass Report #2003-2, Page 16, Figure 2.
[3] Etyemezian et. all, Desert Research Institute; February 15, 2002

6.	Overland Rd	Topaz Rd (1/2 mi. east of Eagle Rd) – Cloverdale Rd	5	Yes**- Principal Arterial	No	No	RD072
7.	SH 55 (Eagle Rd)	I-84 westbound off-ramp – Franklin Rd	7	Yes - Principal Arterial	Yes	No	8815

*Key No: ITD Key Numbers are from the Transportation Improvement Program and the STIP and are strictly numeric (i.e., 6299).
ACHD GIS Numbers are alphanumeric identification numbers (i.e., RD169).
**Based changes in 2030 functional classification proposed as part of *Communities in Motion*.

Table II-2 shows the estimated VMT and PM_{10} emissions from the 2006 baseline scenario. Emissions estimates were developed using emissions factors from MOBILE6.2 and the *Treasure Valley Road Dust Study: Final Report*. The MOBILE6.2 input and output files for the 2006 scenario are listed in Appendix F.

Table II – 2: 2006 Paved Road PM_{10} Estimated Emissions Data

Road Type	Paved Average Weekday VMT	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear Emissions	Total Paved Road PM_{10} Emitted
	[VMT/day]	*[Tons/day]*	*[Tons/day]*	*[Tons/day]*
Interstate	2,109,896	14.26	0.13	14.39
Ramps	105,455	0.95	0.01	0.96
Principal Arterial	2,987,130	24.77	0.19	24.96
Minor Arterial	1,617,074	13.92	0.10	14.02
Collector	393,659	3.80	0.02	3.82
Local	13,827	0.23	<0.01	0.24
Centroid Connectors	608,743	5.24	0.04	5.28
Totals	7,835,784	63.17	0.50	63.67

Table II-3 shows the 2006 average daily VMT and VOC emissions estimates developed using MOBILE 6.2 generated emissions factors. VOC emissions factors were adjusted so that refueling emissions are not included in the estimated emissions. This seems consistent with the methodology used to establish the VOC emissions budgets. Estimates of NO_X emissions are given in **Table II-4**.

Table II – 3: 2006 VOC Estimated Emissions Data					
Road Type	Average Daily VMT	Ada County Vehicle VOC Emissions Factor	Canyon County Vehicle VOC Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	Estimated VOC Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	1,898,906	0.80	0.92	7.25	1.69
Ramps	94,909	1.00	1.15		0.11
Principal Arterials	2,688,417	0.86	1.00		2.58
Minor Arterials	1,455,366	0.88	1.02		1.42
Collectors	354,293	0.94	1.10		0.37
Local	12,444	0.93	1.08		0.01
Centroid Connectors	547,868	1.27	1.47		0.77
Totals	7,052,203	NA	NA	7.25	6.95

[1] A conversion factor of 907,184.74 grams per ton was used.
[2] Refer to Appendix E for specific estimation methodologies.

Table II-4: 2006 NO_X Estimated Emissions Data					
Road Type	Average Daily VMT	Ada County Vehicle NO_X Emissions Factor	Canyon County Vehicle NO_X Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	NO_X Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	1,898,906	2.23	2.36	7.25	4.68
Ramps	94,909	1.89	2.04		0.20
Principal Arterials	2,688,417	1.79	1.92		5.33
Minor Arterials	1,455,366	1.76	1.90		2.85
Collectors	354,293	1.78	1.91		0.70
Local	12,444	1.53	1.65		0.02
Centroid Connectors	547,868	2.10	2.25		1.28
Totals	7,052,203	NA	NA	7.25	15.06

[1] A conversion factor of 907,184.74 grams per ton was used.
[2] Refer to Appendix E for specific estimation methodologies.

2010 Scenario

The 2010 scenario uses 2010 population and employment estimates with the 2006 roadway network and the projects given in **Table II-5** *(Note: The numbers in the "No." column are for reference only).* 2010 demographic projections and allocation to TAZs represents the "Community Choices" growth scenario in *Communities in Motion* endorsed by the COMPASS Board on December 19, 2005. COMPASS' DAC approved the 2010 demographic forecasts and allocations on January 26, 2006.

Table II-5: Projects Added to the 2006 Network for the 2010 Scenario

No.	Project	Location	Number of Lanes	Regionally Significant?	Federal Aid?	Exempt?	Key No.*
8.	30th St (new road)	Main St – Rose St	5	No	No	No	RD202-09
9.	36th St	Hill Rd - Cartwright Rd	3	No	No	Yes – Safety (40CFR93.126)	RD307
10.	Cloverdale Rd	Franklin Rd – Fairview Ave	5	No	No	No	RD202-14
11.	Deer Flat Rd	Ten Mile Rd - SH 69	3	No	No	No	RD125
12.	Eagle Rd	Victory Rd – Ridenbaugh Canal	5	No	No	No	RD203-07
13.	Five Mile Rd	Franklin Rd - Fairview Ave	5	Yes -Principal Arterial	Yes	No	F038/ 7238
14.	Five Mile Rd	Fairview Ave - Ustick Rd	5	No	No	No	RD195A
15.	Floating Feather Rd	Eagle Rd - Edgewood Dr	3	No	No	Yes – Safety (40CFR93.126)	RD257
16.	Franklin Rd	Ten Mile Rd - Linder Rd	5	Yes**- Principal Arterial	Yes	No	RC0165/ 9504
17.	Franklin Rd	Touchmark Rd (east of Eagle Rd) - Five Mile Rd	5	Yes - Principal Arterial	Yes	No	RD282/86 98
18.	Hill Rd Extension	State St - Horseshoe Bend Rd	3	No	No	No	RD308
19.	Maple Grove Rd	Fairview – Goddard	3	No	Yes	Yes – Safety (40CFR93.126)	RD222-01
20.	McMillan Rd	Boise Sports Complex – Eagle Rd	5	No	TBD	No	RD285
21.	Meridian Rd & Main St (Ph 1 of split corridor)	I-84 – Franklin Rd.	5	Yes**- Principal Arterial	No	No	RD205-06
22.	Overland Rd	Linder Rd – Meridian Rd	5	Yes**- Principal Arterial	No	No	RD290
23.	Overland Rd	Vista Ave – Federal Way	3	No	TBD	Yes – Safety (40CFR93.126)	RD169
24.	ParkCenter East Bridge	ParkCenter Blvd - Warm Springs Ave	4	Yes - Principal Arterial	No	No	MA203-02
25.	Ten Mile Rd	Overland Rd – Franklin Rd	5	Yes**- Principal Arterial	TBD	No	RD057
26.	Ten Mile Rd	Franklin Rd – Cherry Ln	5	No	No	No	RD309
27.	Ten Mile Rd	Cherry Ln – Ustick Rd	5	No	No	No	RD188
28.	Ten Mile Rd IC	New Interchange at I-84 and Ten Mile Rd	NA	Yes - Interstate	Garvee	No	
29.	Ustick Rd	Five Mile Rd – Cole Rd	5	No	No	No	RD222

*Key No: ITD Key Numbers are from the Transportation Improvement Program and the STIP and are strictly numeric (i.e., 6299).

ACHD GIS Numbers are alphanumeric identification numbers (i.e., RD169).

**Based changes in 2030 functional classification proposed as part of *Communities in Motion*.

Table II-6 shows estimated weekday VMT and PM_{10} emissions from the 2010 scenario. Emissions estimates were developed using emissions factors from MOBILE 6.2 and the *Treasure Valley Road Dust Study: Final Report*. The MOBILE 6.2 input and output files for 2010 are listed in Appendix G. **Tables II-7** and **II-8** display the VOC and NO_x emissions estimates respectively. VOC emissions factors were adjusted so that refueling emissions are not included in the estimated emissions. This seems consistent with the methodology used to establish the VOC emissions budgets.

Table II-6: 2010 Paved Road PM_{10} Estimated Emissions

Road Type	Paved Average Weekday VMT	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear Emissions	Total Paved Road PM_{10} Emitted
	[VMT/day]	*[Tons/day]*	*[Tons/day]*	*[Tons/day]*
Interstate	2,343,562	15.78	0.11	15.89
Ramps	112,950	1.01	0.01	1.02
Principal Arterial	3,237,715	26.61	0.15	26.76
Minor Arterial	2,113,702	17.94	0.10	18.04
Collector	456,023	4.33	0.02	4.35
Local	18,386	0.32	<0.01	0.33
Centroid Connectors	683,301	5.86	0.03	5.89
Totals	8,965,639	71.85	0.43	72.28

Table II –7: 2010 VOC Estimated Emissions Data

Road Type	Average Daily VMT	Ada County Vehicle VOC Emissions Factor	Canyon County Vehicle VOC Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	Estimated VOC Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	2,109,206	0.55	0.67	7.43	1.31
Ramps	101,655	0.65	0.79		0.07
Principal Arterials	2,913,943	0.59	0.71		1.92
Minor Arterials	1,902,331	0.59	0.72		1.27
Collectors	410,421	0.63	0.77		0.29
Local	16,548	0.62	0.75		0.01
Centroid Connectors	614,971	0.84	1.02		0.58
Totals	8,069,075	NA	NA	7.43	5.45

[1] A conversion factor of 907,184.74 grams per ton was used.

[2] Refer to Appendix E for specific estimation methodologies.

Table II-8: 2010 NO_X Estimated Emissions Data

Road Type	Average Daily VMT	Ada County Vehicle NO_X Emissions Factor	Canyon County Vehicle NO_X Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	NO_X Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	2,109,206	1.35	1.49	7.43	3.16
Ramps	101,655	1.19	1.35		0.13
Principal Arterials	2,913,943	1.13	1.28		3.67
Minor Arterials	1,902,331	1.12	1.27		2.38
Collectors	410,421	1.13	1.27		0.51
Local	16,548	0.98	1.10		0.02
Centroid Connectors	614,971	1.34	1.50		0.91
Totals	8,069,075	NA	NA	7.43	10.78

[1] A conversion factor of 907,184.74 grams per ton was used.
[2] Refer to Appendix E for specific estimation methodologies.

2015 Scenario

The 2015 scenario uses 2015 population and employment estimates with the 2010 roadway network and the projects given in **Table II-9** *(Note: The numbers in the "No." column are for reference only).* 2015 demographic projections and allocation to TAZs represents the "Community Choices" growth scenario in *Communities in Motion* endorsed by the COMPASS Board on December 19, 2005. COMPASS' DAC approved the 2015 demographic forecasts and allocations on January 26, 2006.

Table II-9: Projects Added to the 2010 network for the 2015 Scenario

No.	Project	Location	Number of Lanes	Regionally Significant?	Federal Aid? **	Exempt?	Key No.*
30.	36th St	State St – Taft St	4-7	No	TBD	No	
31.	Amity Rd	Federal Way – Surprise Wy	2-3	No	No	No	RD202-11
32.	Broadway IC	Reconstruct – add new ramps and lanes	N.A.	Yes - Interstate	Garvee	Yes - (40CFR93.127)	
33.	Cloverdale Rd	Amity Rd - Victory Rd	3-5	No	TBD	No	
34.	Cloverdale Rd	Victory Rd – Overland Rd	3-5	No	TBD	No	
35.	Cloverdale Rd	Fairview Ave – Ustick Rd	5	No	No	No	RC0087
36.	Cloverdale Rd	Ustick Rd – McMillan Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
37.	Eagle Rd	Amity Rd – Victory Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
38.	Fairview Ave	Meridian Rd – Locust Grove Rd	5-7	Yes – Principal Arterial	TBD	No	RC0135

39.	Fairview Ave	Locust Grove Rd – Eagle Rd	5-7	Yes – Principal Arterial	TBD	No	RC0133
40.	Fairview Ave	Eagle Rd – Cloverdale Rd	5-7	Yes – Principal Arterial	TBD	No	RC0130
41.	Fairview Ave	Cloverdale Rd – Five Mile Rd	5-7	Yes – Principal Arterial	No	No	RC0127
42.	Fairview Ave	Five Mile Rd – Maple Grove Rd	5-7	Yes – Principal Arterial	No	No	RC0131
43.	Gowen IC	Reconstruct	NA	Yes - Interstate	Garvee	Yes - (40CFR93.127)	
44.	I-84	Ada Co. Line – Ten Mile Rd IC	6	Yes - Interstate	Garvee	No	
45.	I-84	Ten Mile Rd – Meridian Rd	8	Yes - Interstate	Garvee	No	
46.	I-84	Cole IC - Orchard IC	8	Yes - Interstate	Garvee	No	
47.	I-84	Orchard IC - Vista IC	8	Yes – Interstate	Garvee	No	
48.	I-84	Vista IC - Broadway IC	8	Yes - Interstate	Garvee	No	
49.	I-84	Broadway IC – Gowen IC	8	Yes - Interstate	Garvee	No	
50.	Lake Hazel Rd	Maple Grove Rd – Pleasant Valley Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
51.	Linder Rd	Victory Rd – Overland Rd	2-3	No	TBD	Yes – Safety (40CFR93.126)	RD077
52.	Maple Grove Rd	Desert Ave – Amity Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
53.	McMillan Rd	Meridian – Locust Grove Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
54.	McMillan Rd	Locust Grove Rd – Boise Sports Complex	5	No	TBD	No	RC0240
55.	McMillan Rd	Five Mile Rd – Maple Grove Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
56.	Meridian Rd IC	Improvement: cloverleaf ramp for WB I-84 - SB SH 69 (Kuna-Meridian Rd)	NA	Yes - Interstate	Garvee	Yes - (40CFR93.127)	
57.	Orchard IC	Reconstruct - add new ramps and lanes	NA	Yes - Interstate	Garvee	Yes - (40CFR93.127)	
58.	Orchard Rd	Gowen Rd – Victory Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
59.	Pine St – new road	Locust Grove Rd - Eagle Rd (Developer Funded)	3	No	No	No	
60.	SH 16 IC	I-84 – Vicinity of McDermott	TBD	Yes	Garvee	No	
61.	SH 16 River Crossing, Expressway	Connect SH 16 to US 20/26 (ICs at Chapparal, Beacon Light, SH 44, US20/26, Ustick)	2-5	Yes – Principal Arterial	Garvee	No	

62.	Ustick Rd	Meridian - Locust Grove Rd	5	Yes***-Principal Arterial	TBD	No	RD202-37
63.	Ustick Rd	Locust Grove Rd - Eagle Rd	5	Yes***-Principal Arterial	TBD	No	RD205-05
64.	Ustick Rd	Eagle Rd - Cloverdale Rd	5	No	TBD	No	RD205-04
65.	Ustick Rd	Cloverdale Rd – Five Mile Rd	5	No	No	No	RD220
66.	Victory Rd	Eagle Rd – Cloverdale Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
67.	Vista IC	Reconstruct - add new ramps and lanes	NA	Yes - Interstate	Garvee	Yes - (40CFR93.127)	

*Key No: ITD Key Numbers are from the Transportation Improvement Program and the STIP and are strictly numeric (i.e., 6299).ACHD GIS Numbers are alphanumeric identification numbers (i.e., RD169).Blanks indicate an ITD Key or ACHD GIS number has yet to be assigned.
** The fiscal constraints of a long-range plan are more flexible than those of a TIP. Therefore, TBD means To Be Determined, as a specific funding source (or sources) has not been identified.
***Based changes in 2030 functional classification proposed as part of *Communities in Motion*.

Table II-10 shows the estimated weekday VMT and PM_{10} emissions for the 2015 scenario. Emissions estimates were developed using emissions factors from MOBILE 6.2 and the *Treasure Valley Road Dust Study: Final Report*. The MOBILE 6.2 input and output files for 2015 are listed in the Appendix H. **Tables II-11 and II-12** display the VOC and NO_x emissions estimates respectively. VOC emissions factors were adjusted so that refueling emissions are not included in the estimated emissions. This seems consistent with the methodology used to establish the VOC emissions budgets.

Table II-10: 2015 Paved Road PM_{10} Estimated Emissions

Road Type	Paved Average Weekday VMT	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear Emissions	Total Paved Road PM_{10} Emitted
	[VMT/day]	*[Tons/day]*	*[Tons/day]*	*[Tons/day]*
Interstate	3,037,451	20.63	0.11	20.74
Ramps	154,716	1.38	0.01	1.39
Principal Arterial	3,698,797	31.71	0.13	31.84
Minor Arterial	2,295,837	20.07	0.08	20.15
Collector	462,735	4.47	0.02	4.49
Local	19,485	0.33	0.00	0.33
Centroid Connectors	788,099	6.71	0.03	6.74
Totals	10,457,120	85.30	0.38	85.68

Table II –11: 2015 VOC Estimated Emissions Data					
Road Type	Average Daily VMT	Ada County Vehicle VOC Emissions Factor	Canyon County Vehicle VOC Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	Estimated VOC Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	2,733,706	0.38	0.49	7.65	1.18
Ramps	139,245	0.44	0.57		0.07
Principal Arterials	3,328,917	0.41	0.53		1.54
Minor Arterials	2,066,253	0.41	0.53		0.95
Collectors	416,462	0.41	0.53		0.19
Local	17,537	0.41	0.55		0.01
Centroid Connectors	709,289	0.58	0.74		0.46
Totals	9,411,409	NA	NA	7.65	4.40

[1] A conversion factor of 907,184.74 grams per ton was used.
[2] Refer to Appendix E for specific estimation methodologies.

Table II-12: 2015 NO_X Estimated Emissions Data					
Road Type	Average Daily VMT	Ada County Vehicle NO_X Emissions Factor	Canyon County Vehicle NO_X Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	NO_X Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	2,733,706	0.73	0.89	7.65	2.23
Ramps	139,245	0.64	0.82		0.10
Principal Arterials	3,328,917	0.61	0.76		2.28
Minor Arterials	2,066,253	0.61	0.76		1.41
Collectors	416,462	0.61	0.77		0.29
Local	17,537	0.61	0.66		0.01
Centroid Connectors	709,289	0.72	0.90		0.57
Totals	9,411,409	NA	NA	7.65	6.89

[1] A conversion factor of 907,184.74 grams per ton was used.

[2] Refer to Appendix E for specific estimation methodologies.

2025 Scenario

The 2025 scenario uses 2025 population and employment estimates with the 2015 roadway network and the projects given in **Table II-13** *(Note: The numbers in the "No." column are for reference only).* 2025 demographic projections and allocation to TAZs represents the "Community Choices" growth scenario in Communities in Motion endorsed by the COMPASS Board on December 19, 2005. COMPASS' DAC approved the 2025 demographic forecasts and allocations on January 26, 2006.

Table II-13: Projects Added to the 2015 network for the 2025 Scenario

No.	Project	Location	Number of Lanes	Regionally Significant?	Federal Aid?**	Exempt?	Key No.*
68.	36th St	Extend 36th St from existing to Cartwright Rd and Bogus Basin Rd	2-3	No	No	No	RD202-04
69.	Five Mile Rd	Lake Hazel Rd – Amity Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
70.	Five Mile Rd	Amity Rd – Victory Rd	5	No	TBD	No	
71.	Five Mile Rd Overpass	Overland Rd – Franklin Rd	4-5	No***	TBD	No	
72.	Hill Rd	Outlook Ave – Collister Dr	3	No	TBD	Yes – Safety (40CFR93.126)	
73.	Hill Rd	Collister Dr – 36th St	3	No	TBD	Yes – Safety (40CFR93.126)	
74.	Linder Rd Overpass	Extend over I-84	2-3	No	TBD	No	
75.	Linder Rd	Franklin Rd to Ustick Rd	5	No	No	No	RD077
76.	Locust Grove Rd	Victory Rd - Overland Rd	5	No	TBD	No	
77.	Maple Grove Rd	Amity Rd – Victory Rd	3-5	No	TBD	No	
78.	Maple Grove Rd	Victory Rd - Overland Rd	3	No	TBD	Yes – Safety (40CFR93.126)	
79.	Meridian Rd & Main St (Ph 2 of split corridor)	Franklin - Fairview Ave	5	Yes***-Principal Arterial	TBD	No	RD205-07
80.	Rose Hill St	Hubble Dr – Roosevelt St	3	No	TBD	Yes – Safety (40CFR93.126)	
81.	Victory Rd	Cloverdale Rd – Five Mile Rd	3-5	No	TBD	No	

*Key No: ITD Key Numbers are from the Transportation Improvement Program and the STIP and are strictly numeric (i.e., 6299). ACHD GIS Numbers are alphanumeric identification numbers (i.e., RD169). Blanks indicate an ITD Key or ACHD GIS number has yet to be assigned.

** The fiscal constraints of a long-range plan are more flexible than those of a TIP. Therefore, TBD means To Be Determined, as a funding source has not been identified.

***Based changes in 2030 functional classification proposed as part of *Communities in Motion*.

Table II-14 shows estimated weekday VMT and PM_{10} emissions for the 2025 scenario. Emissions estimates were developed using MOBILE6.2 generated emissions factors and the *Treasure Valley Road Dust Study: Final Report.* The MOBILE 6.2 input and output files for 2025 are listed in the Appendix I. **Tables II-15 and II-16** display the VOC and NO_x emissions estimates respectively.

Table II-14: 2025 Paved Road PM_{10} Estimated Emissions				
Road Type	Paved Average Weekday VMT	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear Emissions	Total Paved Road PM_{10} Emitted
	[VMT/day]	*[Tons/day]*	*[Tons/day]*	*[Tons/day]*
Interstate	3,655,053	24.66	0.11	24.77
Ramps	181,942	1.61	0.01	1.62
Principal Arterial	4,562,828	38.80	0.14	38.94
Minor Arterial	3,337,900	28.47	0.10	28.57
Collector	594,459	5.63	0.02	5.65
Local	37,926	0.73	0.00	0.73
Centroid Connectors	933,756	7.89	0.03	7.92
Totals	13,303,864	107.79	0.41	108.20

Table II –15: 2025 VOC Estimated Emissions Data					
Road Type	Average Daily VMT	Ada County Vehicle VOC Emissions Factor	Canyon County Vehicle VOC Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	Estimated VOC Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	3,289,548	0.23	0.35		0.88
Ramps	163,748	0.26	0.40		0.05
Principal Arterials	4,106,545	0.26	0.37		1.21
Minor Arterials	3,004,110	0.25	0.37	7.97	0.87
Collectors	535,013	0.25	0.38		0.16
Local	34,133	0.25	0.37		0.01
Centroid Connectors	840,380	0.37	0.54		0.36
Totals	11,973,477	NA	NA	7.97	3.54

[1] A conversion factor of 907,184.74 grams per ton was used. [2] Refer to Appendix E for specific estimation methodologies.

Table II-16: 2025 NO_X Estimated Emissions Data					
Road Type	Average Daily VMT	Ada County Vehicle NO_X Emissions Factor	Canyon County Vehicle NO_X Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	NO_X Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	3,289,548	0.28	0.44	7.97	1.05
Ramps	163,748	0.29	0.48		0.05
Principal Arterials	4,106,545	0.26	0.42		1.22
Minor Arterials	3,004,110	0.26	0.42		0.89
Collectors	535,013	0.26	0.43		0.16
Local	34,133	0.22	0.35		0.01
Centroid Connectors	840,380	0.31	0.50		0.30
Totals	11,973,477	NA	NA	7.97	3.68

[1] A conversion factor of 907,184.74 grams per ton was used.
[2] Refer to Appendix E for specific estimation methodologies.

2030 Scenario

The 2030 growth scenario, "Community Choices," was developed as part of *Communities in Motion* and endorsed by the COMPASS Board December 19, 2005. The population and employment estimates developed as part of the "Community Choices" growth scenario were analyzed with a 2030 roadway network. The 2030 network is comprised of the 2025 travel demand model network and the projects listed in **Table II-17**.

Table II-17: Projects Added to the 2025 network for the 2030 Scenario							
No.	Project	Location	Number of Lanes	Regionally Significant?	Federal Aid?**	Exempt?	Key No.*
82.	Amity Rd	Ada Co. Line – Cloverdale Rd	4-5	Yes***-Principal Arterial	TBD	No	
83.	Beacon Light Rd	Extend Beacon Light Rd from Ada Co. Line – SH 16	2	No	TBD	No	
84.	Beacon Light Rd	SH 16 – SH 55	4-5	No	TBD	No	
85.	Black Cat Rd	Franklin Rd – Chinden Blvd	4-5	No	TBD	No	
86.	Cherry Ln	Ada Co. Line – Ten Mile Rd	4-5	Yes***-Principal Arterial	TBD	No	
87.	Cloverdale Rd	Lake Hazel Rd - Amity Rd	3-5	No	TBD	No	
88.	Cloverdale Rd	McMillan Rd-US 20/26	3-5	No	TBD	No	
89.	Cole Rd	Desert Ave – Victory Rd	5	No	No	No	RC0094
90.	Emerald St	Five Mile Rd – Orchard St	5	Yes - +45K ADT	TBD	No	

91.	Fairview Ave	Maple Grove Rd – Orchard Rd.	5-7	Yes – Principal Arterial	No	No	
92.	Federal Way (Developer Funded)	Isaac Canyon IC – S/o SH 21	5	No	No	No	
93.	Franklin Rd	Ada Co. Line – Black Cat Rd	5	Yes***- Principal Arterial	TBD	No	RC0161
94.	Franklin Rd	Black Cat Rd – Ten Mile Rd	5	Yes***- Principal Arterial	Yes	No	RC0152/ 9637
95.	Glenwood St / Cole Rd couplet	Two way couplet to Mountain View Dr	3	Yes – Principal Arterial	TBD	No	
96.	Lake Hazel Rd	Ada Co. Line – Maple Grove Rd	4-5	Yes***- Principal Arterial	TBD	No	
97.	Lake Hazel Rd (Gowen Rd Realignment)	Gowen Rd – Eisenman	4-5	Yes***- Principal Arterial	TBD	No	
98.	Linder Rd	Kuna Mora Rd – Victory Rd	4-5	No	TBD	No	
99.	Linder Rd	Ustick Rd – Beacon Light Rd	4-5	No	TBD	No	
100.	SH 44	Ada Co. Line – SH 16	5	Yes – Principal Arterial	Yes	No	
101.	SH 44	SH 16 – Ballantyne	5	Yes – Principal Arterial	Yes	No	
102.	Technology Way – new road	S/o Micron to Isaac's Canyon IC	5	No	No	No	
103.	Ten Mile Rd	Lake Hazel Rd – Overland Rd	5	Yes***- Principal Arterial	TBD	No	
104.	Ten Mile Rd	Ustick Rd – US 20/26	5	No	TBD	No	
105.	Three City's River Crossing (new road)	Chinden Blvd – State St	5	Yes – Principal Arterial	Yes	No	9189
106.	US 20/26	Ada Co. Line – McDermott	5	Yes – Principal Arterial	TBD	No	
107.	US 20/26	McDermott – Eagle Rd	5	Yes – Principal Arterial	TBD	No	
108.	Ustick Rd	Ada Co. Line – Meridian Rd	5	Yes***- Principal Arterial	TBD	No	
109.	Ustick Rd	Cole Rd – Curtis Rd	5	No	TBD	No	RD220

Note: The proposed widening of State St to 7 lanes from Gary Ln to 28th St is proposed to support transit/HOV only and is therefore not included in this list.

*Key No: ITD Key Numbers are from the Transportation Improvement Program and the STIP and are strictly numeric (i.e., 6299). ACHD GIS Numbers are alphanumeric identification numbers (i.e., RD169). Blanks indicate an ITD Key or ACHD GIS number has yet to be assigned.

** The fiscal constraints of a long-range plan are more flexible than those of a TIP. Therefore, TBD means To Be Determined, as a funding source has not been identified.
***Based changes in 2030 functional classification proposed as part of *Communities in Motion*.

Table II-18 shows estimated weekday VMT and PM_{10} emissions for the 2030 "Community Choices" scenario. Emissions estimates were developed using MOBILE6.2 generated emissions factors and the *Treasure Valley Road Dust Study: Final Report*. The MOBILE 6.2 input and output files for 2030 are listed in the Appendix J. **Tables II-19 and II-20** display the VOC and NO_x emissions estimates respectively.

Table II-18: 2030 Paved Road PM_{10} Estimated Emissions

Road Type	Paved Average Weekday VMT	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear Emissions	Total Paved Road PM_{10} Emitted
	[VMT/day]	*[Tons/day]*	*[Tons/day]*	*[Tons/day]*
Interstate	3,802,094	25.55	0.12	25.67
Ramps	190,421	1.61	0.01	1.62
Principal Arterial	5,316,117	44.89	0.16	45.05
Minor Arterial	3,426,553	29.52	0.10	29.62
Collector	604,135	5.76	0.02	5.78
Local	25,099	0.42	0.00	0.42
Centroid Connectors	971,684	8.43	0.03	8.46
Totals	14,336,103	116.18	0.44	116.62

Table II–19: 2030 VOC Estimated Emissions Data

Road Type	Average Daily VMT	Ada County Vehicle VOC Emissions Factor	Canyon County Vehicle VOC Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	Estimated VOC Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	3,421,885	0.22	0.34	7.86	0.88
Ramps	171,379	0.25	0.38		0.05
Principal Arterials	4,784,505	0.24	0.36		1.32
Minor Arterials	3,083,898	0.24	0.36		0.85
Collectors	543,721	0.24	0.36		0.15
Local	22,589	0.24	0.36		0.01
Centroid Connectors	874,515	0.36	0.52		0.36
Totals	12,902,492	NA	NA	7.86	3.62

[1] A conversion factor of 907,184.74 grams per ton was used.
[2] Refer to Appendix E for specific estimation methodologies.

Table II-20: 2030 NO_X Estimated Emissions Data					
Road Type	Average Daily VMT	Ada County Vehicle NO_X Emissions Factor	Canyon County Vehicle NO_X Emissions Factor	% Of Ada VMT by Canyon County Vehicles[2]	NO_X Emitted[1]
	[VMT/day]	*[g/mile]*	*[g/mile]*		*[Tons/day]*
Interstate	3,421,885	0.22	0.39	7.86	0.89
Ramps	171,379	0.24	0.43		0.05
Principal Arterials	4,784,505	0.21	0.37		1.16
Minor Arterials	3,083,898	0.21	0.37		0.75
Collectors	543,721	0.21	0.38		0.13
Local	22,589	0.18	0.31		0.00
Centroid Connectors	874,515	0.25	0.44		0.26
Totals	12,902,492	NA	NA	7.86	3.24

[1] A conversion factor of 907,184.74 grams per ton was used.
[2] Refer to Appendix E for specific estimation methodologies.

"Community Choices" vs. "Trend" Growth Scenarios

The 2030 transportation system outlined in *Communities in Motion* was tested with a "Trend" growth scenario to determine what role growth assumptions would play in regional emissions analyses of Northern Ada County. "Trend" growth follows common patterns of historical and current residential densities, much of which is low-density suburban-style housing, resulting in growth extending well beyond all areas of impact. "Trend" is based on the amount of vacant land, community redevelopment assumptions, current comprehensive plans, and existing densities. Overall, the "Trend" growth scenario represents a continuation of the current land use, employment, and population trends.

Table II-21 shows the changes in the regional emissions analysis resulting from the use of the "Community Choices" growth scenario verses the "Trend" for the same 2030 transportation system. Higher density developments along existing transportation corridors tend to reduce trip lengths and promote alternative modes of travel. Thus, the VMT estimates for a "Community Choices" growth scenario are lower than those for a "Trend" scenario. A reduction in VMT results in a reduction of emissions.

Table II-21: 2030 Estimated Vehicle Emissions						
Roadway Type	PM10 [tons/day]		NOx [tons/day]		VOC [tons/day]	
	Trend	Community Choices	Trend	Community Choices	Trend	Community Choices
Interstate	27.62	25.67	0.93	0.89	0.95	0.88
Ramps	1.69	1.62	0.05	0.05	0.05	0.05
Principal Arterials	48.73	45.05	1.24	1.16	1.41	1.32
Minor Arterials	37.02	29.62	0.94	0.75	1.07	0.85
Collectors	7.22	5.78	0.17	0.13	0.19	0.15
Local Roads	0.54	0.42	0.01	0.00	0.01	0.01
Centroid Connectors	10.47	8.46	0.32	0.26	0.45	0.36
Total	133.29	116.62	3.66	3.24	4.13	3.62

Unpaved Road Dust

Because unpaved roads are not included in any of COMPASS' model networks, the *Treasure Valley Road Dust Study: Final Report* assumed unpaved roadways are traveled at an average speed of 25 miles per hour. This assumption results in a constant emissions factor of approximately 0.315 pounds road dust emissions per vehicle mile traveled on unpaved roadways. **Table II-22** displays the information used to estimate the PM_{10} emissions from unpaved roads. Average daily trips on unpaved roadways in Ada County were assumed, as in past demonstrations, to be 120 vehicles per day.

Table II-22: Unpaved Road Dust PM_{10} Emissions				
Analysis Year*	ADT	Unpaved Roads *[Miles]*	Unpaved VMT *[VMT/day]*	Unpaved Road Dust Emissions *[Tons/day]*
2006	120	78.44	9,413	1.48
2010	120	73.76	8,851	1.39
2015	120	65.96	7,915	1.24
2025	120	50.36	6,043	0.95
2030	120	42.56	5,107	0.80

Note: In 1999, the Total Unpaved Roads=106.38 miles, including 65.07 miles of roads and 41.31 miles of alleys. Assume 120 trips/day on unpaved roads (ICF Kaiser PM-10 Report 10/97)

Future unpaved road inventory decreases due to ACHD commitment to an ongoing program of paving unpaved roads.

** 2005 Unpaved Road =80.0 miles, based on information from ACHD staff Summer2004. Future Year Unpaved Roads based on interpolated road paving rate of 1.95% per year from 2005.*

Carbon Monoxide Emissions

To satisfy IDEQ requirements, a regional CO emissions analysis was conducted using EPA's MOBILE emissions factor model and the COMPASS travel demand model. Specific information on the models and their inputs can be found in previous sections of this document. "Build" emissions were estimated and compared to "no build" emissions estimates. A "build" scenario estimates emissions for a given analysis year assuming the appropriate programmed/planned roadway/transit projects have been constructed. Conversely, a "no build" scenario estimates emissions for a given analysis year using the transportation system as it exists in the base year (e.g. before programmed or planned projects are built). Both the "build" and "no build" scenarios are based on the "Community Choices" growth assumptions. This

comparison provides the CO emissions impacts to the region from the planned transportation system.

As a supplement to the "build/no build" analysis, CO "build" emissions are compared to emissions forecasts published in both the *Limited Maintenance Plan and Request for Redesignation to Attainment for the Northern Ada County Carbon Monoxide Not-Classified Nonattainment Area* and the *Northern Ada County PM_{10} SIP Maintenance Plan and Redesignation Request*. This information is intended to aid air quality planning efforts when determining the need for CO mitigation measures.

2006 (Baseline) Scenario

The same baseline scenario used to estimate PM_{10}, NO_X, and VOC emissions was also used to estimate CO emissions. It includes 2006 population and employment estimates with an anticipated 2006 roadway network. **Table II-1** provides a list of applicable roadway projects used in the 2006 baseline model network. **Table II-23** shows estimated VMT and CO emissions from the 2006 baseline scenario. Appendix F lists the MOBILE 6.2 input and output files for the 2006 scenario.

TABLE II-23: 2006 CO Emissions Estimation

Road Type	Average Daily VMT *[VMT/day]*	Ada County Composite Vehicle CO Emissions Factor[2] *[g/mile]*	Canyon County Composite Vehicle CO Emissions Factor[2] *[g/mile]*	% Of Canyon County Vehicles VMT in Ada[3]	Estimated CO Emitted[1] *[Ton/day]*
Interstate	1,898,906	17.55	20.79	7.25	37.23
Ramps	94,909	21.18	24.67		2.24
Principal Arterials	2,688,417	16.06	19.01		48.24
Minor Arterials	1,455,366	15.79	18.69		25.67
Collector	354,293	15.68	18.62		6.21
Local	12,444	13.60	16.33		0.19
Centroid Connectors	547,868	17.62	21.40		10.80
Totals:	7,052,203	NA	NA	7.25	130.58

[1] A conversion factor of 907,184.74 grams per ton was used.
[2] CO emissions factors used are 2007-winter. Refer to the PM_{10} Maintenance Plan, Appendix A, pg 4-5.
[3] Refer to Appendix E for specific estimation methodologies.

Build Scenarios

The "build" scenarios use transportation networks and demographic assumption specific to the analysis year. These are the same scenarios used to estimate PM_{10}, NO_X, and VOC emissions. **Tables II-5, II-9, II-13, and II-17** provide more detailed information on the roadway projects used to develop the "build" scenario networks. **Table II-24** gives the "build" CO emissions estimates for 2010, 2015, 2025, and 2030.

Table II-24: "Build" Scenario Average Daily VMT and CO Emissions

	Year			
	2010	2015	2025	2030
Average Daily "Build" VMT	8,069,076	9,411,409	11,973,478	12,902,492

"Build" CO Emissions (*Ton/day)*	111.95	106.71	113.69	120.24

No Build Scenarios

The "no build" scenarios use the 2006 (baseline) transportation network with the demographic assumption specific to the analysis year. **Table II-1** provides more detailed information on the roadway projects included in the 2006 transportation network. **Table II-25** gives the "no build" CO emissions estimates for 2010, 2015, 2025, and 2030.

Table II-25: "No Build" Scenario Average Daily VMT and CO Emissions

	Year			
	2010	2015	2025	2030
Average Daily "No Build" VMT	8,030,440	9,340,602	11,936,883	12,824,063
"No Build" CO Emissions *(Ton/day)*	111.45	104.53	112.31	117.75

III. CONCLUSIONS

PM_{10} Budget Test

Table III-1 gives the results of the PM_{10} Budget Test for the Northern Ada County portion of *Communities in Motion*.

Table III-1: Results of PM_{10} Budget Test

	Year				
	2006 *[Tons/day]*	2010 *[Tons/day]*	2015 *[Tons/day]*	2025 *[Tons/day]*	2030 *[Tons/day]*
Estimated Emissions	65.13	72.28	85.67	108.20	116.62
Budget	153.00	153.00	153.00	153.00	153.00
Results	-87.87	-80.72	-67.33	-44.80	-36.38

The results of the budget test shows that the emissions impacts associated with the planned improvements to the Northern Ada County transportation system (projects listed in **Tables II-1, II-5, II-9, II-13, and II-17)** will not exceed the PM_{10} emissions budgets established by the Northern Ada County PM_{10} SIP Maintenance Plan.

VOC Budget Test

Table III-2 gives the results of the VOC Budget Test for the Northern Ada County portion of *Communities in Motion*.

Table III-2: Results of VOC Budget Test					
	Year				
	2006 *[Tons/day]*	2010 *[Tons/day]*	2015 *[Tons/day]*	2025 *[Tons/day]*	2030 *[Tons/day]*
Estimated Emissions	6.96	5.44	4.34	3.51	3.59
Budget	10.40	6.10	5.00	5.00	5.00
Results	-3.44	-0.66	-0.66	-1.49	-1.41

The results of the budget test shows that the emissions impacts associated with the planned improvements to the Northern Ada County transportation system (projects listed in **Tables II-1, II-5, II-9, II-13, and II-17)** will not exceed the VOC emissions budgets established by the Northern Ada County PM_{10} SIP Maintenance Plan.

NO_X Budget Test

Table III-3 gives the results of the NO_X Budget Test for the Northern Ada County portion of *Communities in Motion.*

Table III-3: Results of NO_X Budget Test					
	Year				
	2006 *[Tons/day]*	2010 *[Tons/day]*	2015 *[Tons/day]*	2025 *[Tons/day]*	2030 *[Tons/day]*
Estimated Emissions	15.05	10.80	6.89	3.69	3.25
Budget	21.00	11.20	7.80	7.80	7.80
Results	-5.95	-0.40	-0.91	-4.11	-4.55

The results of the budget test shows that the emissions impacts associated with the planned improvements to the Northern Ada County transportation system (projects listed in **Tables II-1, II-5, II-9, II-13, and II-17**) will not exceed the NO_X emissions budgets established by the Northern Ada County PM_{10} SIP Maintenance Plan.

CO Planning Analyses

Build/No Build Emissions Comparison:

Tables III-4 through III–7 compare the "build" and "no build" emissions scenarios for each analysis year. Again, the purpose of these comparisons is not to demonstrate conformity to the CO Limited Maintenance Plan, but rather to facilitate good air quality planning in Northern Ada County.

Table III-4: 2010 Build/No Build Comparison		
Scenario	**Average Daily VMT** *[VMT/day]*	**CO Emissions** *[Ton/day]*
2010 Build	8,069,076	111.95
2010 No Build	8,030,440	111.45
Result	***38,636***	***0.50***

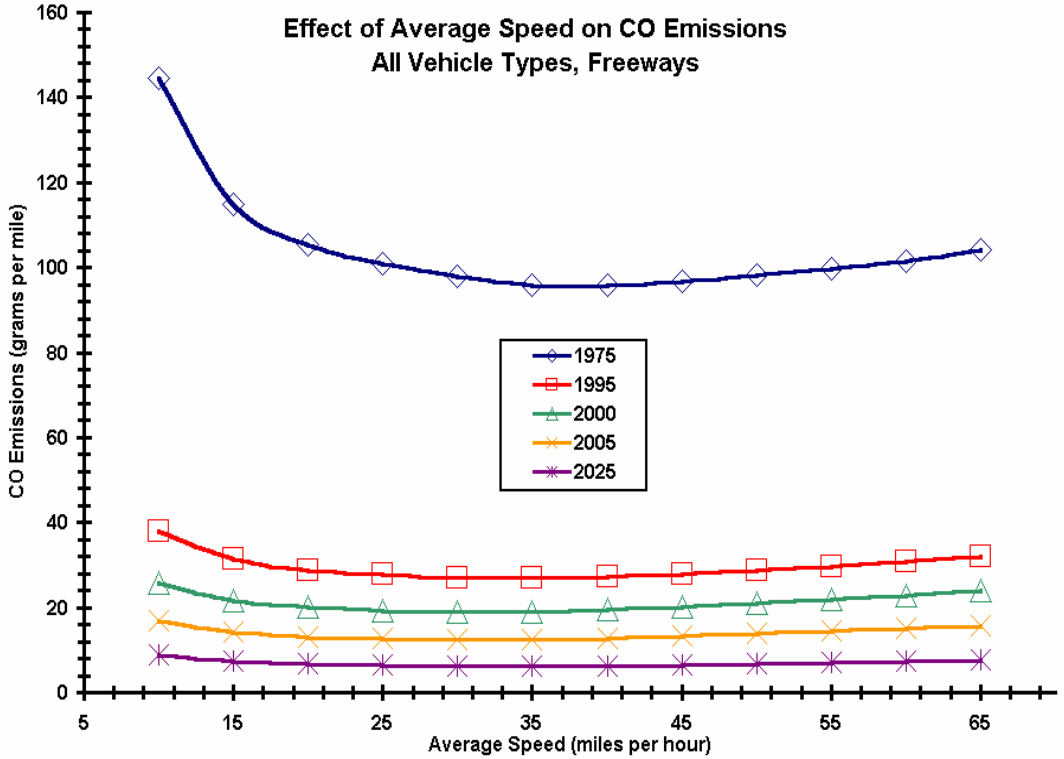
Table III-5: 2015 Build/No Build Comparison		
Scenario	**Average Daily VMT** *[VMT/day]*	**CO Emissions** *[Ton/day]*
2015 Build	9,411,409	106.71
2015 No Build	9,340,602	104.53
Result	***70,807***	***2.18***

Table III-6: 2025 Build/No Build Comparison		
Scenario	**Average Daily VMT** *[VMT/day]*	**CO Emissions** *[Ton/day]*
2025 Build	11,973,478	113.69
2025 No Build	11,936,833	112.31
Result	***36,645***	***1.38***

Table III-7: 2030 Build/No Build Comparison		
Scenario	**Average Daily VMT** *[VMT/day]*	**CO Emissions** *[Ton/day]*
2030 Build	12,902,492	120.24
2030 No Build	12,824,063	117.75
Result	***78,429***	***2.49***

Each comparison shows an increase in CO emissions for the "build" scenarios, even with a projected decrease in "build" network VMT in 2025. These minor increases in CO emission estimates are due to a reduction in roadway congestion, which increased network speeds in the COMPASS model. MOBILE6 CO emissions factors are very sensitive to speed. As **Figure III-1** shows, MOBILE6 CO emissions factors decreases as speed increases until approximately 35 miles per hour. However, when speeds increase above 40 miles per hour, MOBILE6 CO emissions factors begin to increase.

Figure III-1: Effect of Average Speed on CO Emissions for Freeway Facility types (adapted from Figure 28 of EPA's *Sensitivity Analysis of MOBILE6*, EPA420-R-02-035, December 2002)



As a result of this analysis, IDEQ may choose to require CO mitigation measures. However, COMPASS' past work with several local governments to mitigate open burning impacts may be considered more than adequate to offset the CO emissions increases forecasted in "build" scenarios.

Emissions Inventory Comparisons:

To aid in the evaluation of the CO impacts related to *Communities in Motion*, "build" emissions are compared to the on-road mobile portions of two relevant IDEQ emissions inventories in **Tables III-8 and III-9**. On-road mobile CO emissions estimates were developed by IDEQ for both the *Limited Maintenance Plan and Request for Redesignation to Attainment for the Northern Ada County Carbon Monoxide Not-Classified Nonattainment Area* and the *Northern Ada County PM_{10} SIP Maintenance Plan and Redesignation Request*.

Table III-8: Comparison of the "Build" Scenarios to the CO Limited Maintenance Plan On-road Mobile Emissions Inventory

	Year				
	2006 *[Ton/day]*	2010 *[Ton/day]*	2015 *[Ton/day]*	2025 *[Ton/day]*	2030 *[Ton/day]*
"Build" Scenario	142.18	111.95	106.71	113.69	120.24
On-road Inventory*	154.16	162.46	162.46	162.46	162.46
Result	***-11.98***	***-50.51***	***-55.75***	***-48.77***	***-42.22***

*From Table VI.H-4 in Appendix A of the *Limited Maintenance Plan and Request for Redesignation to Attainment for the Northern Ada County Carbon Monoxide Not-Classified Nonattainment Area*. Inventory forecasts for 2000 are used to compare to 2006. Inventory forecasts for 2010 are used to compare to 2015, 2025, and 2030.

Table III-9: Comparison of the "Build" Scenarios to the CO On-road Mobile Emissions Inventory in the PM_{10} Maintenance Plan					
	Year				
	2006 *[Ton/day]*	2010 *[Ton/day]*	2015 *[Ton/day]*	2025 *[Ton/day]*	2030 *[Ton/day]*
"Build" Scenario	130.88	111.95	106.71	113.69	120.24
On-road Inventory*	154.27	125.49	123.29	126.78	126.78
Result	***-23.39***	***-13.54***	***-16.58***	***-13.09***	***-6.54***

*Emissions estimates from Tables 4-3, 9-1, 9-2, and 9-3 in Appendix A of the *Northern Ada County PM_{10} SIP Maintenance Plan and Redesignation Request*. Inventory forecasts for 1999 are used to compare to 2006. Inventory forecasts for 2020 are used to compare to 2025 and 2030.

These comparisons show that, despite the results of the build/no-build comparisons, the programmed/planned transportation system in Northern Ada County will not increase CO emissions above levels already anticipated by IDEQ.

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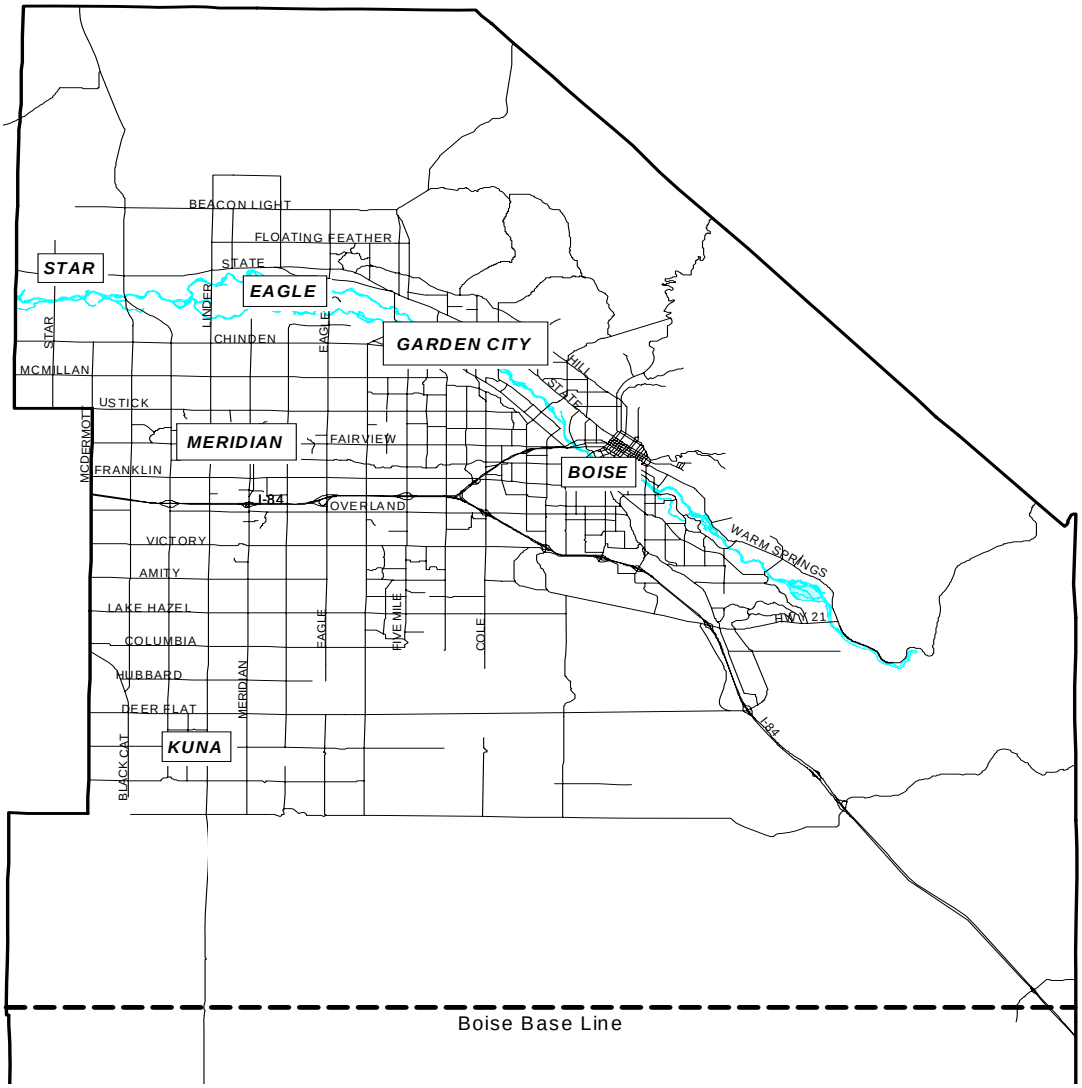
APPENDICES

APPENDIX A

Northern Ada County PM_{10} and CO Maintenance Area



APPENDIX B

GLOSSARY OF ACRONYMS

ACHD		Ada County Highway District
ADT		Average Daily Traffic
AQB		Air Quality Board
CAAA		Clean Air Act Amendment
CIM		*Communities in Motion*
CMAQ		Congestion Mitigation and Air Quality, a federal funding source for air quality
CO		Carbon Monoxide
COMPASS		Community Planning Association of Southwest Idaho
DAC		Demographic Advisory Committee
DOT		US. Department of Transportation
EPA		US. Environmental Protection Agency
FHWA		Federal Highway Administration
FTA		Federal Transit Administration
g		Grams
IDEQ		Idaho Department of Environmental Quality
I/M		Inspection and Maintenance Program
ITD		Idaho Transportation Department
kg		Kilograms
MPO		Metropolitan Planning Organization
NAAQS		National Ambient Air Quality Standards
NHS		National Highway System
NO_x		Oxides of Nitrogen
NRS		Not Regionally Significant
PM_{10}		Particulate Matter with a diameter less than 10 micrometers (i.e. $1x10^{-6}$)
SH		State Highway
SIP		State Implementation Plan
STIP		State Transportation Improvement Program
TCM		Transportation Control Measure
TDM		Travel Demand Model
TIP		Transportation Improvement Program
TMAC		Transportation Modeling Advisory Committee
TPD		Tons per day
VKT		Vehicle Kilometers of Travel
VMT		Vehicle Miles of Travel
VOC		Volatile Organic Compounds

APPENDIX C

COMPASS' TRAVEL DEMAND FORECAST MODEL

Introduction

Regional transportation planning is a complicated process that requires looking 20 years into the future. The Community Planning Association (COMPASS) uses a computer model to forecast traffic conditions and identify transportation system impacts for specific years in the future. The model uses forecasted conditions including the planned improvements to the roadway network as well as land-use assumptions about where growth will occur.

COMPASS' Transportation Model Advisory Committee (TMAC) guides COMPASS staff in the research, development and review of the model as well as recommending improvements and/or enhancements to the model and its input data. TMAC is made up of representatives from COMPASS' many member agencies and appointed transportation/land use/air quality professionals who serve on a voluntary basis.

COMPASS' current travel demand forecast model was calibrated and validated for 2002 conditions. It was calibrated with data from a household travel characteristics study performed and completed in 2002. This survey obtained information about the number of trips, travel time, and trip purpose by mode and time-of-day from more than 2,600 Treasure Valley households. It was validated with traffic count data for 2002/2003. TMAC approved the use of the 2002 calibrated travel demand model on June 29, 2004.

Shortly after the 2002 model was developed, COMPASS began developing a mode choice model for inclusion into the overall four-step travel demand model. The main purpose for the development of this tool was to support the transit planning component of *Communities in Motion*, the new long range transportation plan for a six-county area including Ada and Canyon Counties. The 2002 model, with the inclusion of the mode choice tool was approved for use by TMAC in 2006.

How the Model Works

COMPASS' travel demand model estimates regional travel patters based on where trips are likely to start and end. This is done using a four-step modeling process (see Figure C-1). Travel estimates are adjusted to account for roadway capacities, the availability of alternate routes, and changes in travel time due to congestion. When all routes have approximately the same travel time and there are no longer advantages associated with alternative routes, equilibrium is reached. Forecasts of traffic volumes, vehicle miles of travel, and travel speeds are produced.

Model Assumptions

Travel Characteristics:

COMPASS surveyed Treasure Valley residents' travel habits. This survey was part of a major effort to analyze the valley's present and future transportation needs. It began in August of 2002 with the goal of gathering travel information from 2,400 households. The survey was completed in early 2003. Data was collected from 2,582 households. Final data sets from the survey were submitted to COMPASS that provided trip rates (by trip type by household classification) for each county in the modeling domain, auto occupancy factors by trip type, and the number of trips per duration of time.

Trip Types:

The current travel demand forecast model uses six trip types. Five of these have one end of the round-trip at home. They are home –based work, home-based shopping, home-based social, home-based school, and home-based other. The sixth trip type does not involve travel either to or from home. Therefore, it is called a non-home-based trip. The characteristics for these trip types are developed from travel surveys completed

by random households throughout the Treasure Valley as well as nationally developed data.

Demographic Data Forecasts:
COMPASS' Demographic Advisory Committee develops area-wide demographic forecasts on population, households and employment. Forecasts are first developed for large demographic sub areas of the Treasure Valley. Then the forecasts are allocated to individual Traffic Analysis Zones (TAZ). TAZ boundaries are based on a combination of census boundaries and local geographic features such as roads and waterways and range in size from a few blocks to one or more square miles. COMPASS' TAZ boundaries are reviewed every 10 years, based on the results of the U.S. Census. This process maintains the integrity of the previous years of data while updating the boundaries of the zones based on major changes such as new roads or significant changes in development.

Base year (or current year) demographics are estimated using the most recent U.S. census data (2000 Census), building permits data, and preliminary plat data. Employment estimates are obtained for the Department of Labor and Commerce.

Horizon year demographics are developed as part of the long range transportation planning process. A regional growth control total for the horizon year is used as the starting point. Population and employment adjustments are made to the various demographic areas in the region so that the control total is met, but not exceeded.

Communities in Motion has a horizon year of 2030. Adjustments to the demographic areas (and the TAZs within those areas) were made to produce two distinct growth forecasts for the plan; a "Trend" growth scenario and "Community Choices" growth scenario. Both use the same two county (Ada and Canyon) population control total for 2030 of 825,000.

The goal of the "Trend" forecast was to allocate future growth based on prevailing residential patterns and densities using estimates of vacant and redevelopable land. Ada and Canyon County Assessors' files were used to develop an inventory of vacant and redevelopable land. Criteria for redevelopable land were created and reviewed with COMPASS' Demographic Advisory Committee.

In contrast, "Community Choices" combines modest land use intensification/densification along transportation corridors with additional employment and population growth in outlying communities. Less suburban residential development is anticipated in this growth scenario, as compared with the Trend. With more infill development (and thus increased densities) in the corridor areas, this scenario consumes less land than the "Trend."

Interim year estimates of regional households and employment are interpolated using the base year estimate and the 2030 "Community Choices" growth scenario as endpoints. Professional judgment is used to allocate this growth to TAZs. For specific information on how many jobs and households were added to demographic areas and/or TAZs in the interim years visit
http://www.compassidaho.org/demo/forecasts.htm

Roadway Networks:
In order to forecast travel demand, a representation of the functionally classified roadway network and transit system is input to the model for each analysis year. The functionally classified roadways represented in the model include: interstates, principal arterials, minor arterials, and collectors. Some local roads are included in model roadway networks for the purposes of connectivity and model validation. However residential roadways are not specifically considered in the model. Instead they are abstractly represented as centroid connectors. Centroid connectors are connections in the model made between classified roadways and TAZs. Future year roadway networks are developed using existing facilities with roadway projects planned for completion by a certain date.

The capacity of a roadway is defined as the number of vehicles a particular road can manage before congestion occurs. Capacities for model networks are based on a level of service (LOS) "D" threshold and vary according to the functional classification of the roadway and its location (e.g. urban vs. rural).

Posted speed limits are put into COMPASS' travel demand model as the maximum travel speed on the network.

Mode Choice Model:
"Mode Choice" is the third step in a traditional 4-step travel demand model (see Figure C-1). It takes person trips estimated using the demographic input data and splits them into mode specific trips. It sorts trips into one of either two motorized (bus or auto) or two non-motorized (walk or bike) mode choices. Transit (bus) trips are assigned to the transit network, while vehicle trips are assigned to the roadway network. A mode choice model was added to the COMPASS travel demand model to support the analysis needs of *Communities in Motion*. It is based on the mode choice model utilized by the Salt Lake City regional MPO (Wasatch Front Regional Council).

The transit network is input independent of the roadway network. In addition to such characteristics as direction and speed, information on fares, transfers, "headways" (max time between transit vehicles), and stop location need to be input as network characteristics. The transit network used for conformity purposes is the "fixed stop" being implemented by Valley Regional Transit. For more information on the transit system in Ada and Canton Counties, visit http://www.valleyride.org/infopage.htm.

Peak-Hour Model:
COMPASS' peak-hour model estimates travel demand during the afternoon rush hour (5 to 6 p.m.). It operates identical to and uses the same types of data inputs as COMPASS' 24-hour travel demand model. Forecasted traffic volumes from peak hour models are primarily used in traffic studies to aid in the design of intersections. The peak-hour model was not used in this regional emissions analysis.

Model Calibration and Validation:

The latest calibration of COMPASS' two-county travel demand model was completed in April of 2004. 2002 was chosen as the model's demographic and land use "calibration year" to coincide with COMPASS' most recent household travel survey. Parcel data from both counties were obtained and each parcel was identified with its current use, status (built, vacant, re-developable, or exempt) and comprehensive plan use. The U.S. census data was allocated and adjusted to 2002 using the parcel data for each of the cities and counties. Employment data was purchased and input into the model for 2002. Existing roadway network characteristics (e.g. number of lanes, posted speed) were also verified. Roadway capacities in the model were evaluated and updated as appropriate.

As per federal guidance, the 2002 calibration of the COMPASS travel demand model was validated to traffic count data. Traffic count data for 2002/2003 were collected from the Idaho Transportation Department, Ada County Highway District, and various Canyon County transportation agencies. The guidance suggests a model is validated when predicted volumes for the calibration year are within a certain percentage of the measured volumes. Federal validation guidelines are:

- Freeways/Interstates:Less than 7% deviation
- Principal Arterials:Less than 10% deviation
- Minor Arterials:Less than 15% deviation
- Collectors:Less than 25% deviation

Additionally, staff validated the 2002 calibration of the COMPASS model to California Transportation Department (CALTrans) standards. CALTrans standards are more stringent the federal guidelines. For more information on the performance of the COMPASS model, visit http://www.compassidaho.org/model.html. The travel demand model was also put through a sensitivity analysis. This involves testing the model's response to changes made to its inputs. The results of this validation exercise met expectations. TMAC reviewed the validation statistics and approved the use of the 2002 model calibration without the mode choice model in May of 2004.

The mode choice model (transit system) could not be validated to the same level as the roadway network was. This is due to the fact Valley Regional Transit made substantial changes to the system in 2004/2005. However, modeled ridership was consistent on a regional basis with actual ridership data. Thus, the mode choice model was approved for use in the 2002 model by TMAC in the summer of 2006.

Model Data Uses

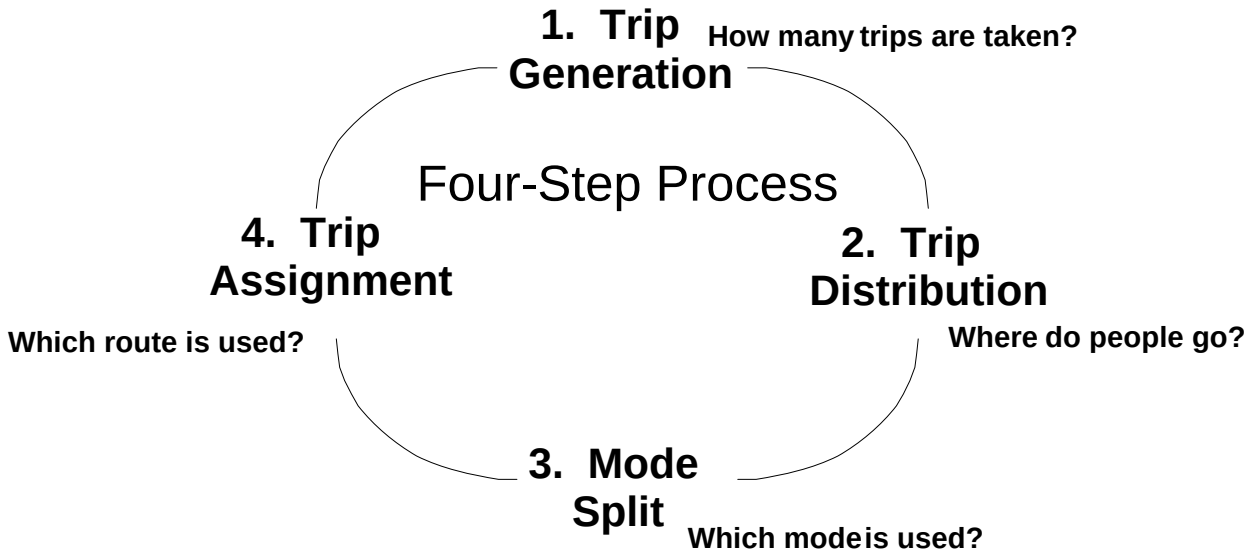
COMPASS' travel demand model produces forecasts of average weekday traffic volumes (ADT), average traffic speeds, vehicle miles of travel (VMT), and the level of service for each roadway in the model network. These forecasts are used for a variety of purposes, including:

- Traffic Impact Studies – These studies determine traffic impacts of new developments such as a new retail mall.

- Roadway Network Deficiency Analyses - These highlight potential future roadway inefficiencies and/or needs as a result of additional growth or other network modifications.

- Air Quality Conformity Analyses – Transportation conformity analyses are required to demonstrate planned transportation projects will conform to the state implementation plans in nonattainment and/or maintenance areas.

Figure C-1:
The Four-Step Model



INPUTS:

Census and/or Home Interviews (Surveys)

Traffic Counts

Roadway Characteristics

Demographic/Land Use Data

MODEL USED TO FORECAST:

Travel Demand Estimation

How many vehicles may travel a particular route in the future?

Development Impacts

How will a proposed development impact the existing roads?

Roadway Deficiencies

Which roads may be overloaded and by how much?

Air Quality Conformity Determinations

Will air quality improve or worsen?

Decision Support

Where do we invest to best serve the future community needs?

Appendix D

Approved Modeling Assumptions and Emissions Estimation Methodologies

Table D-1: *Communities in Motion* MOBILE Model Input Assumptions

Parameter:	CIM:	FY06-10 TIP Modeled at:	Note:
Fleet Mix	EPA MOBILE 6.2 defaults. Based on national fleet mix data	Local fleet mix data acquired as part of COMPASS' B20 Biodiesel (Remote Sensing) Study.	COMPASS will continue working with IDEQ and ITD develop local fleet characteristics for use in Treasure Valley emissions modeling.
I/M Program	Two distinct Annual programs: One is a test only 2500 RPM for pre 1996 vehicles, the other is an On board diagnostic test (OBD Test) for 1996 and newer vehicles. 2500 RPM: Waiver Rates = 1%, 1%; Stringency = 27%. OBD: Waiver Rates = 0.0% and 1%. Compliance Rate = 98% for both programs.	Same	Data acquired from/confirmed by Denis Turner, Air Quality Board, on 3-16-2005.
Anti-Tamper Program	Annual check for gasoline vehicles. Program started in 1984. Model years 1981 and newer are checked for tampering with: Air Pump, Catalyst, fuel inlet restrictor, EGR, and the gas cap. Compliance rate is 98%.	Same	
Min/Max Temp.	Winter = 31.25 / 48.20 F Summer = 46.77/ 73.22	Same	These temperatures are the ones used in the PM10 Maintenance Plan. ITD's PLAQ uses different temps for project screening purposes.
Fuel RVP	Winter = 15; Summer = 8.6	Same	
Diesel Fuel Sulfur Content	500 ppm until 2010; 15 ppm after 2010	Same	Diesel fuel sulfur content will be reduced to 15 ppm by 2010 as per federal fuel standards.
Facility Speeds	Based on the weighted average model speeds for Interstates, Interstate Ramps, Principle and Minor Arterials, Collectors, Local Roads, and Centroid Connectors.	Same	Per PM10 Maintenance Plan Methodology (see Attachment 2)
Fuel Program	3 = Conventional Gasoline West	Same	Applies one of two phase-in schedules for the Tier 2 sulfur fuel standards for years after 1999.
Absolute Humidity	Winter = 26.39% Summer = 37.62%	Same	Per PM10 Maintenance Plan
Seasonal Evaluation	Average of Winter and Summer emissions factors.	Same	Winter emissions will be for years 2007, 2011, 2016, 2026, 2031. This will allow us to take credit for some fleet turnover in November and December.

Summary of *Communities in Motion* Regional Emissions Analysis Methodologies

Budget Tests: A Budget Test will be used to demonstrate conformity of *CIM* and the FY2006-2010 TIP for NO_x, VOC, and PM_{10}. The test will use the PM_{10} Maintenance Plan's annual emissions estimation methodology. This method developed an annual average emissions factor by averaging summer and winter emissions factors for each pollutant. These annual average emissions factors will then be used with forecasted VMT from the travel demand model to calculate annual average emissions in tons per day (TPD).

CO Analysis: "Build" and "no build" emissions were estimated using winter emissions factors for CO and average daily VMT as per the emissions inventory in the CO Limited Maintenance Plan.

VOC Emissions Adjustment: Refueling emissions will not be included in the VOC analyses. The supporting on-road emissions inventory calculations for the PM_{10} Maintenance Plan removed more than refueling emissions from VOC estimates. However, this was done inconsistently and COMPASS staff has been unable to determine exactly how VOC emissions were calculated. Therefore, all evaporative VOC emissions, excluding refueling emissions, will be included in the VOC emissions estimates. This will be done by calculating the seasonal VOC emissions factors using MOBILE6.2 and the following equation:

$$EF_{adj} = \sum_{X=1}^{27} \{(EF_X - RE_X) * F_x\}$$

Where:
EF_{adj} = Adjusted VOC emissions factor (in grams VOC/mile) for a given roadway type
X = MOBILE6 vehicle classification (27 classifications based on gross vehicle weight and fuel type)
EF_x = Total VOC emission factor (tailpipe + evaporative, in grams VOC/mile) for a specific vehicle class on a given roadway type
RE_X = Refueling VOC emissions factor for a specific vehicle class (in grams VOC/mile)
F_x = Fraction of vehicle class X in total fleet

The adjusted emissions factors were then used to produce the VOC emissions estimates.

PM Emissions: PM_{10} emissions will be calculated using average weekday VMT, not average daily VMT. This is due to how road dust emissions were calculated in the PM_{10} Maintenance Plan.

CO Planning Analysis: A Build/No Build Test will be conducted using winter emissions factors for CO instead of annual average. Average daily VMT will be used to calculate CO emissions. In addition, CO emissions estimates will be compared to those in the CO Limited Maintenance Plan emissions inventory and the PM_{10} Maintenance Plan. A CO planning analysis is not required by FHWA, but is a requirement of the CO Limited Maintenance Plan.

Methodology for Determining MOBILE Model Facility Speeds: First, speeds for each link in the travel demand model are VMT weighted by multiplying the congested speed of the link by its corresponding distance and daily volume:

$$SW_L = S_L * VMT_L$$

Where:

SW_L = VMT weights containing speed for each link (miles^2/ hour)

S_L = Congested speed of the link (in miles/hour)

VMT_L = Weekday VMT for the link (in miles)

Then, for each of the 7 modeled facility types, the daily VMT and the VMT weights containing speed are summed:

$$SW_T = \sum_{1}^{n} SW_L$$

$$VMT_T = \sum_{1}^{n} VMT_L$$

Where:

SW_T = Total VMT weights containing speed for a given facility type (miles^2/ hour)

VMT_T = Total weekday VMT of a given facility type (miles)

n = number of links for a given facility type

To arrive at a final speed for each travel demand model facility, the total VMT weight containing speed for each facility type is divided by the total VMT of a given facility type:

$$S_M = \frac{SW_T}{VMT_T}$$

Where:

S_M = Speed used in MOBLIE 6.2 for a given facility type (miles/hour)

This was the methodology used to develop the on-road portion of the PM_{10} Maintenance Plan's emission inventory and motor vehicle emissions budgets.

MOBILE 6.2 Modeling of Facility Types:

Travel Demand Model Interstate = MOBILE 6.2 Freeways

Travel Demand Model Principal Arterials = MOBILE 6.2 Arterial

Travel Demand Model Minor Arterials = MOBILE 6.2 Arterial

Travel Demand Model Collectors = MOBILE 6.2 Arterial

Travel Demand Model Local Roads: For local facility types MOBILE 6.2 assigns a speed of 12.9 mph. However travel demand model speeds of local roads are well above 12.9 mph. Therefore emissions factors for local roads are calculated using the ratios of three MOBILE 6.2 generated emissions factors:

$$EF_{local} = EF_{AS} \times \frac{EF_L}{EF_{AL}}$$

Where:

EF_{Local} = Emissions factor for local roads (grams/mile)

EF_{AS} = The MOBILE 6.2 emissions factor for local roads modeled as an arterial (grams/mile)

EF_{L} = The MOBILE 6.2 emissions factor for local roads modeled as a local road (grams/mile)

EF_{AL} = The MOBILE 6.2 emissions factor for local roads modeled as an arterial at a speed of 12.9 mph (grams/mile)

Travel Demand Model Ramps: For freeway ramps, MOBILE 6.2 assigns a speed of 34.6 mph. This was accepted and used for the PM_{10} Maintenance Plan's emissions inventory.
Travel Demand Model Centroid Connectors = MOBILE 6.2 Arterial. Note: Centroid connectors are more representative of a MOBILE 6.2 local roadway than a MOBILE 6.2 arterial. The travel demand model speeds of most centroid connectors are 15 mph, while the speeds of local roadways are closer to those found on minor arterials and collectors. However, an analysis conducted as part of the FY2004-2008 Northern Ada County TIP regional emissions analysis showed changing the emissions estimation methodology to be insignificant.

Road Dust Emissions

Paved: In February of 2002, Desert Research Institute (DRI) completed a study of fugitive road dust emissions from paved and unpaved roadways in Ada and Canyon Counties (Treasure Valley Road Dust Study: Final Report, Etyemezian et. all, DRI; February 15, 2002). It was included in Appendix F of the PM_{10} Maintenance Plan and used to establish the PM_{10} motor vehicle emissions budget for Ada County. Section 5 of the report yielded a more current and area specific emissions estimation methodology. It estimates emissions using roadway speeds and an empirically derived emissions potentials:

$$b = C_{C,S,T} \times s^{-x} \quad \text{(Equation D-1)}$$

Where:
b = roadway emissions potential (grams PM_{10}/VKT/mps).

$C_{C,S,T}$ = Constant dependant on County, setting, and season (grams PM_{10}/VKT/mps).

S = Posted speed of the roadway (mph).

X = empirically derived exponent dependant on County, setting, and season (1/mph).

Table 5-1 Treasure Valley Road Dust Study contains the values used in equation D-1. DRI found $C_{C,S,T}$ for paved residential/local roadways to be independent of speed (x = 0). However, paved residential roadway emissions potentials were still seasonally dependant.

In order to calculate road dust emissions, emissions factors were calculated for Ada County's paved urban rural roadways during both summer and winter seasons:

$$EF_{S,T} = b_{S,T} \times s \quad \text{(Equation D-2)}$$

Where:

$EF_{S,T}$ = Roadway PM_{10} emissions factor per setting and season (grams PM_{10}/VKT)

$b_{S,T}$ = Roadway emissions potential per setting and season (grams PM_{10}/VKT/mps).

S = Posted speed of the roadway (mps).

Individual link speeds and DRI's urban/rural setting designations were used to calculate paved road emissions factors for

each roadway link in COMPASS' travel demand model network. Posted speed, in miles per hour (mph), are converted to meters per second (mps) using a conversion factor of 0.447.

Because paved road dust emissions factors change with the seasons, two emissions factors were calculated for each link: a winter factor and a summer factor. Each of these seasonal emissions factors was then adjusted to account for precipitation effects (7% reduction in the summer and 9% reduction in the winter). The seasonal emissions factors adjusted for precipitation effects were then combined, using 0.25 as the fraction of the year the winter scenario applies and 0.75 as the fraction of the year that is summer. This results in one composite emissions factor per roadway link.

PM_{10} emissions for each link were then calculated by applying the emissions factor to average weekday vehicle kilometers traveled (VKT) of the link:

$$E_{PM10,L} = EF_{C,L} \times VKT_L \quad \text{(Equation D-3)}$$

Where:

$E_{PM10,L}$ = PM_{10} emissions for a given link (grams PM_{10}/day).

$EF_{C,L}$ = Composite PM_{10} emissions factor for a given link (grams PM_{10}/VKT).

VKT_L = Average weekday vehicle kilometers traveled for the link (VKT).

Conversion factors of 1.6 kilometers/mile and 907,184.74 grams/ton were applied to get a result in ton PM_{10}/day.

Unpaved: Because unpaved roads are not included in COMPASS' model networks, the Treasure Valley Road Dust Study: Final Report assumed unpaved roadway speeds to be 25 miles per hour. The result is a constant emissions factor of 0.31 pounds road dust per mile traveled for unpaved roadways. Average daily trips on unpaved roadways in Ada County can be assumed, as in past regional emissions analyses, to be 120 vehicles per day. Paving is assumed to occur in Ada County at a rate of 1.95% a year, based on data from ACHD.

Appendix E

Emissions Adjustment Factors

Separate emissions factors were developed to account for the Canyon County resident portion of Ada County VMT. Estimates of the Canyon portion of Ada VMT were based on COMPASS' 2002 Household Travel Survey. The only difference between the Canyon County emissions factors and Ada County's will be the impacts associated with an I/M program. According to the *2002 Household Travel Survey*, 32.2% of Canyon County residents commute to work in Ada County during the week. Therefore, to more accurately represent the emissions of the Canyon County vehicles commuting on Ada County roadways:

2006 Percentage Ada VMT traveled by Canyon Vehicles:

% Canyon County Emissions in Ada:

32% Canyon Pop. That work in Ada from Table 28 of the *2002 Treasure Valley Transportation Survey*

33.70% Going Home trips from Table 35 of the *2002 Household Travel Survey*
8.30% Work Trips from Table 35 of the *2002 Household Travel Survey*
5.40% Work Related Trips from Table 35 of the *2002 Household Travel Survey*

47.40% Sum of all Canyon work related trips per *2002 Household Travel Survey*

Therefore:

32% Canyon Commuting Pop. x
47.40% of Canyon Trips related to work =
15.17% Canyon Trips that involve Ada travel, based on work trips.

2006	**Average Daily Canyon VMT (From COMPASS TDM)**
Interstate	861,705
P. Art	1,162,332
M. Art	734,869
Collector	288,645
Local	12,665
Ramp	34,788
Centroid Conn.	264,654
Total	3,359,658

15.17% x 3,359,658 VMT = 509,593

509,593 VMT ÷ 7,095,308 Ada VMT = .0718

Estimated Canyon VMT that includes Ada travel, based on work trips.

.0718 x 100 =

7.18% **Of Ada's 2006 VMT from Canyon Commuters**

2010 Percentage Ada VMT traveled by Canyon Vehicles:

2010	Average Daily Canyon VMT (From COMPASS TDM)
Interstate	981,163
P. Art	1,321,183
M. Art	908,537
Collector	354,992
Local	18,434
Ramp	43,184
Centroid Conn.	314,066
Total	3,941,559

15.17% x 3,941,559 VMT = 597,856

Estimated Canyon VMT that includes Ada travel, based on work trips.

597,856 VMT ÷ 8,069,527 Ada VMT = .0741

.0741 x 100 =

7.41% **Of Ada's 2010 VMT from Canyon Commuters**

2015 Percentage Ada VMT traveled by Canyon Vehicles:

2015	Average Daily Canyon VMT (From COMPASS TDM)
Interstate	1,346,324
P. Art	1,485,406
M. Art	1,058,384
Collector	409,702
Local	20,925
Ramp	55,245
Centroid Conn.	369,317
Total	4,745,303

15.17% x 4,745,303 VMT = 719,768

Estimated Canyon VMT that includes Ada travel, based on work trips.

719,768 VMT ÷ 9,411,409 Ada VMT = .0765

.0765 x 100 =

7.65% **Of Ada's 2015 VMT from Canyon Commuters**

2025 Percentage Ada VMT traveled by Canyon Vehicles:

2025	Average Daily Canyon VMT (From COMPASS TDM)
Interstate	1,695,329
P. Art	1,872,938
M. Art	1,480,741
Collector	697,603
Local	27,626
Ramp	65,837
Centroid Conn.	449,351
Total	6,289,425

15.17% x 6,289,425 VMT = 953,980

Estimated Canyon VMT that includes Ada travel, based on work trips.

953,980 VMT ÷ 11,973,478 Ada VMT = .0797

.0797 x 100 =

7.97% **Of Ada's 2025 VMT from Canyon Commuters**

2030 Percentage Ada VMT traveled by Canyon Vehicles:

2030	Average Daily Canyon VMT (From COMPASS TDM)
Interstate	1,620,293
P. Art	2,366,188
M. Art	1,444,496
Collector	681,253
Local	24,957
Ramp	72,432
Centroid Conn.	472,633
Total	6,682,252

15.17% x 6,682,252 VMT = 1,013,564 Estimated Canyon VMT that includes Ada travel, based on work trips.

1,013,564 VMT ÷ 12,902,491 Ada VMT = .0786

.0786 x 100 =

7.86% **Of Ada's 2030 VMT from Canyon Commuters**

Once the percentage of Canyon vehicle travel on the Ada County's roadway network was calculated for each analysis year, emissions were estimated using the Ada VMT and network speeds for a 100% Ada fleet and a 100% Canyon fleet. The total emissions for a given analysis were the sum of the portion of Canyon fleet emissions in Ada and the portion of Ada fleet emissions:

$$E_t = E_C(X) + (E_A(1\text{-}X)) \qquad \text{(Equation E-1)}$$

Where:

E_t = Total Ada County Emissions (in Tons/day)

E_C = Emissions resulting from a 100% Canyon County Fleet on Ada's Network (in Tons/day).

E_A = Emissions resulting from a 100% Ada County Fleet on Ada's Network (in Tons/day).

X = Fraction Ada VMT traveled by Canyon County vehicles (percentages derived above ÷ 100%).

Example E-1:

2006 Interstate NOx Emission =

$$\left[\left(\frac{1{,}839{,}571\,VMT/day \times 2.32\,grams/mile}{907184.74\,grams/ton}\right)\times(0.0718)\right]+$$
$$\left[\left(\frac{1{,}839{,}571\,VMT/day \times 2.19\,grams/mile}{907184.74\,grams/ton}\right)\times(1-0.0718)\right]=4.46\,TPD$$

Appendix F

2006 Baseline Scenario
MOBILE 6.2 Model Files

Ada Vehicle Input File: A06Bas.IN

Canyon Vehicle Input File: C06Bas.IN

Ada Vehicle Output Files: A06Bas.OUT, A06Bas.PM

Canyon Vehicle Output Files: C06Bas.OUT, C06Bas.PM

Appendix G

2010 Scenarios
MOBILE 6.2 Model Files

Ada Vehicle Input File: A10Act.IN
Canyon Vehicle Input File: C10Act.IN
Ada Vehicle Output Files: A10Act.OUT, A10Act.PM
Canyon Vehicle Output Files: C10Act.OUT, C10Act.PM

"No Build" Scenario
Ada Vehicle Input File: A10Bas.IN
Canyon Vehicle Input File: C10Bas.IN
Ada Vehicle Output Files: A10Bas.OUT
Canyon Vehicle Output Files: C10Bas.OUT

Appendix H

2015 Scenarios
MOBILE 6.2 Model Files

Ada Vehicle Input File: A15Act.IN
Canyon Vehicle Input File: C15Act.IN
Ada Vehicle Output Files: A15Act.OUT, A15Act.PM
Canyon Vehicle Output Files: C15Act.OUT, C15Act.PM

"No Build" Scenario
Ada Vehicle Input File: A15Bas.IN
Canyon Vehicle Input File: C15Bas.IN
Ada Vehicle Output Files: A15Bas.OUT
Canyon Vehicle Output Files: C15Bas.OUT

Appendix I

2025 Scenario
MOBILE 6.2 Model Files

Ada Vehicle Input File: A25Act.IN
Canyon Vehicle Input File: C25Act.IN
Ada Vehicle Output File: A25Act.OUT, A25Act.PM
Canyon Vehicle Output File: C25Act.OUT, C25Act.PM

<u>No Build Scenario</u>
Ada Vehicle Input File: A25Bas.IN
Canyon Vehicle Input File: C25Bas.IN
Ada Vehicle Output Files: A25Bas.OUT
Canyon Vehicle Output Files: C25Bas.OUT

Appendix J

2030 Scenario
MOBILE 6.2 Model Files

Ada Vehicle Input File: A30Act.IN
Canyon Vehicle Input File: C30Act.IN
Ada Vehicle Output Files: A30Act.OUT, A30Act.PM
Canyon Vehicle Output Files: C30Act.OUT, C30Act.PM

<u>No Build Scenario</u>
Ada Vehicle Input File: A30Bas.IN
Canyon Vehicle Input File: C30Bas.IN
Ada Vehicle Output Files: A30Bas.OUT
Canyon Vehicle Output Files: C30Bas.OUT

Reserved - Appendix K

Public Comments/COMPASS Responses

A 30-day public comment period began April 18, 2006 and ended May 19, 2006. No comments on the conformity demonstration were received.