COMPASS
COMMUNITY PLANNING ASSOCIATION
of Southwest Idaho

Working together to plan for the future

Conformity Demonstration for the draft FY2017-2021 Regional Transportation Improvement Program

Report Number 12-2016
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Resolution No. TBD

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

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LIST OF ACRONYMS

ACHD		Ada County Highway District
ATR		Automatic traffic recorder
AVFT		Alternative vehicle fuels and technology
CFR		Code of Federal Regulations
CIM 2040		*Communities in Motion 2040*
CIP		ACHD's Capital Improvements Plan
CO		Carbon monoxide
COMPASS		Community Planning Association of Southwest Idaho
DEQ		Idaho Department of Environmental Quality
E10		10% ethanol in gasoline
EPA		U.S. Environmental Protection Agency
ICC		Interagency Consultation Committee
IM		Inspection Maintenance
ITD		Idaho Transportation Department
MOVES		Motor Vehicle Emission Simulator
MPO		Metropolitan planning organization
NAAQS		National Ambient Air Quality Standards
NO_x		Oxides of nitrogen
OBD		On-board diagnostics
PM_{10}		Particulate matter with a diameter less than 10 micrometers (i.e. $1x10^{-6}$) (coarse particulate matter)
RPM		Revolutions per minute
SIP		State Implementation Plan
TIP		Transportation Improvement Program
TMAC		Transportation Modeling Advisory Committee
VIN		Vehicle identification number
VMT		Vehicle miles of travel
VOC		Volatile organic compounds

FOREWORD

The federal government mandates that any transportation project 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 in a nonattainment or maintenance area when it can be shown, 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 U.S. Environmental Protection Agency's (EPA's) health-based air quality standards. A finding of nonconformity would prevent the implementation of certain federally funded and/or regionally significant transportation projects.

Only EPA's criteria pollutants[1] are subject to conformity analyses. One of two tests is used in a conformity demonstration:

Budget: State air quality implementation and maintenance plans for nonattainment and 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.

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 a build scenario are equal to or less than the emissions from a no build scenario, conformity has been demonstrated. This test is used for nonattainment or maintenance areas where motor vehicle emissions budgets are not established.

This document contains the information and analyses necessary for the Federal Highway Administration and the Federal Transit Administration to make a transportation conformity finding for the draft FY2017-2021 Regional Transportation Improvement Program, covering Ada and Canyon Counties.

[1] EPA sets air quality standards for six common pollutants, referred to as "criteria" air pollutants. These standards are developed based on human health and/or environmental criteria (science-based guidelines). Of the six criteria pollutants, particulate pollution and ground-level ozone are the two most widespread health threats.

SUMMARY

The U.S. Environmental Protection Agency's (EPA's) Motor Vehicle Emission Simulator (MOVES) and the Community Planning Association of Southwest Idaho's (COMPASS') most current travel demand model were used to estimate pollutant emissions from the transportation projects contained in *Communities in Motion 2040* and the draft FY2017-2021 Regional Transportation Improvement Program (TIP). A TIP is a short-range (five-year) capital improvement budget for the transportation system in a given urbanized area. The Interagency Consultation Committee approved the modeling methodologies and assumptions used in the regional emissions analyses including the applicable transportation model networks. Growth and demographic assumptions from the region's *Communities in Motion 2040* Vision, updated and reconciled in spring 2016, are used in this demonstration.

Transportation conformity is demonstrated in a nonattainment or maintenance area when it can be shown, 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 EPA's health-based air quality standards. A finding of nonconformity would prevent the implementation of certain federally funded and/or regionally significant transportation projects. Northern Ada County is a "maintenance area" for two air pollutants – coarse particulate matter (PM_{10}) and carbon monoxide.

The *Northern Ada County PM_{10} State Implementation Plan, Maintenance Plan: Ten-Year Update*[2] contains motor vehicle emissions budgets for three pollutants: coarse particulate matter, oxides of nitrogen, and volatile organic compounds. Emissions budget tests, as required by 40CFR93.118, demonstrate conformity of draft FY2017-2021 TIP. The *Northern Ada County Air Quality Maintenance Area Second 10-Year Carbon Monoxide Limited Maintenance Plan*[3] does not contain any motor vehicle emissions budgets. However, COMPASS conducts a build versus no build carbon monoxide emissions analysis per the *Northern Ada County Air Quality Maintenance Area Second 10-Year Carbon Monoxide Limited Maintenance Plan* to aid in regional air quality planning.

While areas with maintenance plans approved under EPA's limited maintenance plan option are not subject to the budget test, the areas remain subject to other transportation conformity requirements of 40CFR93, subpart A. Thus, the metropolitan planning organization (MPO) in the area or the state must document and ensure that:

a. *Transportation plans and projects provide for timely implementation of SIP* [State Implementation Plan] *transportation control measures in accordance with 40CFR93.113;*
b. *Transportation plans and projects comply with the fiscal constraint element per 40CFR93.108;*
c. *The MPO's interagency consultation procedures meet applicable requirements of 40CFR93.105;*
d. *Conformity of transportation plans is determined no less frequently than every four years, and conformity of plan amendments and transportation projects is demonstrated in accordance with the timing requirements specified in 40CFR93.104;*
e. *The latest planning assumptions and emissions model are used as set forth in 40CFR93.110 and 40CFR93.111;*
f. *Projects do not cause or contribute to any new localized carbon*

[2] http://www.deq.idaho.gov/media/971222-ada_county_pm1 0_sip_0213.pdf

[3] http://www.deq.idaho.gov/media/909866-ada-county-co-maintenance-plan-2011.pdf

monoxide or particulate matter violations, in accordance with procedures specified in 40CFR93.123; and

g. Project sponsors and/or operators provide written commitments as specified in 40CFR93.125. [40CFR93, subpart A]

The estimated emissions demonstrate that the projects contained in the draft FY2017 – 2021 TIP meet air quality conformity requirements for Northern Ada County and will not degrade air quality. Figures 4 – 7 (pages 27 – 30) show estimated emissions as compared to pollutant budgets coarse particulate matter, volatile organic compounds, oxides of nitrogen, and carbon monoxide.

I. INTRODUCTION

Community Planning Association of Southwest Idaho

The Community Planning Association of Southwest Idaho (COMPASS) is an association of local 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 the Ada Planning Association, has been designated as the metropolitan planning organization (MPO) for Ada County. In April 2003, COMPASS was designated as the MPO for the Nampa Urbanized Area, located in neighboring Canyon County. The agency's service area covers Ada and Canyon Counties.

Clean Air Act Designations

The federal government sets health-based air quality standards for air pollutants, called the National Ambient Air Quality Standards, or NAAQS. Areas that have violated (not attained) the NAAQS are referred to as "nonattainment areas"; areas that were nonattainment areas in the past, but have re-attained the standard, are termed "maintenance areas." Northern Ada County is a maintenance area for two air pollutants – coarse particulate matter (PM_{10}) and carbon monoxide (CO). Northern Ada County violated the NAAQS for these pollutants in the 1980s and early 1990s, and has been in compliance ever since.

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 in a nonattainment or maintenance area when it can be shown, 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 NAAQS. A finding of nonconformity would prevent the implementation of certain federally funded and/or regionally significant transportation projects.

Coarse Particulate Matter (PM_{10})

Northern Ada County is designated as a maintenance area in attainment of the 24-hour PM_{10} NAAQS. Appendix A shows the extent of the maintenance area boundaries. While exceedances of the 24-hour PM_{10} NAAQS have occurred due to wind-blown dust events, no violations of the 24-hour PM_{10} NAAQS have occurred since the area was designated as a maintenance area in attainment of the standard. Prior to March 12, 1999, Northern Ada County was designated as a nonattainment area for PM_{10}. However, on that date, the U.S. Environmental Protection Agency (EPA) administrator signed a revocation of Northern Ada County's nonattainment designation based on changes made to the PM_{10} NAAQS (64FR12257). 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 (DEQ) to update Northern Ada County's PM_{10} State Implementation Plan (SIP). In September 2003, the EPA approved the *Northern Ada County PM_{10} SIP Maintenance Plan and Redesignation Request*. In March 2013, the *Northern Ada County PM_{10} State Implementation Plan, Maintenance Plan: Ten-Year Update*[4] (PM_{10} maintenance plan) was submitted to EPA. On May 17, 2013, EPA announced receipt of the "maintenance plan" and issued determination of adequacy of the motor vehicle emission budgets for transportation conformity purposes.

[4] http://www.deq.idaho.gov/media/971222-ada_county_pm10_sip_0213.pdf

Commonly, past exceedances of the 24-hour PM_{10} NAAQS in Northern Ada County occurred during severe 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 gaseous pollutants such as oxides of nitrogen (NO_X) and volatile organic compounds (VOCs). Thus, both NO_X and VOCs 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)

Northern Ada County is designated as an attainment area with an approved limited maintenance plan for the CO NAAQS. Northern Ada County has not experienced a violation of the CO NAAQS since 1987. DEQ submitted the *Limited Maintenance Plan and Request for Redesignation to Attainment for the Northern Ada County Carbon Monoxide Not-Classified Nonattainment Area* to EPA in December 2001. EPA approved the limited maintenance plan and subsequently redesignated the area in December 2002. The *Northern Ada County Air Quality Maintenance Area Second 10-Year Carbon Monoxide Limited Maintenance Plan*[5] (CO maintenance plan) was approved by EPA September 2012. 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 PM_{10} maintenance plan established motor vehicle emissions budgets for PM_{10}, NO_x, and VOCs. Therefore, to satisfy transportation conformity requirements established by 40CFR93.118, budget tests must be performed for draft FY2017-2021 Regional Transportation Improvement Program (TIP). Budget tests are satisfied when regional emissions estimates based on the transportation projects outlined in a Regional Transportation Improvement Program (TIP) or transportation plan are less than or equal to "budgets" established by SIPs and/or air quality maintenance plans.

As noted above, EPA guidance related to "limited maintenance plans" eliminates this requirement with regard to CO for Northern Ada County's 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.*[6]

Therefore, CO motor vehicle emissions budget tests are not federally required for Northern Ada County. However, COMPASS conduct a build/no build analysis per the CO maintenance plan 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, DEQ may choose to require mitigation measures.

[5] http://www.deq.idaho.gov/media/909866-ada-county-co-maintenance-plan-2011.pdf

[6] Page 8 of the *Northern Ada County Air Quality Maintenance Area Second 10-Year Carbon Monoxide Limited Maintenance Plan* http://www.deq.idaho.gov/media/909866-ada-county-co-maintenance-plan-2011.pdf

Interagency Consultation

Idaho Administrative Code (IDAPA 58.01.01.567) requires that agencies within nonattainment and maintenance areas establish an Interagency Consultation Committee (ICC) on transportation conformity. The ICC is comprised of the following agencies:

- Ada County Highway District (ACHD)
- ACHD Commuteride
- City of Boise
- COMPASS as the MPO
- DEQ
- Idaho Transportation Department, District 3
- Valley Regional Transit
- Federal Highway Administration Idaho Division, as an ex-officio

The Northern Ada County ICC approved the assumptions and methodologies employed in the development of the regional emissions analyses in this demonstration on July 12, 2016. The approved assumptions and methodologies are listed in Appendix B. The roadway project list was also approved by the ICC on July 12, 2016. 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 performed:

> *…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 PM_{10} maintenance plan established motor vehicle emissions budgets for 2008, 2015, and 2023. Demographic data and transportation projects are grouped in five-year increments. Therefore, the conformity analysis also uses those increments, adhering to the applicable guidelines and regulations of no more than ten years between analysis years.
Budget tests and CO build/no-build analysis are performed for:

- 2017 - Base year of the draft FY2017-2021 TIP
- 2021 - Last year of the draft FY2017-2021
- 2023 - SIP budget year; emissions estimated by interpolation
- 2030 - Intermediate analysis year
- 2040- Long-range transportation plan (*Communities in Motion 2040* [CIM 2040]) horizon year

Projects for the five scenarios are shown in Tables 1, 3, 6, and 8. The results for these five scenarios are shown in Tables 2, 4, 7, and 9. Table 5 shows 2023 PM_{10}, VOC, and NO_x emissions and the 2023 established budget for all three pollutants. The 2023 emissions were interpolated using 2021 and 2030 emissions as allowable per 40CFR93.118(d)(2):

> *The regional emissions analysis may be performed for any years in the timeframe of the conformity determination (as described under §93.106(d)) provided they are not more than ten years apart and provided the analysis is performed for the attainment year (if it is in the timeframe of the transportation plan and conformity determination) and the last year of the timeframe of the conformity determination. Emissions in years for which consistency with motor vehicle emissions budgets must be demonstrated, as required in paragraph (b) of this section, may be determined by interpolating between the years for which the regional emissions analysis is performed.*

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[7] 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.*

Idaho Administrative Code (IDAPA 58.01.01.566)[8] 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:*
>
> *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.*

The ICC maintains discretionary authority in interpreting and applying these definitions to the area's transportation programs, plans, and projects. Definitions for regionally significant road projects and regionally significant transit projects, as developed by the ICC, are below. For the purposes of this conformity determination, all applicable roadway projects, despite their significance, were included in the travel demand model networks.

Regionally Significant Roadway Project Definition

On January 30, 2002, the ICC developed the following definition of a "Regionally Significant" transportation 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.*

[7] Code of Federal Regulations Title 40: Protection of Environment

[8] Idaho Administrative Code Rules for the Control of Air Pollution in Idaho

Regionally Significant Transit Project Definition

On August 31, 2005, the ICC 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 TIP or long-range transportation plan 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 projects, 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 exempt if the ICC concludes they may 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. There are no transportation control measures requiring implementation in either the PM_{10} maintenance plan or the CO maintenance plan. Therefore, the TIP meets the requirements of 40CFR93.113(c).

II. EMISSIONS ESTIMATION

Emissions Analysis Assumptions and Tools

This air quality conformity demonstration is based upon average speed distributions for each roadway type by 16 speed "bins." The regional travel demand model's average daily estimates or forecasts for each roadway segment provide the necessary data for this input. Emissions factors are generated using the latest version of EPA's motor vehicle emissions model (Motor Vehicle Emission Simulator, or MOVES2014a). A regional emission analysis was conducted as described below.

COMPASS' Travel Demand Model

The COMPASS travel demand model provides estimates of average weekday and peak hour travel demand for each link of a given transportation network based on current and future growth assumptions. In addition to travel demand, the model produces weekday vehicle miles of travel forecasts, congested network speeds, and other data relevant to regional emissions analyses. The 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, collectors, and select local roads in Ada and Canyon Counties.

COMPASS' travel demand modeling activities were performed under the review of the Transportation Model Advisory Committee (TMAC). TMAC was a technical committee formed by the COMPASS Board of Directors. The committee was made up of local experts, technical staff from COMPASS member agencies, and local traffic engineers from both the public and private sectors. TMAC worked with COMPASS staff to calibrate and validate the regional travel demand model to reflect the actual travel patterns and behaviors in the Ada and Canyon Counties. A major update to the regional travel demand model was completed in January 2015. The committee was disbanded after this work was completed as part of a larger change in COMPASS committee structure; if needed, a workgroup can be established in the future to advise on modeling activities. To learn more about the travel demand model visit http://www.compassidaho.org/prodserv/traveldemand.htm.

Demographic Data

The COMPASS Board of Directors approves the official population and employment forecast control totals for Ada and Canyon Counties. Between September 2011 and October 2012, COMPASS, its member agencies, stakeholders, and the general public participated in the development of a preferred growth scenario for the year 2040 – the *Communities in Motion 2040* Vision. This preferred growth scenario, used for the CIM 2040 plan, was based on approved population and employment forecasts and was adopted by the COMPASS Board in October 2012. To learn more about the process and growth allocations visit http://www.compassidaho.org/prodserv/cim2040_scenarioplanning.htm.

In early 2016, COMPASS updated and reconciled the demographic forecasts to account for building permit activity and approved developments since the CIM 2040 Vision was approved in 2012. This is an annual process coordinated with land use agencies and the Demographic Advisory Workgroup.

The CIM 2040 Vision forecasts the demographic data in five-year increments (Figure 1). Demographic data for the analysis years of 2017 and 2021 were developed (interpolated) using either the current estimates and/or the appropriate reconciled demographic forecast. For example, the 2017 demographics used the 2016 estimates and the reconciled 2020 forecasted demographics. The 2021 demographics used the reconciled 2020 and 2025 demographics.

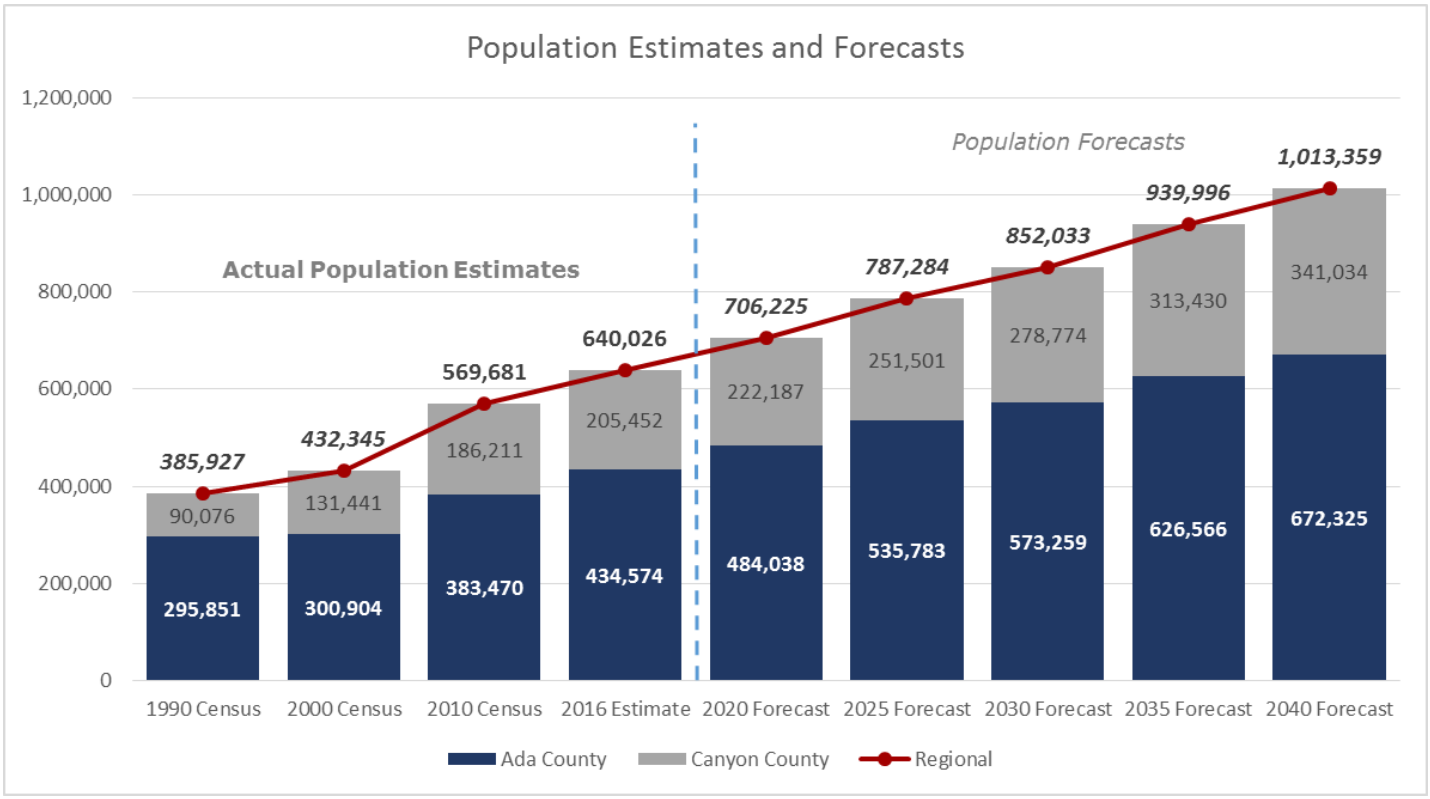


Figure 1: COMPASS Population Estimates[9] and Forecasts

Roadway Network Assumptions

The projects used in the regional emissions analysis for the draft FY2017-2021 TIP were derived from:

- COMPASS' draft FY2017-2021 TIP
- ACHD's FY2016-2020 Integrated Five-Year Work Plan
- FY2017-2021 Idaho Transportation Investment Program
- ACHD's draft 2016 Capital Improvements Plan (CIP) (FY2016-2035)
- CIM 2040, the regional long-range transportation plan for Ada and Canyon Counties

Roadway projects were placed into analysis (or budget) year networks based on information contained in the above sources. The anticipated project completion date is used to place the transportation project in the appropriate network year. Projects listed as "preliminary development" in the TIP were placed in the roadway network year based on information provided by the transportation agencies. Other future roadway projects listed on the funded list of both CIM 2040 and ACHD's CIP were placed in a roadway network year based on information contained in ACHD's CIP. For transparency, COMPASS includes all roadway projects, even those designated as "exempt," in its conformity analysis. This is reflected in the projects listed in Tables 1, 3, 6, and 8. Roadway projects listed as unfunded in CIM 2040 **and** right-of-way only/unfunded in ACHD's CIP were not included in the roadway networks. These "unfunded" projects could not be considered funded or go to construction without an accompanying emissions analysis.

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 four-step travel demand

9 http://www.compassidaho.org/documents/prodserv/demo/PopulationEstimateMethodology2016.pdf

model, such as the one maintained by COMPASS. It takes estimates of "person trips" and predicts the mode of travel the trip will use.
Figure 2 shows the modes available to the travel demand model for assignment. Transit trips are assigned to a transit network input into the travel demand model. Non-motorized trips are not assigned to a network.

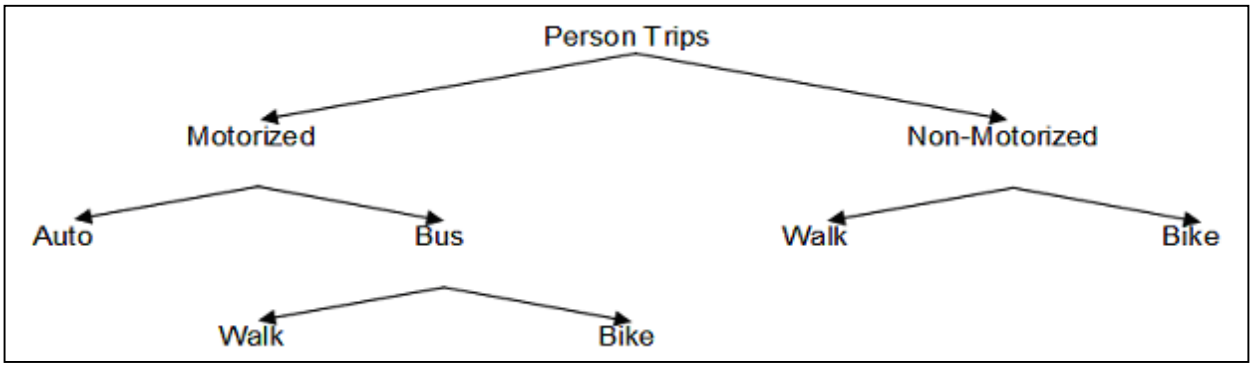


Figure 2: COMPASS Model Travel Modes

Currently, no major system expansion is funded for the region's transit system in either the draft FY2017-2021 TIP or CIM 2040. Therefore, only the transit system as it exists today is included in the analysis through 2040. The current system includes:

- Eighteen routes and approximately 667 stops with peak hour headways between 20-60 minutes in the Boise/Garden City service area.
- Five Nampa and Caldwell fixed routes with peak hour headways up to 60 minutes and one Nampa/Caldwell dial-a-ride service route.
- Five inter-county routes (between Ada and Canyon Counties) with up to 30 minute headways during the morning/afternoon peak periods and 2-3 hour headways during off peak periods.

Chapter 5 in CIM 2040[10] contains more information on the region's current transit system. Specific information on the routes and schedules used to model the transit system can be found at Valley Regional Transit's website at http://www.valleyride.org/.

Travel demand forecast models are used to calculate vehicle miles of travel (VMT). VMT is an estimate of the amount of vehicular travel in a given geographical area and is dependent upon land use (growth) and assumptions about the transportation system (programmed and funded projects). VMT and roadway speed are the outputs of the regional travel demand model necessary to run MOVES for emission estimates. Figure 3 shows the vehicle miles of travel for 2017, 2021, 2030, and 2040, which coincide with the analysis years for this conformity demonstration.

[10] http://www.compassidaho.org/prodserv/cim2040.htm#Plan

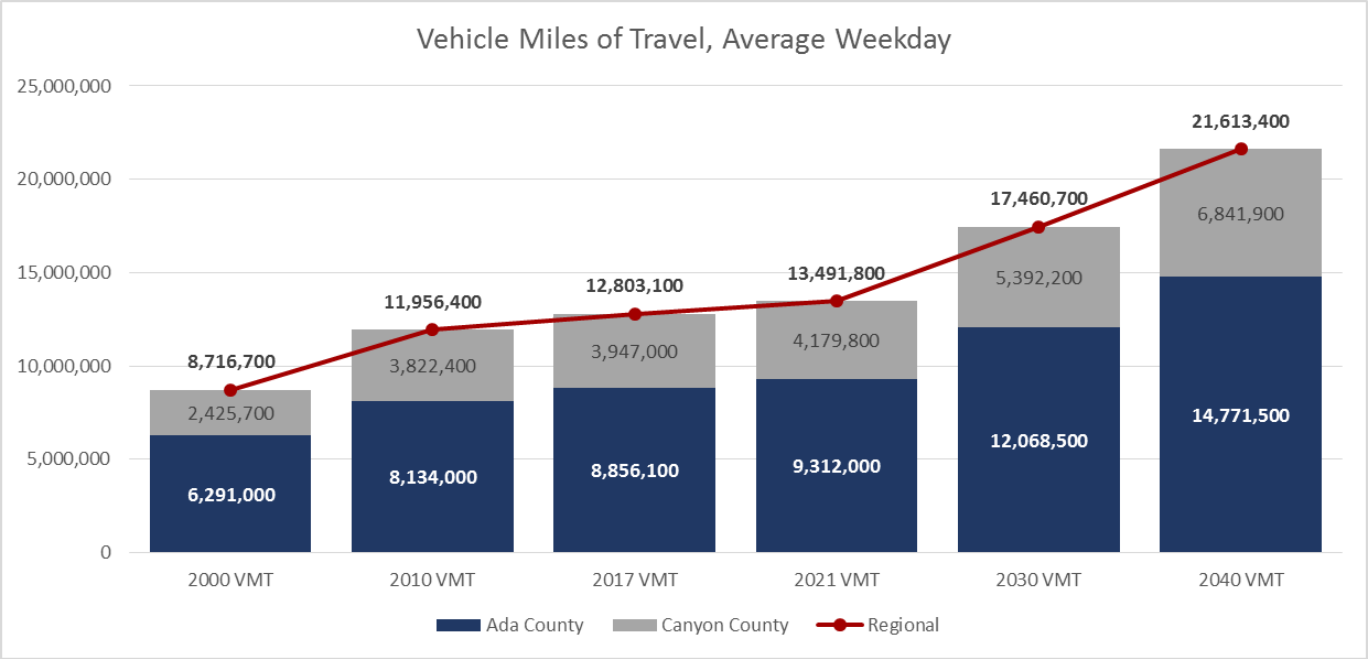


Figure 3: Vehicle Miles of Travel Estimated by the Travel Demand Model

Emissions Modeling

EPA's new emissions model, MOVES, was used to estimate the air quality impacts associated with current and future roadway networks.

The MOVES model[11] uses local data inputs for climate, elevation, Northern Ada County's vehicle emissions testing program, and travel demand model forecasted VMT and roadway speeds to develop emission factors for specified air pollutants. Appendix B summarizes the MOVES modeling assumptions approved by the ICC for use in this demonstration. These model settings and inputs were reviewed during the interagency consultation process. Both the PM_{10} and CO maintenance plans were updated by DEQ's Boise Regional Office. All of the methodologies, assumptions, processes, and results are documented in the updated maintenance plans. Both plans and associated appendices are available on DEQ's website, as listed below:

PM_{10} Maintenance Plan
http://www.deq.idaho.gov/media/971222-ada_county_pm10_sip_0213.pdf

PM_{10} Maintenance Plan appendices
http://www.deq.idaho.gov/media/971226-ada_county_pm10_sip_appendices_0213.pdf

CO Maintenance Plan
http://www.deq.idaho.gov/media/909866-ada-county-co-maintenance-plan-2011.pdf

CO Maintenance Plan appendices
http://www.deq.idaho.gov/media/909870-ada-county-co-maintenance-plan-2011-appendices.pdf

As described on page 9, PM_{10}, VOC, and NO_x budget tests were performed under the four scenario years: 2017, 2021, 2030, and 2040. Results are shown in Tables 2, 4, 7, and 9. Table 5 shows interpolated 2023 PM_{10}, VOC, and NO_x emissions and the 2023 established budget for all three pollutants.

[11] http://www.epa.gov/otaq/models/moves/index.htm

2017 Baseline Scenario

The 2017 baseline scenario uses near-term population and employment estimates with the 2017 roadway network listed in Table 1. *(Note: The numbers in the "No." column are for reference only)*. Projects 1 through 4 are included for information purposes only. These projects were recently completed, or are currently under construction, with expected completion by the end of 2016.

Table 1: Projects Included in the 2017 Network for the 2017 Baseline Scenario

No.	Project	Location	Lanes	Regionally Significant Project	Federal Aid	Subject to Regional Emissions Analysis	Identification No.[1]
1.	Broadway Bridge Replacement	Front St. to University Dr.	6	Yes	Yes	Yes	11588
2.	Five Mile Rd.	Fairview Ave. to Ustick Rd.	5	No	No	No	RD195a/
3.	Cloverdale Rd.	Franklin Rd. to Fairview Ave.	5	No	No	No	RD202-14, RD2016-25
4.	Executive Dr.	Parkdale Ave. to President Dr.	5	No	No	No	IN212-07, RD2016-40
5.	State Hwy 55 (Eagle Rd.)	**Northbound** Franklin Rd. to Fairview Ave.	3	Yes	No	Yes	13349
6.	Emerald St. / Americana Ave. **lane reconfiguration**	Orchard St. to Latah St. *removing 1 travel lane per direction on Emerald St. removing 1* ***southbound*** *travel lane on Americana Ave. from Latah St. to Ann Morrison Park Entrance*	3	No	No	No	CM212-08
7.	Franklin Rd.	Black Cat Rd. to Ten Mile Rd.	5	Yes	Yes	Yes	12368, RC0152, RD2016-57
8.	Ustick Rd.	Linder Rd. to Meridian Rd.	5	Yes	No	Yes	RD202-35, RD2016-126
9.	Ustick Rd.	Meridian Rd. to Locust Grove Rd.	5	Yes	No	Yes	RD202-37, RD2016-127

[1]Identification No: Numeric identification numbers refer to projects in the TIP. Alphanumeric identification numbers refer to projects in ACHD's Integrated Five-Year Work Plan or CIP.

Table 2 shows estimated motor vehicle emissions for PM_{10}, VOC, and NO_X from the 2017 baseline scenario.

Table 2: 2017 Estimated Emissions, Tons per Day

2017	PM_{10}				VOC	NO_X
	Unpaved Road Dust Emissions	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear Emissions	Total PM_{10} Emitted		
Estimated Emissions	2.65	22.30	0.79	25.7	5.82	10.91
Budget	***n/a***	***n/a***	***n/a***	***42.9***	***12.6***	***29.5***

2021 Scenario

The 2021 scenario uses 2021 population and employment forecasts with the 2021 roadway network. The 2021 roadway network includes the projects listed in Tables 1 and 3. *(Note: The numbers in the "No." column are for reference only)*.

Table 3: Projects Added to the 2017 Network for the 2021 Scenario

No.	Project	Location	Lanes	Regionally Significant Project	Federal Aid	Subject to Regional Emissions Analysis	Identification No.[1]
10.	Cloverdale Rd.	Fairview Ave. to Ustick Rd.	5	No	No	No	RC0087, RD2016-25
11.	Cloverdale Rd.	Ustick Rd. to McMillan Rd.	5	No	No	No	RC0092, RD2016-26
12.	Cloverdale Rd.	McMillan Rd. to US Hwy 20/26 (Chinden Blvd.)	5	No	No	No	RD207-13, RD2016-27
13.	Cole Rd.	Overland Rd. to Franklin Rd.	5	Yes	No	Yes	RD207-16, RD2016-29
14.	Cole Rd.	McGlochlin St. to Victory Rd. (with intersection project)	5	Yes	No	Yes	IN205-97, RD2016-28
15.	Eagle Rd.	Amity Rd. to Victory Rd.	5	Yes	No	Yes	RD207-33, RD2016-32
16.	State Hwy 55 (Eagle Rd.)	**Southbound** River Valley Rd. to Franklin Rd.	3	Yes	No	Yes	13349
17.	Lake Hazel Rd.	Cole Rd. to Orchard Ext W	2	Yes	No	Yes	RD2016-70
18.	Linder Rd.	Franklin Rd. to Pine Ave.	5	Yes	No	Yes	RD213-16, RD2016-76
19.	Maple Grove Rd.	Victory Rd. to Overland Rd.	5	No	No	No	RD207-22, RD2016-89
20.	Meridian Rd.	Cherry/Fairview Ave. to Ustick Rd.	5	No	No	No	RD207-23, RD2016-100
21.	Orchard Ext.	Orchard Ext W to Gowen Rd.	2	No	No	No	RD2016-104
22.	Orchard Ext. W.	Lake Hazel Ext. to Orchard Ext	2	No	No	No	RD2016-103
23.	Pine Ave.	Meridian Rd. to Locust Grove Rd.	3	No	No	No	RD208-01, RD2016-113
24.	US Hwy 20/26	Locust Grove Rd. to State Hwy 55 (Eagle Rd.)	5	Yes	No	Yes	ORN 19790

[1] Identification No: Numeric identification numbers refer to projects in the TIP. Alphanumeric identification numbers refer to projects in ACHD's Integrated Five-Year Work Plan or CIP.

Table 4 shows estimated motor vehicle emissions for PM_{10}, VOC, and NO_X from the 2021 scenario.

Table 4: 2021 Estimated Emissions, Tons per Day

2021	PM_{10}				VOC	NO_X
	Unpaved Road Dust Emissions	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear	Total PM_{10} Emitted		
Estimated Emissions	2.65	23.81	0.69	27.2	4.48	7.14
Budget	***n/a***	***n/a***	***n/a***	***42.9***	***12.6***	***29.5***

Table 5 shows interpolated motor vehicle emissions for PM_{10}, VOC, and NO_X for the budget year of 2023. Emission estimates from 2020 and 2025 are used to interpolate the 2023 emissions.

Table 5: 2023 Interpolated Emissions, Tons per Day						
2023	**PM_{10}**				**VOC**	**NO_X**
	Unpaved Road Dust Emissions	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear Emissions	Total PM_{10} Emitted		
Estimated Emissions	2.65	25.64	0.77	29.1	4.27	6.54
Budget	***n/a***	***n/a***	***n/a***	***60.1***	***17.2***	***34.2***

2030 Scenario

The 2030 scenario uses 2030 population and employment estimates with the 2030 roadway network. The 2030 roadway network includes all projects listed in Tables 1, 3, and 6. (*Note: The numbers in the "No." column are for reference only)*.

Table 6: Projects Added to the 2021 Network for the 2030 Scenario

No.	Project	Location	Lanes	Regionally Significant Project	Federal Aid[1]	Subject to Regional Emissions Analysis	Identification No.[2]
25.	Airport Rd./ Overland Rd. Ext.	McDermott Rd. to Black Cat Rd.	2	No	No	No	RD2016-5
26.	Amity Rd.	State Hwy 69 (Meridian Rd.) to Locust Grove Rd.	5	No	No	No	RD2016-2
27.	Amity Rd.	Locust Grove Rd. to Eagle Rd.	5	No	No	No	RD2016-3
28.	Amity Rd.	Eagle Rd. to Cloverdale Rd.	3	No	No	No	RD2016-4
29.	Black Cat Rd.	Franklin Rd. to Cherry Ln.	5	No	No	No	RD2016-13
30.	Black Cat Rd.	Cherry Ln. to Ustick Rd.	5	No	No	No	RD2016-14
31.	Black Cat Rd.	Ustick Rd. to McMillan Rd.	5	No	No	No	RD2016-15
32.	Black Cat Rd.	Overland Rd. to Franklin Rd.	3	No	No	No	RD2016-12
33.	Black Cat Rd.	McMillan Rd. to US Hwy 20/26 (Chinden Blvd.)	3	No	No	No	RD2016-16
34.	Cloverdale Rd.	Lake Hazel Rd. to Amity Rd.	5	No	No	No	RD207-09, RD2016-21
35.	Cloverdale Rd.	Amity Rd. to Victory Rd.	5	No	No	No	RD2016-22
36.	Cloverdale Rd.	Victory Rd. to Overland Rd.	5	No	No	No	RD2016-23
37.	Cloverdale Rd.	Columbia Rd. to Lake Hazel Rd.	5	No	No	No	RD2016-20
38.	Cole Rd.	Amity Rd. to McGlochin St.	5	Yes	No	Yes	RD2016-28
39.	Deer Flat Rd.	Linder Rd. to State Hwy 69 (Meridian Rd.)	5	No	No	No	RD2016-30
40.	Eagle Rd.	Lake Hazel Rd. to Amity Rd.	5	Yes	No	Yes	RD2016-31
41.	Eisenman Rd.	Lake Hazel Rd. to Gowen Rd.	3	No	No	No	RD2016-34
42.	Emerald St.	Cole Rd. to Curtis Rd.	5	No	No	No	RD2016-37
43.	Executive Dr.	Cloverdale Rd. to Five Mile Rd.	5	No	No	No	RD2016-39
44.	Fairview Ave.	Five Mile Rd. to Maple Grove Rd.	7	Yes	No	Yes	RD2016-44
45.	Fairview Ave.	Locust Grove Rd. to State Hwy 55 (Eagle Rd.)	7	Yes	No	Yes	RD2016-41
46.	Fairview Ave.	State Hwy 55 (Eagle Rd.) to Cloverdale Rd.	7	Yes	No	Yes	RD2016-42
47.	Fairview Ave.	Maple Grove Rd. to Cole Rd.	7	Yes	No	Yes	RD2016-45
48.	Five Mile Rd.	Lake Hazel Rd. to Amity Rd.	5	No	No	No	RD215-07, RD2016-47
49.	Five Mile Rd.	Overland Rd. to Franklin Rd. Does NOT include widening of the overpass	5	No	No	No	RD2016-49
50.	Floating Feather Rd. Realignment	Plummer Ln. to State Hwy 16 (Emmett Hwy)	3	No	No	No	RD2016-52
51.	Floating Feather Rd.	Palmer Ln. to Linder Rd.	3	No	No	No	RD2016-54
52.	Floating Feather Rd.	Linder Rd. to Park St.	3	No	No	No	RD2016-55

Table 6: Projects Added to the 2021 Network for the 2030 Scenario							
No.	Project	Location	Lanes	Regionally Significant Project	Federal Aid[1]	Subject to Regional Emissions Analysis	Identification No.[2]
53.	Floating Feather Rd.	Park Ln. to Ballantyne Rd.	3	No	No	No	RD2016-56
54.	Floating Feather Rd. Realignment	State Hwy 16 (Emmett Hwy) to Palmer Ln.	3	No	No	No	RD2016-53
55.	Hill Rd./ Hill Road Pkwy	Horseshoe Bend Rd. to Duncan Ln.	5	No	No	No	RD2016-59
56.	Hill Rd./ Hill Road Pkwy	Duncan Ln. to Seaman Gulch Rd.	5	No	No	No	RD2016-60
57.	Lake Hazel Rd.	Maple Grove Rd. to Cole Rd.	5	Yes	No	Yes	RD2016-69
58.	Lake Hazel Rd.	Eagle Rd. to Cloverdale Rd.	3	Yes	No	Yes	RD2016-66
59.	Lake Hazel Rd.	Cloverdale Rd. to Five Mile Rd.	5	Yes	No	Yes	RD2016-67
60.	Lake Hazel Rd.	Five Mile Rd. to Maple Grove Rd.	5	Yes	No	Yes	RD2016-68
61.	Lake Hazel Rd.	Black Cat Rd. to Ten Mile Rd.	3	Yes	No	Yes	RD2016-61
62.	Lake Hazel Rd.	Ten Mile Rd. to Linder Rd.	3	Yes	No	Yes	RD2016-62
63.	Lake Hazel Rd.	Linder Rd. to State Hwy 69 (Meridian Rd.)	3	Yes	No	Yes	RD2016-63
64.	Lake Hazel Rd.	State Hwy 69 (Meridian Rd.) to Locust Grove Rd.	3	Yes	No	Yes	RD2016-64
65.	Lake Hazel Rd.	Locust Grove Rd. to Eagle Rd.	3	Yes	No	Yes	RD2016-65
66.	Linder Rd.	Victory Rd. to Overland Rd.	5	No	No	No	RD2016-74
67.	Linder Rd.	Ustick Rd. to McMillan Rd.	5	Yes	No	Yes	RD2016-78
68.	Linder Rd.	McMillan Rd. to US Hwy 20/26 (Chinden Blvd.)	5	Yes	No	Yes	RD2016-79
69.	Linder Rd.	US Hwy 20/26 (Chinden Blvd.) to State Hwy 44 (State St.)	7	Yes	No	Yes	RD2016-80
70.	Linder Rd.	State Hwy 44 (State St.) to Floating Feather Rd.	5	No	No	No	RD2016-81
71.	Locust Grove Rd.	Victory Rd. to Overland Rd.	5	No	No	No	RD2016-83
72.	Locust Grove Rd.	Fairview Ave. to Ustick Rd.	5	No	No	No	RD2016-84
73.	Locust Grove Rd.	Ustick Rd. to McMillan Rd.	3	No	No	No	RD2016-85
74.	Maple Grove Rd.	Amity Rd. to Victory Rd.	5	No	No	No	RD207-21, RD2016-88
75.	McMillan Rd.	Cloverdale Rd. to Five Mile Rd.	5	No	No	No	RD2016-98
76.	McMillan Rd.	Five Mile Rd. to Maple Grove Rd.	3	No	No	No	RD2016-99
77.	Meridian Rd.	Ustick Rd. to McMillan Rd.	3	No	No	No	RD2016-101
78.	Orchard St. Realigned	Gowen Rd. to I-84 Interchange	5	Yes	No	Yes	RD2016-105
79.	Pine Ave.	Ten Mile Rd. to Linder Rd.	3	No	No	No	RD2016-112
80.	State Hwy 44	State Hwy 16 to Linder Rd.	4	Yes	TBD	Yes	TBD
81.	State St.	Glenwood Rd. to Pierce Park Ln.	7	Yes	No	Yes	RD208-04, RD2016-117
82.	State St.	Pierce Park Ln. to Collister Dr.	7	Yes	No	Yes	RD208-05, RD2016-118,
83.	State St.	Collister Dr. to 36th St.	7	Yes	No	Yes	RD208-06, RD2016-119
84.	State St.	36th St. to 28th St.	7	Yes	No	Yes	RD208-07, RD2016-120

Table 6: Projects Added to the 2021 Network for the 2030 Scenario							
No.	Project	Location	Lanes	Regionally Significant Project	Federal Aid[1]	Subject to Regional Emissions Analysis	Identification No.[2]
85.	Ten Mile Rd.	Ustick Rd. to McMillan Rd.	5	No	No	No	RD202-32, RD2016-123
86.	Ten Mile Rd.	McMillan Rd. to US Hwy 20/26 (Chinden Blvd.)	5	No	No	No	RD202-31, RD2016-124
87.	Ten Mile Rd.	Victory Rd. to Overland Rd.	3	Yes	No	Yes	RC0299, RD2016-122
88.	Ustick Rd.	Cole Rd. to Curtis Rd.	5	No	No	No	RD2016-128
89.	Ustick Rd.	Ten Mile Rd. to Linder Rd.	3	Yes	No	Yes	RD2016-125
90.	Victory Rd.	Locust Grove Rd. to Eagle Rd.	3	No	No	No	RD2016-133
91.	Victory Rd.	Cloverdale Rd. to Five Mile Rd.	5	No	No	No	RD2016-135
92.	Victory Rd.	Maple Grove Rd. to Cole Rd.	5	No	No	No	RD2016-137
93.	Victory Rd.	Black Cat Rd. to Ten Mile Rd.	3	No	No	No	RD2016-129
94.	Victory Rd.	Ten Mile Rd. to Linder Rd.	3	No	No	No	RD2016-130
95.	Victory Rd.	Linder Rd. to Meridian Rd.	3	No	No	No	RD2016-131
96.	Victory Rd.	Meridian Rd. to Locust Grove Rd.	3	No	No	No	RD2016-132
97.	Victory Rd.	Eagle Rd. to Cloverdale Rd.	5	No	No	No	RD2016-134

[1] 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.
[2] Identification No: Alphanumeric identification numbers refer to projects in ACHD's Integrated Five-Year Work Plan or CIP.

Table 7 shows estimated motor vehicle emissions for PM_{10}, VOC, and NO_X from the 2030 scenario.

Table 7: 2030 Estimated Emissions, Tons per Day						
2030	PM_{10}				VOC	NO_X
	Unpaved Road Dust Emissions	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear Emissions	Total PM_{10} Emitted		
Estimated Emissions	2.65	32.02	0.77	35.4	3.52	4.41
Budget	***n/a***	***n/a***	***n/a***	***60.1***	***17.2***	***34.2***

2040 Scenario

The 2040 scenario uses 2040 population and employment estimates with the 2040 roadway network. The 2040 roadway network includes all projects listed in Tables 1, 3, 6, and 8. (*Note: The numbers in the "No." column are for reference only)*.

Table 8: Projects Added to the 2030 Network for the 2040 Scenario

No.	Project	Location	Lanes	Regionally Significant Project	Federal Aid	Subject to Regional Emissions Analysis	Identification No.[1]
98.	36th Street Extension	Cartwright Rd. to Bogus Basin Rd.	2	No	No	No	RD2016-1
99.	Amity Rd.	Black Cat Rd. to Ten Mile Rd.	5	Yes	No	Yes	n/a
100.	Beacon Light Rd.	State Hwy 16 (Emmett Hwy) to Palmer Ln.	3	No	No	No	RD2016-6
101.	Beacon Light Rd.	Palmer Ln. to Linder Rd.	3	No	No	No	RD2016-7
102.	Beacon Light Rd.	Linder Rd. to Park Ln.	3	No	No	No	RD2016-8
103.	Beacon Light Rd.	Park Ln. to Ballantyne Rd.	3	No	No	No	RD2016-9
104.	Beacon Light Rd.	Ballantyne Rd. to Eagle Rd.	3	No	No	No	RD2016-10
105.	Beacon Light Rd.	Eagle Rd. to State Hwy 55	3	No	No	No	RD2016-11
106.	Cloverdale Rd.	Kuna Rd. to Deer Flat Rd.	3	No	No	No	RD2016-17
107.	Cloverdale Rd.	Deer Flat Rd. to Hubbard Rd.	3	No	No	No	RD2016-18
108.	Cloverdale Rd.	Hubbard Rd. to Columbia Rd.	3	No	No	No	RD2016-19
109.	Cloverdale Rd.	Overland Rd. to Franklin Rd. Does NOT include widening of the overpass	5	No	No	No	RD2016-24
110.	Eagle Rd.	Floating Feather Rd. to Beacon Light Rd.	3	No	No	No	RD2016-33
111.	Emerald St.	Curtis Rd. to Orchard St.	5	No	No	No	RD2016-38
112.	Fairview Ave.	Cloverdale Rd. to Five Mile Rd.	7	Yes	No	Yes	RD2016-43
113.	Fairview Ave.	Meridian Rd. to Locust Grove Rd.	7	Yes	No	Yes	RD2016-40
114.	Fairview Ave.	Cole Rd. to Curtis Rd.	7	Yes	No	Yes	RD2016-46
115.	Floating Feather Rd	Star Rd. to Plummer Ln.	3	No	No	No	RD2016-51
116.	Franklin Rd.	McDermott Rd. to Black Cat Rd.	5	Yes	No	Yes	n/a
117.	Glenwood Couplet	Cole Rd. to Goddard Rd.	3	Yes	No	Yes	RD2016-58
118.	Lake Hazel Rd.	Orchard Ext W to Pleasant Valley Rd.	5	Yes	No	Yes	RD2016-71
119.	Lake Hazel Rd.	Pleasant Valley Rd. to Eisenman Rd.	5	Yes	No	Yes	RD2016-72
120.	Lake Hazel Rd.	Cole Rd. to Orchard Ext W (build at 2 lanes by 2021)	5	*Yes*	No	*Yes*	*RD2016-70*
121.	Linder Rd.	Amity Rd. to Victory Rd.	3	No	No	No	RD2016-73
122.	Linder Rd.	Overland Rd. to Franklin Rd. Does NOT include overpass	5	No	No	No	RD2016-75
123.	Linder Rd.	Cherry Ln. to Ustick Rd.	3	Yes	No	Yes	RD2016-77
124.	Linder Rd.	Pine Ave. to Cherry Ln.	3	Yes	No	Yes	RD2016-76
125.	Linder Rd.	Floating Feather Rd. to Beacon Light Rd.	5	Yes	No	Yes	n/a
126.	Locust Grove Rd.	Amity Rd. to Victory Rd.	3	No	No	No	RD2016-82

Table 8: Projects Added to the 2030 Network for the 2040 Scenario							
No.	Project	Location	Lanes	Regionally Significant Project	Federal Aid	Subject to Regional Emissions Analysis	Identification No.[1]
127.	Locust Grove Rd.	McMillan Rd. to US Hwy 20/26 (Chinden Blvd.)	3	No	No	No	RD2016-86
128.	McMillan Rd.	Star Rd. to McDermott Rd.	3	No	No	No	RD2016-92
129.	McMillan Rd.	McDermott Rd. to Black Cat Rd.	3	No	No	No	RD2016-93
130.	McMillan Rd.	Black Cat Rd. to Ten Mile Rd.	3	No	No	No	RD2016-94
131.	McMillan Rd.	Ten Mile Rd. to Linder Rd.	3	No	No	No	RD2016-95
132.	McMillan Rd.	Linder Rd. to State Hwy 69 (Meridian Rd.)	3	No	No	No	RD2016-96
133.	Meridian Rd.	McMillan Rd. to US Hwy 20/26 (Chinden Blvd.)	3	No	No	No	RD2016-102
134.	Orchard Ext.	Orchard Ext W to Gowen Rd. (build at 2 lanes by 2021)	5	*No*	No	*No*	*RD2016-104*
135.	Orchard Ext. W.	Lake Hazel Ext to Orchard Ext (build at 2 lanes by 2021)	5	*No*	No	*No*	*RD2016-103*
136.	Overland Rd.	Black Cat Rd. to Ten Mile Rd.	3	No	No	No	RD2016-106
137.	Pleasant Valley Ext.	Orchard Ext to Pleasant Valley Rd.	5	No	No	No	RD2016-114
138.	Star Rd.	McMillan Rd. to US Hwy 20/26 (Chinden Blvd.)	5	No	No	No	RD2016-115
139.	Star Rd.	US Hwy 20/26 (Chinden Blvd.) to State Hwy 44 (State St.)	5	No	No	No	RD2016-116
140.	Ten Mile Rd.	Deer Flat Rd. to Hubbard Rd.	3	No	No	No	RD2016-121
141.	Ten Mile Rd.	Lake Hazel Rd. to Amity Rd.	5	Yes	No	Yes	n/a
142.	Ten Mile Rd.	Amity Rd. to Victory Rd.	5	Yes	No	Yes	n/a
143.	Ustick Rd.	McDermott Rd. to Black Cat Rd.	5	Yes	No	Yes	n/a

[1]Identification No: Alphanumeric identification numbers refer to projects in ACHD's Integrated Five-Year Work Plan or CIP. Blanks indicate an identification number has not been assigned.

Table 9 shows estimated motor vehicle emissions for PM_{10}, VOC, and NO_X from the 2040 scenario.

Table 9: 2040 Estimated Emissions, Tons per Day						
2040	PM_{10}				VOC	NO_X
	Unpaved Road Dust Emissions	Paved Road Dust Emissions	Tailpipe, Tire, and Brakewear Emissions	Total PM_{10} Emitted		
Estimated Emissions	2.65	40.47	0.93	44.1	3.15	3.84
Budget	***n/a***	***n/a***	***n/a***	***60.1***	***17.2***	***34.2***

Carbon Monoxide Emissions

To satisfy DEQ requirements, a regional CO emissions analysis was conducted using EPA's MOVES 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 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 (i.e., before programmed or planned projects are built). This comparison provides the CO emissions impacts to the region from the planned transportation system.

Build / No Build Scenarios

The build scenarios use transportation networks and demographic assumptions specific to the analysis year. These are the same scenarios used to estimate PM_{10}, NO_X, and VOC emissions, above. Tables 1, 3, 6, and 8 provide more detailed information on the roadway projects used to develop the build scenario networks.

The no build scenarios use the 2017 (baseline) transportation network with the demographic assumptions specific to the analysis year. Table 1 provides more detailed information on the roadway projects included in the 2017 baseline transportation network.

Table 10 shows the build and no build CO emissions estimates for 2017, 2021, 2030, and 2040.

Table 10: Build / No Build Scenario CO Emissions

	Year			
	2017	2021	2030	2040
Build CO Emissions (*Ton/day)*	59.3	49.0	36.8	30.0
No Build CO Emissions (*Ton/day)*	n/a	49.1	37.0	30.2

III. CONCLUSIONS

PM_{10} Budget Test

The results of the PM_{10} budget test for draft FY2017-2021 TIP show that the emissions impacts associated with the planned improvements to the Northern Ada County transportation system (projects listed in Table 1, 3, 6, and 8) will not exceed the PM_{10} emissions budgets established by the PM_{10} maintenance plan (Figure 4).

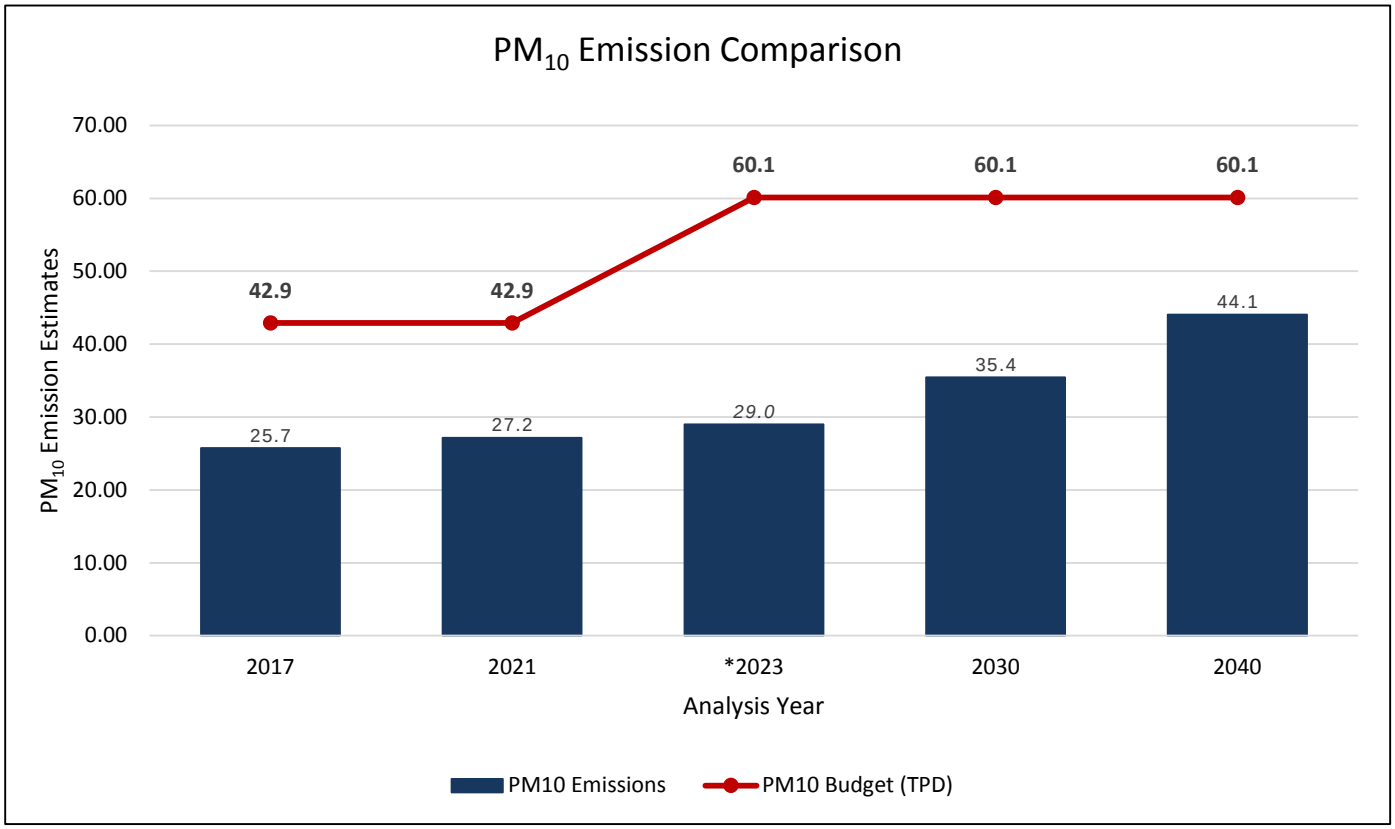


Figure 4: PM_{10} Budget Test Results

VOC Budget Test

The results of the VOC budget test for draft FY2017-2021 TIP show that the emissions impacts associated with the planned improvements to the Northern Ada County transportation system (projects listed in Tables 1, 3, 6, and 8) will not exceed the VOC emissions budgets established by the PM_{10} maintenance plan (Figure 5).

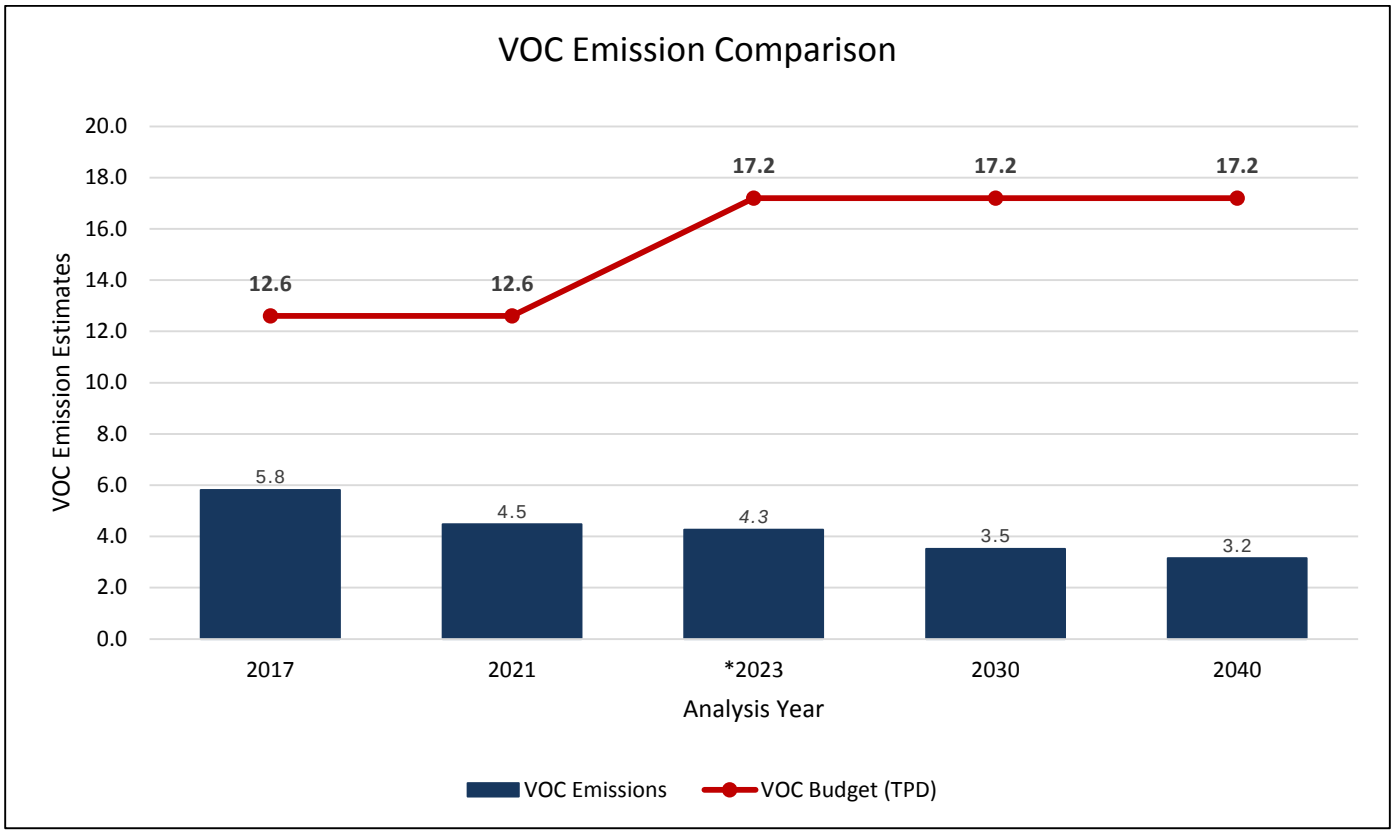


Figure 5: VOC Budget Test Results

NO_X Budget Test

The results of the NO_x budget test for draft FY2017-2021 TIP show that the emissions impacts associated with the planned improvements to the Northern Ada County transportation system (projects listed in Tables 1, 3, 6, and 8) will not exceed the NO_X emissions budgets established by the PM_{10} maintenance plan (Figure 6).

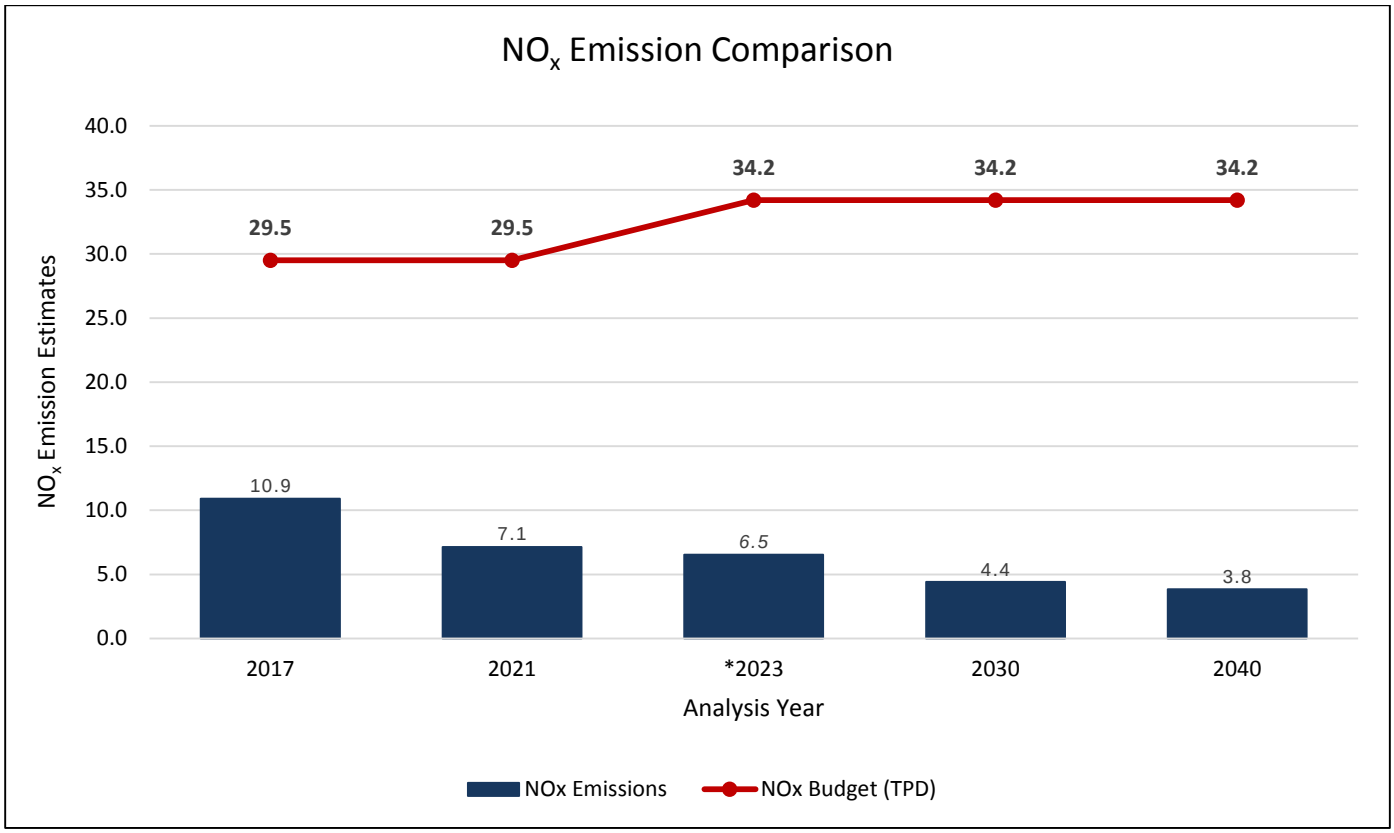


Figure 6: NO_x Budget Test Results

Build / No Build Emissions Comparison:

Figure 7 shows the comparison between the build and no build emissions scenarios for each analysis year. Again, the purpose of these comparisons is not to demonstrate conformity with the CO limited maintenance plan, but rather to facilitate good air quality planning in Northern Ada County.

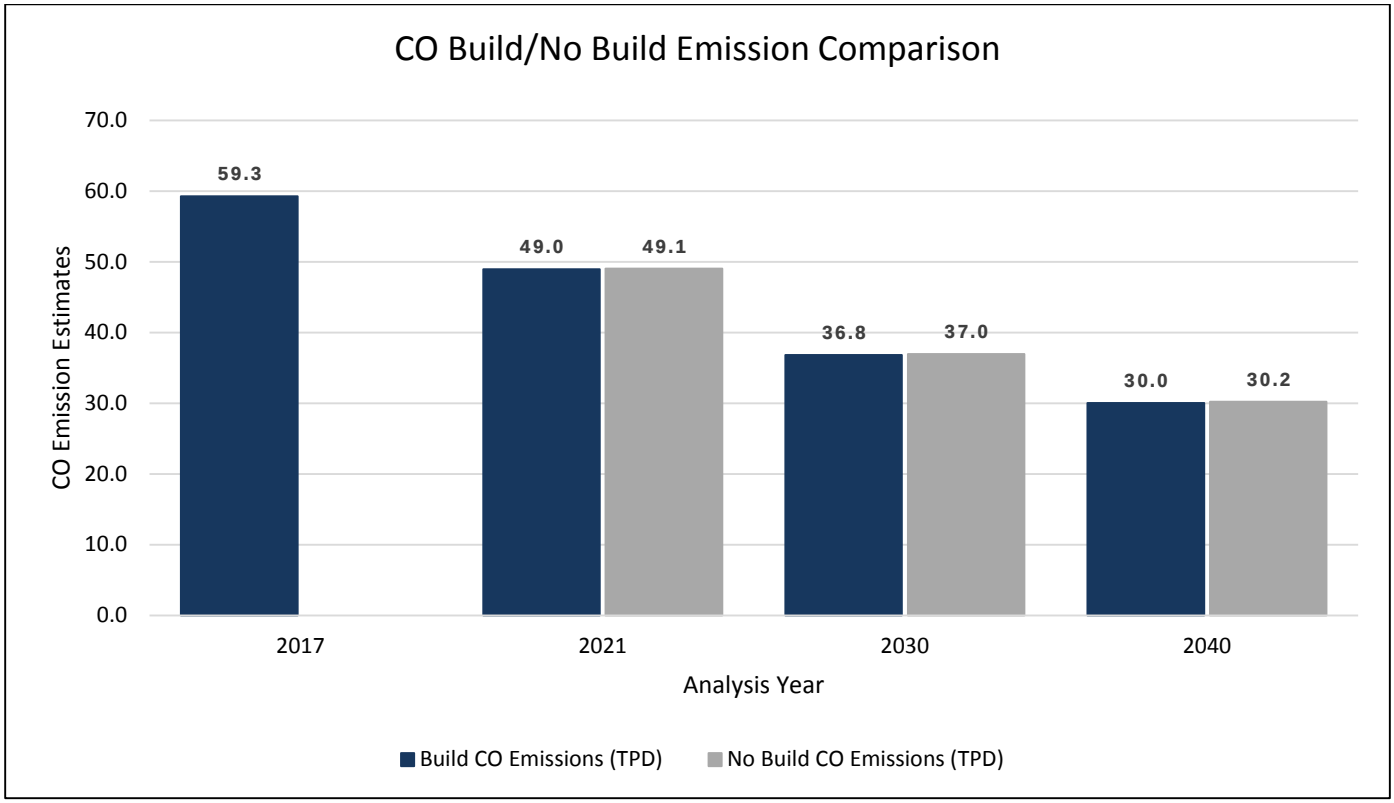
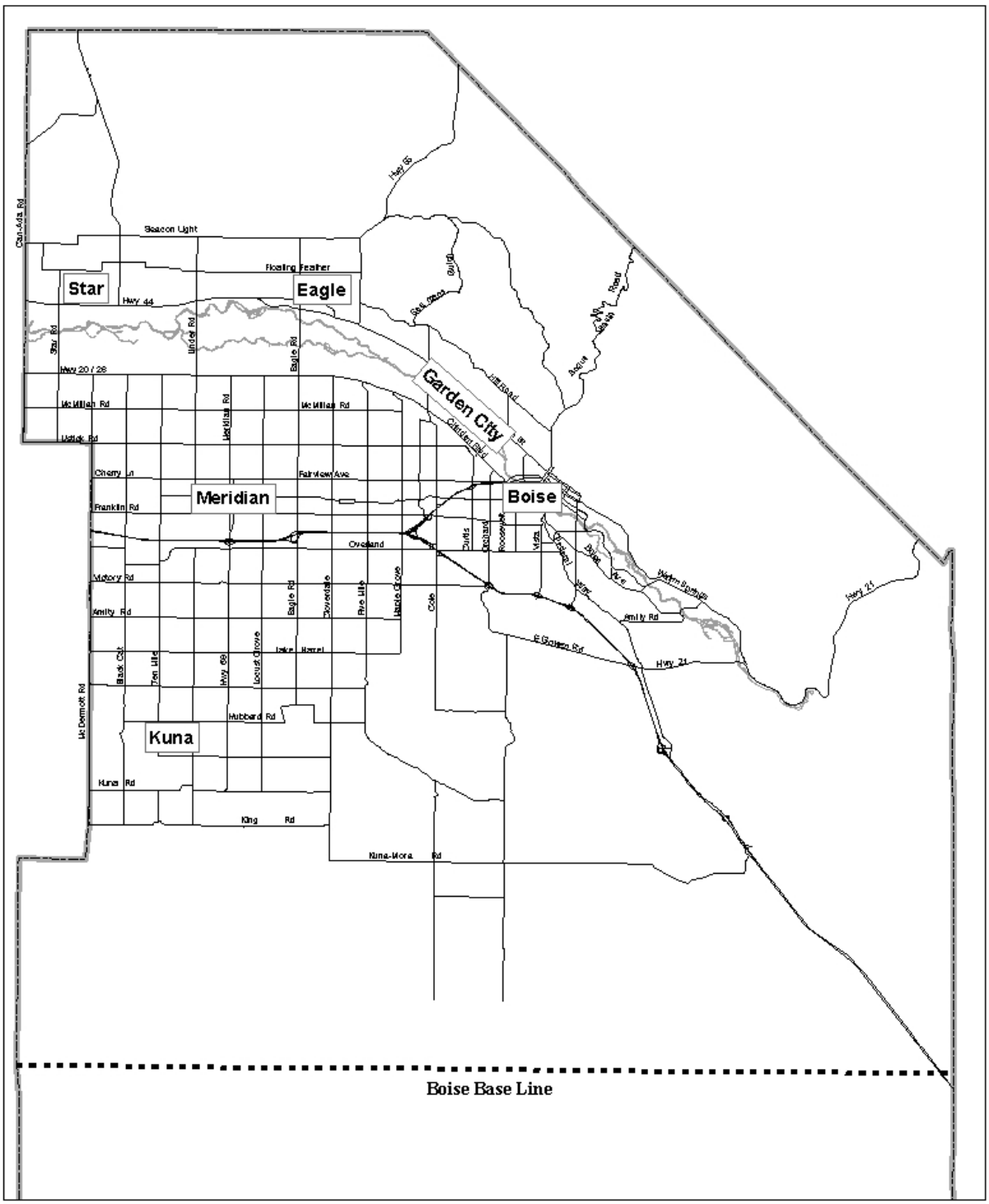


Figure 7: CO Build / No Build Comparison

APPENDICES

Appendix A: Northern Ada County PM_{10} and CO Maintenance Area



Legal Description for Northern Ada County PM_{10} and CO Maintenance Area

The legal description of the area boundaries is as follows:

- Beginning at a point in the center of the channel of the Boise River where the section line between Sections 15 and 16 of Township 3 North, Range 4 East, crosses the Boise River.

Northern Boundary

- Thence down the center of the channel of the Boise River to a point opposite the mouth of Mores Creek.
- Thence in a straight-line going 44 degrees north and 38 minutes west until said line intersects the north line of Township 5 North in Range 1 East.
- Thence west to the northwest corner of Section 6, Township 5 North, Range 1 West.

Western Boundary

- Thence south to the northwest corner of Section 6, Township 3 North, Range 1 West.
- Thence east to the northeast corner of Section 5, Township3 North, Range 1 West.
- Thence south to the southeast corner of Section 32, Township 2 North, Range 1 West.
- Thence west to the northwest corner of Section 6, Township 1 North, Range 1 West.
- Thence south to the southwest corner of Section 31, Township 1 North, Range 1 West.

Southern Boundary

- Thence east to the southeast corner of Section 33, Township 1 North, Range 4 East.

Eastern Boundary

- Thence north to the point of beginning.

Appendix B: Approved Regional Emission Assumptions

Source type population and fleet age distribution:

DEQ decoded individual Idaho Division of Motor Vehicles registration records of vehicles registered in the Treasure Valley using the Data One, Inc. and CVINA vehicle identification number (VIN) decoding system. The decoded VINs provide information regarding the vehicle make, model, type, age, and fuel types. This information was then used to develop source-related MOVES input.

Inspection Maintenance (IM) Program – June 1, 2010 - future

Ada County:

1) Two speed test (idle and 2500 RPM) for pre 1996 vehicles only.
2) Exhaust OBD check for 1996 and newer vehicles.
3) Evaporative system OBD check for 1996 and newer vehicles.
4) Compliance factor – This factor is calculated annually from the previous year's IM program statistics.
5) Four-year grace period for new vehicles
6) Biennial testing – effective January 1, 2010.

Canyon County:

1) Two speed test (idle and 2500 RPM) for pre 1996 vehicles only.
2) Evaporative gas cap check for 1996 and newer vehicles.
3) Exhaust OBD check for 1996 and newer vehicles.
4) Evaporative system OBD check for 1996 and newer vehicles.
5) Compliance factor – This factor is calculated annually from the previous year's IM program statistics.
6) Five-year grace period for new vehicles
7) Biennial testing – effective January 1, 2010.

Meteorology

The meteorology input compiles the average hourly temperature and relative humidity data for each county. Base- and future-year inventories were modeled using average hourly temperature and relative humidity data by county for each month from a representative weather station for each county. Ada County is represented by the National Weather Service station at the Boise Air Terminal and Canyon County is represented by the data set from the Caldwell Industrial Airport.

Fuel-Related Inputs

Alternative Vehicle Fuels and Technology (AVFT): Ada and Canyon Counties were modeled using a custom AVFT input file derived from VIN-decoded registration data, the Idaho Department of Education school bus database, and telephone surveys of local garbage collection and public transportation providers.

Fuel Supply, and Fuel Formulation: National default fuel supply inputs were used for all source types.

Fuel Usage Fractions: Assume that all E-85 capable vehicles are using conventional (E10) gasoline

Average Speed Distribution

The average speed distribution allocates the different source types (vehicles) for each roadway type to 16 speed bins ranging from 0 to >75 miles per hour. *Average* speed distributions were developed from the regional travel demand model average daily estimates or forecasts for each roadway segment and hourly traffic count statistics developed from detailed automatic traffic recorder (ATR) traffic count data provided by Idaho Transportation Department (ITD).

The hourly ATR-based traffic count profiles for each roadway type were used to estimate hourly volume on each segment and the modified Bureau of Public Roadways volume/capacity curve was used to develop the average speed distribution database for each hour.

$$Hourly\ Vehicle\ Speed = \ Free\ Flow\ Speed\ * \left(1 + A * \left(\frac{Volume}{Capacity}\right)^{B}\right)$$

Where A and B are local coefficients used in the regional travel demand model as provided by COMPASS. Base- and future-year average speed distributions were developed for all four MOVES road types using travel demand model base and future-year outputs developed by COMPASS for the Treasure Valley and detailed ATR data provided by ITD.