

## Appendix C: 2040 MTP Conformity Determination

### **Introduction**

The Portneuf Valley Nonattainment Area (PVNAA) was shown to have met the PM<sub>10</sub> Nation Ambient Air Quality Standards (NAAQS) with the approval of the State Implementation Plan (SIP) and Maintenance Plan by Environmental Protection Agency EPA on August 14, 2006 (Federal Register / Vol. 71, No. 134 / Thursday, July 13, 2006). The attainment of the maintenance plan still requires the PVNAA to demonstrate that transportation activities will not cause additional exceedance of the PM<sub>10</sub> NAAQS.

Bannock Transportation Planning Organization (BTPO) is the Metropolitan Planning Organization (MPO) for the PVNAA, and as the MPO is required to conduct a conformity determination on the Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).

Transportation conformity is the process of evaluating the planning transportation activities emissions against the Motor Vehicle Emissions Budget (MVEB) established by the SIP. The SIP for the Portneuf Valley Non-Attainment Area was approved by EPA on August 14, 2006. Due to changes in the requirements for air quality modeling an amendment to that SIP and MVEB was submitted in April 2014 and has an effective date of September 15, 2014 (Federal Register / Vol. 79, No. 137 / Thursday, July 17, 2014). The requirements and specification for determining transportation conformity are provided in Code of Federal Regulation Title 40 part 93.

The procedure to determine if a transportation plan or transportation improvement program conforms to the SIP is the budget test. The budget test compares the emissions from a specific action like the update of the transportation plan or TIP to the emissions limitation established in the budget referred to as the Motor Vehicle Emissions Budget.

Latest emissions model, planning assumptions, consultation, and emissions budgets are the four basic criteria for a conformity determination on the Transportation Improvement Program (TIP). For each area the inputs and assumptions will be presented. The main purpose is to provide a detailed outline of how the transportation emissions were generated.

### ***Portneuf Valley Non-Attainment Area Transportation Conformity Assumptions***

#### **Latest Emissions Model**

The Environmental Protection Agency approved Motor Vehicle Emissions Simulator model (MOVES2014) on October 7, 2014 as the official model for conducting transportation conformity. EPA also provided a two-year grace period beginning on October 7, 2014 and ending October 7, 2016 to implement the MOVES2014 for transportation conformity (Federal Register /Vol. 79, No. 194 /Tuesday, October 7, 2014). Motor Vehicle Emission Simulator Model (MOVES2010b) was used to complete this conformity analysis. The MOVES model



provides vehicle emissions for Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOCs) and a portion of Particulate Matter less than ten microns (PM<sub>10</sub>). The paved road dust portion of PM<sub>10</sub> is calculated using 2011 AP-42 Compilation of Air Pollutant Emission Factors chapter 13.

### **Latest Planning Assumptions**

In 2012, BTPO updated the demographic projections along with the Travel Demand Model. The TDM was validated and calibrated with a 2010 base-year. BTPO's travel demand model software is TransCAD and the current version is TransCAD 6.0. The 2012 update study used the 2010 population data from U.S. Census data and employment data from Idaho Department of Labor Bureau of Economic Statics to project 2010 to 2040 in five year intervals. The BTPO Travel Model Users Guide is available on the BTPO website at <http://www.bannockplanning.org/demographics-maps/>. The guide provides the inputs and assumptions used in the development of the TDM.

### **Transit Assumptions**

Built into the TDM is a method to account for non-vehicle travel. While this method is not an official mode split model it does assume which percentage of trips from district to district which would use transit, walking, or bicycle as a mode of travel. In this method the cost of transit and number of riders is considered to be constant over the twenty-years of the TDM.

### **Key Assumptions**

The travel demand model and emission inventory documents (links provided) provide a detailed description of the inputs used in the development of the conformity models. Both the TDM and the MOVES model are complicated software packages which used local data to reproduce or simulate either travel or emissions for existing and future conditions. To help review the conformity determination the key assumptions or inputs will be reviewed for the TDM and MOVES model

### **Vehicle Miles Traveled Inputs**

Household Disaggregation: The housing units for each TAZ are converted into household size and number of workers based on 2010 census data.

Trip Generation: Based on the BTPO household travel survey the average weekday person trips are generated for six trip purposes which are:

- HBW – Home Base Work
- HBC – Home Base Collage
- SCH – Home Based School
- HBS – Home Based Shopping
- HBO – Home Based Other
- NHB – Not Home Based



Trip Distribution: BTPO's model uses a destination choice trip distribution model which was developed from the household travel survey data. The employment data is tracked by retail, service, education, and other employment types.

Mode Split: The model split model uses a simple lookup table of auto share by district production-attraction pairs as calculated from the household survey by trip purpose.

TDM VMT: The TDM provides output in the form of Average Daily Traffic. ADT is converted to VMT by multiplying the length of each segment by the ADT of that segment.

Annual VMT: The data from the Highway Performance Monitoring System (HPMS) and Idaho Transportation Department's (ITD) Automatic Traffic Reorders (ATRs) are used to generate a weekday/weekend ration and fleet mix for each road types which applied to the TDM VMT. VMT for local roads which includes local streets and centroid connectors was not adjusted.

Road Types: The TDM, FHWA, and MOVES all use a different roadway type. A crosswalk table was developed which convert the BTPO TDM road types into the four road types used by MOVES.

Monthly, Daily, and Hourly VMT: The ART data for an entire year was evaluated to develop a fraction of travel which occurs in each month, day and hour for each road type and vehicle classification. National defaults were used for commercial short and long haul trucks.

### **Vehicle Fleet Key Assumptions**

Vehicle Population and age distribution came for four sources which are:

- Cars, motorcycles, trucks, and light commercial trucks - Idaho DMV
- Intercity and transit buses - Phone interview this providers
- School Bus -Idaho Department of Education
- Commercial trucks short and long haul -National defaults

The vehicle population data was for Bannock County. The 2010 census population percentage of the PVNAA to the county population was 89.3 percent. That percentage was used to scale those populations with local data. The populations with national data the VMT from local sources was used to scale the national defaults.

Vehicle Age Distribution was developed for Bannock County using a VIN –decoded vehicle registration data. The same age distribution was used for both the 2011 and 2020 emissions inventory and both the 2015, 2020, 2025 and 2040 conformity runs.

### **Vehicle Hours Traveled (VHT) Key Assumptions**

Vehicle hours traveled inputs characterize the time spent traveling and the average speed of vehicle traveling on specific road type. The hourly ATR traffic count data was used to create an hourly volume for each roadway class which was assigned to the outputs of the BTPO TDM.



The Akcelik volume delay function from the TDM was used to adjust the average speed to account for congestion. The same volume delay function was used in the MOVES and TDM modeling.

### **Fuel-Related Key Assumptions**

For the 2015 runs the national default were used except for E10 market share where only 99 percent of used for E10 and one percent assigned for ethanol-free gasoline. In 2020 and beyond the national default fuel supply was used. National defaults were used to account for alternative fueled vehicles.

### **Meteorology Key Assumptions**

Meteorology inputs including average hourly temperature, relative humidity, and precipitation came from observed data for 2011 at the Pocatello Regional Airport. The 2011 meteorology data was used for all conformity runs.

### **Pave Road Dust Key Assumptions**

AP-42 Compilation of Air Pollutant Emission Factor was used to determine paved road dust emission on a daily basis. The emission for each roadway type is the product of the emission factors, and the VMT in each day. The components of the road dust equation are VMT, road surface silt loading, average vehicle weight, and precipitation. Difference in silt loading during winter and summer season requires defining the seasons. For purposes of the analysis winter season is defined as November 1 – February 29 and the summer season as April 1 – October 31.

Vehicle Miles Traveled: Already discussed but the VMT is generated from the TDM outputs along with ART data to get the hourly distribution by roadway type.

Silt Loading: Silt loading is the average amount of material on the road. Due to changes in road sanding the PVNAA now uses national defaults. The silt loading for paved road emission calculations are available in Table 8 of the Emission Inventory document.

Average Vehicle Weight: Average vehicle type for each roadway was determined from the ART data. This data was converted to the FHWA vehicle classification and then to the MOVES vehicle type. The national default average vehicle weight was used for each vehicle type.

Precipitation Data: If there is a day with more than a trace of precipitation ( $\geq 0.01$  inches) that day is considered to not have measurable road dust. The data come from the MESOWEST and Western Regional Climate Center and was for the 2011. The 2011 data was used for all emission runs.

### **Time Horizons**

CFR 40 §93.106(d)(1) and CFR 40 §93.106(d)(2) allow the modification of the time horizon if the Policy Board in conjunction with IDEQ and other stakeholders agree. BTPO has elected to modify the time frame of the conformity determination. In analyzing the timeframe



requirements in CFR 40 §93.106(a)(1), CFR 40 §93.106(d)(1), and CFR 40 §93.118(b)(2) the following horizon or analysis year have been identified:

- Horizon Year 2015 – First year of the TIP but also an analysis year for the TDM.
- Horizon Year 2020 – This is the last year of the Motor Vehicle Emission Budget.
- Horizon Year 2025 – This is the tenth year of the 2040 Metropolitan Transportation Plan.

In addition to the three analysis years 2040, which is the last year of the 2040 MTP is included for informational purposes only.

### **Projects Included in the 2040 Metropolitan Transportation Plan**

Transportation conformity is designed to ensure that transportation activities within the area will not exceed the MVEB for that area. Transportation conformity at a program level pertains to the Metropolitan Transportation Plan and the Transportation Improvement Program. Projects in a TIP and must be included in a conforming transportation plan.

For each horizon the lists below includes all the federally funded projects which will be constructed from 2015 to 2040. There are no other projects which are considered regionally significant will be constructed during the time horizon. Table 1 lists the FY 2015 – 2018 Transportation Improvement Program projects which are in the 2015 Horizon year analysis. Table 2 lists the FY 2015 – 2018 Transportation Improvement Program projects which are in the 2020 Horizon Year. Table 3 lists the Intersection of Hawthorne and Quinn (Key#12099) as in Preliminary Development but the anticipated construction date is 2022 which puts the project within the 2025 Horizon year

Also included in the 2025 Horizon year from the 2040 MTP are:

- Yellowstone - Park Lawn and Siphon: Widen the existing road from two to five lanes in 2023.
- I-15 South 5th Interchange (IC 61): Reconstruct the interchange to align off-ramps 2025.

The 2040 Horizon Year includes those projects identified in the 2040 MTP after 2025, they include:

- Hawthorne Road widening: Widen Hawthorn Road 600' south of I-18 to Chubbuck Road from two or three lanes to five lanes.
- Hiline Road widening: Widen Hiline Road from Alameda to Pearl from two lanes to five lanes.

The projects included in the 2025 and 2040 Horizons were taken from Table 7-5 Funding for the Preferred Scenario.



Key Number	Project Name	Activity	Year of Activity					Program	Sponsor	Conformity	
			2015	2016	2017	2018	2019				PD
14349	MLK Complete Street Project, City of Pocatello	Narrow roadway to improve bicycle and pedestrian facilities	\$643						TAP	Pocatello	Exempt 40 CFR 993 Table 2
14018	STP-7151; Benton and 2nd Ave	Intersection safety improvements to eliminate left turns	\$150						Safety	Pocatello	Exempt 40 CFR 993 Table 2
14015	I-15B, FY15 5 ADA Ramps, Pocatello	Repair curb ramps	\$28							Pocatello	Exempt 40 CFR 993 Table 2
12439	Local; FY 2015 BTPO Metropolitan Planning	Planning	\$157							BTPO	Exempt 40 CFR 993 Table 2
18922	FY 15 Pocatello UZA Capital	244-Bus stop improvement 7th and Sherman	\$100						5310	Surb	Exempt 40 CFR 993 Table 2
13255	FY 15 Pocatello UZA Operations	227-Operations	\$583						5307	Surb	Exempt 40 CFR 993 Table 2
13258	FY 15 Pocatello UZA Security	235-Security	\$25						5307	Surb	Exempt 40 CFR 993 Table 2
13254	FY 15 Pocatello UZA Capital	244-Transit Capital	\$10						5307	Surb	Exempt 40 CFR 993 Table 2
13256	FY 15 Pocatello UZA Demand Response Operation	217-Demand Response Operations	\$73						5307	Surb	Exempt 40 CFR 993 Table 2
13257	FY 15 Pocatello UZA Preventive Maintenance	232-Preventive Maintenance	\$200						5307	Surb	Exempt 40 CFR 993 Table 2
13253	FY 15 Pocatello UZA Metro Planning	225-Metropolitan Planning	\$39						5303	PRT	Exempt 40 CFR 993 Table 2

**Table A 1 2015 Horizon Year**

Key Number	Project Name	Activity	Year of Activity					Program	Sponsor	Conformity	
			2015	2016	2017	2018	2019				PD
11657	Intersection of Alameda and Jefferson	Realign intersection		\$2,878					STP-LU	Pocatello	Yes
19053	E Alameda Rd and Yellowstone	Intersection improvements					\$2,251		State	ITD	Yes
12417	I-15; IC# 47 to IC # 67	Pavement Preservation		\$1,383						ITD	Exempt 40 CFR 993 Table 2
13099	US91: Flandro to Pole Line	Restoration and Rehabilitation		\$2,598						ITD	Exempt 40 CFR 993 Table 2
12444	Off System; Portneuf River Lewis St. Bridge	Bridge Rehabilitation			\$1,067					Pocatello	Exempt 40 CFR 993 Table 2
12098	Center Street Underpass	Bridge Rehabilitation						\$3,400		Pocatello	Exempt 40 CFR 993 Table 2
13119	Benton Street Bridge	Bridge Rehabilitation			\$3,329					Pocatello	Exempt 40 CFR 993 Table 2
13564	Local; FY 2016 BTPO Metropolitan Planning	Planning		\$157						BTPO	Exempt 40 CFR 993 Table 2
13565	Local; FY 2017 BTPO Metropolitan Planning	Planning			\$157					BTPO	Exempt 40 CFR 993 Table 2
14005	I-15B, East Alameda and Yellowstone Ave Medians	Install medians to channel left turns and improve safety				\$1,365				ITD	Exempt 40 CFR 993 Table 2
14012	State, FY 18 D5 Guardrail, Pocatello to Inkom									ITD	Exempt 40 CFR 993 Table 2
14021	Local; FY 2018 BTPO Metropolitan Planning	Planning				\$157				BTPO	Exempt 40 CFR 993 Table 2
13800	FY 16 Pocatello UZA Operations	227-Operations		\$588					5307	Surb	Exempt 40 CFR 993 Table 2
13801	FY 16 Pocatello UZA Capital	244-Transit Capital		\$10					5307	Surb	Exempt 40 CFR 993 Table 2
13802	FY 16 Pocatello UZA Demand Response Operation	217-Demand Response Operations		\$73					5307	Surb	Exempt 40 CFR 993 Table 2
13803	FY 16 Pocatello UZA Preventive Maintenance	232-Preventive Maintenance		\$200					5307	Surb	Exempt 40 CFR 993 Table 2
13804	FY 16 Pocatello UZA Metro Planning	225-Metropolitan Planning		\$39					5303	PRT	Exempt 40 CFR 993 Table 2
14289	FY 17 Pocatello UZA Operations	227-Operations			\$590				5307	Surb	Exempt 40 CFR 993 Table 2
14286	FY 17 Pocatello UZA Security	235-Security			\$8				5307	Surb	Exempt 40 CFR 993 Table 2
14288	FY 17 Pocatello UZA Capital	244-Transit Capital			\$8				5307	Surb	Exempt 40 CFR 993 Table 2
14284	FY 17 Pocatello UZA Demand Response Operation	217-Demand Response Operations			\$80				5307	Surb	Exempt 40 CFR 993 Table 2
14285	FY 17 Pocatello UZA Preventive Maintenance	232-Preventive Maintenance			\$200				5307	Surb	Exempt 40 CFR 993 Table 2
14287	FY 17 Pocatello UZA Metro Planning	225-Metropolitan Planning			\$39				5303	PRT	Exempt 40 CFR 993 Table 2
18889	FY 18 Pocatello UZA Operations	227-Operations				\$590			5307	Surb	Exempt 40 CFR 993 Table 2
19124	FY 18 Pocatello UZA Security	235-Security				\$8			5307	Surb	Exempt 40 CFR 993 Table 2
18769	FY 18 Pocatello UZA Capital	244-Transit Capital				\$8			5307	Surb	Exempt 40 CFR 993 Table 2
19017	FY 18 Pocatello UZA Demand Response Operation	217-Demand Response Operations				\$80			5307	Surb	Exempt 40 CFR 993 Table 2
18988	FY 18 Pocatello UZA Preventive Maintenance	232-Preventive Maintenance				\$200			5307	Surb	Exempt 40 CFR 993 Table 2
18808	FY 18 Pocatello UZA Metro Planning	225-Metropolitan Planning				\$39			5303	PRT	Exempt 40 CFR 993 Table 2
Total			\$4,023	\$9,032	\$6,570	\$3,540	\$4,270	\$3,400	\$5,303		

Cost are in Current Dollar value in 1,000 of dollars. Projects have a 2% increase from 2014 TIP numbers. Transit Project are Federal Funds only. Amendment 1

Sponsor Codes: BPO = Bannock Transportation Planning Organization; Chubbuck = City of Chubbuck; Pocatello = City of Pocatello PRT = Pocatello Regional Transit; ITD = Idaho Transportation Department.

Conformity: Yes indicates that the project is required to be included in the Conformity Determination

**Table A 2: 2020 Horizon Year TIP Projects**

Key Number	Project Name	Activity	Year of Activity					Program	Sponsor	Conformity	
			2015	2016	2017	2018	2019				PD
12099	Intersection of Hawthorne and Quinn	Improve capacity by installing signal or other traffic control device						\$1,940	STP-LU	Pocatello	Yes

**Table A 3: 2025 Horizon Year TIP Projects**



## Motor Vehicle Emissions Budget

The PVNAA Motor Vehicle Emission Budget has been updated to reflect emission modeling with the MOVES2010b model and the revised State Implementation Plan.

Year	PM <sub>10</sub> (TPY)	NO <sub>x</sub> (TPY)	VOC (TPY)
2005	N/A	N/A	N/A
2011	415	1364	903
2020	498	856	651

**Table A 4: PVNAA Motor Vehicle Emissions Budget**

## Results

Tables A-5, A-6, A-7 and A-8 provide the transportation emission outputs of the MOVES2010b model and the Road Dust calculations from AP 42 13.3.1. All of the reported emissions are shown but only NO<sub>x</sub>, VOC, and PM<sub>10</sub> have an emissions budget. The other results are for information only. For Horizon years 2015, 2020, 2025, and 2040 the proposed MTP passes the budget test and therefore is in conformity with the State Implementation Plan.

Year 2015			
pollutantName/Activity	PVNAA	MVEB(2011)	Conformity Test
VMT	432,669,439		PASS
VehiclePopulation	74,883		
Carbon Monoxide (CO)	8,132		
Ammonia (NH3)	15		
Oxides of Nitrogen (NOx)	959	1,364	
Sulfur Dioxide (SO2)	4		
Volatile Organic Compounds	689	903	
Primary OnRoad and RoadDust PM10 - Total	379	415	
Primary OnRoad and RoadDust PM2.5 - Total	56		
Primary OnRoad PM10 - Total	50		
Primary OnRoad PM2.5 - Total	37		
RoadDust PM10 - Total	329		
RoadDust PM2.5 - Total	19		

Note: calculation method for Road Dust is AP 42 13.2.1 Paved Road (Version January, 2011)

**Table A 5: 2015 Horizon Year Budget Test**



Year 2020			
pollutantName/Activity	PVNAA	MVEB(2020)	Conformity Test
VMT	434,061,766		PASS
VehiclePopulation	75,122		
Carbon Monoxide (CO)	6,345		
Ammonia (NH3)	12		
Oxides of Nitrogen (NOx)	624	856	
Sulfur Dioxide (SO2)	4		
Volatile Organic Compounds	473	651	
Primary OnRoad and RoadDust PM10 - Total	355	498	
Primary OnRoad and RoadDust PM2.5 - Total	40		
Primary OnRoad PM10 - Total	24		
Primary OnRoad PM2.5 - Total	21		
RoadDust PM10 - Total	331		
RoadDust PM2.5 - Total	19		

Note: calculation method for Road Dust is AP 42 13.2.1 Paved Road (Version January, 2011)

**Table A 6: 2020 Horizon Year Budget Test**

Year 2025			
pollutantName/Activity	PVNAA	MVEB(2020)	Conformity Test
VMT	476,939,487		PASS
VehiclePopulation	82,603		
Carbon Monoxide (CO)	6,211		
Ammonia (NH3)	13		
Oxides of Nitrogen (NOx)	496	856	
Sulfur Dioxide (SO2)	4		
Volatile Organic Compounds	395	651	
Primary OnRoad and RoadDust PM10 - Total	400	498	
Primary OnRoad and RoadDust PM2.5 - Total	42		
Primary OnRoad PM10 - Total	35		
Primary OnRoad PM2.5 - Total	21		
RoadDust PM10 - Total	365		
RoadDust PM2.5 - Total	21		

Note: calculation method for Road Dust is AP 42 13.2.1 Paved Road (Version January, 2011)

**Table A 7: 2025 Horizon Year Budget Test**





Year 2040			
pollutantName/Activity	PVNAA	MVEB(2020)	Conformity Test
VMT	546,122,970		
VehiclePopulation	94,605		
Carbon Monoxide (CO)	6,448		
Ammonia (NH3)	13		
Oxides of Nitrogen (NOx)	406	856	PASS
Sulfur Dioxide (SO2)	4		
Volatile Organic Compounds	294	651	PASS
Primary OnRoad and RoadDust PM10 - Total	447	498	PASS
Primary OnRoad and RoadDust PM2.5 - Total	40		
Primary OnRoad PM10 - Total	17		
Primary OnRoad PM2.5 - Total	16		
RoadDust PM10 - Total	430		
RoadDust PM2.5 - Total	24		

Note: calculation method for Road Dust is AP 42 13.2.1 Paved Road (Version January, 2011)

**Table A 8: 2040 Horizon Year Budget Test**