

TECHNICAL SUPPORT DOCUMENT  
FOR ON-ROAD MOBILE SOURCES:  
MOTOR VEHICLE EMISSIONS BUDGET DERIVATION  
FOR THE PROVO, UT PM<sub>2.5</sub> NONATTAINMENT AREA

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Utah Division of Air Quality  
Planning Branch/Mobile Sources

## Motor Vehicle Emissions Budget (MVEB) Derivation:

### Emissions Inventory

Mountainland Association of Governments (MAG) Organization constructed the on-road mobile source emissions inventory. This inventory covered the analysis years of 2017, 2026, and 2035 for Provo PM<sub>2.5</sub> Nonattainment Area (NA). The emissions results can be found in the **Technical Support Document for On-road Mobile Sources: PM<sub>2.5</sub> Emissions Inventory for 2017, 2026, and 2035 for the Provo, UT PM<sub>2.5</sub> Nonattainment Area and surrounding modeling domain within Utah**; Table 1 PM<sub>2.5</sub> SIP On-road Mobile Source Inventory 2017-2035 Winter Weekday Emission (Tons per Winter Weekday). (pg14)

### MVEB Year Selection

The conformity regulation (40 CFR 93.118(b)(2)) requires that the last year of the Maintenance Plan to be used as a MVEB. Intermediate MVEB years can be established within the Maintenance Plans but are not required. The 2026 analysis year will not be a MVEB year but consists of a qualitative finding that there are no factors which would cause or contribute to a new violation or exacerbate an existing violation in the years before the last year of the Maintenance Plan. The qualitative finding for 2026 is found in **Section IX.A.27.c.4(a)(i) of the Utah State Implementation Plan: PM<sub>2.5</sub> Maintenance Provisions for the Provo Nonattainment Area**.

### MVEB Development

The MVEB is based upon the 2035 countywide inventory for the Provo PM<sub>2.5</sub> NA. The individual county on-road mobile 2035 inventory is located below in Table 1. This inventory was used to demonstrate compliance with the 24 hour PM<sub>2.5</sub> maintenance requirements.

<b>Table 1. Provo, UT PM<sub>2.5</sub> NA: Utah County On-road Mobile Emissions Inventory 2035 Winter Weekday Emissions (Tons per Winter Weekday)*</b>									
Year	County	NH3	NOx	PM10**	PM2.5**	SO2	VOC	VOC Refuel	VMT
2035	Utah	0.50	4.50	1.28	0.32	0.06	4.20	0.25	20,278,299

\* Tier 3 Fuel 10 ppm Sulfur

\*\* PM 10 Exhaust + Brake and Tire Wear

\*\*\* PM 2.5 Exhaust + Brake and Tire Wear

### Safety Margin

The transportation conformity requirements found in 40 CFR 93.102 requires that the PM<sub>2.5</sub> SIP include motor vehicle emissions budgets for PM<sub>2.5</sub> precursor emissions of Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOC), and direct PM<sub>2.5</sub> (primary exhaust PM<sub>2.5</sub> + brake and tire wear) emissions. VOC emissions precursor budgets are required because UDAQ has identified VOCs as a PM<sub>2.5</sub> precursor that significantly impact PM<sub>2.5</sub> concentrations.

EPA's conformity regulation (40 CFR 93.124(a)) allows the implementation plan to quantify explicitly the amount by which motor vehicle emissions could be higher while still demonstrating compliance with the maintenance requirement. These additional emissions that can be allocated to the applicable MVEB are considered the "safety margin." As defined in 40 CFR 93.101, safety margin represents the amount of emissions by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for demonstrating maintenance. The implementation plan can then allocate some or all of this "safety margin" to the applicable MVEBs for transportation conformity purposes.

MAG requested UDAQ to determine whether there is a safety margin present in the 2035 inventory that was constructed for the Provo, UT PM<sub>2.5</sub> NA. The safety margin determination identifies additional on-road mobile source emissions of PM<sub>2.5</sub> precursor emissions of Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOC), and direct PM<sub>2.5</sub> (primary exhaust PM<sub>2.5</sub> + brake and tire wear) combined with the 2035 inventory of emissions that satisfy air quality attainment. The requested safety margin emissions are identified below in Table 2.

<b>Table 2. Provo, UT PM<sub>2.5</sub> NA: Utah County On-road Mobile Emissions Inventory Safety Margin Request 2035* Winter Weekday Emissions (Tons per Winter Weekday)*</b>							
Year	County	NOx	New NOx	PM <sub>2.5</sub> **	New PM <sub>2.5</sub> **	VOC***	New VOC***
2035	Utah	4.50		0.32		4.20	
	Safety Margin Request		2.00		1.18		2.80
	New Total with Safety Margin		6.50		1.50		7.00
	Safety Margin Percent Increase		44.44%		368.75%		66.67%

\* Tier 3 Fuel 10 ppm Sulfur

\*\* PM 2.5 Exhaust + Brake and Tire Wear

\*\*\* VOC does not include refueling

The on-road mobile source inventory and the additional safety margin request were used to demonstrate compliance with the 24 hour PM<sub>2.5</sub> maintenance requirements. Table 2 and 3 indicate how the final MVEB was derived. The safety margin request and final MVEB is located within **Section IX.A.27 of the Utah State Implementation Plan: PM<sub>2.5</sub> Maintenance Provisions for the Provo Nonattainment Area** (p43).

**Table 3. Provo, UT PM<sub>2.5</sub> NA: Utah County MVEB  
2035\* Winter Weekday Emissions  
(Tons per Winter Weekday)\***

	NOx	PM <sub>2.5</sub> **	VOC***
Provo NAA PM <sub>2.5</sub> MVEB BUDGET	6.50	1.50	7.00

\* Tier 3 Fuel 10 ppm Sulfur

\*\* PM 2.5 Exhaust + Brake and Tire Wear

\*\*\* VOC does not include refueling