State of Utah

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DAQ-089-13

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Bill Reiss, Environmental Engineer

DATE: October 23, 2013

SUBJECT: FINAL ADOPTION: Amend State Implementation Plan (SIP) Section IX, Part A.23, Control Measures for Area and Point Sources, Fine Particulate Matter, $PM_{2.5}$ SIP for Logan, UT-ID Nonattainment Area.

The $PM_{2.5}$ SIP approved by the Board on December 5, 2012, included, in its transportation conformity section, an element that was identified as yet to be determined.

The requirement to include a mobile source emissions budget for direct $PM_{2.5}$ is identified in 40 CFR 93.102 as somewhat discretionary. Direct $PM_{2.5}$ includes brake-wear, tire-wear, and tailpipe emissions, but not re-entrained road dust. At the time the SIP was approved, neither EPA nor DAQ was ready to conclude whether a budget for direct $PM_{2.5}$ would be necessary.

On August 7, 2013, the Board proposed amendments to Chapter 7 of SIP Section IX, Part A.23 to resolve this issue by:

- Establishing a motor vehicle emission budget (MVEB) for on-road direct $PM_{2.5}$ emissions; and
- Establishing a trading mechanism to allow future increases in on-road direct $PM_{2.5}$ emissions to be offset by future decreases in plan precursor emissions from on-road mobile sources at appropriate ratios established by the air quality model.

A 30-day public comment period was held. No comments were received and no hearing was requested.

Staff Recommendation: Staff recommends the Board adopt Chapter 7 of SIP Section IX, Part A.23 as proposed.

Chapter 7 – TRANSPORTATION CONFORMITY

7.1 Introduction

The federal Clean Air Act (CAA) requires that transportation plans and programs within the Logan, UT-ID $PM_{2.5}$ nonattainment area conform to the air quality plans in the region prior to being approved by the Cache Metropolitan Planning Organization (CMPO). Demonstration of transportation conformity is a condition to receive federal funding for transportation activities that are consistent with air quality goals established in the Utah State Implementation Plan (SIP). The CAA regulates air pollutant emissions from mobile sources by establishing motor vehicle emissions budgets in the SIP. Transportation conformity requirements are intended to ensure that transportation activities do not interfere with air quality progress. Conformity applies to on-road mobile source emissions from regional transportation plans (RTPs), transportation improvement programs (TIPs), and projects funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) in areas that do not meet or previously have not met the National Ambient Air Quality Standards (NAAQS) for ozone, carbon monoxide, particulate matter less than 10 micrometers in diameter (PM_{10}), particulate matter 2.5 micrometers in diameter or less ($PM_{2.5}$), or nitrogen dioxide.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFTEA-LU) and section 176(c)(2)(A) of the CAA require that all regionally significant highway and transit projects in air quality nonattainment areas be derived from a "conforming" transportation plan. Section 176(c) of the CAA requires that transportation plans, programs, and projects conform to applicable air quality plans before being approved by an MPO. Conformity to an implementation plan means that proposed activities must not (1) cause or contribute to any new violation of any standard in any area, (2) increase the frequency or severity of any existing violation of any standard in any area, or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The plans and programs produced by the transportation planning process of the CMPO are required to conform to the on-road mobile source emissions budgets established in the SIP. Approval of conformity is determined by the FHWA and FTA.

7.2 Consultation

The Interagency Consultation Team (ICT) is an air quality workgroup in Utah that makes technical and policy recommendations regarding transportation conformity issues related to the SIP development and transportation planning process. Section XII of the SIP established the ICT workgroup and defines the roles and responsibilities of the participating agencies. Members of the ICT workgroup collaborated on a regular basis during the development of the $PM_{2.5}$ SIP. They also meet on a regular basis regarding

transportation conformity and air quality issues. The ICT workgroup is comprised of management and technical staff members from the affected agencies associated directly with transportation conformity.

ICT Workgroup Agencies

- Utah Division of Air Quality (UDAQ)
- Metropolitan Planning Organizations MPOs
  - CMPO
  - Wasatch Front Regional Council
  - Mountainland Association of Governments
- Utah Department of Transportation (UDOT)
- Utah Local Public Transit Agencies
- Federal Highway Administration (FHWA)
- Federal Transit Administration (FTA)
- U.S. Environmental Protection Agency (EPA)

7.3 Regional Emission Analysis

The regional emissions analysis is the primary component of transportation conformity and is administered by the lead transportation agency located in the EPA designated air quality nonattainment area. On December 2009, EPA designated the only multistate nonattainment area in the State of Utah by declaring portions of Cache County, Utah and Franklin County, Idaho (Cache Valley) as a $PM_{2.5}$ nonattainment area. The responsible transportation planning organization for the Utah portion of the multistate nonattainment area is covered by the CMPO while the Idaho portion is covered by the Idaho Department of Transportation.

The motor vehicle emissions budget serves as a regulatory limit for on-road mobile source emissions. Motor vehicle emissions limits are defined in 40 CFR 93.101 as "that portion of the total allowable emissions defined in the submitted or approved control strategy implementation plan revision or maintenance plan for a certain date for the purpose of meeting reasonable further progress milestones or demonstrating attainment or maintenance of the NAAQS, for any criteria pollutant or its precursors, allocated to highway and transit vehicle use and emissions." As a condition to receive federal transportation funding, transportation plans, programs, and projects are required to meet those emission budgets through strategies that increase the efficiency of the transportation system and reduce motor vehicle use.

The conformity test consists of either an interim emissions test or a motor vehicle emissions budgets test. The interim conformity test requirements apply until either EPA has declared the motor vehicle emissions budgets adequate for transportation conformity purposes or until EPA approves the $PM_{2.5}$ SIP.

7.4 Interim $PM_{2.5}$ Conformity Test

The EPA interim conformity test for $PM_{2.5}$ emissions requires that future nitrogen oxides (NO_x) and direct $PM_{2.5}$ emissions from RTPs, TIPs, and projects funded or approved by the FHWA or the FTA not exceed 2008 levels. Direct particulate emissions consist of particles emitted from vehicle exhaust (elemental carbon, organic carbon, and SO_4) and brake and tire wear. Interim emissions budget tests performed by the CMPO must include the whole multistate $PM_{2.5}$ nonattainment area of Cache Valley, including emissions estimates from Franklin County, Idaho. In the Transportation Conformity $PM_{2.5}$ Components section below, Cache County, Utah and Franklin County, Idaho have requested separate motor vehicle emissions budgets for their respective areas; therefore, the budget listed only applies to the Cache MPO. The Interim conformity test requirements apply until EPA has declared the motor vehicle emissions budgets adequate for transportation conformity purposes or until it approves the $PM_{2.5}$ SIP.

7.5 Transportation $PM_{2.5}$ Budget Test Requirements

The CMPO collaborated with the ICT workgroup on interim conformity and SIP related issues prior to receiving the official EPA designation status of nonattainment for $PM_{2.5}$. During the SIP development process the CMPO coordinated with the ICT workgroup and developed $PM_{2.5}$ SIP motor vehicle emissions budgets using the latest planning assumptions and tools for traffic analysis and the EPA approved Motor Vehicle Emission Simulator (MOVES) emissions model. Local MOVES modeling data inputs were cooperatively developed by CMPO and the ICT workgroup using EPA recommended methods where applicable.

7.6 Transportation Conformity $PM_{2.5}$ Components

The transportation conformity requirements found in 40 CFR 93.102 require that the $PM_{2.5}$ SIP include motor vehicle emissions budgets for direct $PM_{2.5}$; motor vehicle emissions from tailpipe, brake and tire wear; and emissions of nitrogen oxide (NO_x), a gaseous $PM_{2.5}$ precursor. Because UDAQ has identified volatile organic compounds (VOCs) as a $PM_{2.5}$ precursor that significantly impact $PM_{2.5}$ concentrations, the SIP will need a VOC motor vehicle emissions budget for transportation conformity purposes. The EPA conformity rule presumes that $PM_{2.5}$ re-entrained road dust does not need to be included in the interim conformity test or have an established motor vehicle emissions budget unless either the state or EPA decides that re-entrained road dust emissions are a significant contributor to the $PM_{2.5}$ nonattainment problem. The UDAQ conducted a re-entrained road dust study that concluded that $PM_{2.5}$ re-entrained road dust emissions are negligible in the Utah portion of the Cache Valley $PM_{2.5}$ nonattainment area. EPA Region 8 reviewed the study and concurred with the UDAQ's findings. A

similar analysis was undertaken to address direct $PM_{2.5}$ emissions, but in this case the conclusion was otherwise. Therefore, a motor vehicle emissions budget for direct $PM_{2.5}$ is established in this SIP.

7.7 Transportation Conformity $PM_{2.5}$ Budgets

In this SIP, the state is establishing transportation conformity motor vehicle emission budgets (MVEB) for NO_x, VOC, and $PM_{2.5}$ (elemental carbon, organic carbon, SO_4, brake and tire wear) for 2014 in the nonattainment portions of Cache County, Utah. The Transportation Conformity $PM_{2.5}$ budgets emissions estimates for the mobile sources are calculated from the EPA approved Motor Vehicle Emission Simulator Model (EPA MOVES 2010a).

Cache MPO Transportation Conformity Budgets

	Direct $PM_{2.5}$ (tpd)	NO_x (tpd)	VOC (tpd)
2014	0.33	4.82	3.45

Table 7.1, Emissions Budgets for Transportation Conformity Purposes (EPA MOVES 2010a). Note: VOC emissions do not include refueling spillage and displacement vapor loss. Budgets are rounded to the nearest hundredth ton.

Per section 93.124 of the conformity regulations, for transportation conformity analyses using these budgets in analysis years beyond 2014, a trading mechanism is established to allow future increases in on-road direct $PM_{2.5}$ emissions to be offset by future decreases in plan precursor emissions from on-road mobile sources at appropriate ratios established by the air quality model. Future increases in on-road direct $PM_{2.5}$ emissions may be offset with future decreases in NOx emissions from on-road mobile sources at a NOx:$PM_{2.5}$ ratio of 14.65:1 and/or future decreases in VOC emissions from on-road mobile sources at a VOC:$PM_{2.5}$ ratio of 20.98:1. This trading mechanism will only be used if needed for conformity analyses for years after 2014. To ensure that the trading mechanism does not impact the ability to meet the NOx or VOC budgets, the NOx emission reductions available to supplement the direct $PM_{2.5}$ budget shall only be those remaining after the 2014 NOx budget has been met, and the VOC emissions reductions available to supplement the direct $PM_{2.5}$ budget shall only be those remaining after the 2014 VOC budget has been met. Clear documentation of the calculations used in the trading should be included in the conformity analysis.