

Air Quality Memorandum

REPORT NO. 43

DATE October 23, 2025

SUBJECT CONFORMITY ANALYSIS FOR AMENDMENT #4 OF THE WFRC 2023-2050 REGIONAL TRANSPORTATION PLAN.

ABSTRACT The Infrastructure Investment and Jobs Act (IIJA) and the Clean Air Act Amendments (CAAA) require that all regionally significant highway and transit projects in air quality non-attainment and maintenance areas be derived from a “conforming” Regional Transportation Plan and Transportation Improvement Program. A conforming Plan or Program is one that has been analyzed for emissions of controlled air pollutants and found to be within emission limits established in the State Implementation Plan (SIP) or within guidelines established by the Environmental Protection Agency (EPA) until such time that a SIP is approved. This conformity analysis is made by the Wasatch Front Regional Council (WFRC), as the Metropolitan Planning Organization for the Salt Lake City and Ogden-Layton Urbanized Areas, and submitted to the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) for their concurrence. This conformity analysis is being prepared according to the EPA transportation conformity regulations published in the Federal Register March 2012 and according to the Infrastructure Investment and Jobs Act (IIJA). The EPA approved MOVES model for estimating vehicle emissions was used for this conformity analysis.

This conformity analysis addresses the emissions impact of Amendment #4 of the 2023-2050 RTP. The projected vehicle activity is based on Version 9.1.1 of the Wasatch Front travel demand model which has been calibrated to a 2019 base year. For a description of the project changes as part of this Amendment #4, see Appendix 4. For a detailed view of all the projects included in this conformity analysis, see the [interactive map of the 2023-2050 Regional Transportation Plan](#).

Based on the analysis presented in this document, the amended WFRC 2023-2050 RTP conforms to the State Implementation Plan or the Environmental Protection Agency interim conformity guidelines for all pollutants in applicable non-attainment or maintenance areas. Therefore, all transportation projects in Box Elder, Weber, Davis, Salt Lake, and Tooele Counties included in the amended 2023-2050 RTP are found to conform.

Wasatch Front Regional Council

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A. Conformity Requirements

Conformity Process

Since the commencement of the federal transportation planning requirements in the late 1960s, further requirements (most recently the 2021 Infrastructure Investment and Jobs Act and the 1990 Clean Air Act Amendments) have added to the responsibilities and the decision-making powers of local governments through the Metropolitan Planning Organization. The Wasatch Front Regional Council (WFRC) is the Metropolitan Planning Organization for the Salt Lake City and Ogden - Layton Urbanized Areas. This report summarizes WFRC's conformity analysis of the amended 2023-2050 RTP with the Division of Air Quality's State Implementation Plan (SIP) and the Environmental Protection Agency's interim conformity guidelines. This conformity analysis is subject to public and agency review, and requires the concurrence of the Federal Highway Administration and Federal Transit Administration.

In November, 1993, the Environmental Protection Agency and the U.S. Department of Transportation issued rules establishing the procedures to be used to show that transportation plans and programs conform to the SIP. The conformity rules establish that federal funds may not be used for transportation projects that add capacity in areas designated as "non-attainment (or maintenance) with respect to the National Ambient Air Quality Standards", until and unless a regional emissions analysis of the Plan and TIP demonstrates that the projects conform to the SIP. This restriction also applies to "regionally significant" transportation projects sponsored by recipients of federal funds even if the regionally significant transportation project uses local funds exclusively.

Davis and Salt Lake Counties, Ogden City and portions of Weber, Box Elder and Tooele Counties are designated as non-attainment (or maintenance) for one or more air pollutants. Specifically, there are four areas in the Wasatch Front region for which the conformity rules apply. These areas are listed in Table 1 below.

Table 1
Wasatch Front Region Nonattainment Designations

Area	Designation	Pollutant	Attainment Date
Ogden City	Moderate Non-Attainment Area	Particulate Matter (PM ₁₀)	TBD
Salt Lake County	Moderate Non-Attainment Area	Particulate Matter (PM ₁₀)	2003
Salt Lake (including Davis, Salt Lake, and portions of Weber, Box Elder, and Tooele Counties)	Serious Non-Attainment Area	Particulate Matter (PM _{2.5})	2019
Northern Wasatch Front (including Salt Lake, Davis, and portions of Weber and Tooele Counties)	Moderate Non-Attainment Area	Ozone (O ₃)	2023

The CAA established requirements for conformity. These requirements are outlined in 40 CFR 93.109 and include the following:

- Latest planning assumptions
- Transportation Control Measures (TCM)
- Emissions budget
- Projects from a conforming plan and TIP
- PM₁₀ control measures
- Latest emissions model
- Consultation
- Currently conforming plan and TIP
- CO, PM₁₀, and PM_{2.5} “hot spots”

Each of these requirements will be discussed in the following paragraphs.

Latest Planning Assumptions

Current travel models utilize socioeconomic data and forecasts derived from local government land use and permit/approval information, employment data from the Utah Department of Workforce Services, and county-level household and job projections from University of Utah’s Kem C. Gardner Policy Institute (GPI) Base year socioeconomic data are for calendar year 2019. Forecasts of population and employment by traffic analysis zone were developed by WFRC in 2022 and are controlled to the county-level forecast totals produced in 2022 by GPI through funding provided by the Utah Legislature.

Latest Emissions Model

The conformity analysis presented in this document is based on EPA mobile source emissions models: MOVES4.0 for tailpipe emissions and AP-42 section 13.2.1 for paved road dust emissions. The application of these models will be discussed in greater detail in the Emissions Model section of this document.

Consultation Process

Section 105 of 40 CFR Part 93 (Conformity Rule) requires, among other things, interagency consultation in the development of conformity determinations. To satisfy this requirement, the State Division of Air Quality (DAQ) prepared a Conformity SIP to outline the consultation procedures to be used in air quality and transportation planning. The Conformity SIP also defines the membership of the Interagency Consultation Team (ICT) as representatives from DAQ, WFRC, Mountainland Association of Governments, Utah Department of Transportation, Utah Transit Authority, EPA, FHWA, and the FTA. The Conformity SIP has been approved by EPA. WFRC followed the consultation procedures as outlined in the Conformity SIP in the preparation of this conformity analysis. The Utah Division of Air Quality and other members of the ICT were also provided with a copy of this report during the public comment period for the amended 2023-2050 RTP.

This Conformity Analysis for the amended 2023-2050 RTP was made available for public inspection and comment for a 30-day period in accordance with EPA conformity regulations. This analysis was also posted on the WFRC website during the comment period. Notification of the comment period was sent by electronic mail to interested stakeholders. In addition, public comment was taken during various committee meetings of the Wasatch Front Regional Council.

TCM Implementation

A conformity analysis for the amended 2023-2050 RTP must certify that the RTP does not interfere with the implementation of any Transportation Control Measure (TCM) identified in the applicable State Implementation Plan (SIP). There are not any TCM's identified in any of the currently applicable SIP documents for the Wasatch Front Region.

Emissions Budget

A comparison of mobile source emission estimates to emission budgets defined in the SIP is outlined in this document in Section D - Conformity Determination.

Currently Conforming Plan and TIP

The existing 2023-2050 RTP for the Wasatch Front Area conforms to State air quality goals and objectives as noted in a letter from FHWA and FTA dated May 31, 2023. The existing 2024-2029 TIP for the Wasatch Front Area was also found to conform and this was noted in a letter from FHWA and FTA dated October 1, 2023.

Projects from a Conforming Plan and TIP

TIP Time Frame - All projects which must be started no later than 2029 in order to achieve the transportation system envisioned by the amended 2023-2050 RTP are included in the 2024-2029 TIP. The TIP is fiscally constrained, meaning that only those projects with an identified source of funds are included in the TIP. Estimated funding availability is based on current funding levels and reasonable assumptions that these funds will continue to be available. Conformity for the 2024-2029 TIP is addressed separately in Air Quality Memorandum 41a.

Regionally Significant

All regionally significant projects, regardless of funding source (federal, state, or local) are included in the RTP. All regionally significant projects are also included in the regional emissions analysis of the RTP. Regionally significant highway projects are identified as capacity projects on roadways

functionally classified as a principal arterial or higher order facility, and certain minor arterials as identified through the interagency consultation process (see Appendix 1 for a complete definition of regionally significant projects). The latest Utah Department of Transportation Functional Classification map is used to identify functional classification. Capacity projects on interstate highways, freeways, expressways, principal arterials, certain minor arterials, and fixed guideway transit are treated as regionally significant projects.

Because of their relative impact on air quality, all regionally significant projects regardless of funding source must be included in the regional emissions analysis, and any significant change in the design or scope of a regionally significant project must also be reflected in the analysis. All regionally significant projects have been included in the regional emissions analysis, and the modeling parameters used for these projects are consistent with the design and scope of these projects as defined in the RTP. In order to improve the quality of the travel model, minor arterials and collectors, as well as local transit service, are also included in the regional travel model (and thus the regional emissions analysis) but these facilities are not considered regionally significant since they do not serve regional transportation needs as defined by EPA. For a detailed view of projects included in this conformity analysis, see the [interactive map of the 2023-2050 Regional Transportation Plan](#).

CO, PM₁₀ and PM_{2.5} “Hot Spot” Analysis

In addition to the regional emissions conformity analysis presented in this document, specific projects within carbon monoxide (CO) and particulate matter (PM₁₀ and PM_{2.5}) non-attainment areas are required to prepare a “hot spot” analysis of emissions. The “hot spot” analysis serves to verify whether localized emissions from a specific project will meet air quality standards. This requirement is addressed during the NEPA phase of project development before FHWA or FTA can issue final project approval.

FHWA has issued [guidance](#) on quantitative PM₁₀ and PM_{2.5} “hot spot” analysis to be used for the NEPA process.

PM₁₀ Control Measures

Construction-related Fugitive Dust - Construction-related dust is not identified in the Utah SIP as a contributor to the PM₁₀ non-attainment area. Therefore, there is no conformity requirement for construction dust. Section 93.122(d) (1) of 40 CFR reads as follows:

“For areas in which the implementation plan does not identify construction-related fugitive PM₁₀ as a contributor to the non-attainment problem, the fugitive PM₁₀ emissions associated with highway and transit project construction are not required to be considered in the regional emissions analysis.”

In the Utah PM₁₀ SIP, construction-related PM₁₀ is not included in the inventory, nor is it included in the attainment demonstration or control strategies. Control of construction-related PM₁₀ emissions is mentioned in qualitative terms in Section IX.A.7 of the SIP as a maintenance measure to preserve attainment of the PM₁₀ standard achieved by application of the control strategies identified in the SIP. Section IX.A.7.d of the SIP requires UDOT and local planning agencies to cooperate and review all proposed construction projects for impacts on the PM₁₀ standard. This SIP requirement is satisfied

through the Utah State Air Quality Rules. R307-309-4 requires that sponsors of any construction activity file a dust control plan with the State Division of Air Quality.

Other Conformity Requirements

Transit Fares - Historically, transit fares have increased periodically in response to rising operating costs. The percentage of transit fare revenues to overall operating costs has remained relatively constant over the years.

The WFRC anticipates that \$574,000,000 will be generated from passenger fares to use new transit services over the life of the 2023-2050 RTP. Fare revenues are estimated using ridership projections from the WFRC travel demand model and the historic trend of the average revenue per ride collected by the agency.

Since 2013, UTA's base fare has been \$2.50. The average revenue per ride has ranged between \$1.11 and \$1.16 between 2016 and 2022.

Recently there has been interest in a free fare policy for transit service. This policy was tested for the month of February 2022. Free fare within the downtown area of Salt Lake City has been the policy of Utah Transit Authority for many decades. A year-long test is being proposed in the near future for system wide free fare transit service provided a revenue source can be identified to recover the lost passenger fares. A free fare policy would be expected to attract more transit passengers and reduce vehicle miles traveled. Identifying a source for replacing the passenger revenue would be essential to avoid service reductions that would otherwise result from the reduced operating revenue.

Plans to expand light rail service, to increase and enhance bus service including bus rapid transit, and to extend or enhance commuter rail operations (including the addition of more double-track sections) are moving forward. These transit projects are envisioned in the Plan and the steps necessary to implement these projects are moving forward including various sales tax increases for transit funding.

B. Transportation Modeling

Improvement to the Wasatch Front travel demand model practice and procedure is an ongoing process. This conformity analysis is based on the latest version (9.0) of the travel demand model. Version 9.0 of the travel demand model has been calibrated to a 2019 base year, which includes updated inputs and parameters to reflect 2019 conditions, and has been validated to 2019 traffic count and transit boarding data. The calibration process used local data estimated from the 2012 Household Travel Survey conducted by WFRC and the 2019 5-year American Community Survey data. Version 9.0 of the model included expanding the area covered by the model to the county boundaries and an update to the mode choice model to make the model more sensitive to changes in transit frequency.

Planning Process

Federal funding for transportation improvements in urban areas requires that these improvements be developed through a comprehensive, coordinated, and continuous planning process involving all affected local governments and transportation planning agencies. The planning process is certified annually by the Regional Council and reported to the Federal Highway Administration and Federal Transit Administration. Every four years FHWA and FTA conduct a comprehensive certification review. The certification review of 2021 found that the WFRC planning process meets federal requirements. Recommendations were made to continue to improve WFRC's planning process and these are being addressed.

The documentation of the planning process includes, at a minimum, a twenty-year Regional Transportation Plan updated at least every four years; and a four-year Transportation Improvement Program (capital improvement program) updated and adopted at least every four years. The planning process includes the involvement of local elected officials, state agencies, and the general public.

Travel Characteristics

The WFRC travel model is used to estimate and forecast highway Vehicle Miles Traveled (VMT) and vehicle speeds for Davis, Salt Lake, and western Weber Counties. The Utah State Travel Model (USTM) is used to estimate VMT and speed in Box Elder County, Tooele County, and eastern Weber County. The WFRC travel demand model is based on the latest available planning assumptions and a computerized representation of the transportation network of highways and transit service. The base data for the travel demand model is reviewed regularly for accuracy and updates. The travel model files used for this conformity analysis are available upon request.

Shown below in Table 2a and Table 2b is a summary of winter and summer weekday VMT for the cities and counties in designated non-attainment areas. Totals for VMT are given for various air quality analysis years from 2028 to 2050. Note that the VMT values for Weber, Box Elder and Tooele Counties are not for the entire county but only that portion of the county designated as non-attainment for a criteria pollutant.

Seasonal factors for highway VMT variations have been revised and refined by data collected by the Utah Department of Transportation. Seasonal factors are determined for each link of the highway system based on the functional class (freeway or arterial) and the area type (rural, transitional, suburban, and urban). Other considerations include traffic volume and recreational activity.

Table 2a
Vehicle Miles Traveled (HPMS Adjusted Average Winter Weekday)

	2028	2032	2042	2050
<i>Ogden City</i>	<i>1,860,303</i>	<i>1,960,830</i>	<i>2,153,424</i>	<i>2,278,436</i>
Salt Lake County	31,776,604	34,992,736	38,787,127	41,962,314
Davis County	9,854,037	11,472,569	12,969,188	13,855,391
Weber County*	5,355,835	5,814,042	6,854,258	7,574,896
Box Elder County*	1,150,116	1,231,554	1,425,721	1,573,172
Tooele County*	1,818,416	2,029,208	2,462,965	2,859,695

**non-attainment portion of the county*

Table 2b
Vehicle Miles Traveled (HPMS Adjusted Average Summer Weekday)

	2028	2032	2042	2050
Salt Lake County	35,447,852	39,053,632	43,214,702	46,692,559
Davis County	11,151,194	12,959,807	14,605,467	15,569,102
Weber County*	6,282,941	6,828,922	8,046,701	8,866,707
Tooele County*	2,204,815	2,457,083	2,980,312	3,456,055

**non-attainment portion of the county*

Peak and Off-Peak Trip Distribution

The modeled VMT and the modeled vehicle speed depend on the number of vehicle trips assigned for each time period (AM, midday, PM, and evening) defined in the travel demand model. The percentage of trips by purpose varies for each time period. The percentages in Table 3 and Table 4 below are based on data from the 2012 Household Travel Survey, the 2012 College Survey, and observed truck counts.

Table 3
Percent of Trips by Time of Day

Trip Purpose	AM	Mid-Day	PM	Evening	Grand Total
Home Based - Work	32.5%	18.3%	30.7%	18.4%	100.0%
Home Based - Shopping	1.9%	43.9%	25.0%	29.2%	100.0%
Home Based - Other	10.0%	31.3%	23.7%	35.1%	100.0%
Home Based - School	37.8%	29.3%	29.4%	3.4%	100.0%
Home Based - College	25.9%	33.7%	18.5%	21.8%	100.0%
Non-home Based - Work	7.0%	55.8%	26.0%	11.2%	100.0%
Non-home Based - Non-work	5.0%	47.5%	24.3%	23.2%	100.0%
Internal-to-External	19.1%	31.4%	25.7%	23.9%	100.0%
External-to-Internal	19.7%	32.6%	26.2%	21.5%	100.0%
External-to-External	17.9%	32.9%	26.0%	23.2%	100.0%
Truck	15.9%	35.2%	22.7%	26.1%	100.0%

Table 4
Percent of Trips by Purpose

Trip Purpose	AM	Mid-Day	PM	Evening	Grand Total
Home Based - Other	28%	34%	36%	54%	38%
Home Based - School	19%	6%	7%	1%	7%
Home Based - Shopping	1%	13%	10%	12%	10%
Home Based - Work	37%	8%	17%	12%	16%
Non-home Based - Non-work	7%	25%	18%	18%	19%
Non-home Based - Work	8%	13%	11%	3%	9%
Grand Total	100%	100%	100%	100%	100%

Comparison of Modeled Speeds with Observed Data

WFRC strives for a high level of consistency between speeds predicted by its travel demand model and those observed in the real world. As part of WFRC's travel model validation process, observed travel speeds were collected in the Fall of 2018 and compared to speeds predicted by the Wasatch Front Travel Demand Model (v.8.3 beta). Validation of speeds for v9.0 of the travel demand model will be completed at a future date.

Observations were collected for weekdays, from real time trip-routing web applications for the morning and evening peak travel periods for a set of 138 origin-destination pairs within the Wasatch Front region. Several web applications and data sources were evaluated before selecting the observed data source most consistent with real world experiences.

For the validation comparison, 43 trip origins, from traffic analysis zone (TAZ) centroids, were selected by staff, balancing the desires for region-wide coverage and trips volume representation. A set of up to 6 TAZ centroid destinations were selected for each trip origin point.

For each origin-destination pair, average trip speed was collected on the half-hour for each of the three peak hours of both the AM and PM periods. A weighted average of the hourly observed travel speeds for each peak period was calculated using observed travel volume as the weight factor.

Across the region, as shown in Table 5, averaged modeled trip speeds were 11% faster than the observed speed during the AM peak period and 6% faster during the PM peak period.

Table 5
WFRC Planning Area Modeled Speeds Compared to Observed Speeds

	AM Peak	PM Peak
Modeled Speeds (mph)	41	36
Observed Speeds (mph)	37	34
Percent Difference	11 %	6 %

C. Emission Modeling

Inspection Maintenance (I/M) Programs

Assumptions for the input files for EPA's MOVES vehicle emissions model include I/M programs in Salt Lake, Davis, and Weber Counties. Box Elder and Tooele Counties do not presently have I/M programs.

Vehicle Miles Traveled (VMT) Mix

The "VMT mix" is the percentage of vehicle miles traveled for each vehicle type. While no longer a required input for the MOVES model as it was for MOBILE6.2, VMT mix is used in several instances to generate the input files required to run the MOVES model. The national default VMT mix found in the MOVES database was used to disaggregate local vehicle type data collected in 2022. The local vehicle type data is collected by UDOT as part of the federal Highway Performance Monitoring System (HPMS) data collection system and is based on automated counters which classify vehicles based on vehicle length. The UDOT classification is used to calculate control percentages for light duty (LD) vehicles and heavy duty (HD) vehicles for each facility type. The EPA default VMT mix is then applied to disaggregate the two UDOT control percentages into detailed percentages for the thirteen vehicle classes used in MOVES.

Vehicle Weights

Facility specific VMT mix data described above was also used to estimate the average vehicle weight on each facility type. From the percentage of each vehicle type (or VMT mix) and the average weight for each vehicle type, a composite vehicle weight is estimated for each roadway type. Since vehicle weight affects the rate of re-entrained road dust emissions estimated using the AP-42 method, vehicle weight variations on different facilities will affect the amount of fugitive dust created. The VMT mix for each facility type was used to estimate an average vehicle weight for each facility type with the following results:

<u>Facility</u>	<u>Composite Vehicle Weight</u>
Urban - Freeway	6,500 lbs, or 3.25 tons
Urban - Arterial	6,100 lbs, or 3.05 tons
Urban - Local	3,900 lbs, or 1.95 tons

Post Model Adjustments

For conformity analyses prior to 2000, the WFRC applied post model adjustments to vehicle emission estimates. Emission credits for work trips were modeled for reductions in single occupant vehicle rates based primarily on increased investments in transit service and rideshare programs, and the projected increase in telecommuting. Other less significant post model adjustments were also estimated for incident management, pavement restriping, and signal coordination. Additional emission reducing programs and projects supported by CMAQ funds such as park and ride lots, bicycle facilities, transit vehicles, intelligent transportation systems (ITS), and intersection improvements have also been implemented.

WFRC believes that these programs have a positive effect in reducing vehicle emissions. In practice, however, WFRC has found that documenting the air quality benefits of these programs can be challenging. WFRC will continue to support these emission reduction programs, but credits from these programs have not been included in this conformity analysis.

Project level “hot spot” emissions analysis is included in the NEPA phase of project development to address localized and possibly concentrated emission exposure. The regional conformity analysis discussed in this document addresses weekday emissions from all transportation projects on a regional scale, not localized concentrations. Seasonal and weekend traffic is not usually considered with weekday traffic conditions which are typically higher. In the case of proposed transit operations in Little Cottonwood Canyon (LCC), those activities could also be present on a weekday. Post model estimates of the regional emission impact of LCC transit operations were prepared and included in this conformity analysis. On a regional scale, the net emissions maximum impact (added bus emissions versus eliminated private vehicle emissions) from LCC transit operations in 2050 tons/day is small: NO_x increases 0.0100, PM₁₀ is reduced 0.0020, and VOC is increased 0.0003.

MOVES Inputs

The MOVES model is a very data intensive computer program based on the MariaDB software. Through the interagency consultation process the required MOVES inputs reflecting local conditions have been established.

Data files defining local conditions by county and year are required inputs to the MOVES model including vehicle population, emission testing programs, fuel supply, fuel formulation, meteorological conditions, and vehicle age. Vehicle population estimates by county are based on 2022 registration data for light duty vehicles, transit and school bus counts, and MOVES default data for heavy duty vehicles and the estimated VMT for the same year. This vehicle population to VMT ratio is then applied to model projections of VMT to estimate future year vehicle population. By estimating vehicle population in this way, the calculation considers the effects of human population and employment projections, as well as mode choice options that are included in the travel demand model.

Vehicle activity input files for the MOVES model are generated by the WFRC travel demand model using a customized in-house computer program for this purpose. The MOVES input files required include data for road distribution, speed distribution, and VMT by vehicle type for each county (Box Elder, Davis, Salt Lake, Tooele, and Weber) and analysis year as required for operating the MOVES model.

The input files listed above are read into the MOVES program as database files. The input database folders in Table 6 below contain the database files used for each county, season and year modeled using MOVES4 for this conformity analysis. The results of the MOVES model are stored in the output database “Conf24_out” for each county and analysis year identified in Table 6.

Table 6a
MOVES Input Database Folders

Box Elder	Weber	Davis	Salt Lake	Tooele	Ogden
	Conf24_we _2028_IN	Conf24_da _2028_IN	Conf24_sl _2028_IN		Conf24_og _2028_IN
Conf25_be _2032_IN	Conf25_we _2032_IN	Conf25_da _2032_IN	Conf25_sl _2032_IN	Conf25_to _2032_IN	Conf25_og _2032_IN
Conf25_be _2042_IN	Conf25_we _2042_IN	Conf25_da _2042_IN	Conf25_sl _2042_IN	Conf25_to _2042_IN	Conf25_og _2042_IN
Conf25_be _2050_IN	Conf25_we _2050_IN	Conf25_da _2050_IN	Conf25_sl _2050_IN	Conf25_to _2050_IN	Conf25_og _2050_IN

Table 6b
MOVES Run Specification Files

Box Elder	Weber	Davis	Salt Lake	Tooele	Ogden
	Conf24_we _2028.MRS	Conf24_da _2028.MRS	Conf24_sl _2028.MRS		Conf24_og _2028.MRS
Conf25_be _2032.MRS	Conf25_we _2032.MRS	Conf25_da _2032.MRS	Conf25_sl _2032.MRS	Conf25_to _2032.MRS	Conf25_og _2032.MRS
Conf25_be _2042.MRS	Conf25_we _2042.MRS	Conf25_da _2042.MRS	Conf25_sl _2042.MRS	Conf25_to _2042.MRS	Conf25_og _2042.MRS
Conf25_be _2050.MRS	Conf25_we _2050.MRS	Conf25_da _2050.MRS	Conf25_sl _2050.MRS	Conf25_to _2050.MRS	Conf25_og _2050.MRS

Road Dust Estimates

In January 2011, the EPA released new guidance for estimating dust emissions from paved roads. These guidelines are published in Chapter 13.2.1 of the AP-42 document. The new formula is

$$E = k (sL)^{0.91} \times (W)^{1.02}$$

where: E = particulate emission factor (grams/mile),
 k = particle size multiplier for particle size range and units of interest (for PM_{10} , $k=1.0$ and for $PM_{2.5}$ $k=0.25$),
 sL = road surface silt loading (grams per square meter - g/m^2), and
 W = average weight (tons) of the vehicles traveling the road.

Based on vehicle type counts on roads in the WFRC region, average vehicle weights for local roads, arterials, and freeways are 1.95, 3.05, and 3.25 tons respectively. The silt load (sL) factor varies by highway functional class and by traffic volume. The default silt load factors found in Table 13.2.1-2 of the AP-42 document are summarized below.

Traffic Volume	Functional Class	Silt Load (grams/meter²)
500-5,000	local roads	0.200
5,000-10,000	arterial roads	0.060
limited access	freeways	0.015

A precipitation reduction factor is also applied to the above equation using the following expression:

$$(1 - P/4N)$$

Where: P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period, and
 N = number of days in the averaging period (e.g., 365 for annual, 91 for seasonal, 30 for monthly).

The AP-42 guidance recommends a value of 90 precipitation days per year for the Wasatch Front region. Using these values, the precipitation reduction factor yields a value of 0.9384. Combined with the basic road dust emission rate, the net $PM_{2.5}$ and PM_{10} road dust factors by highway functional class are as follows:

Functional Class	PM_{10} Road Dust Rate (grams/mile)	$PM_{2.5}$ Road Dust Rate (grams/mile)
local roads	0.429	0.107
arterials	0.226	0.057
freeways	0.068	0.017

D. Conformity Determination

The following conformity findings for the amended 2023-2050 Regional Transportation Plan for the Wasatch Front are based on the transportation systems and planning assumptions described in this report and the EPA approved vehicle emissions model (MOVES4).

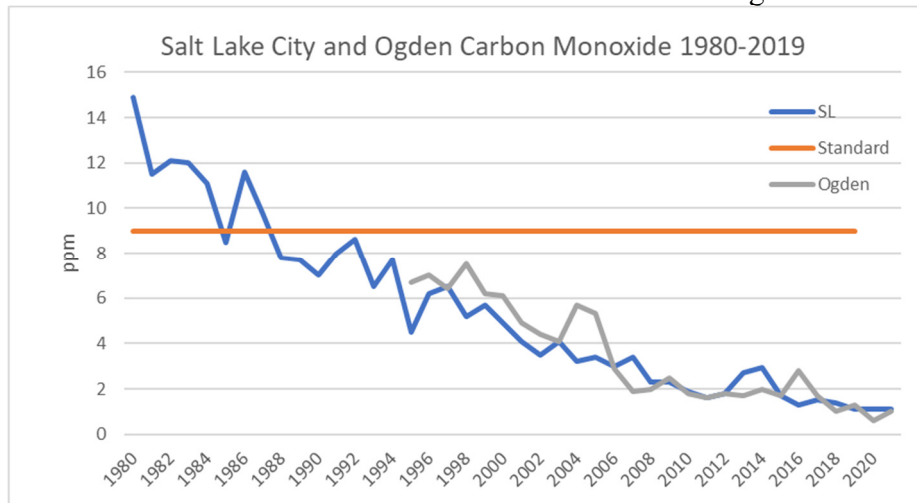
Salt Lake City and Ogden CO Conformity

Carbon monoxide levels in Salt Lake City and Ogden have been at healthy levels for over 20 years which has resulted in the EPA removing the non-attainment designation. Salt Lake City and Ogden were first designated as non-attainment areas for carbon monoxide in 1978. After 42 years of monitoring CO pollution, implementing vehicle emission testing, and adopting much improved vehicle emission standards, the air in Salt Lake City and Ogden continues to be clear of unhealthy levels of carbon monoxide pollution.

The chart below shows the dramatic reductions in CO pollution in Salt Lake City and Ogden since 1980. The EPA health standard for CO is 9 ppm. Salt Lake City has not exceeded that level since 1987, and Ogden has not exceeded the CO standard since 1995 or earlier according to available data.

This dramatic improvement in CO pollution is primarily due to improved vehicle emission standards and cleaner fuels. Before 1966, passenger cars and light duty trucks emitted about 80 grams/mile and 102 grams/mile of CO respectively. Following a series of vehicle emission standard improvements, the emission rate for both types of vehicles since 2006 now stands at 3.4 grams/mile for CO – a reduction of over 96%.

Over the years as older vehicles have been replaced with newer, cleaner vehicles, the accumulated CO pollution has gone down steadily to the point that Salt Lake City and Ogden carbon monoxide levels have remained in the healthy range for the last 33 years. Emissions of other pollutants such as nitrogen oxides and volatile organic compounds – precursor emissions to particulate pollution and ozone pollution – have likewise been reduced but more work remains for management of these pollutants.



Source: Second highest 8-hour observation. 1980-1994 EPA AIRS data for Salt Lake City, 1995-2021 Utah DAQ monitoring archive "Quick Look" reports.

Ogden PM₁₀ Conformity

For analysis years 2030 and later, the Ogden City PM₁₀ Maintenance Plan defines motor vehicle emissions budgets for NO_x and direct PM₁₀ as shown below in Tables 7 and 8.

Ogden City was designated as a PM₁₀ non-attainment area in August of 1995 based on PM₁₀ violations in 1993 or earlier. For conformity analysis years prior to 2030, it must be demonstrated that Ogden PM₁₀ emissions are either less than 1990 emissions or less than “no-build” emissions. The analysis years 2028, 2032, 2042, and 2050 were selected in accordance with the requirements of 40 CFR Section 93.119(e).

PM₁₀ emissions are present in two varieties referred to as primary and secondary PM₁₀. Primary PM₁₀ consists mostly of fugitive road dust but also includes particles from brake wear and tire wear and some “soot” particles emitted directly from the vehicle tailpipe. The methods defined in the January 2011 version of the EPA publication known as “AP-42” were used to estimate dust from paved roads. Secondary PM₁₀ consists of gaseous tailpipe emissions that take on a particulate form through subsequent chemical reactions in the atmosphere. Nitrogen oxides are the main component of secondary PM₁₀ emissions with sulfur oxides a distant second.

As summarized in Tables 7 and 8, emission estimates for the amended 2023-2050 RTP satisfy the “Build < 1990” test or the “Projection < Budget” test for secondary PM₁₀ (NO_x precursors) and primary PM₁₀ (direct tailpipe particulates, brake wear, tire wear, and road dust) in Ogden City. The 1990 emission estimates based on the Mobile6.2 vehicle emissions model for the 2003 conformity analysis have been updated for this conformity analysis using the MOVES model and the January 2011 AP-42 road dust methodology for consistency with current emission modeling requirements. Specifically, the NO_x precursor budget (1990 emission estimate) changes from 4.57 tons/day to 6.92 tons/day, and the direct PM₁₀ budget (1990 estimate) changes from 2.28 tons/day to 1.28 tons/day. The 1990 primary PM₁₀ estimate for Ogden City includes emissions from the unpaved access road to the Ogden landfill which was closed in 1998.

For projections of primary PM₁₀ emissions, no credit was taken for a number of programs adopted since Ogden City last violated the PM₁₀ standard. These particulate reducing programs include covered load ordinances, increased frequency of street sweeping, and reduced application of deicing and skid resistant materials (salt and sand). Documentation of these programs has been provided by Ogden City but the actual benefits of these programs are not included in the emission projections below. Other areas that have estimated the benefit of these programs have found a silt load reduction of over 30% for effective street sweeping programs and a 5% silt load reduction when limiting the amount of sand and salt applied to the roads. Ogden City has also implemented a number of specific projects that have a positive effect in reducing particulate emissions including park and ride lots, stormwater improvements, shoulder widening and edge striping, and addition of curb and gutter on several roadways.

From this demonstration it is concluded that the amended 2023-2050 RTP conforms under the Emission Reductions Criteria for areas without motor vehicle emissions budgets for years prior to 2030, and for years after 2030 conforms to the motor vehicle emission budgets in the maintenance plan for PM₁₀ in Ogden City.

Table 7
Ogden City - PM10 (NO_x Precursor)
Conformity Determination

Year	^d 2028	^c 2032	^c 2042	^e 2050
1990 Emissions or 2030 Maintenance Plan Budget (tons/day)	6.92	1.00	1.00	1.00
<i>emission rate (grams/mile)</i>	<i>0.4003</i>	<i>0.1756</i>	<i>0.1019</i>	<i>0.0910</i>
<i>seasonal VMT</i>	<i>1,860,303</i>	<i>1,960,830</i>	<i>2,153,424</i>	<i>2,278,436</i>
Projection* (tons/day)	0.82	0.38	0.24	0.23
Conformity (Projection < 1990 Emissions or < Budget)	Pass	Pass	Pass	Pass

c - 10-year rule, *d* - no budget 5-year rule, *e* - last year of Plan

* Projection = Emission Rate x Seasonal VMT / 453.6 grams per pound / 2,000 pounds per ton.

Table 8
Ogden City - PM10 (Primary Particulates)**
Conformity Determination

Year	^d 2028	^c 2032	^c 2042	^e 2050
1990 Emissions or 2030 Maintenance Plan Budget (tons/day)	1.28	1.50	1.50	1.50
<i>emission rates (grams/mile)</i>				
<i>total exhaust particulates</i>	<i>0.0329</i>	<i>0.0187</i>	<i>0.0143</i>	<i>0.0144</i>
<i>brake particulates</i>	<i>0.1076</i>	<i>0.1009</i>	<i>0.1133</i>	<i>0.1222</i>
<i>tire particulates</i>	<i>0.0247</i>	<i>0.0248</i>	<i>0.0273</i>	<i>0.0290</i>
<i>road dust particulates</i>	<i>0.5541</i>	<i>0.5752</i>	<i>0.6257</i>	<i>0.6592</i>
<i>seasonal VMT</i>	<i>1,860,303</i>	<i>1,960,830</i>	<i>2,153,424</i>	<i>2,278,436</i>
Projection* (tons/day)	0.72	0.72	0.78	0.82
Conformity (Projection < 1990 Emissions or < Budget)	Pass	Pass	Pass	Pass

** Includes total PM10 exhaust particulates, road dust, tire wear, and brake wear.

c - 10-year rule, *d* - no budget 5-year rule, *e* - last year of Plan

* Projection = Emission Rate x Seasonal VMT / 453.6 grams per pound / 2,000 pounds per ton.

Salt Lake County PM₁₀ Conformity

For analysis years 2030 and later, the Salt Lake County PM₁₀ Maintenance Plan defines motor vehicle emissions budgets for NO_x and direct PM₁₀ as shown below in Table 9.

The previous PM₁₀ SIP for Salt Lake County does not define a budget beyond the year 2003. Therefore, conformity tests are required only for analysis years which are identified in accordance with 40 CFR 93.118. Analysis years after 2003 but prior to 2030 must meet the 2003 budgets for primary particulates and secondary particulates (see the discussion above under Ogden PM₁₀ Conformity for an explanation of primary and secondary PM₁₀ emissions). The State air quality rule R307-310 allows a portion of the surplus primary PM₁₀ budget to be applied to the secondary PM₁₀ budget for conformity purposes. However, for the 2028 analysis year, no budget adjustment was necessary.

Table 9
Salt Lake County - PM₁₀ Budgets
Direct (Dust) and Precursor (NO_x) PM₁₀ Emission Budgets
(tons/day)

Year	2028	2032	2042	2050
Total PM₁₀ Budget	72.60	--	--	--
<i>Direct PM₁₀ Budget to be Traded</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
Direct PM₁₀ Budget	40.30	24.00	24.00	24.00
NO_x Precursor PM₁₀ Budget	32.30	21.00	21.00	21.00

Table 10a and Table 10b below demonstrate that projected mobile source emissions are within the emission budget defined in the SIP. The years listed in Table 10a and Table 10b are in accordance with requirements of the Conformity Rule (40 CFR Part 93) as noted in the tables.

From this demonstration it is concluded that the amended 2023-2050 RTP conforms to the applicable controls and goals of the State Implementation Plan for PM₁₀ in Salt Lake County.

Table 10a
Salt Lake County - PM10 (NO_x Precursor)
Conformity Determination

	<i>c</i>	<i>c</i>	<i>c</i>	<i>e</i>
Year	2028	2032	2042	2050
Budget (tons/day)	32.30	21.00	21.00	21.00
<i>emission rate (grams/mile)</i>	<i>0.2787</i>	<i>0.1688</i>	<i>0.1070</i>	<i>0.0961</i>
<i>seasonal VMT</i>	<i>31,776,604</i>	<i>34,992,736</i>	<i>38,787,127</i>	<i>41,962,314</i>
Projection* (tons/day)	9.76	6.51	4.57	4.45
Conformity (Projection < Budget)	Pass	Pass	Pass	Pass

c - 10-year rule, *e* - last year of Plan

WFRM Memo to Jeff Houk of EPA, April 15, 1994.

* Projection = Emission Rate x Seasonal VMT / 453.6 grams per pound / 2,000 pounds per ton. Add 0.01 tons/day for LCC transit operations beginning 2032.

Table 10b
Salt Lake County - PM10 (Primary Particulates)**
Conformity Determination

	<i>c</i>	<i>c</i>	<i>c</i>	<i>e</i>
Year	2028	2032	2042	2050
Budget (tons/day)	40.30	24.00	24.00	24.00
<i>emission rates (grams/mile)</i>				
<i>total exhaust particulates</i>	<i>0.0087</i>	<i>0.0071</i>	<i>0.0052</i>	<i>0.0049</i>
<i>brake particulates</i>	<i>0.0369</i>	<i>0.0343</i>	<i>0.0360</i>	<i>0.0369</i>
<i>tire particulates</i>	<i>0.0106</i>	<i>0.0101</i>	<i>0.0102</i>	<i>0.0102</i>
<i>road dust particulates</i>	<i>0.1950</i>	<i>0.1796</i>	<i>0.1800</i>	<i>0.1801</i>
<i>seasonal VMT</i>	<i>31,776,604</i>	<i>34,992,736</i>	<i>38,787,127</i>	<i>41,962,314</i>
Projection* (tons/day)	8.80	8.91	9.89	10.73
Conformity (Projection < Budget)	Pass	Pass	Pass	Pass

c - 10-year rule, *e* - last year of Plan

** Includes total PM10 exhaust particulates, road dust, tire wear, and brake wear.

WFRM Memo to Jeff Houk of EPA, April 15, 1994.

* Projection = Emission Rate x Seasonal VMT / 453.6 grams per pound / 2,000 pounds per ton.

Salt Lake PM_{2.5} Conformity

Davis, Salt Lake, and portions of Weber, Tooele, and Box Elder Counties have been designated as a non-attainment area under the new PM_{2.5} standard (35 µg/m³) that was established in 2006. As reported in the November 6, 2020 Federal Register, EPA proposed the following motor vehicle emission budgets for the Salt Lake PM_{2.5} area effective in 2035 and thereafter: 21.63 tpd of NO_x, 20.57 tpd of VOC, and 1.38 tpd of direct PM_{2.5}. Until these budgets are officially approved including a public comment period, the interim conformity test applies which requires that PM_{2.5} emissions remain below 2008 levels.

Table 11a below demonstrates that projected mobile source emissions of NO_x (a precursor to PM_{2.5} emissions) in the five-county PM_{2.5} non-attainment area are less than 2008 NO_x emissions. Table 11b below demonstrates that projected mobile source emissions of VOC (also a precursor to PM_{2.5} emissions) in the five-county PM_{2.5} non-attainment area are less than 2008 VOC emissions. Table 11c below demonstrates that direct particle emissions of PM_{2.5} in the five-county PM_{2.5} non-attainment area are also less than 2008 direct particle emissions. Direct particle emissions include exhaust emissions of elemental carbon, organic carbon, and sulfates (SO₄); and mechanical emissions from brake wear and tire wear.

From this demonstration it is concluded that the amended RTP conforms under the interim conformity guidelines for PM_{2.5} areas without an approved motor vehicle emissions budget for the Salt Lake PM_{2.5} non-attainment area.

Table 11a
Salt Lake Area[#] - PM_{2.5} (NO_x Precursor)
Conformity Determination

Year	^c 2028	^c 2032	^c 2042	^e 2050
2008 Emissions (tons/day)	97.98	97.98	97.98	97.98
<i>emission rate (grams/mile)</i>	<i>0.3249</i>	<i>0.1936</i>	<i>0.1136</i>	<i>0.1046</i>
<i>seasonal VMT</i>	49,955,008	55,540,109	62,499,259	67,825,468
Projection* (tons/day)	17.89	11.85	7.82	7.82
Conformity (Projection < 2008 Emissions)	Pass	Pass	Pass	Pass

c - 10-year rule, *e* - last year of Plan

[#] Salt Lake PM_{2.5} Non-Attainment Area includes: Davis, Salt Lake, and portions of Weber, Box Elder and Tooele Counties.

* Projection = Emission Rate x Seasonal VMT / 453.6 grams per pound / 2,000 pounds per ton. Add 0.01 tons/day for LCC transit operations beginning 2032.

Table 11b
Salt Lake Area[#] - PM_{2.5} (VOC Precursor)
Conformity Determination

	<i>c</i>	<i>c</i>	<i>c</i>	<i>e</i>
Year	2028	2032	2042	2050
2008 Emissions (tons/day)	61.35	61.35	61.35	61.35
<i>emission rate (grams/mile)</i>	<i>0.1741</i>	<i>0.1614</i>	<i>0.1313</i>	<i>0.1242</i>
<i>seasonal VMT</i>	49,955,008	55,540,109	62,499,259	67,825,468
Projection* (tons/day)	9.58	9.88	9.04	9.29
Conformity (Projection < 2008 Emissions)	Pass	Pass	Pass	Pass

c - 10-year rule, *e* - last year of Plan

Salt Lake PM_{2.5} Non-Attainment Area includes: Davis, Salt Lake, and portions of Weber, Box Elder and Tooele Counties.

* Projection = Emission Rate x Seasonal VMT / 453.6 grams per pound / 2,000 pounds per ton.

Table 11c
Salt Lake Area[#] - PM_{2.5} (Direct PM Emissions)**
Conformity Determination

	<i>c</i>	<i>c</i>	<i>c</i>	<i>e</i>
Year	2028	2032	2042	2050
2008 Emissions (tons/day)	7.33	7.33	7.33	7.33
<i>emission rate (grams/mile)</i>	<i>0.0150</i>	<i>0.0129</i>	<i>0.0107</i>	<i>0.0106</i>
<i>seasonal VMT</i>	49,955,008	55,540,109	62,499,259	67,825,468
Projection* (tons/day)	0.83	0.79	0.74	0.79
Conformity (Projection < 2008 Emissions)	Pass	Pass	Pass	Pass

c - 10-year rule, *e* - last year of Plan

Salt Lake PM_{2.5} Non-Attainment Area includes: Weber, Davis, Salt Lake, and portions of Box Elder and Tooele Counties.

* Projection = Emission Rate x Seasonal VMT / 453.6 grams per pound / 2,000 pounds per ton.

** Direct PM for conformity includes total PM_{2.5} exhaust particulates, brake wear, and tire wear. Road dust is excluded.

Northern Wasatch Front Ozone Conformity

A new 8-hour National Ambient Air Quality Standard for ozone was approved in October 2015 at 70 ppb. The Northern Wasatch Front (NWF) Area was designated as a marginal non-attainment area for ozone by EPA effective December 2018. On November 7th, 2022 the NWF was redesignated as a moderate non-attainment area. The NWF area includes Salt Lake and Davis Counties, and portions of Weber and Tooele Counties. Pending development and approval of a State Implementation Plan for ozone, interim conformity is based on the approved 1997 Ozone SIP for Salt Lake and Davis Counties which established motor vehicle emission budgets for NO_x and VOC of 85.63 tons/day and 71.15 tons/day respectively.

Table 12a below demonstrates that projected mobile source emissions of NO_x (a precursor to ozone emissions) in the four-county ozone non-attainment area are less than the 1997 NO_x budget. Table 12b below demonstrates that projected mobile source emissions of VOC (also a precursor to ozone emissions) in the four-county ozone non-attainment area are less than the 1997 VOC budget.

From this demonstration it is concluded that the amended RTP conforms under the interim conformity guidelines for ozone areas with an approved motor vehicle emissions budget for the NWF area ozone non-attainment area.

Table 12a

Northern Wasatch Front Ozone# - NO_x Precursor Conformity Determination

	^c	^c	^c	^e
Year	2028	2032	2042	2050
1997 SIP Budget (tons/day)	85.63	85.63	85.63	85.63
<i>emission rate (grams/mile)</i>	<i>0.2600</i>	<i>0.1505</i>	<i>0.0807</i>	<i>0.0693</i>
<i>seasonal VMT</i>	55,086,802	61,299,444	68,847,182	74,584,423
Projection (tons/day)	15.79	10.17	6.12	5.70
Conformity (Projection < Budget)	Pass	Pass	Pass	Pass

c - 10-year rule, *e* - last year of Plan

Northern Wasatch Front Ozone Non-Attainment Area includes: Davis, Salt Lake, and portions of Weber and Tooele Counties.

* Projection = Emission Rate x Seasonal VMT / 453.6 grams per pound / 2,000 pounds per ton.

Table 12b

**Northern Wasatch Front Ozone# - VOC Precursor
Conformity Determination**

	<i>c</i>	<i>c</i>	<i>c</i>	<i>e</i>
Year	2028	2032	2042	2050
1997 SIP Budget (tons/day)	71.15	71.15	71.15	71.15
<i>emission rate (grams/mile)</i>	<i>0.1418</i>	<i>0.1306</i>	<i>0.1016</i>	<i>0.0900</i>
<i>seasonal VMT</i>	55,086,802	61,299,444	68,847,182	74,584,423
Projection (tons/day)	8.61	8.83	7.71	7.40
Conformity (Projection < Budget)	Pass	Pass	Pass	Pass

c - 10-year rule, *e* - last year of Plan

Northern Wasatch Front Ozone Non-Attainment Area includes: Davis, Salt Lake, and portions of Weber and Tooele Counties.

* Projection = Emission Rate x Seasonal VMT / 453.6 grams per pound / 2,000 pounds per ton.

Appendix – 1

Definition of Regionally Significant Projects

**Process for Determining Regionally Significant Facilities
for Purposes of Regional Emissions Analysis (see CFR 93.105.2.c.1.ii)**

Background: 40 CFR 93.101 defines “regionally significant project” and associated facilities for the purpose of transportation conformity. The federal definition does not specifically include minor arterials. The following definitions and processes will be used by the Wasatch Front Regional Council (WFRC) and Mountainland Association of Governments (MAG) in consultation with DAQ, UDOT, UTA, FHWA, FTA, and EPA to determine which facilities shall be considered regionally significant for purposes of regional emissions analysis. It is the practice of the MPO to include minor arterials and collectors in the travel model for the purpose of accurately modeling regional VMT and associated vehicle emissions. The inclusion of minor arterials and collectors in the travel model, however, does not identify these facilities as regionally significant.

1. Any new or existing facility with a functional classification of principal arterial or higher on the latest UDOT Functional Classification Map shall be considered regionally significant (see <https://www.arcgis.com/home/webmap/viewer.html?webmap=494d57208ea4464bb664ac2da38f9c91&extent=-116.9385,35.9224,-106.1719,42.8498>).
2. Any fixed guide-way transit service including light rail, commuter rail, or portions of bus rapid transit that involve exclusive right-of-way shall be considered regionally significant.
3. As traffic and land use conditions change in the future, the MPO’s - in consultation with DAQ, UDOT, FHWA, and EPA - will consider 1) the relative importance of minor arterials serving major activity centers, and 2) the absence of principal arterials in the vicinity to determine if any minor arterials in addition to those listed in Exhibit A should be considered as regionally significant for purposes of regional emissions analysis.

Exhibit A
Minor Arterials Determined to be Regionally Significant
for Purposes of Regional Emissions Analysis

40 FR 93.105(c)(ii), “Consultation – Interagency consultation procedures: Specific processes” specifies that Interagency Consultation shall include a process to identify which minor arterials should be considered as “regionally significant” for the purpose of regional emissions analysis. Based on inspection and engineering judgment of current traffic conditions; and based on application of the “Process for Determining Regionally Significant Facilities for Purposes of Regional Emissions Analysis” agreed upon by members of the Interagency Consultation Team; the WFRC initially designated several minor arterials as regionally significant.

Since 2015, all but one of the minor arterials referenced above have been reclassified with the functional type of principal arterial and are therefore by definition regionally significant. The remaining minor arterial to be considered as regionally significant for emissions analysis is listed below. It should also be noted that all collectors, minor arterials, and principal arterials are included in the highway network used in the WFRC travel demand model.

Davis County

none

Salt Lake County

none

Weber County

SR-79 (Hinckley Drive): SR-108 to I-15

**Process for Determining Significant Change in Design Concept and Scope
for Purposes of Regional Emissions Analysis (see CFR 93.105.2.c.1.ii)**

Changes to regionally significant projects may or may not necessitate a new regional emissions analysis. The following definitions and processes will be used to determine what changes to project concept and scope are to be considered significant or not for purposes of regional emissions analysis.

1. Adding or extending freeway auxiliary lanes or weaving lanes between interchanges is not considered a significant change in concept and scope since these lanes are not normally included in the travel model.
2. Adding or extending freeway auxiliary/weaving lanes from one interchange to a point beyond the next interchange is considered a significant change in concept and scope.
3. A change to a regionally significant project defined in the Regional Transportation Plan that does not change how the project is defined in the travel model is not considered a significant change in concept and scope. These changes include but are not limited to lane or shoulder widening, cross section (other than the number of through lanes), alignment, interchange configuration, intersection traffic control, turn lanes, continuous or center turn lanes, and storage lanes.
4. A change to a regionally significant project defined in the Regional Transportation Plan that does alter the number of through lanes, lane capacity, or speed classification as defined in the travel model is considered a significant change in concept and scope.
5. Advancing or delaying the planned implementation of a regionally significant project that does not result in a change in the transportation network described in the travel model for any horizon year (as defined in CFR 93.101) is not considered a significant change in concept and scope.
6. Advancing or delaying the planned implementation of a regionally significant project that does result in a change in the transportation network described in the travel model for any horizon year (as defined in CFR 93.101) is considered a significant change in concept and scope.
7. Project changes not addressed in the above statements will be decided on a case-by-case basis through consultation by representatives from DAQ, WFRC, MAG, UDOT, UTA, FHWA, FTA, and EPA.

Appendix – 2

RTP 2023-2050 List of Projects

A final list of amended 2023-2050 RTP projects can be found in [Appendix H: 2023-2050 Phased Project Lists by Mode](#). The new 2023-2050 RTP [interactive map](#) (<https://wfrc.org/rtp-2023-map/>) is also available.

Appendix – 3

Amendment #1 Project Overviews

Level 1 – Staff Modifications (For information only)

Active Transportation

1. **Weber Canyon Bike Path**

Cost: N/A due to removal

The Utah Department of Transportation (UDOT) is requesting an amendment to remove the Weber Canyon Bike Path from the Weber River Parkway to the Morgan County line. The Wasatch Front Regional Council (WFRC) and UDOT have overlapping projects between the RTP and UDOT's Long Range Plan (LRP). The project will remain in the UDOT LRP and will fix the overlap in Utah's Unified Transportation Plan.

2. **Porter Lane Bike Lane**

Cost: \$86,000

WFRC Staff is requesting an amendment to modify the eastern extent of the 0.68-mile bike lane on Porter Lane based on the relocation of a proposed crossing over I-15. The I-15 Farmington to Salt Lake City Environmental Impact Statement (EIS) has moved the planned crossing of I-15 to the north. This new extent will terminate the project at the logical endpoint of the future 1250 West shared-use path. Potential funding sources include City funds, County funds, Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), Transportation Alternatives Program (TAP), Carbon Reduction Program (CRP), and/or Transportation Investment Fund Active (TIF Active).

3. **Bonneville Shoreline Trail**

Cost: \$10.4 Million

Salt Lake County is requesting an amendment to update the alignment of the 40-mile Bonneville Shoreline Trail West based upon the recent Salt Lake County Parks & Recreation Study. This project will increase access to outdoor recreation and improve feasibility of the proposed alignment. Potential funding sources include City funds, TAP, developer funding, Recreational Trails Program, and/or Utah Outdoor Recreation grants.

4. **Perry Farm Overhead Pedestrian/Bike Crossing**

Cost: \$6.3 Million

The City of Bluffdale is requesting an amendment to change the phasing of the Perry Farms to Independence overhead pedestrian/bike crossing from Phase 2 (2033-2042) to Phase 1 (2023-2032). This project will increase safety, improve access to opportunities, has the potential for vehicle trip replacement, and improved safe routes to school. This project has received partial funding from the Federal Railroad Administration's Railroad Crossing Elimination Grant. Additional potential funding sources include TAP, STP, CMAQ, CRP, and/or TIF Active.

5. I-15 EIS - Active Transportation Projects

Cost: Project costs included in the I-15 reconstruction project.

UDOT is requesting an amendment for eleven project changes included in the I-15 Farmington to Salt Lake City EIS. There are seven project modifications and four new projects, all in Phase 1 (2023-2032). The project types include a shared lane, a bike lane, a buffered bike lane, two overhead crossings, and six shared use paths. These projects will increase connectivity, safety, and access to the regional active transportation network. These active transportation projects costs and construction will be included with the I-15 reconstruction project. For specific project information, please see the “I-15” tab within this [spreadsheet](#).

6. Kearns Active Transportation Plan

Cost: \$14.4 Million

Kearns Metro Township is requesting an amendment for four new projects in various phases that come from the recently completed Kearns Active Transportation Plan. Of the four new projects, three are shared use paths and one is a buffered bike lane. These projects will increase connectivity, safety, and access to the regional active transportation network. Potential funding sources include City funds, County funds, STP, CMAQ, TAP, CRP, TIF Active, Transit Transportation Investment Funds First Last Mile (TTIF FLM), and/or Active Transportation Investment Funds (ATIF). For specific project information, please see the “Kearns” tab within this [spreadsheet](#).

7. Layton Active Transportation Plan

Cost: \$25.3 Million

The City of Layton is requesting an amendment for 36 new projects in various phases that come from the recently completed Layton Active Transportation Plan. These new projects include bike lanes, buffered bike lanes, shoulder bikeways, shared use paths, and street crossings. These projects will increase connectivity, safety, and access to the regional active transportation network. Potential funding sources include City funds, County funds, STP, CMAQ, TAP, CRP, TIF Active, TTIF FLM, and/or ATIF. For specific project information, please see the “Layton” tab within this [spreadsheet](#).

8. Taylorsville Active Communities Plan

Cost: \$24.3 Million

The City of Taylorsville is requesting an amendment for 17 active transportation projects. These projects include ten new projects, five modified projects, and two removed projects, all in various phases, from the recently completed Taylorsville Active Communities Plan. These projects include buffered bike lanes, shared use paths, and roadway undercrossings. These projects will increase connectivity, safety, and access to the regional active transportation network. Potential funding sources include City funds, County funds, STP, CMAQ, TAP, CRP, TIF Active, TTIF FLM, and/or ATIF. For specific project information, please see the “Taylorsville” tab in this [spreadsheet](#).

9. Walk White City Plan

Cost: \$7.8 Million

White City Metro Township is requesting an amendment for three new projects in various phases that come from the recently completed Walk White City Plan. These projects include

two shared use paths and one street crossing. These projects will increase connectivity, safety, and access to the regional active transportation network. Potential funding sources include City funds, County funds, STP, CMAQ, TAP, CRP, TIF Active, TTIF FLM, and/or ATIF. For specific project information, please see the “White City” tab in this [spreadsheet](#).

Transit

10. 400 West - American Spur TRAX Extension

Cost: \$120 Million

The Utah Transit Authority (UTA) is requesting an amendment to change the needs-based phasing from Phase 2 (2033-2042) to Phase 1 (2023-2032). This 1.7-mile project is a realignment of the Red TRAX Line between 200 South and 1300 South in Salt Lake City. This project will increase mobility and access to opportunities within the new corridor. Potential funding sources include Transit Transportation Investment Fund (TTIF), federal funds, and/or local option sales tax.

11. TRAX Orange Line - University of Utah to Downtown Salt Lake City

Capital Cost: \$101 Million

O&M (per year): \$10.4 Million

UTA is requesting an amendment to change the needs-based phasing from Phase 2 (2033-2042) to Phase 1 (2023-2032). This 4.7-mile project is a reconfiguration project from the University of Utah to 600 West. The Orange TRAX Line will increase access to opportunities and provide increased mobility along its corridor. Potential funding sources include TTIF, federal funds, and/or local option sales tax.

12. TRAX Orange Line - Downtown Salt Lake City to the Salt Lake City International Airport

Capital Cost: \$30 Million

O&M (per year): \$7.5 Million

UTA is requesting an amendment to change the needs-based phasing from Phase 3 (2043-2050) to Phase 1 (2023-2032). This 6.7-mile project is a reconfiguration project from Downtown Salt Lake City to the Salt Lake City International Airport. The Orange TRAX Line will increase access to opportunities and provide increased mobility along its corridor. Potential funding sources include TTIF, federal funds, and/or local option sales tax.

Level 2 – Board Modifications

Roadway

1. 12600 South

Cost: \$50 Million

The City of Herriman and the Utah Department of Transportation (UDOT) are requesting an amendment to change the lane configuration of the 12600 South (Herriman Boulevard) new construction project. The recommendation is to change the lane configuration from 6800 West to 7300 West (future SR-111) to five lanes and leave the existing remaining portion of the project from 7300 West to Oquirrh Boulevard as three lanes. The project aligns with the 12600 South State Environmental Study (SES) completed by UDOT which addresses current and future growth in southwestern Salt Lake County. Potential funding sources include the Transportation Investment Fund (TIF) and local funds.

2. Freedom Point Way

Cost: \$2.5 Million

The City of Bluffdale is requesting a new collector road project connecting Porter Rockwell Boulevard to Pony Express Road by extending Freedom Point Way. The connecting collector road will have one lane per direction with a center left-turn lane and sidewalks. Funding sources include Salt Lake County Corridor Preservation Funds and local funds.

3. Grandville Avenue Extension

Cost: \$5 Million

The city of South Jordan is requesting an extension of Grandville Avenue to Old Bingham Highway. This project will provide more accessibility to the 5600 West Old Bingham Highway TRAX Station. The project is needed on the RTP in order to be qualified for Salt Lake County Corridor Preservation Funds.

4. FrontRunner Grade-Separated Crossing - Hill Field Road

Cost: \$32 Million

The Utah Transit Authority (UTA) in coordination with WFRC and Layton City is requesting a new grade-separated crossing at Hill Field Road and the FrontRunner/Union Pacific Railroad lines. This project has been identified as part of the FrontRunner Forward Study and will improve the reliability of FrontRunner, vehicle travel times, and safety improvements for all users. Local funds could be utilized to complete this project.

5. FrontRunner Grade-Separated Crossing - Gordon Avenue

Cost: \$32 Million

UTA in coordination with WFRC and Layton City is requesting a new grade separated crossing at Gordon Avenue and the FrontRunner/Union Pacific Railroad Lines. This project has been identified as part of the FrontRunner Forward Study and will improve the reliability of FrontRunner, vehicle travel times, and safety improvements for all users. Local funds could be utilized to complete this project.

6. FrontRunner Grade-Separated Crossing - Pages Lane

Cost: \$32 Million

UTA in coordination with WFRC and West Bountiful is requesting a new grade-separated crossing at Pages Lanes and the FrontRunner/Union Pacific Railroad lines. This project has been identified as part of the FrontRunner Forward Study and will improve the reliability of FrontRunner, vehicle travel times, and safety improvements for all users. Local funds could be utilized to complete this project.

7. FrontRunner Grade Separated Crossing - 1700 South

Cost: \$32 Million

UTA in coordination with WFRC and Salt Lake City is requesting a new-grade separated crossing at 1700 South and the FrontRunner/Union Pacific Railroad Lines. This project has

been identified as part of the FrontRunner Forward Study and will improve the reliability of FrontRunner, vehicle travel times, and safety improvements for all users. Local funds could be utilized to complete this project.

8. FrontRunner Grade Separated Crossing - Vine Street

Cost: \$32 Million

UTA in coordination with WFRC and Murray is requesting a new grade-separated crossing at Vine Street and the FrontRunner/Union Pacific Railroad lines. This project has been identified as part of the FrontRunner Forward Study and will improve the reliability of FrontRunner, vehicle travel times, and safety improvements for all users. Local funds could be utilized to complete this project.

9. FrontRunner Grade Separated Crossing - 5900 South

Cost: \$32 Million

UTA in coordination with WFRC and Murray is requesting a new grade-separated crossing at 5900 South and the FrontRunner/Union Pacific Railroad Lines. This project has been identified as part of the FrontRunner Forward Study and will improve the reliability of FrontRunner, vehicle travel times, and safety improvements for all users. Local funds could be utilized to complete this project.

Transit

10. Davis - Salt Lake City Community Connector

Capital Cost: \$75.6 Million

O&M (per year): \$6.4 Million

UTA is requesting an amendment for an alignment change, per the Davis - Salt Lake City Community Connector Environmental Assessment (EA), in Salt Lake City from 400 West to 300 West between Beck Street to the North Temple FrontRunner Station. This project will increase access to opportunities, mobility, and provide faster travel times in this corridor. Potential funding sources for this 25.5-mile project include Transit Transportation Investment Fund (TTIF), federal funds, and/or local option sales tax.

11. Big Cottonwood Canyon Core Route

Capital Cost: \$25.8 Million

O&M (per year): \$6 Million

The Utah Department of Transportation (UDOT) and UTA are requesting an amendment for a new 15-mile core route bus service from the Cottonwood Canyons Transit Hub to the Brighton Ski Resort in Big Cottonwood Canyon. This project will ease congestion and provide transportation options in the corridor. Potential funding sources include the TTIF, federal funds, local option sales taxes, and/or the Cottonwood Canyon Transportation Investment Fund (CCTIF).

12. Point Innovative Mobility Zone with Dedicated Shuttle

O&M (per year): \$1 Million

UDOT and UTA are requesting an amendment to include phase 1 of the Point of the Mountain EA - Innovative Mobility Zone with dedicated shuttles to operate prior to

implementation of the light rail transit line into Phase 1 of the 2023-2050 Regional Transportation Plan. This project will increase access to opportunities and mobility within the new development. Potential funding sources include TTIF, federal funds, and/or local option sales tax. The Mountainland Association of Governments (MAG) will incorporate the Traverse Mountain innovative mobility zone within their Plan.

Level 3 – Full Amendments

Transit

1. Point of the Mountain Transit

Capital Cost: \$622 Million

O&M (per year): \$3.3 Million

UDOT and UTA are requesting an amendment for the updated mode from bus rapid transit (BRT) to light rail transit, the phase from Phase 1 (2023-2032) to Phase 2 (2033-2042), and alignment per the phase 2 recommendations of the Point of the Mountain Environmental Assessment (EA). This project will increase access to opportunities and mobility within the new development. This 5.3-mile project has an approved one-time Legislative appropriation and additional funds could come from Transit Transportation Investment Fund (TTIF), local funds, and/or federal funds. The cost and length reflected of this project is only for the Salt Lake County portion within WFRC as the Mountainland Association of Governments (MAG) will incorporate the Utah County portion in their Plan. The total project cost is estimated at \$945 million capital costs with \$6.3 million annual operations and maintenance costs.

2. FrontRunner Station at the Point of the Mountain Development

Capital Cost: \$120 Million

UDOT and UTA are requesting an amendment for the new FrontRunner Station at the Point of the Mountain development. This project will increase access to the Point development and increase access to opportunities. This project has an approved one-time Legislative appropriation and additional funds could come from TTIF, local funds, and/or federal funds. The cost reflected of this project and the associated double tracking from Draper to Lehi is only for the Salt Lake County portion within WFRC as the Mountainland Association of Governments (MAG) will incorporate the Utah County portion in their Plan. The total project cost is estimated at \$400 million.

3. North Farmington Station, Stop, or Terminal

Capital Cost: \$3 Million

Farmington City is requesting an amendment for the new station, stop, or terminal in North Station Park that connects the fixed-guideway innovative mobility zone to the Farmington FrontRunner Station. This project will increase mobility and access to opportunities. This new project comes from the Farmington Station Area Plan. Potential funding sources include Housing and Transit Reinvestment Zones (HTRZ), TTIF, federal funds, and/or local option sales tax.

4. Farmington Fixed-Guideway Innovative Mobility Zone

Capital Cost: \$1 Million

O&M (per year): \$447,000

Farmington City is requesting an amendment for the new 1.2-mile fixed-guideway innovative mobility zone from the Farmington FrontRunner Station to the North Farmington station, stop, or terminal. This project will increase mobility and access to opportunities within the corridor. This new project is from the Farmington Station Area Plan. Potential funding sources include HTRZ, TTIF, federal funds, and/or local option sales tax.

Roadway

I-15 - Farmington to Salt Lake City

Total Project Cost: \$2.6 Billion

UDOT is requesting an amendment to I-15 in southern Davis County and northern Salt Lake County to align with the recommendations from the I-15 Farmington to Salt Lake City Environmental Impact Statement (EIS). The first component of the amendment will be to adjust the previous traffic lane recommendation of four general purpose (GP) lanes and two high-occupancy toll (HOT) lanes in each direction to five GP lanes and one HOT lane in each direction. Part two will split the Davis County portion of the project into two segments from Farmington to 2600 South and from 2600 South to the Salt Lake County line while the Salt Lake County segment would remain the same from the Davis County line to 400 South. Part three will update the total project cost from \$2 Billion to \$2.6 Billion, largely due to inflationary components of the project. Lastly, the amendment will remove five projects from the RTP that will be incorporated into the overall I-15 project. The I-15 project will also incorporate pedestrian and bicycle design elements maximizing connectivity for communities and neighborhoods located on either side of I-15. The projects outlined below are the different segments of the overall I-15 project being recommended as amendments.

5. I-15 - Farmington to 2600 South

Cost: \$1.453 Billion

UDOT is requesting an amendment to the I-15 Farmington to Salt Lake County line project, by splitting it into two segments at 2600 South in Bountiful. This segment adjusts the project length to 9.5 miles from Farmington to 2600 South and changes the traffic lanes from four GP lanes and two HOT lanes to five GP lanes and one HOT lane. This project will receive funding from the Transportation Investment Fund (TIF).

6. I-15 - 2600 South to the Salt Lake County Line

Cost: \$459 Million

UDOT is requesting an amendment to the I-15 Farmington to Salt Lake County line project, by splitting it into two segments at 2600 South in Bountiful. This segment adjusts the project length to 3.0 miles from 2600 South in Bountiful to the Salt Lake County line and changes the traffic lanes from four GP lanes and two HOT lanes to five GP lanes and one HOT lane. This project will receive funding from the TIF.

7. I-15 - the Davis County Line to 400 South

Cost: \$688 Million

UDOT is requesting an amendment to the I-15 Farmington to Salt Lake City project. This segment of the amendment changes the traffic lanes from four GP lanes and two HOT lanes to five GP lanes and one HOT lane. This project will receive funding from the TIF.

8. I-15 Managed Motorways Operations

Cost: N/A due to removal

UDOT is requesting the I-15 southern Davis County portion of the managed motorway's operational improvement project to be removed from the RTP as it will be incorporated into the overall I-15 project. This project helps prevent congestion to improve travel time, reliability and safety by using sophisticated ramp metering and vehicle detection methods.

9. I-15 Interchange at Parrish Lane

Cost: N/A due to removal

UDOT is requesting the I-15 interchange upgrade at Parrish Lane be removed from the RTP as it will be incorporated into the overall I-15 project. The interchange at Parrish Lane will be modified to a single point urban interchange (SPUI) and be improved to accommodate enhanced traffic flow and safer bicycle and pedestrian use.

10. I-15 Interchange at Warm Springs Road

Cost: N/A due to removal

UDOT is requesting the I-15 interchange upgrade at Warm Springs Road be removed from the RTP as it will be incorporated into the overall I-15 project. This project will modify the existing interchange to an overstreet, full interchange with a diamond configuration which enables more accessibility to I-15 and the surrounding community.

11. I-215 Interchange at I-15/US-89 (Upgrade Interchange)

Cost: N/A due to removal

UDOT is requesting the upgrades to the I-215 interchange at I-15/US-89 be removed from the RTP as they will be incorporated into the overall I-15 project. The interchange upgrades will create better connectivity and mobility.

12. I-215 Interchange at I-15/US-89 (System-to-System Interchange)

Cost: N/A due to removal

UDOT is requesting the system-to-system interchange improvements to I-215 and I-15/US-89 be removed from the RTP as they will be incorporated into the overall I-15 project. This new interchange will be a SPUI with access to I-15 and I-215 from US-89 creating more opportunities for north/south and west connections.

13. I-15 - WFRC's northern MPO boundary and US-91

Cost: \$10 Million

UDOT is requesting a new project to be amended into the RTP. This project will add two miles of passing lanes in both the northbound and southbound directions between WFRC's northernmost MPO boundary and US-91 in Box Elder County. The project will extend further north and will be included in UDOT's Long Range Plan (LRP). The project will help traffic efficiency and increase safety, especially related to heavy truck traffic in the area. Potential funding sources include the TIF.

Appendix – 4

Amendment #4 Project Overviews

1. Legacy Parkway - I-15 / US-89 to I-215 (Davis County)

Cost: \$65 Million

UDOT is requesting an amendment to Legacy Parkway from I-15 / US-89 in Farmington to I-215 in North Salt Lake City (R-D-50). The RTP currently shows the project is needed in Phase 2 (2033-2042) and fiscally constrained in Phase 3 (2043-2050). As UDOT has assessed the I-15: Farmington to Salt Lake City construction project, they have concluded that moving the Legacy Parkway widening project to Phase 1 would provide significant benefit. Initial analysis shows:

- Better traffic flow during construction with the added capacity on Legacy,
- A time savings of nine to 12 months to reconstruct I-15,
- A cost savings on the project of roughly \$200 million, and
- A safer working environment for those building the project.

Because of these significant benefits, UDOT has requested that the Legacy Parkway widening project be moved to Phase 1, with an updated project cost and changed status of the new lanes from High Occupancy Toll (HOT) lanes to General Purpose lanes.

- The savings on the I-15 project would allow the needed Legacy Parkway improvements to be accelerated.
- The funding for Legacy Parkway would come from the Transportation Investment Fund (TIF) and is significantly less than what would be needed if UDOT had to maintain traffic flow on I-15 without the additional lane on the Legacy Parkway.

2. I-15 - 3000 North to US-91 (Box Elder County)

Cost: \$83.2 Million

UDOT is requesting an amendment to the I-15 widening project from approximately 3000 North (the northern edge of the WFRC MPO boundary). The RTP shows the project needed phase Phase 2 (2033-2040) and unfunded fiscally constrained, with a request to move both to Phase 1 (2023-2032). This project would replace the need for the I-15 Operational/Passing Lanes project (R-B-17) that is currently in Phase 1 Fiscal Constraint. This project would also enhance a heavy freight travel corridor in a designated Industrial District in the Wasatch Choice Vision. This project has received funding from the TIF.

3. I-15 - Northern WFRC MPO Boundary to Hwy 91 on I-15 (Box Elder County)

Cost: \$10 Million

UDOT is requesting the I-15 operational / passing lanes project (R-B-17) be removed from the RTP due to the widening project (R-B-1) being needed in Phase 1 (2023-2032).