CONFORMITY DETERMINATION REPORT

MOUNTAINLAND MPO

TransPlan50

2050 Regional TRANSPORTATION PLAN

MAG

Expert Resources. Enriching Lives.

Adopted June 6 2019

Mountainland Association of Governments

586 East 800 North
Orem, Utah 84097-4146

TERMS AND ABBREVIATIONS

CAA	Clean Air Act
CFR	Code of Federal Regulations
CMAQ	Congestion Mitigation and Air Quality
CO	Carbon Monoxide
FAST Act	Fixing America's Surface Transportation Act
GPI	Kem C. Gardner Policy Institute
HDDV	Heavy Duty Diesel Vehicle (8501 lbs. and heavier gross vehicle weight)
HOV	High Occupancy Vehicle
HPMS	Highway Performance Monitoring System
I/M	Inspection and Maintenance
LDGV	Light Duty Gas Vehicle (0-6000 lbs. gross vehicle weight)
LDGT1	Light Duty Gas Truck 1 (0-6,000 lbs. Gross vehicle weight)
LDGT2	Light Duty Gas Truck 2 (6,001-8,500 lbs. Gross vehicle weight)
LEV	Low Emission Vehicle
MOVES	Motor Vehicle Emission Simulator
MPO	Metropolitan Planning Organization
RTP	Regional Transportation Plan
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NOx	Oxides of Nitrogen
OBD	On Board Diagnostics
O_3	OZONE
PM10	Particulate matter smaller than or equal to 10 microns
PM2.5	Particulate matter smaller than or equal to 2.5 microns
REMM	Real Estate Market Model
RFG	Reformulated Gasoline
RVP	Reid Vapor Pressure
SIP	State Implementation Plan
STIP	State Transportation Improvement Program
TCM	Transportation Control Measures
TDM	Transportation Demand Management
TIP	Transportation Improvement Program
VMT	Vehicle Miles Traveled

Agencies:

MAG	Mountainland Association of Governments
DAQ	Division of Air Quality
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration

UDOT	Utah Department of Transportation
UTA	Utah Transit Authority
WFRC	Wasatch Front Regional Council
CMPO	Cache MPO

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MAG Regional Planning Committee resolution adopting MAG TransPlan 50 and the Conformity Determination Report

WHEREAS, MAG is the designated Metropolitan Planning Organization (MPO) for transportation planning in the Urbanized Area of Utah County; and

WHEREAS, the FAST Act – Fixing America's Surface Transportation Act and the Clean Air Act Amendments (CAA) require the MPO to develop Regional transportation plans (RTP) and short-range Transportation Improvement Programs (TIP) that conform with the applicable State Implementation Plan (SIP) for air quality; and

WHEREAS, MAG TransPlan 50 was developed to meet the requirements of the CAA and the FAST Act, and to address the short and long term transportation needs of the Region, and

WHEREAS, MAG TransPlan 50 has been developed in compliance with 23 CFR 450.322, Metropolitan Transportation Planning Process through appropriate technical and review processes, and

WHEREAS, the Conformity Determination Report covering TransPlan 50 has been developed to meet the requirements of 40 CFR 93 and the emission limits set for State Implementation Plans (SIP) for the State of Utah, and

WHEREAS, MAG TransPlan 50in its entirety was developed in cooperation with the MPO's planning partners and reflects local commitment for project implementation.

NOW, THEREFORE, BE IT RESOLVED that MAG Regional Planning Committee adopts the MAG TransPlan 50 and the Conformity Determination Report in its entirety.

BE IT FURTHER RESOLVED that MAG Regional Planning Committee authorizes staff, with approval of the Chairman of the Committee, to make non-substantive technical corrections to the final document as necessary.

Resolution Adopted by MAG Regional Planning Committee Board – June 6, 2019

CONFORMITY DETERMINATION REPORT

MAG TransPlan 50

SUMMARY

This report is the new Conformity Determination for MAG TransPlan50

As the Metropolitan Planning Organization (MPO), MAG) is responsible to develop, produce and adopt the Metropolitan Transportation Plan (MTP), Transportation Improvement Plan (TIP), and the Unified Planning Work Program (UPWP). MAG has the responsibility to ensure that the MAG TransPlan50 for the Utah Valley urbanized area **conform** to the air quality requirements of the State Implementation Plan (SIP) and the Environmental Protection Agency interim conformity guidelines for all pollutants in non-attainment or maintenance areas. This responsibility is fulfilled when MAG Regional Planning Committee approves the Conformity Determination Report. FHWA and FTA review this document, in consultation with the EPA, to ensure that all relevant planning regulations have been adequately addressed.

"Under 23 CFR Part 450 and the FAST Act, federally funded projects cannot be approved, funded, advanced through the planning process, or implemented unless those projects are in a Fiscally Constrained and Conforming Transportation Plan and Transportation Improvement Program."

TRANSPORTATION CONFORMITY:
A Basic Guide for State and
Local Officials US-DOT

This report updates the conformity analysis and describes the changes made to the travel model transportation networks.

Approval of these documents by FHWA and FTA allow the policies, programs and projects to be implemented using Federal Funding.

All assumptions used in this determination report were found consistent with the federal regulations at various stages of the development of MAG TransPlan50

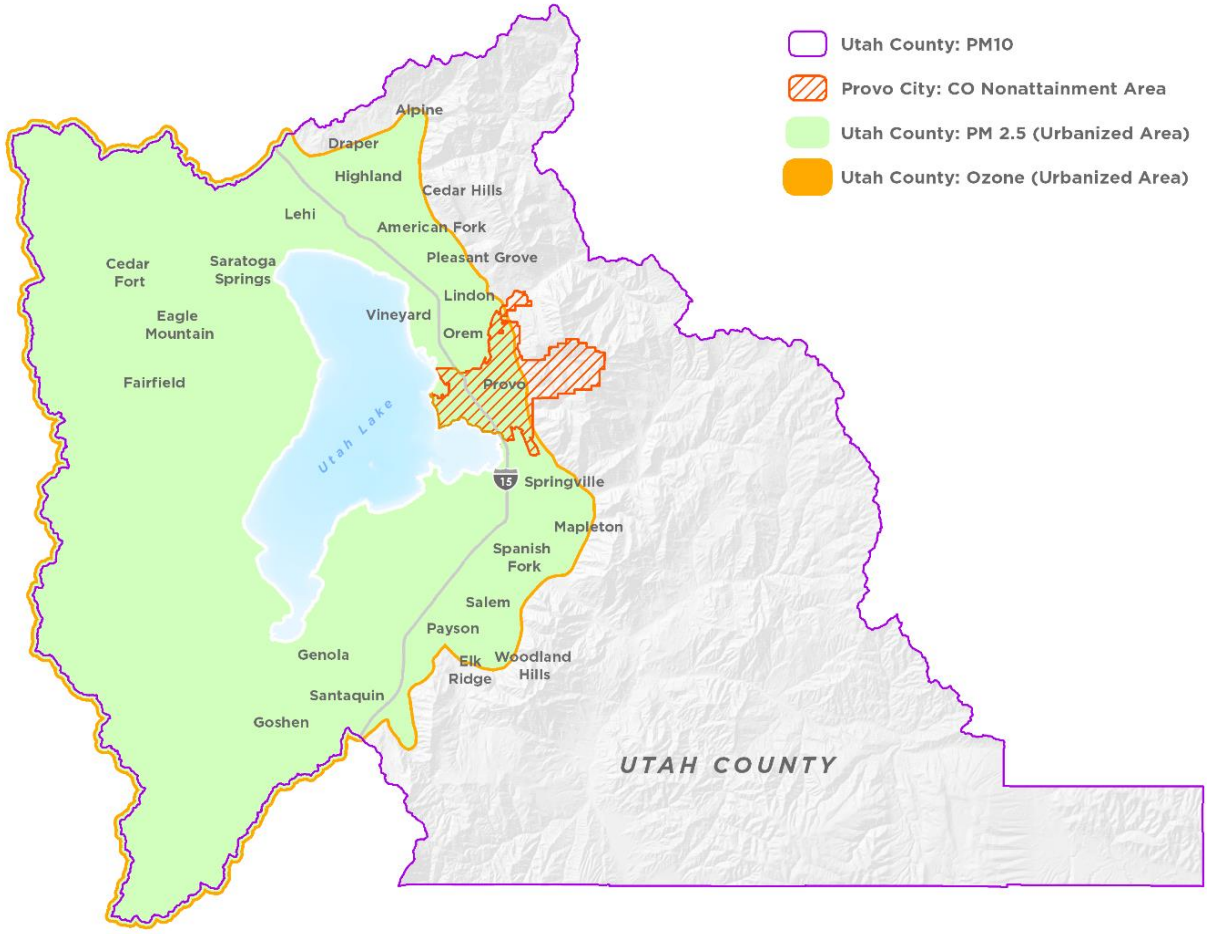
Based on an analysis consistent with these rules, a positive determination can be made for all the transportation projects included in MAG TransPlan50 in the Provo City Carbon Monoxide non-attainment area, in the Utah County 2006 $PM_{2.5}$ non-attainment area, in the Utah County PM_{10} non-attainment area and the 2015 OZONE non-attainment area.

APPLICABLE CLEAN AIR ACT REQUIREMENTS AND CONFORMITY RULES

The FAST Act and the relevant elements of the CAA Subsections 176(c) (1) (2) and (3), requires the MPO to develop RTPs that conforms with the applicable State Implementation Plan (SIP) for air quality.

The EPA Transportation Conformity Rules (40 CFR Part 93) and FHWA/FTA Metropolitan Planning Regulation (23 CFR Part 450) were employed in the preparation of this conformity Determination.

UTAH COUNTY Non-Attainment Areas MAP



Provo City is designated as a Maintenance Area for Carbon Monoxide. Utah County is designated as moderate non-attainment for PM_{10}, serious non-attainment for 2006 $PM_{2.5}$ and marginal non-attainment for 2015 Ozone.

CONFORMITY TESTS

Conformity Analysis Tests Table summarizes the specific quantitative conformity tests required by the conformity rules based on the State Implementation Plans for each non-attainment area pollutant in the MAG area.

Effective April 10, 2019, Utah County was declared a Clean Data $PM_{2.5}$ non- attainment area. The State, in collaboration with stakeholders, is required to prepare a $PM_{2.5}$ Maintenance Plan. Until the plan is approved by the EPA, the MPO is required to perform interim conformity tests for the 2006 $PM_{2.5}$ non-attainment area.

Effective June 4, 2018, Utah County was declared a Marginal OZONE non-attainment area. A marginal designation does not require preparation of a SIP, however the MPO is required to perform an interim conformity test for the 2015 Ozone non-attainment area.

Conformity Analysis Tests

Area	Non-attainment and SIP Status	Pollutants	Test Period	Quantitative Tests
Provo	Approved Maintenance SIP	CO	Maintenance Plan	Emissions Budget
Utah County	Moderate PM_{10}, SIP submitted and approved	NOX precursor Direct PM_{10}	Control Strategy SIP	Emissions Budget
Utah County	Marginal 2015 Ozone non-attainment.	NOX precursor VOC precursor	Interim Test	Build $\leq$ 2017
Utah County	2006 $PM_{2.5}$ Non-Attainment	NOX precursor VOC precursor Direct $PM_{2.5}$	Interim Test	Build < No Build Or Build $\leq$ 2008

The conformity rules outline specific analysis requirements that non-attainment areas must follow depending on the severity of the non-attainment problem and the time frame established by the Clean Air Act to maintain National Ambient Air Quality Standards.

The following list describes the appropriate subsections of 40 CFR Part 93 the plan must meet:

- 93.110 – Latest Planning Assumptions
- 93.111 – Latest Emission Model
- 93.112 – Consultation

Transportation Plan (RTP) and TIP:

- 93.113(b) – Transportation Control Measures (RTP)
- 93.113(c) – Transportation Control Measures (TIP)
- 93.118 or 93.119 – Emission Budget(s) or Emission Reduction

93.110 - LATEST PLANNING ASSUMPTIONS

Section 93.110 of the transportation conformity rule defines the requirements for the most recent planning assumptions that must be in place at the time of the conformity determination process. The planning assumptions relate to the socio-economic forecasts, transit operating policies, transit capital program policies, transit fare policies that impact the travel demand modeling. All planning assumptions have been reviewed and agreed to through the interagency consultation process at various stages of the TransPlan50 development

HORIZON YEARS

Conformity must be determined for the Regional Transportation Plan that includes the Transportation Improvement Program (TIP) in the non-attainment and/or maintenance areas. While other requirements of the Metropolitan Transportation Planning Process dictate the financial feasibility and related programming and planning procedures, conformity is based largely on analyzing specific horizon years chosen according to the criteria found in under Section 93.118. The following rules have been followed to define the horizon years in the MAG study area:

- Any year for which the implementation plan establishes Motor Vehicle Emission Budget – for PM_{10} the 2020 is a budget year. For CO maintenance plan 2015 is a budget year.
- The first horizon year must be no more than 10 years from the first year of the plan (2019)
- If the attainment year (2003 for PM_{10}, 2014 for CO) is in the time span of the transportation plan – it must be a horizon year.
- For $PM_{2.5}$ until a SIP budget is established – the baseline year is 2008
- For $PM_{2.5}$ until a SIP budget is established - The first horizon year must be no more than 5 years from the year of analysis.
- For Ozone – the baseline year is 2017
- For Ozone – The first horizon year must be no more than 5 years from the year of analysis.

- Horizon years may be no more than 10 years apart.
- For CO – years 2025 2035, 2045 and 2050 meet this requirement.
- For PM10 -Years 2020, 2030, 2040 and 2050 meet this requirement.
- For PM2.5 –Years 2024, 2034, 2044 and 2050 meet this requirement.
- For Ozone - Years 2024, 2034, 2044 and 2050 meet this requirement.
- The final horizon year must be the last year of the transportation plan and 2050 applies to all analyses.

Conformity Horizon Years Table summarizes the proposed horizon years for the three non-attainment areas in the MAG modeling area.

CONFORMITY HORIZON YEARS

Area	Non-attainment Pollutant	Horizon Year(s)
Provo City	Carbon Monoxide (CO)	2025 2035 2045 2050
Utah County	PM10	2020 2030 2040 2050
Utah County	PM2.5	2024 2034 2044 2050
Utah County	Ozone	2024 2034 2044 2050

SOCIO-ECONOMIC FORECASTS

Perhaps the single greatest influence on the magnitude of pollutant emissions resulting from the transportation system is the rate of growth of persons, jobs, households, and related socio-economic measures. The conformity rules require that the socio-economic inputs used in the analysis represent the latest available estimates. Regional and county control totals of population, households and employment using a combination of cohort survival and economic base model (called the UPED model) are submitted by the University of Utah's GPI that is responsible for developing and producing population estimates and projections, neighborhood indicators and demographic analyses focusing on Utah. In addition, the Demography team is responsible for the Utah State Data Center, a program affiliated with the U.S. Census Bureau that is responsible for the dissemination and interpretation of demographic and socioeconomic data, including recently released and historical. These projections are updated approximately every two years. The Mountainland Association of Governments generally works with the Center to disaggregate the regional and county socio-economic forecasts down to the individual traffic analysis zones, which comprise the region. Added socio-economic variables for dwelling units, automobile ownership, and stratified household size are also forecast by MAG down to the individual traffic zone level. The data employed in this plan was developed by MAG in 2019.

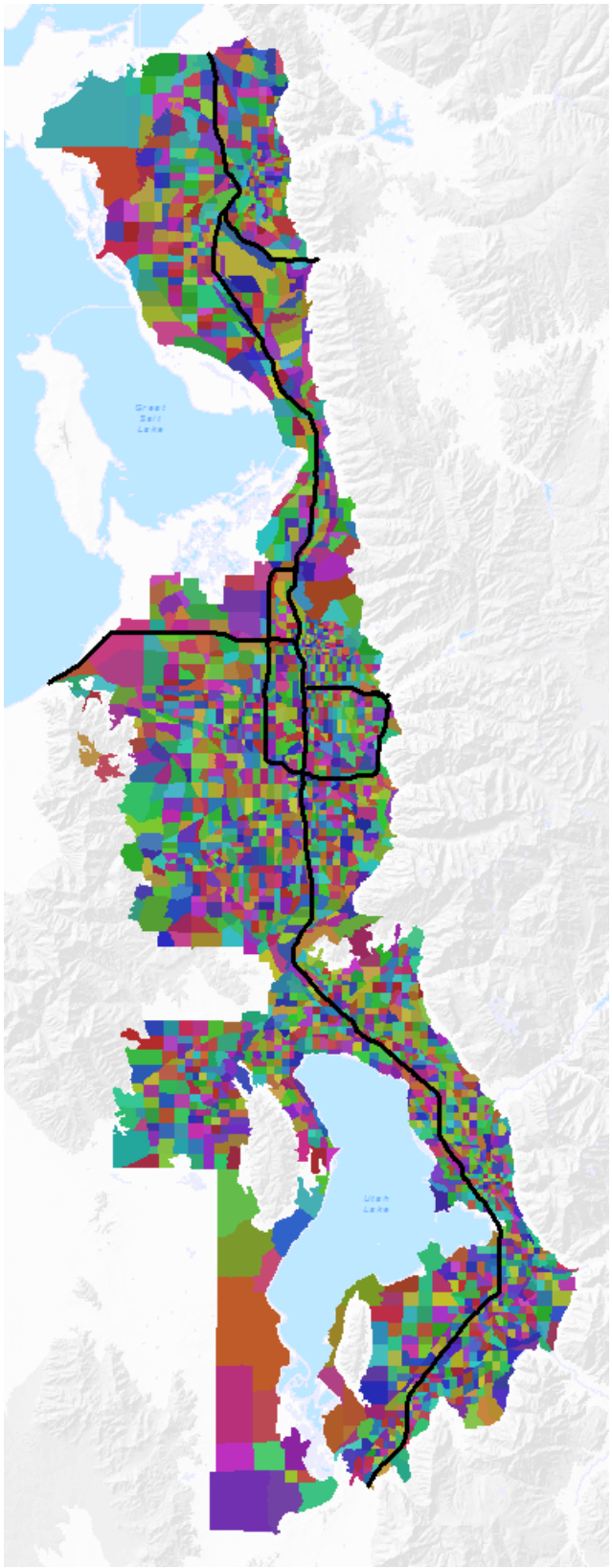
LAND USE ALLOCATIONS

In addition to review by local municipalities, land use allocations feeding into the model were reviewed by a group of stakeholders, including developers, environmentalists, and other concerned and interested citizens.

ZONAL DATA

Travel models create a unique spatial framework for describing travel demand. The study area is subdivided into small geographic units called Traffic Analysis Zones (TAZ). The zonal systems to be used for this effort is a 1127-zone system for the Salt Lake Area, a 514-zone system for the Ogden Area, and a 1085-zone system for the Utah County Area. Zones are not bisected by census tract boundaries, thus each of the area's census tracts contains one or more TAZ.

THE INTEGRATED REGIONAL TRAVEL MODEL - TAZ MAP

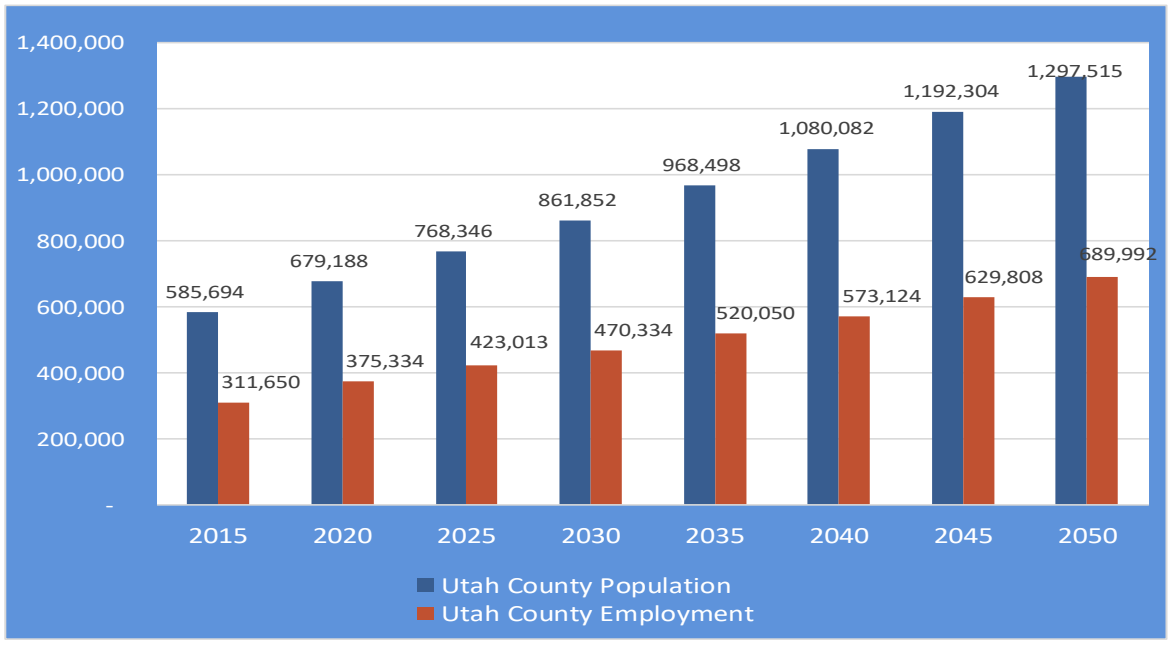


POPULATION & EMPLOYMENT

Economic and demographic data by TAZ are estimated by WFRC and MAG using information provided by the GPI as well as employment data provided by the Department of Workforce services. Future year projections of socio-economic data begin with control totals provided by the Center. They are the State's official demographic estimates and forecasts and are published for each county in the State.
Each MPO allocates the population, households, and employment to the TAZ. The allocation to zones is done on the basis of local master plans and in conjunction with local planners. Detailed projections are made for 2020, 2030, 2040, and 2050 and beginning in 2015. Estimates for intermediate years are not post-processed but do exist as raw land use model output. Household data has been stratified by (1) the number of persons per household and (2) by the number of vehicles used by the household. The model applies a set of equations to this data to calculate the expected number of person-trips for each household based on *household size/number of vehicles* combination totals for each TAZ.

Population and Employment Forecasts Table summarizes the population and employment forecasts used in this conformity analysis. These forecasts are the most current data and are consistent with those developed by the GPI published in June 2017 as the State of Utah, Economic and Demographic Projections and disaggregated by the MPO.
Employment data does not include agriculture, construction, or mining jobs.
Population data does not include group quarters population (institutionalized persons, student housing etc.)

POPULATION AND EMPLOYMENT Chart



PROJECTS IN THE TIP AND PLAN

All the projects identified in the 2050 Plan are included in the regional emissions analysis. The plan is fiscally constrained – containing only projects that are with an identified funding source. Estimated funding levels are based on current funding levels and reasonable assumptions that these funds will be continued in the future.

> ***Regionally Significant Projects:*** (40 CFR 93.101): means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs. This includes : access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sport complexes, etc., or transportation terminals) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guide way transit facilities that offer an alternative to regional highway travel."

MAG's definition applied in the highway networks meets the EPA definition. All principal arterial projects and passenger rail projects are included in the regional travel model. Also, projects on minor arterial, collector and local transit service are included – therefore included in the emission analysis, even though they do not serve regional transportation needs as defined by EPA.

For a complete list of the projects included in this conformity analysis, see www.mountainland.org/transplan50.

Regionally significant projects may not proceed under a conformity lapse. This conformity analysis finds that the transportation plan conforms.

UTAH COUNTY - Regionally Significant Corridors Map

MOUNTAINLAND BASELINE /PLANNED REGIONALLY SIGNIFICANT FACILITIES

Existing / Planned Facilities

I-15 Freeway -- Juab County Line to Salt Lake County Line
SR-92 / Timpanogos Highway-- I-15 to mouth of American Fork Canyon
SR-68 – Utah/Salt Lake County Line to Grandview Blvd, Saratoga Springs
SR-73 – Redwood Road to Cedar Fort
SR-85 / 2100 North -- I-15 / Lehi 2100 North Interchange to Redwood Road
SR-145 / US-89 / American Fork Main Street/Pioneer Crossing-- American Fork State Street to Saratoga Springs Redwood Road
SR-129 / North County Blvd – I-15 Pleasant Grove Interchange to SR-92
SR-114 / Geneva Road / Provo Center Street – US-89 to Provo Center Street to US-89 Provo State Street
SR-52 / Orem 800 North -- I-15 / Orem 800 North Interchange to University Ave Provo
Orem Center Street – Orem SR-114 Geneva Road to Orem US-89 State Street
Bulldog Blvd – Provo US-89 State Street to Provo US-189 University Ave
US-189 / University Ave Provo -- Orem 800 North to I-15 / University Ave Interchange Provo
US-89 / State Street American Fork to Provo -- American Fork 200 East to Provo Bulldog Blvd
US-89 / State Street Lehi / American Fork -- Lehi Main Street to American Fork Main Street
US-89 / Main Street Springville -- Springville 1400 North to SR-51
US-89 / Provo 300 South-- Provo 500 West to South State Street Provo
US-89 / Provo 500 West-- Bulldog Blvd to Provo 300 South
US-89 / South State Street Provo, Provo 300 South to Springville 1400 North
US-89 / Springville to Spanish Fork -- SR-51 Springville to US-6 Spanish Fork
SR-75 - I-15 / Springville 1400 North to US-89 Springville State Street
SR-77 - I-15 / Springville 400 South to US-89 Springville State Street
US-6 Spanish Fork -- I-15 / US-6 Interchange Spanish Fork to MPO boundary (mouth of Spanish Fork Canyon)
SR-156 / Spanish Fork Main Street -- I-15 / Spanish Fork Main Street Interchange to Arrowhead Trail Spanish Fork
SR-265 / University Parkway -- I-15 / University Parkway Interchange Orem to University Ave Provo
Intermodal Centers – American Fork, Orem, Provo, Spanish Fork, and Vineyard Commuter Rail Station
Commuter Rail -- Provo to Salt Lake County Line and Provo to Payson
TRAX Light Rail – Draper to Lehi Line
Bus Rapid Transit – Provo to American Fork

FUTURE YEARS TRAVEL DEMAND MODEL NETWORK

All projects included in the 2050 regional transportation plan were modeled to determine their impacts on air quality including baseline projects. This approach models conformity for the entire plan, but in the case of failure to demonstrate conformity, only exempt projects may proceed.

In order to remain consistent with past modeling practices, MAG included the analysis of all planned transportation capacity increase projects on facilities functionally classified as Collector, Minor Arterial, and Principal Arterial streets.

The highway projects list from the 2050 Regional Transportation Plan is included in the appendix. Maps of the transportation networks used for the emissions analysis are provided in the Appendix. The following "Build" model runs reflect the Plan.

Baseline	=	Includes existing network as of 2015
2024	=	Includes project on current TIP and existing
2030	=	Includes projects up to and including year
2040	=	Includes projects up to and including year
2050	=	Includes projects up to and including year

In addition to the Transportation Plan networks mentioned above, additional years were interpolated –2020, 2034, and 2044 to provide for transportation data needed to assess the air quality impacts on the PM_{10} Ozone and $PM_{2.5}$ analysis years.

Concept and Scope: the design concept and scope of all regionally significant capacity increasing projects in the TIP has not changed significantly from the design and scope identified in the plan.

THE REGIONAL TRAVEL DEMAND MODEL

MODEL OVERVIEW

The Regional model is an integrated land-use, transportation, and air quality model designed to perform a wide range of analyses. The model includes several advanced features that place it on the cutting edge of improved modeling methods required to meet the FAST Act and the Clean Air Act. In addition, several features recommended by the Travel Model Improvement Program of the US Department of Transportation, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA) and the Environmental Protection Agency (EPA) are incorporated into the model.

Some of the most useful model outputs include:

- Origin-Destination flows,
- Directional link vehicle volumes,
- Vehicular travel times and speeds, and
- Transit ridership numbers.
- The model produces forecasts for four times of day:
- AM Peak: 6-8:59 AM
- Midday: 9 AM – 2:59 PM
- PM Peak: 3-5:59 PM
- Evening/Off-peak: 6 PM – 5:59 AM

MODEL COVERAGE

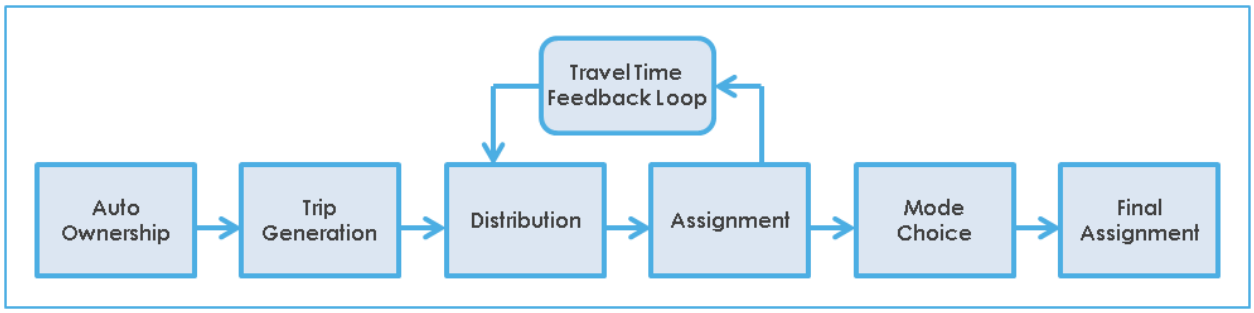
The model covers the developable area of Utah, Salt Lake, Davis, Weber, and a portion of Box Elder counties except for the canyons and the mountains to the east of the urbanized areas**.** In these cases, the population in the areas that are outside of the travel model coverage is relatively small and is separated from the urban area by some distance.

There is significant commuting from both Summit County (Park City) and Tooele County from In both cases the population centers are separated by distances of more than 15 miles from the urban portions of Salt Lake County. The issue of how to treat these growing travel flows may need to be dealt with in the future. At this time the commuting levels are not of a magnitude that treating the flows as an external-internal flow compromises the urban models to a significant degree.

MODEL STRUCTURE

System-wide transportation planning models are typically based on a four-step modeling process: trip generation, trip distribution, mode split, and trip assignment. The regional model incorporates these steps and adds an auto ownership model that is sensitive to urban design variables.

The model has a feedback loop between trip distribution and traffic assignment, which is a process that ensures consistency between travel congestion and times that *influence* trip distribution patterns and are also an *outcome* of trip assignment. Travel time, or more generally speaking *accessibility*, is calculated based on outputs from the assignment model, but also is an important determinant of trip distribution and mode split. Therefore, it is customary to iterate these three models in order to reach a convergent solution.



CONCEPTUAL OVERVIEW OF THE WFRC/MAG MODEL

At the start of a full model run, the auto ownership model estimates household auto ownership levels and then the trip generation model uses land use data and auto ownership to calculate trip ends at the transportation analysis zone (TAZ) level. These trip ends are then paired into origins and destinations in the distribution model. In the mode split model, a mode of travel is selected for each trip. Vehicle trips are assigned to the highway network in the assignment model. The travel time feedback loop in the model is accomplished prior to mode choice by converting person trips to vehicle trips based on observed data.

MODEL COMPONENTS

Although considered a five-step process as stated above, the model is actually comprised of several steps and each step is programmed or scripted separately. These steps include, but are not limited to:

- *Land use allocation model (REMM)* allocates future land use (i.e. housing and jobs) based on accessibility, availability of land (through physical constraints and zoning), and location of existing land uses.
- *Auto ownership model* estimates the likelihood of each household in the region owning 0, 1, 2, 3+ cars. Auto ownership is a function of characteristics of the household and where the household lives. Auto ownership and availability is a strong predictor of trip making and mode choice behavior.
- *Trip generation model* calculates the number of person trips generated within each TAZ. The trip generation model parameters are developed from the WFRC/MAG 2012 Household Travel Survey. The number of trips to and from a place is a function of the amount and types of land-use activity within the zone.
- *Trip distribution model* pairs the origins and destinations for each zone for each of the trip purposes. Trip generation estimates the number of trips to or from each TAZ, and trip distribution completes the trip by describing which trip origins are linked with which trip destinations. The result of this is a person trip matrix for each trip type. Trip distribution links trip-ends of the same type based primarily on the spatial separation of different land-uses and observed

sensitivities to trip length. One output of trip distribution is the person trip table for home to work that can be compared to the "Journey- to-Work" data provided by the Bureau of the Census.

- *Highway/transit skim builder* finds the best available travel path via each of the travel modes explicitly modeled. Several modes are explicitly modeled, including auto, transit modes (local bus, bus rapid transit, light rail, commuter rail) and non-motorized modes. Skims are reasonable approximations of the travel time and cost between all pairs of TAZs, and skims are described for each travel mode. The path-finding algorithms are calibrated based on observed travel paths and observed relationships between volumes and congested speeds.

- *Mode split model* calculates which mode the person trips are likely to take based on availability and mode-specific parameters (e.g. time, cost, transit frequency). Mode split provides a breakdown of person trips by mode both for captive riders (people without automobiles) and for the total population. The mode split model is developed based on observed data on mode preferences and what those preferences imply about sensitivities to mode attributes.

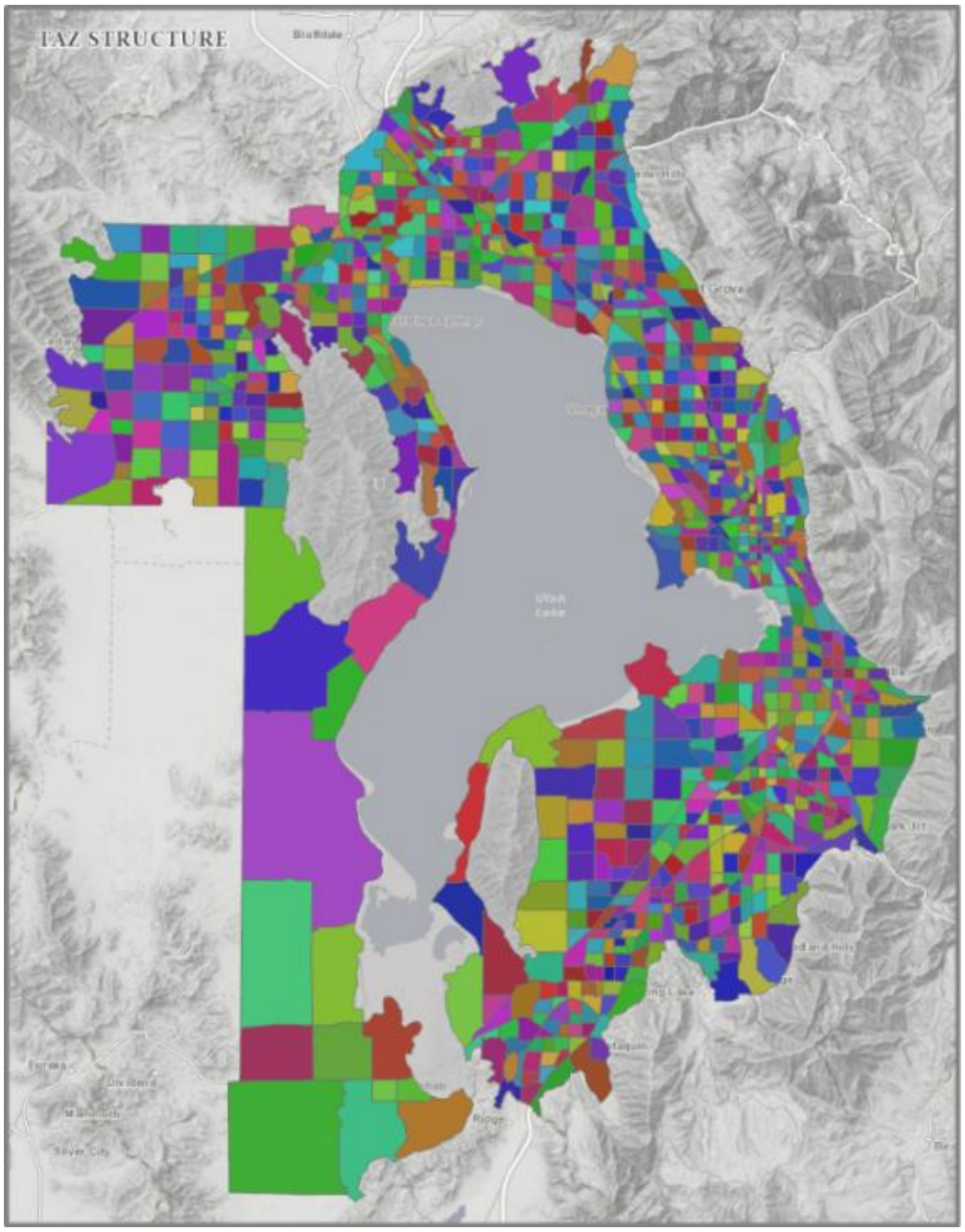
- *Vehicle assignment model* locates the "best" routes between each origin/destination pair and assigns the vehicle trips to the highway network. Important outputs of this module include number of vehicles on each roadway segment by time period and turning movements at intersections. Several other pieces of data can be extracted, including operating speeds, travel times, VMT, VHT, and V/C on links and at intersections. In addition, one can configure the vehicle assignment to save all the vehicle trips that use a single link in either direction (select link analysis) or all the vehicle trips that originate or are destined for a zone (select zone analysis).

- *Transit assignment* uses the transit trip table output from mode split and assigns person trips using transit to the appropriate transit route. This provides a means of viewing transit ridership graphically and understanding the relative effectiveness of different segments of the transit network.

- *Model output* is summarized automatically by the model, including regional statistics (e.g. VMT, VHT, transit shares and trip lengths), corridor and segment performance statistics (e.g. delay, volume, and ridership), district and county-level trip flows, MOVE emissions model inputs, and calibration statistics.

MODEL GEOGRAPHY & UTAH COUNTY TAZ STRUCTURE MAP

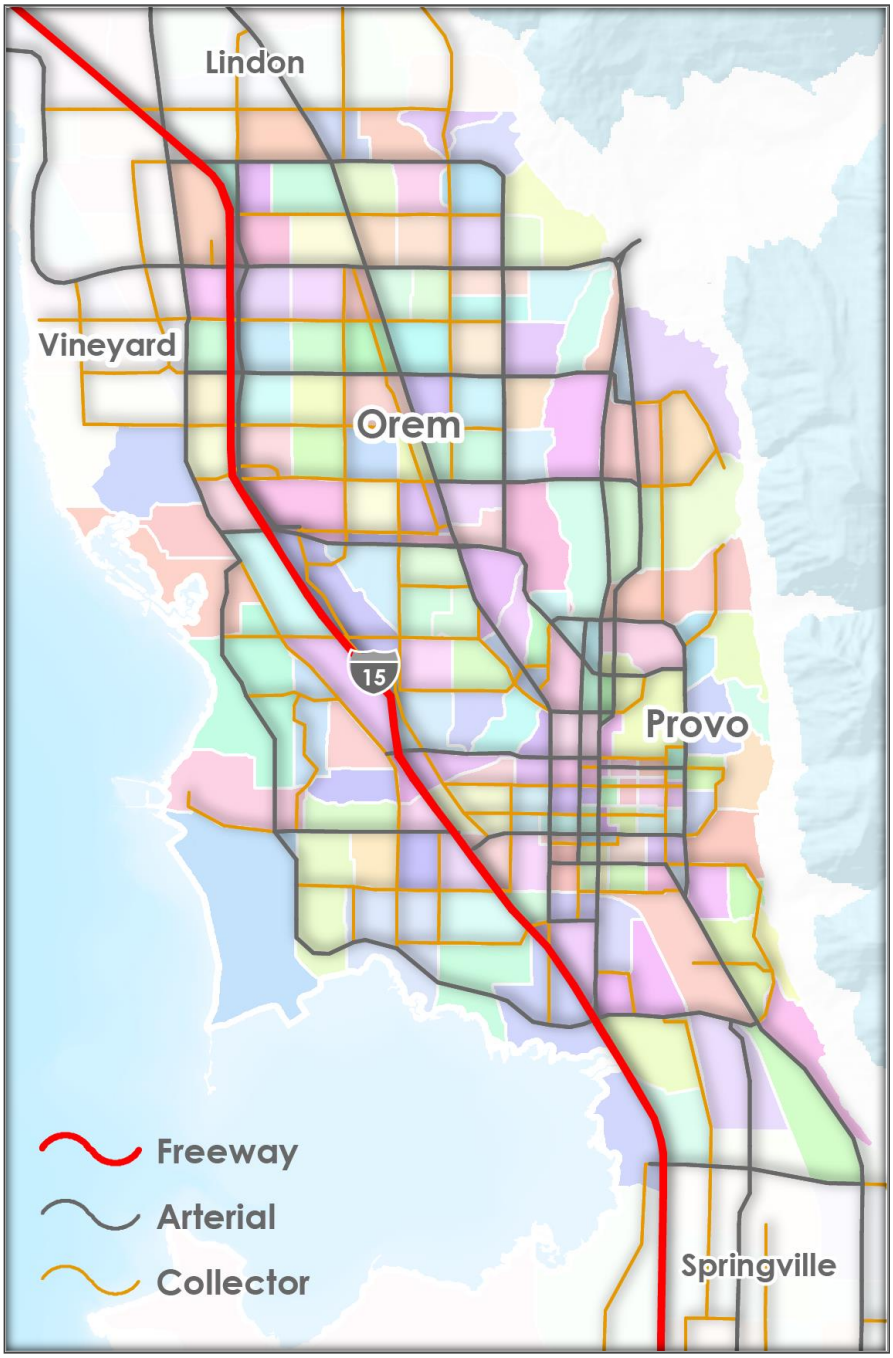
- **TAZ STRUCTURE**
- Utah County traffic model consists of 1,127 internal TAZs and 8 external TAZs. Land-use and socioeconomic data are summarized within this spatial framework and travel is estimated between the TAZs.



NETWORK STRUCTURE

For modeling purposes, the road network includes all facilities functionally designated as collector or above. There are approximately 50,000 road links in the network. The Street Network in Model (Provo and Orem) Map shows a portion of the Voyager network covering Provo and Orem.

NETWORK IN MODEL (PROVO AND OREM) MAP



MODEL CALIBRATION

The model is calibrated to reasonably represent 2015 “base year” travel conditions and patterns, a process in which model output is checked or "validated" against real-world data. Trip rates, transit ridership and highway volumes are examples of type of model outputs that are validated. When the model results do not match the base- year values within an acceptable tolerance, parameters are adjusted until the model is acceptable. For future forecast years, the model output is reviewed for "reasonableness" to validate model results and model sensitivities can be assessed.

QUALITY CONTROL AND MONITORING

Due to the vast amount of data required as input to the modeling process, numerous quality control tools have been developed to help ensure the integrity of that data, which in turn enhances the reliability of the model. These automated features include the following:

- Summaries of key demographic data – these are used to compare magnitudes and trends and to check for accuracy.
- Summaries of county-to-county flow magnitudes and trends- these help in checking for accuracy and reasonableness.
- Cross checks to detect conflicting network data.
- Visual inspection of differences between the highway networks.
- Screen line summaries to compare general traffic volumes.
- Check links for correct county and city tag.
- Check that link speeds and volumes are within reasonable ranges.
- Numerous other network detail checks.

TRANSPORTATION MODELING

UTAH COUNTY REGIONAL TRAVEL Characteristics

The Travel Characteristics table provides a summary of AADT VMT estimates resulting from the transportation system in the various horizon years. Base Year 2015 VMTs are actual UDOT counts.

	UDOT AADT		Networks AADT						
base year	2015	2017	2020	2024	2030	2034	2040	2044	2050
arterial	5,337,542	5,705,769	6,597,320	7,240,212	7,929,818	8,269,520	8,786,360	9,493,743	10,663,018
freeway	4,621,863	5,324,030	6,024,676	5,791,432	7,547,265	8,787,335	10,945,750	11,912,810	13,525,935
local	2,097,865	2,211,883	2,617,985	2,854,613	3,103,579	3,361,471	3,789,039	4,045,570	4,463,295
Total	12,057,270	13,241,682	15,239,980	15,886,257	18,580,662	20,418,326	23,521,149	25,452,978	28,652,248

UTAH COUNTY 2015 AADT ADJUSTMENT FACTORS

FACILITY TYPE	MODEL AWKDT VMT	HPMS AADT VMT	MODEL TO AADT
Freeways	4,727,905	4,621,863	1.023
Arterials	5053,170	5,337,542	0.946
Local Roads	903,619	2,097,865	2.321

PROVO CITY 2015 AADT ADJUSTMENT FACTORS

FACILITY TYPE	MODEL AWKDT VMT	HPMS AADT VMT	MODEL TO AADT
Freeways	621,093	602,460	0.97
Arterials	838,343	880,260	1.05
Local Roads	211,775	491,319	2.32

Since PM and CO emission analysis for Utah County and Provo City is related to winter episodes, the VMT data is adjusted to the winter season. The winter factor applied to the adjusted model VMT is 0.974 for both Utah County VMT and Provo City VMT as per seasonal traffic engineering area counts. Ozone emissions analysis is related to summer episodes, the VMY data is adjusted to the summer season. The summer factor applied to the adjusted model VMT is 1.07

UTAH COUNTY - TRAVEL CHARACTERISTICS

	Activity by Time of Day				
	Base Year				
Facility Type	2015	2024	2030	2040	2050
Arterials					
AM	17.5%	17.6%	17.42%	17.25%	17.20%
Mid	31.9%	31.8%	32.05%	32.02%	32.06%
PM	26.1%	26.3%	26.14%	26.39%	26.42%
Eve	24.6%	24.4%	24.39%	24.35%	24.32%
Freeways					
AM	19.6%	19.6%	19.7%	19.61%	19.55%
Mid	31.8%	32.1%	32.1%	32.07%	32.12%
PM	25.5%	25.1%	25.3%	25.18%	25.06%
Eve	23.2%	23.2%	22.9%	23.14%	23.26%
Local roads					
AM	15.7%	15.7%	15.63%	15.60%	15.49%
Mid	33.3%	33.4%	33.41%	33.48%	33.61%
PM	25.6%	25.5%	25.56%	25.51%	25.46%
Eve	25.4%	25.4%	25.41%	25.41%	25.43%
Total Network					
AM	18.3%	18.3%	18.34%	18.38%	18.33%
Mid	31.9%	32.0%	32.15%	32.14%	32.20%
PM	25.8%	25.7%	25.71%	25.68%	25.62%
Eve	24.0%	24.0%	23.80%	23.80%	23.86%

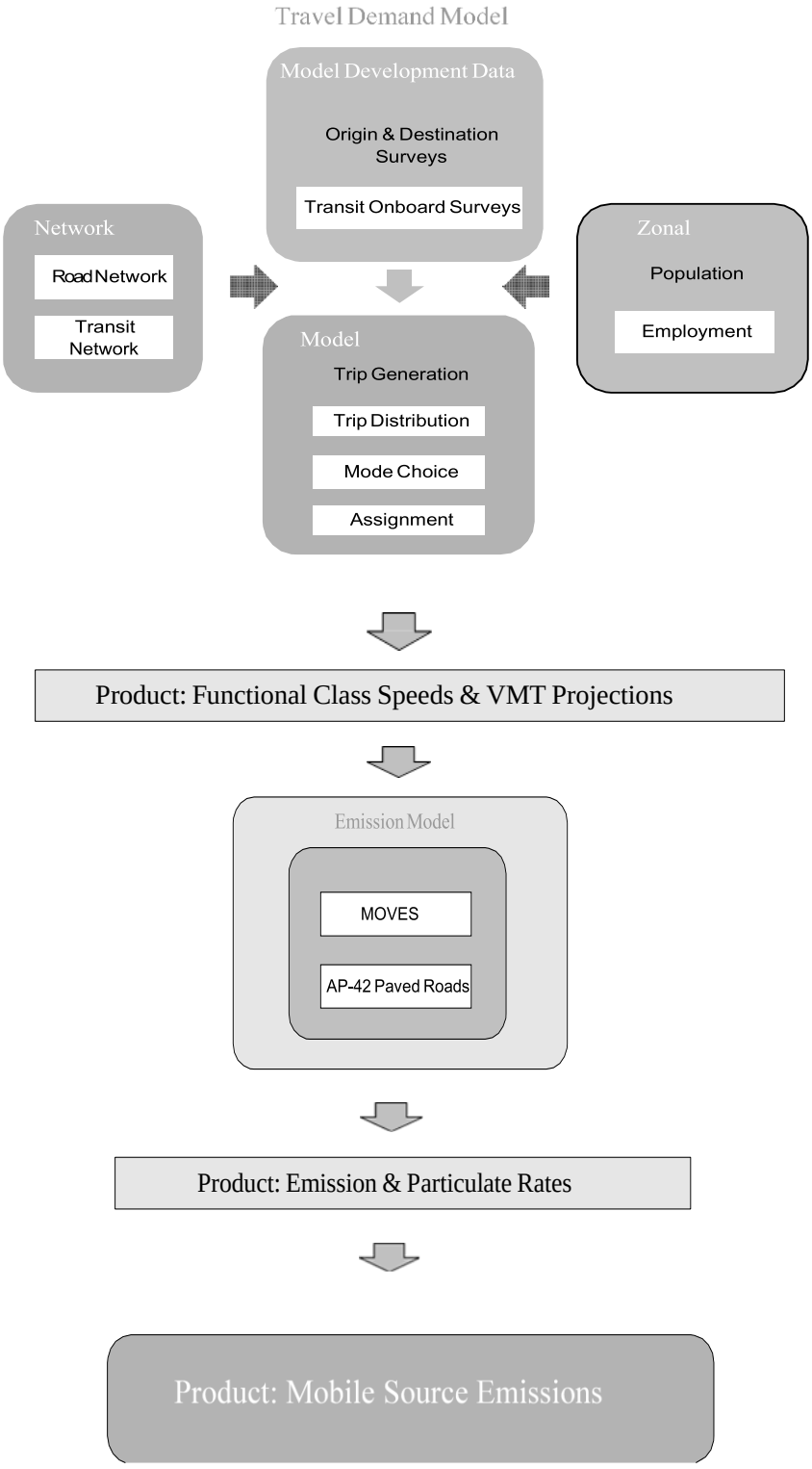
	Speeds by Time of Day				
	Base Year				
Facility Type	2015	2024	2030	2040	2050
Arterials					
AM	33.1	31.1	33.4	32.0	31.7
Mid	34.6	33.8	34.3	33.0	32.7
PM	31.2	28.4	31.0	29.4	28.2
Eve	35.7	35.5	35.4	34.2	34.1
Freeways					
AM	68.2	64.6	67.8	64.1	59.6
Mid	73.0	73.4	73.5	72.3	71.9
PM	58.3	55.1	60.4	56.6	53.3
Eve	74.8	74.9	74.4	73.4	73.2
Local roads					
AM	19.4	19.3	19.1	18.9	18.8
Mid	19.4	19.3	19.1	18.9	18.8
PM	19.4	19.3	19.1	18.9	18.8
Eve	19.5	19.4	19.2	19.0	18.9
Total Network					
AM	40.6	38.1	41.4	41.4	40.3
Mid	41.2	40.2	41.7	42.3	42.2
PM	36.5	33.5	37.2	36.6	35.2
Eve	41.9	41.3	42.3	43.1	43.2

PROVO CITY - TRAVEL CHARACTERISTICS

	Activity by Time of Day				
	Base Year				
Facility Type	2015	2024	2030	2040	2050
Arterials					
AM	17.56%	17.58%	17.33%	17.46%	17.52%
Mid	32.13%	32.02%	32.51%	32.32%	32.31%
PM	26.09%	26.25%	25.68%	26.06%	26.13%
Eve	24.22%	24.15%	24.48%	24.16%	24.04%
Freeways					
AM	20.48%	20.34%	20.21%	20.35%	20.17%
Mid	30.74%	31.43%	31.51%	31.83%	31.67%
PM	26.60%	25.85%	26.08%	25.19%	25.33%
Eve	22.17%	22.37%	22.20%	22.63%	22.83%
Local roads					
AM	16.71%	16.45%	16.56%	16.57%	16.48%
Mid	32.67%	32.96%	32.85%	32.81%	32.95%
PM	26.05%	25.95%	26.08%	26.09%	26.04%
Eve	24.57%	24.64%	24.52%	24.52%	24.53%
Total Network					
AM	18.43%	18.44%	18.35%	18.54%	18.60%
Mid	31.73%	31.90%	32.17%	32.18%	32.08%
PM	26.23%	26.07%	25.83%	25.68%	25.75%
Eve	23.62%	23.58%	23.64%	23.60%	23.57%

	Speeds by Time of Day				
	Base Year				
Facility Type	2015	2024	2030	2040	2050
Arterials					
AM	29.3	28.9	29.1	29.1	28.5
Mid	30.7	30.4	30.4	30.4	29.9
PM	27.2	26.2	26.5	26.5	25.7
Eve	32.1	32.0	32.0	32.0	31.7
Freeways					
AM	70.8	61.8	69.2	69.2	60.4
Mid	74.2	73.1	73.4	73.4	72.5
PM	67.6	54.7	62.0	62.0	49.9
Eve	74.3	74.3	74.2	74.2	74.0
Local roads					
AM	17.8	17.9	17.9	17.9	17.8
Mid	17.8	17.9	17.9	17.9	17.8
PM	17.8	17.9	17.9	17.9	17.8
Eve	17.9	17.9	17.9	17.9	17.8
Total Network					
AM	34.6	34.1	35.7	35.7	34.6
Mid	34.7	35.2	35.9	35.9	37.1
PM	31.9	30.3	32.0	32.0	30.3
Eve	35.5	36.2	36.8	36.8	38.6

TRAVEL MODEL AND MOBILE EMISSION MODEL INTERACTION DIAGRAM



MODELING DOMAIN FOR PM10, PM2.5, OZONE AND CO NON-ATTAINMENT AREAS

The modeling area included in the MAG models covers the entire county. PM10 ,PM2.5 and Ozone conformity must be found for the entire designated non-attainment areas. CO conformity must be found for the Provo City boundary.

93.111- LATEST VEHICLE EMISSION MODEL

The Mobile Source emissions factor data is derived from employing two EPA models. For Oxides of Nitrogen emission factors and Particulates MAG employed the approved MOVES model and for determining Road Dust emission rates the AP-42 equation was used as summarized below:

Secondary PM10 Pollutants
MOVES - NOx

2006 PM2.5 Precursor
MOVES – Nox, VOC

2015 Ozone Precursor
MOVES – Nox, VOC

PM10 Pollutants - Direct
MOVES – Exhaust, Tire & Brake wear
AP-42– Chapter 13 - Road dust

2006 PM2.5 Pollutants - Direct
MOVES Total PM2.5, Break and Tireware

Once the emission rates have been determined for each facility type the corresponding rates (in grams/mile) are multiplied by the seasonal daily VMT for that facility for that calendar year. As per following formula:

Emission Rate (gram/mile) x Vehicle Miles Traveled (miles/day) = Emissions (gram/day)

The total emissions for the County are determined by adding the rates of all 3 facility types (Freeways, Arterials, and Local roads)

MOVES
EPA approved 2014a version of MOVES was used in preparation of the plan conformity.

I/M PROGRAMS
Up to 1996 Utah County's I/M program was a basic two-speed idle, classified as a Test & Repair program. 1996 and later-The Utah County's I/M program was approved by EPA for credit as a centralized test only program with Technician Training credits.

Effective February 29, 2000, the Utah County I/M Program consists of a two-speed idle test on all gasoline vehicles of model years 1968 through 1995. OBD testing is performed

on all gasoline vehicles of model years 1996 or newer. A vehicle that passes the OBD test will be given a certificate of compliance for registration purposes. If a vehicle fails the OBD test then it must pass the two-speed idle test in order to receive a certificate of compliance.

For modeling purposes – Model years 1996 and above are tested under the OBD procedure. H.B.172 went into effect January 2003 requiring biennial emission testing to the newest 6 years car models

MOVES INPUT FILES

The MOVES model is a very data intensive computer program based on the MYSQL database software. Input files utilized in the conformity analysis follow the agreed upon procedures and data that were established through consultation with the DAQ and EPA in the preparation of the SIPs and Maintenance Plans. For the projection inventories the input files were adapted to reflect changes in the local I/M programs, vehicle standards, and other parameters as they evolve over time – in accordance with the Interagency Consultation process that reflect the local conditions established. Vehicle activity input files are generated by the WFRC/MAG Regional Travel Demand Model.

Detailed discussion on MOVES procedures and proper use and an explanation of all command lines and external files used in the modeling is detailed in the EPA User's Guide to MOVES - October 2014.

PRIMARY PARTICULATE EMISSIONS – MOVES, AND AP-42 Chapter 13- PAVED ROADS

The conformity analysis for Particulate Matter10 (PM_{10}) was estimated by utilizing the MOVES model for Exhaust, Tire, and Brake Wear. Road Dust was estimated utilizing AP-42. A detailed discussion of the methodology appears in the guidance documentation of the MOVES and Chapter 13 of the AP-42 fifth edition. Both can be acquired online at *http://www.epa.gov/otaq/moveshtm* and *http://www.epa.gov/ttn/chief/ap4ttn/chief/ap42/ch13/* respectively

93.112 - CONSULTATION

***WFRC / MAG Regional Transportation Model*:** MAG in collaboration with WFRC employ a state of the practice travel demand model using the traditional four step travel demand process. The model is run using the TP+ program developed by the Urban Analysis Group. In the past, three similar but distinct travel models were used for the Ogden, Salt Lake, and Provo/Orem areas. These models have now been consolidated into one regional model. This improves the ability of the model to account for the effects of each area on

the others since interregional trips are no longer considered "external" to any of the regions.

DAQ / MAG Emission Input Parameters: MAG in collaboration with the DAQ has developed, through consultation, the environmental conditions (such as ambient temperature profile, altitude and humidity) used in the MOVES model. These parameters were employed in the preparation of the PM_{10} SIP and the CO Maintenance Plan modeling. A detailed discussion of the environmental conditions and parameters is included in the PM_{10} SIP and the CO Maintenance Plan TSD respectively.

Clean Air Agencies Consultation: As stated in the transportation bill, "In metropolitan areas which are non- attainment for ozone or carbon monoxide under the Clean Air Act, the metropolitan planning organization shall coordinate the development of a long range plan with the process for development of the transportation control measures of the State Implementation plans required by the Clean Air Act." A New Consultation Procedures SIP was adopted by the State AQ Board and Approved by EPA in September 2009.

The presence of the DAQ on our Mountainland MPO Planning Committee and on the Technical Advisory Committee, contributes to improved communications between Air Quality and Transportation Planning activities. In conjunction with the conformity determination we have established an Interagency Coordination Committee that includes representatives of FHWA, UDOT, DAQ, UTA, EPA, Mountainland, and the WFRC. These meetings have greatly improved the consultation process resulting in a successful plan consistent with the federal planning regulations and the SIP.

Employing the Interagency Consultation process articulated in 40 CFR 93.105, MAG has worked closely with the appropriate agencies to develop a process that established a set of transportation, land use and air quality planning assumptions that were used in this conformity determination. The participants included staff representing the following agencies:

UDOT
FHWA/FTA
DAQ
EPA/Region 8
CMPO
UTA
Utah County Government
Utah County Cities
WFRC

93.113 - TRANSPORTATION CONTROL MEASURES

There are no mandatory Transportation Control Measures (TCM) identified in the PM10 SIP for Utah County nor in the Provo CO Maintenance Plan.

***Transit Improvements*:** The Transportation Plan identifies strategic options for the role of public transit in Utah County. This plan identifies mass transit needs as well as intercity travel between Utah County and the Salt Lake Valley with a thirty- year horizon.

UTA is funded through portions of the sales tax used for both operation and capital expenses. Additional revenue is received through fares paid and federal grants received annually for capital expenses. While there have been some short- term fluctuations in transit patronage in response to fare increases, the implementation of commuter rail service and other transit improvements have increased transit patronage within the levels anticipated by the Plan.

Plans for expanding and increasing bus service, extending Bus Rapid Transit to American Fork, and the addition of commuter rail in South Utah County are moving forward. These transit goals are featured in the Plan, and the steps necessary to achieve them are moving forward, including a proposal of voter approval of additional revenue for transit funding. Detailed discussion on Public Transit is included in the TransPlan50 document.

93.118 - EMISSION BUDGETS

UTAH COUNTY PM_{10} CONFORMITY DETERMINATION

The Utah County PM10 SIP requires conformity determinations for both NOx and Primary PM (a combination of Direct PM10.and Dust. Construction related PM_{10} (§93.122(d)) is not necessary because the PM10 SIP does not identify construction related dust as a contributor to the PM_{10} non-attainment.

The current PM_{10} SIP Motor Vehicle Budgets (from 2003) were developed utilizing EPA's then approved emission model -Mobile 6.2. Since then – EPA replaced that model with the new - MOVES model (see discussion under section 93.111 – Latest emission model requirement above).

MOVES, especially in the early years before fuel and car technology improvements kick in, estimates much higher NOX rates which the current available budget cannot cover.

In 2005, the State introduced a Trading Rule for Salt Lake County (R307 – 110) that allows the WFRC MPO to apply potential surplus in its budget for Primary PM_{10}, to a potential short fall in its budget for NOX at a ratio of one-to-one.

Mountainland AOG requested the State to expand this existing rule to Utah County as well. The new Rule addressing specifically Utah County - R307 – 111 was incorporated into the state code and became effective March 5, 2015. The final Trading Rule for Utah County was published in the Federal Register on July 17, 2015.

UTAH COUNTY PM10 EMISSION MODELING RESULTS

The following tables summarize the emission applied in the form MOVES and AP-42 -Paved Roads respectively.

Utah County - 2020 MOVES and AP-42 Rates								
Rate				Pollutant g/mile				
					Direct PM10			
County	year	facility	Source	NOX	T_PM10	Brake	Tire	Dust
UT	2020	All	ALL VEH	0.478	0.0233	0.0374	0.0104	0.1899

Utah County - 2030 MOVES and AP-42 Rates								
Rate				Pollutant g/mile				
					Direct PM10			
County	year	facility	Source	NOX	T_PM10	Brake	Tire	Dust
UT	2030	All	ALL VEH	0.212	0.0101	0.0378	0.0106	0.1873

Utah County - 2040 MOVES and AP-42 Rates								
Rate				Pollutant g/mile				
					Direct PM10			
County	year	facility	Source	NOX	T_PM10	Brake	Tire	Dust
UT	2040	All	ALL VEH	0.151	0.0064	0.0410	0.0107	0.1773

Utah County - 2050 MOVES and AP-42 Rates								
Rate				Pollutant g/mile				
					Direct PM10			
County	year	facility	Source	NOX	T_PM10	Brake	Tire	Dust
UT	2050	All	ALL VEH	0.149	0.0062	0.0379	0.0104	0.1757

Direct PM10 = Total PM10 + Brakewear & Tirewear

Utah County - 2020 PM10 MOVES and AP-42 Emissions

					Pollutant Ton/wday		
						Primary PM10	
County	year	facility	Source	Distance	NOX	Direct PM	Dust
UT	2020	All	ALL VEH	14,781,622	7.790	1.160	2.865
UT Total					7.790	1.160	2.865

Utah County - 2030 PM10 MOVES and AP-42 Emissions

					Pollutant Ton/wday		
						Primary PM10	
County	year	facility	Source	Distance	NOX	Direct PM	Dust
UT	2030	A	ALL VEH	18,023,246	4.220	1.190	3.446
UT Total					4.220	1.190	3.446

Utah County - 2040 PM10 MOVES and AP-42 Emissions

					Pollutant Ton/wday		
						Primary PM10	
County	year	facility	Source	Distance	NOX	Direct PM	Dust
UT	2040	A	ALL VEH	22,815,524	3.790	1.460	4.140
UT Total					3.790	1.460	4.140

					Pollutant Ton/wday		
						Primary PM10	
County	year	facility	Source	Distance	NOX	Direct PM	Dust
UT	2050	A	ALL VEH	27,786,346	4.570	1.670	4.983
UT Total					4.570	1.670	4.983

Direct PM10 = Total PM10 + Brakewear & Tirewear

The table below summarizes the budget test associated with each required year of analysis for the precursor pollutant of NOx and Direct PM10. Direct PM10 is the sum of various component elements related to small particulates resulting from vehicle travel. These include exhaust, brake and tirewear and fugitive dust as results from the EPA AP-42, chapter 13-Paved Roads model. The Regional Transportation Plan and the Transportation Improvement Program conform to the emissions budget test for all PM10 pollutants.

The State air quality rule R307-111 allows a portion of the surplus primary PM10 budget to be applied to the secondary PM_{10} budget for conformity purposes. The table below shows that budget adjustments were necessary for analysis year 2020

UTAH COUNTY PM_{10} CONFORMITY BUDGET TEST

Utah County PM10 Conformity Budget test											
				Pollutants							
				Secondary tonsw/day			Primary PM10 tons/wday				
County	year	facility	source	NOX	NOX budget	Result	Direct PM10	DUST	Primary PM10 Budget	Result
UT	2020	all	all veh	7.79	5.21		1.16	2.87		
		Primary PM - traded		2.58+5.21=7.79				trade -	10.34 -2.58=7.76	
	2020 Total			7.79	7.79	Pass	4.03		7.76	Pass
	2030	all	all veh	4.22			1.19	3.45		
	2030 Total			4.22	5.21	Pass	4.64		10.34	Pass
	2040	all	all veh	3.79			1.46	4.14		
	2040 Total			3.79	5.21	Pass	5.60		10.34	Pass
	2050	all	all veh	4.57			1.67	4.98		
	2050 Total			4.57	5.21	Pass	6.65		10.34	Pass
	Primary PM = Direct PM10+ Dust									

UTAH COUNTY PM_{10} CONFORMITY DETERMINATION

Based on the findings of this report a positive conformity determination for PM10 is made for the 2050 Regional Transportation Plan and TIP.

UTAH COUNTY $PM_{2.5}$ CONFORMITY DETERMINATION

Conformity determinations for $PM_{2.5}$ is required for NOx, direct $PM_{2.5}$ and VOC.

UTAH COUNTY $PM_{2.5}$ EMISSION MODELING RESULTS:

Utah County - 2024 PM2.5 Interim Test -Rates						
				Pollutant g/mile		
County	**year**	**facility**	**Source**	**NOX**	**VOC**	**Direct**
UT	**2024**	ALL	ALL VEH	0.331	0.307	0.022
UT Total				**0.331**	**0.307**	**0.022**

Utah County - 2025 PM2.5 Interim Test -Rates						
				Pollutant g/mile		
County	**year**	**facility**	**Source**	**NOX**	**VOC**	**Direct**
UT	**2034**	ALL	ALL VEH	0.177	0.203	0.014
UT Total				**0.177**	**0.203**	**0.014**

Utah County - 2035 PM2.5 Interim Test -Rates						
				Pollutant g/mile		
County	**year**	**facility**	**Source**	**NOX**	**VOC**	**Direct**
UT	**2044**	ALL	ALL VEH	0.153	0.173	0.013
UT Total				**0.153**	**0.173**	**0.013**

Utah County - 2040 PM2.5 Interim Test -Rates						
				Pollutant g/mile		
County	**year**	**facility**	**Source**	**NOX**	**VOC**	**Direct**
UT	**2050**	ALL	ALL VEH	0.154	0.169	0.013
UT Total				**0.154**	**0.169**	**0.013**

Direct= Exhaust, Brake,Tire

Utah County - 2024 PM2.5 Interim Test Emission							
					Pollutant t/winter day		
County	year	facility	Source	Distance	NOX	VOC	Direct
UT	2024	ALL	ALL VEH	15,471,998	5.650	5.248	0.378
UT Total					5.650	5.248	0.378

Utah County - 2034 PM2.5 Interim Test Emission							
					Pollutant t/winter day		
County	year	facility	Source	Distance	NOX	VOC	Direct
UT	2034	ALL	ALL VEH	19,805,770	3.870	4.430	0.300
UT Total					3.870	4.430	0.300

Utah County - 2044 PM2.5 Interim Test Emission							
					Pollutant t/winter day		
County	year	facility	Source	Distance	NOX	VOC	Direct
UT	2044	ALL	ALL VEH	24,689,378	4.170	4.710	0.360
UT Total					4.170	4.710	0.360

Utah County - 2050 PM2.5 Interim Test Emission							
					Pollutant t/winter day		
County	year	facility	Source	Distance	NOX	VOC	Direct
UT	2050	ALL	ALL VEH	27,786,346	4.710	5.200	0.390
UT Total					4.710	5.200	0.390

Direct= Exhaust, Brake,Tire

UTAH COUNTY $PM_{2.5}$ CONFORMITY Budget Test

The table below summarizes the results of the interim test (analysis year ≤ 2008) associated with each required year of analysis for $PM_{2.5}$ emissions for the precursor pollutant of NOx and Direct $PM_{2.5}$.

Utah County PM2.5 Conformity Interim test - ≤ 2008 emissions

				Pollutants								
				Precursor tons/wday						Direct PM2.5 tons/wday		
County	year	facility	Source	NOX	NOX	Result	VOC	VOC	Result	Direct	Direct	Result
UT			2008		40.046	baseline		22.108	baseline		2.102	baseline
	2024	all	all	5.650	5.650		5.248	5.248		0.378	0.378	
	2024			5.650	5.650	Pass	5.249	5.249	Pass	0.378	0.378	Pass
	2034	all	all	3.870	3.870		4.430	4.430		0.300	0.300	
	2034			3.870	3.870	Pass	4.430	4.430	Pass	0.300	0.300	Pass
	2044	all	all	4.170	4.170		4.710	4.710		0.360	0.360	
	2044			4.170	4.170	Pass	4.710	4.710	Pass	0.360	0.360	Pass
	2050	all	all	4.710	4.710		5.200	5.200		0.390	0.390	
	2050			4.710	4.710	Pass	5.200	5.200	Pass	0.390	0.390	Pass

Direct - Exhaust, Brakewear & Tirewear

The Regional Transportation Plan and the Transportation Improvement Program conform to the emissions interim test for the $PM_{2.5}$ pollutants.

UTAH COUNTY $PM_{2.5}$ CONFORMITY DETERMINATION

Based on the findings of this report, a positive conformity determination for $PM_{2.5}$ is made for the TransPlan50 Plan and TIP.

UTAH COUNTY OZONE CONFORMITY DETERMINATION

Utah County OZONE non-attainment area is designated as "Marginal". As such, although the State is not preparing a SIP, the conformity rule requires the MPO to determine whether the TransPlan50 projections still conform. The rule requires the analysis to be based on an interim test comparing the plan horizon years results to the OZONE Inventory of 2015 (as base year). The horizon years inventories should be ≤ (less or equal) than the base year. Since OZONE exceedances in Utah County were observed in the summer season – the VMTs are adjusted to reflect the Summer season.

Conformity determinations for OZONE is required for NOx, and VOC

UTAH COUNTY OZONE EMISSION MODELING RESULTS:

Utah County - 2024 OZONE Interim Test - Rates

				Pollutant g/mile	
County	year	facility	Source	NOX	VOC
UT	2024	ALL	ALL VEH	0.302	0.234
UT Total				0.302	0.234

Utah County - 2034 OZONE Interim Test - Rates

				Pollutant g/mile	
County	year	facility	Source	NOX	VOC
UT	2034	ALL	ALL VEH	0.146	0.124
UT Total				0.146	0.124

Utah County - 2044 OZONE Interim Test - Rates

				Pollutant g/mile	
County	year	facility	Source	NOX	VOC
UT	2044	ALL	ALL VEH	0.123	0.094
UT Total				0.123	0.094

Utah County - 2050 OZONE Interim Test - Rates

				Pollutant g/mile	
County	year	facility	Source	NOX	VOC
UT	2050	ALL	ALL VEH	0.124	0.092
UT Total				0.124	0.092

Utah County - 2024 OZONE Interim Test Emission						
					Pollutant	t/summer day
County	year	facility	Source	Distance	NOX	VOC
UT	2024	ALL	ALL VEH	16,488,549	5.460	4.260
UT Total					5.460	4.260

Utah County - 2034 OZONE Interim Test Emission						
					Pollutant	t/summer day
County	year	facility	Source	Distance	NOX	VOC
UT	2034	ALL	ALL VEH	21,194,208	3.420	2.900
UT Total					3.420	2.900

Utah County - 2044 OZONE Interim Test Emission						
					Pollutant	t/summer day
County	year	facility	Source	Distance	NOX	VOC
UT	2044	ALL	ALL VEH	26,419,310	3.580	2.740
UT Total					3.580	2.740

Utah County - 2050 OZONE Interim Test Emission						
					Pollutant	t/summer day
County	year	facility	Source	Distance	NOX	VOC
UT	2050	ALL	ALL VEH	29,733,138	4.070	3.020
UT Total					4.070	3.020

UTAH COUNTY OZONE CONFORMITY Interim Budget Test

The table below summarizes the results of the interim test (analysis year ≤ 2017) associated with each required year of analysis for OZONE emissions for the precursor pollutant of NOx and VOC.

Utah County OZONE Conformity Interim test - ≤ 2017 emissions									
				Pollutants					
				Precursor tons/Summer day					
County	year	facility	Source	NOX	NOX	Result	VOC	VOC	Result
UT	2017				16.110	baseline		8.310	baseline
	2024	all	all	5.460	5.460		4.260	4.260	
	2024			5.460	5.460	Pass	4.260	4.260	Pass
	2034	all	all	3.420	3.420		2.900	2.900	
	2034			3.420	3.420	Pass	2.900	2.900	Pass
	2044	all	all	3.580	3.580		2.740	2.740	
	2044			3.580	3.580	Pass	2.740	2.740	Pass
	2050	all	all	4.070	4.070		3.020	3.020	
	2050			4.070	4.070	Pass	3.020	3.020	Pass

UTAH COUNTY OZONE CONFORMITY DETERMINATION:

Based on the findings of this report, a positive conformity determination for OZONE is made for the TransPlan50 Plan and TIP.

PROVO CITY CO CONFORMITY DETERMINATION

A Budget based Conformity Determination for CO is required for the Provo City non-attainment area

PROVO CITY CO - EMISSION MODEL RESULTS

Provo City CO Emission Rates

Rate g/mile				Pollutant
City	year	facility	Source	CO
PROVO	2025	All	ALL VEH	4.02
	2035	All	ALL VEH	2.82
	2045	All	ALL VEH	2.69
	2050	All	ALL VEH	2.72

Provo City CO Emissions

Tons/wday					Pollutant
City	year	facility	Source	Distance	CO
PROVO	2025	All	ALL VEH	2,119,096	9.380
	2035	All	ALL VEH	2,416,859	7.520
	2045	All	ALL VEH	2,727,557	8.080
	2050	All	ALL VEH	2,906,435	8.720

Provo City CO Budget Test

Provo City Conformity Budget Test

				Pollutant tons/winter day		
City	year	facility	source	CO	CO budget	Result
PROVO	2025	all	all veh	9.38	72.1	Pass
	2035	all	all veh	7.52	72.1	Pass
	2045	all	all veh	8.08	72.1	Pass
	2050	all	all veh	8.72	72.1	Pass

Based on the analysis presented, a quantitative conformity determination for Provo City can be made for Carbon Monoxide based on the required test described under the transportation conformity rule.

PROVO CITY CO CONFORMITY DETERMINATION

Based on an analysis consistent with these rules, a positive determination can be made for the TransPlan50 Plan and TIP in the Provo City Carbon Monoxide maintenance area.

ADDITIONAL INFORMATION

- **2024-2050 Highway Project List (See www.mountainland.org/TransPlan50)**

The input/and output database files of the Mobile models used in the analysis can be obtained upon request from Mountainland Association of Governments:

- **Highway Networks – See TransPlan50, Appendix B-Travel Demand**