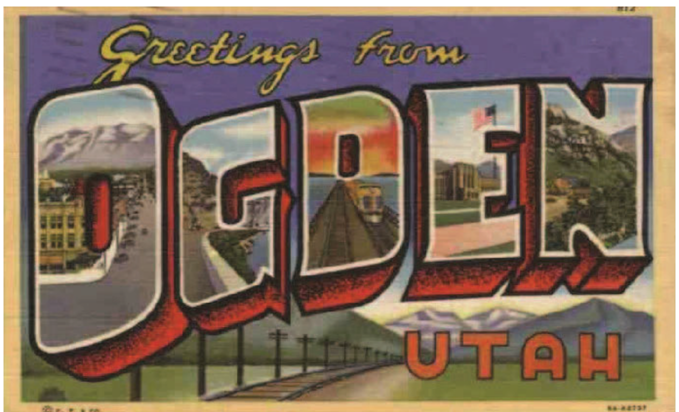
APPENDIX B7

Air Quality Technical Report



Air Quality Technical Report

Ogden/Weber State University Transit Project

Ogden, Weber County, Utah

October 10, 2018

Contents

Tables

Figures

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1.0 Introduction

This technical report describes the existing air quality in the Ogden/Weber State University Transit Project study area and evaluates how air quality would be affected by the Action Alternative. The Action Alternative is the Bus Rapid Transit on 25th Street Alternative, which was selected by the Ogden/Weber State University Transit Project partners and adopted by the Ogden City Council as the Locally Preferred Alternative.

Implementation of the No-Action Alternative would not result in adverse impacts to air quality. The affected environment (existing conditions) would remain unchanged from current conditions.

Project Study Area. The project study area encompasses a 5.3-mile corridor between downtown Ogden, Weber State University, and McKay-Dee Hospital. The project study area is located in the city of Ogden in Weber County, Utah. The project study area encompasses a portion of downtown central Ogden bounded by the Union Pacific Railroad line to the west, 20th Street (State Route [S.R.] 104) to the north, the city limits at the base of the Wasatch Mountains to the east, and about 4600 South to the south, the southwestern part of which follows the Ogden/South Ogden municipal boundary (Figure 1).

This project study area includes the following major destinations and Ogden neighborhood districts that could be served by the Action Alternative (Figure 2):

- The Ogden Intermodal Transit Center (FrontRunner operates frequent service from Ogden to Provo, an 88-mile route)
- Lindquist Field, a minor-league baseball stadium with an 8,262-person capacity
- The Junction, a 20-acre entertainment, residential, retail, and office mixed-use redevelopment
- The Ogden downtown central business district, which includes city, county, and federal offices
- Seven neighborhood districts: Central Business (downtown), East Central, Taylor, Jefferson, T.O. Smith, Mt. Ogden, and Southeast Ogden
- Ogden High School, with an annual enrollment of about 1,000 students in grades 10–12
- Weber State University, with about 2,500 faculty and staff and about 25,000 students (up from 17,000 in 2007), 840 of whom lived on campus as of September 2016 (Sears 2016)
- The Dee Events Center, a 12,000-seat sports and entertainment venue with a 3,000-space parking lot
- The McKay-Dee Hospital Center (at 2,300 employees, the fourth-largest hospital in Utah)

Figure 1. Project Study Area

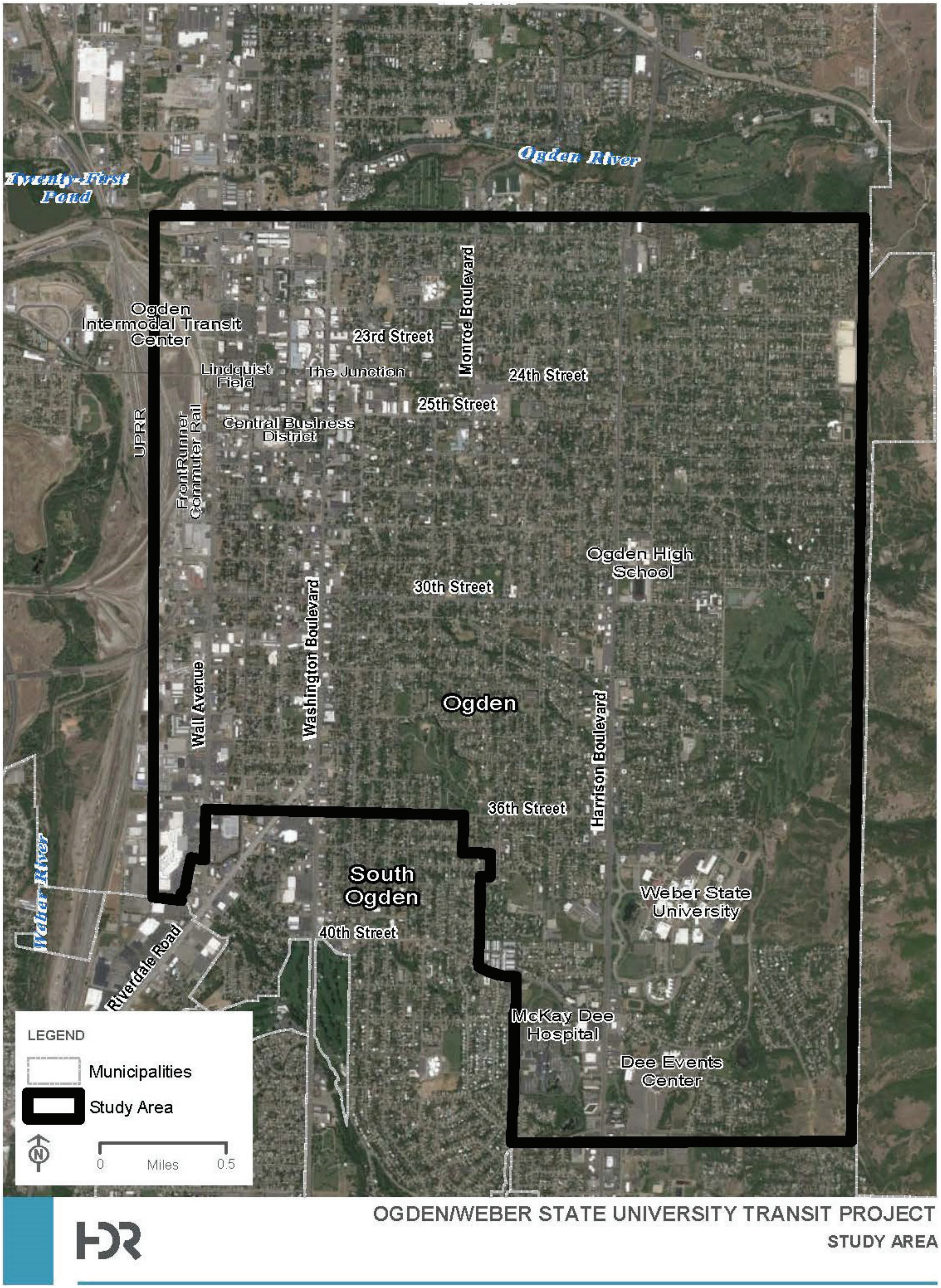
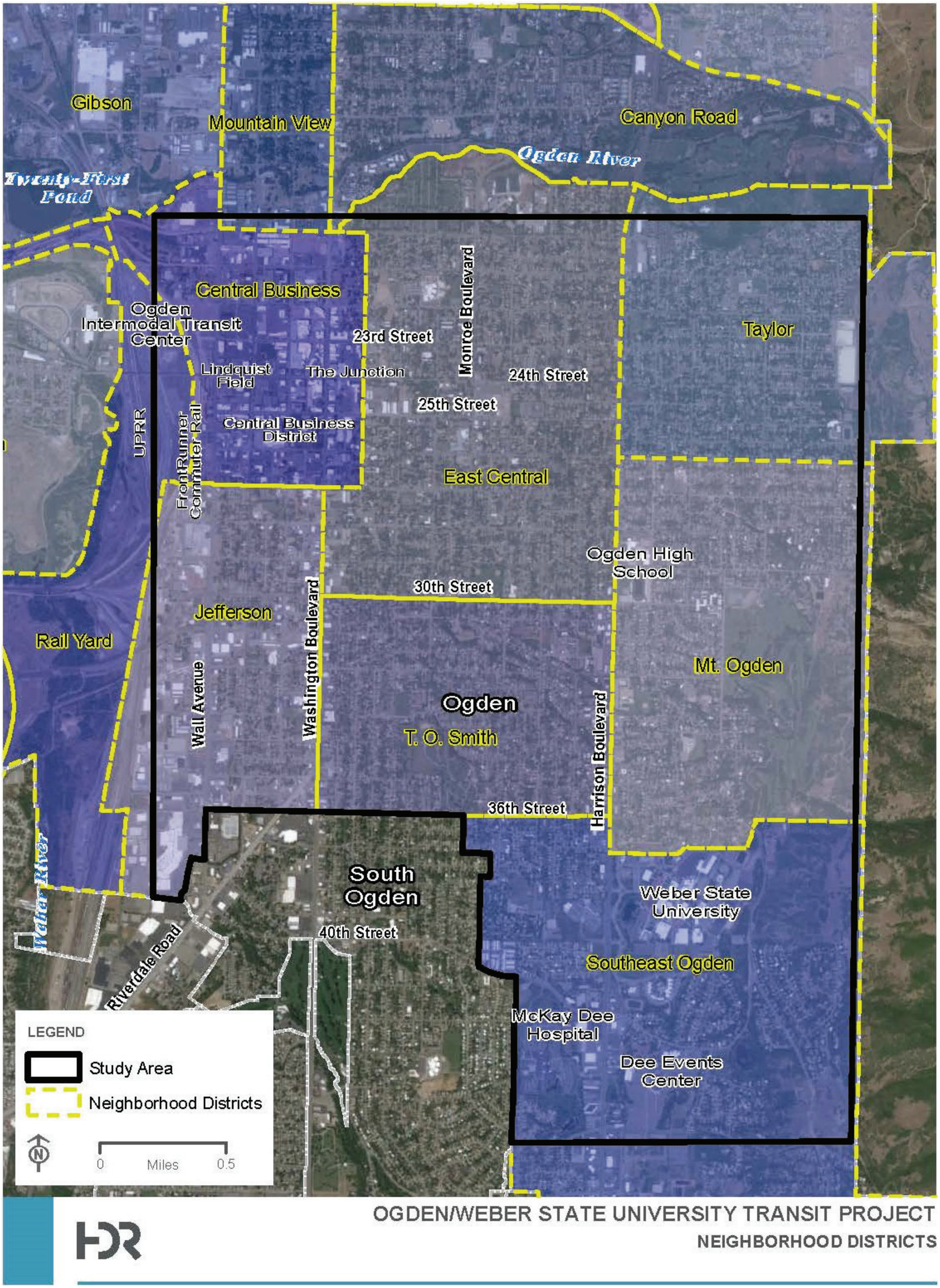


Figure 2. Neighborhood Districts



Ogden is one of the oldest communities in Utah and has a number of historic districts and neighborhoods. Much of central Ogden is served by a traditional grid street system, and a number of the major arterials are state highways managed by the Utah Department of Transportation (UDOT) which serve regional travel through Ogden. These major arterials are Washington Boulevard (S.R. 89), Harrison Boulevard (S.R. 203), and 30th Street (S.R. 79). Harrison Boulevard is part of the National Highway System and is a major north-south arterial that serves an important statewide transportation function through Utah by connecting Washington Boulevard (S.R. 89), Weber State University, and 12th Street (S.R. 39). The Union Pacific Railroad (UPRR) line and the Ogden Intermodal Transit Center are on the western edge of the city, and Interstate 15 is just west of the city.

Air Quality Impact Evaluation Area. The air quality impact evaluation area focuses on the areas around the Action Alternative and the greater Weber County airshed.

2.0 Project Description

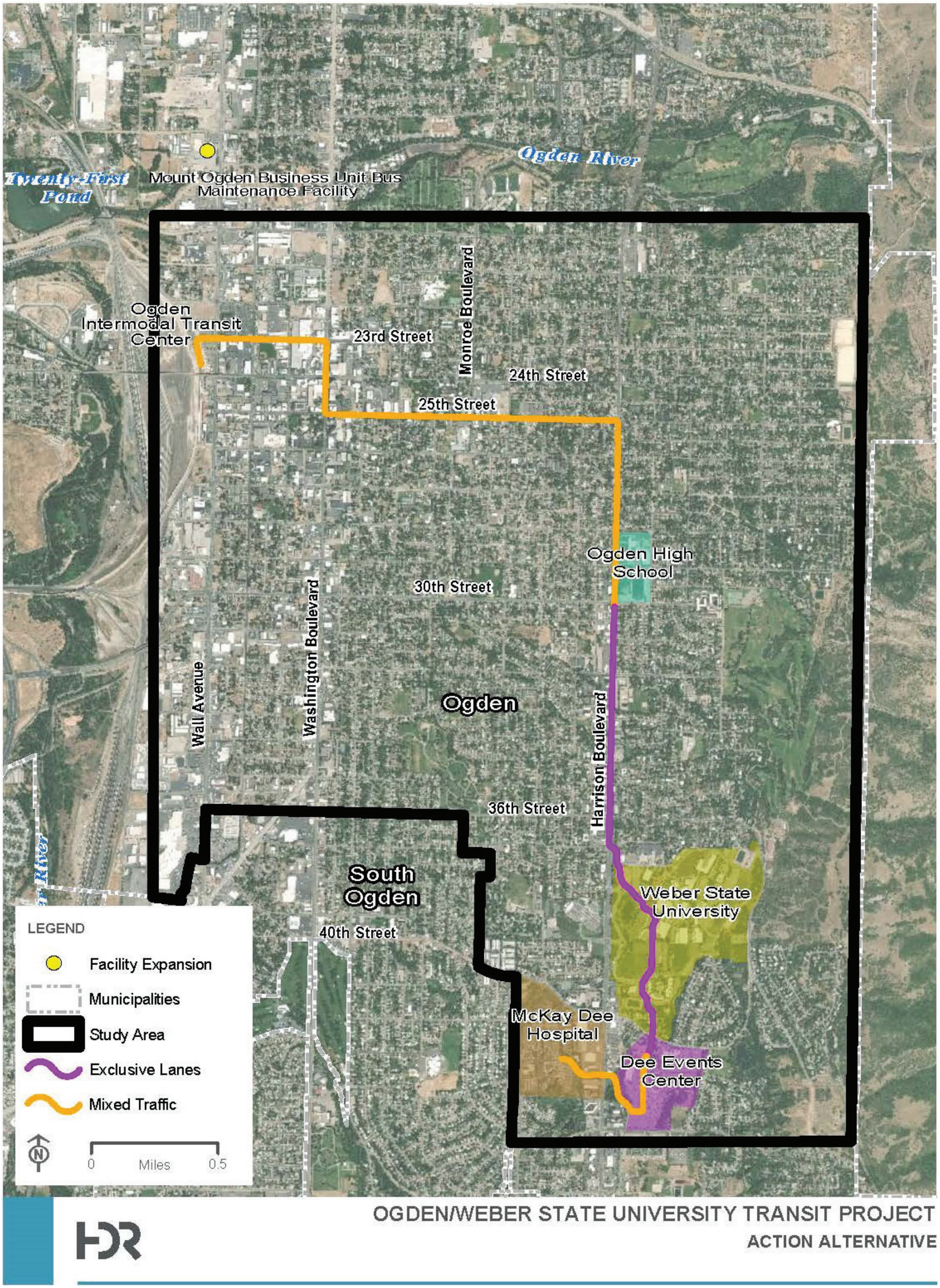
The Federal Transit Administration (FTA) and the Utah Transit Authority (UTA), in cooperation with project partners Ogden City, Weber County, the Wasatch Front Regional Council (WFRC), UDOT, Weber State University, and McKay-Dee Hospital, have prepared an Environmental Assessment under the National Environmental Policy Act (42 United States Code §§ 4321–4347) for the Ogden/Weber State University Transit Project.

Proposed Transit Corridor. The proposed transit corridor is the alignment of the Action Alternative (Figure 3). The bus rapid transit (BRT) route for the Action Alternative would be about 5.3 miles long (10.6 miles round trip), with a western terminus at the Ogden Intermodal Transit Center. From there, the BRT route would head east in mixed-flow traffic on 23rd Street to Washington Boulevard, south on Washington Boulevard to 25th Street, east on 25th Street to Harrison Boulevard, and south on Harrison Boulevard. At about 31st Street and Harrison Boulevard, the BRT route would transition to center-running, bus-only lanes. It would continue on a dedicated busway through the Weber State University campus and then travel west to McKay-Dee Hospital, where it would again travel in mixed-flow traffic. The BRT route would loop back on the same route.

Station Locations. The Action Alternative includes 16 brand-identified stations. The station locations were chosen during the project’s Alternatives Analysis update process. Station spacing ranges from about 0.25 mile apart to about 0.50 mile apart; several stations on Harrison Boulevard would be farther apart because of the spacing of major destinations.

Of the proposed 16 stations, 11 are existing bus route 603 stations (including the termini at the Ogden Intermodal Transit Center and McKay-Dee Hospital) that would be enhanced as part of the Action Alternative. The project team agreed that not all 16 stations would be constructed for the BRT service’s opening day (2020). Three of the 16 stations are designated as future stop locations. The existing route 603 bus currently stops at two of these three locations, and those locations would be discontinued and new enhanced stations would be constructed in their place in the future based on ridership and station demand.

Figure 3. Action Alternative



Station Amenities. The Action Alternative stations would include a platform, canopy, landscaped planter, and station amenities. The station would sit on a concrete bus pad elevated above the sidewalk curb height between 6 and 9 inches above the street grade. Stations would be about 125 feet long, with a platform length of 100 feet to accommodate two 40-foot-long BRT vehicles. Station shelters would be roughly comparable in size to existing UTA bus passenger shelters in the area, though somewhat longer.

At present, UTA anticipates that the shelters would be designed to include a combination of glass panels and solid support members that would have a minimal visual "footprint." Station canopies would be opaque features that provide shelter from sun and rain and would be about 10 to 15 feet high, depending on the incorporation of decorative architectural features that would be determined during final design.

The platform provides the area for passenger waiting, boarding, and station amenities. The station platform would range from 8 to 25 feet wide, depending on the station location and the need for a platform to accommodate either single-direction travel or both southbound and northbound travel. Station amenities could include ticket vending machines, seating, lighting, a canopy and wind screens, garbage receptacles, and wayfinding information (maps and signs).

Mount Ogden Business Unit Bus Maintenance Facility Expansion. In conjunction with the Action Alternative, UTA would expand the existing Mount Ogden Business Unit Bus Maintenance Facility located at 175 W. 17th Street in Ogden. The Mount Ogden facility is currently operating at maximum capacity and cannot accommodate the additional eight BRT vehicles needed for the Action Alternative. As a result, the existing Mount Ogden facility would be renovated and expanded.

Operations at the Mount Ogden facility would continue to include maintenance, repairs, inspections, and cleaning for the existing bus fleet and the additional BRT vehicles. The BRT vehicles would be maintained and stored overnight at this facility. The north maintenance building would be expanded to the east by about 8,000 square feet, remaining within property currently owned by UTA and remaining within the existing parking lot pavement area; no additional right-of-way would be required. The expansion would consist of four new bus maintenance bays, which are covered areas for maintaining the new BRT vehicles as well as buses already in the fleet. The expansion would bring the existing facility from about 32,000 square feet to just under 40,000 square feet.

23rd Street and 25th Street Roadway Improvements. To further support the Action Alternative, Ogden City would upgrade portions of 23rd Street and 25th Street to better accommodate the Action Alternative. 25th Street would be rebuilt from the bottom up, and, in certain instances, water mains would be replaced, storm sewers would be installed, and sanitary sewers would be repaired. Depending on the extent of the utility work, curbs might be fully replaced. Ogden City would also upgrade the roadway infrastructure on portions of 23rd Street between Wall Avenue and Kiesel Avenue to better support the Action Alternative and active transportation (walking and bicycling). Improvements would include adding a traffic signal at Lincoln Avenue, restriping, adding bicycle lanes, adding crosswalks, reconstructing curbs, and reconfiguring parking.

3.0 Regulatory Setting

3.1 National Ambient Air Quality Standards (NAAQS)

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for air pollutants considered harmful to public health and the environment. These standards include both primary and secondary standards. Primary standards protect public health, while secondary standards protect public welfare (such as protecting property and vegetation from the effects of air pollution).

The federal standards have been adopted by the Utah Division of Air Quality as the ambient air quality standards for Utah. The current NAAQS are listed in Table 1.

If an area meets the NAAQS for a given air pollutant, the area is called an *attainment area* for that pollutant (because the NAAQS have been attained). If an area does not meet the NAAQS for a given air pollutant, the area is called a *nonattainment area*. A *maintenance area* is an area previously designated as a nonattainment area that has been redesignated as an attainment area and is required by Section 175A of the Clean Air Act, as amended (CAA), to have a maintenance plan.

3.2 Transportation Conformity Requirements

All state governments are required to develop a State Implementation Plan (SIP), which details how the State will comply with the requirements of the CAA. Section 176(c) of the CAA requires that transportation plans, programs, and projects that are developed, funded, or approved by FTA, the Federal Highway Administration (FHWA), or metropolitan planning organizations must demonstrate that the projects conform to the SIP. Transportation conformity requirements apply to any transportation-related criteria pollutants (for example, carbon monoxide or particulate matter) for which the project area has been designated a nonattainment or maintenance area.

Under Section 176(c) of the CAA, a transportation project is said to “conform” to the provisions and purposes of the SIP if the project, both alone and in combination with other planned projects, does not:

- Cause or contribute to new air quality violations of the NAAQS,
- Worsen existing violations of the NAAQS, or
- Delay timely attainment of the NAAQS or required interim milestones.

The transportation conformity rule (40 Code of Federal Regulations [CFR] 93, Subpart A) establishes the criteria and procedures for determining whether projects conform to the SIP (EPA 2012a).

Table 1. National and Utah Ambient Air Quality Standards (NAAQS)

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Carbon monoxide (CO)	Primary	8-hour average	9 ppm	Not to be exceeded more than once per year
		1-hour average	35 ppm	
Lead (Pb)	Primary and secondary	Rolling 3-month average	0.15 μg/m^3 [a]	Not to be exceeded
Nitrogen dioxide (NO_2)	Primary	1-hour average	100 ppb	98th percentile, averaged over 3 years
	Primary and secondary	Annual average	53 ppb [b]	Annual mean
Ozone (O_3)	Primary and secondary	8-hour average	0.075 ppm [c]	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate matter ($PM_{2.5}$)	Primary	Annual average	12 μg/m^3	Annual mean, averaged over 3 years
	Secondary	Annual average	15 μg/m^3	Annual mean, averaged over 3 years
	Primary and secondary	24-hour average	35 μg/m^3	98th percentile, averaged over 3 years
Particulate matter (PM_{10})	Primary and secondary	24-hour average	150 μg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur dioxide (SO_2)	Primary	1-hour average	75 ppb [d]	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour average	0.5 ppm	Not to be exceeded more than once per year

Source: EPA 2012b

ppm = parts per million
ppb = parts per billion
PM_{10} = particulate matter 10 microns in diameter or less
$PM_{2.5}$ = particulate matter 2.5 microns in diameter or less
μg/m^3 = micrograms per cubic meter

[a] Final rule signed October 15, 2008. The 1978 lead standard (0.15 μg/m^3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[b] The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

[c] Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard (“anti-backsliding”). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

[d] Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

3.3 Mobile-Source Air Pollutants (MSATs)

In addition to the NAAQS, EPA has also established a list of 33 urban air toxics (64 Federal Register 38706). Urban air toxics are pollutants that can cause cancer or other serious health effects or adverse environmental effects. Most air toxics originate from human-made sources including road mobile sources, non-road mobile sources (such as airplanes), and stationary sources (such as factories or refineries).

Air toxics are in the atmosphere as a result of industrial activities and motor vehicle emissions. Scientific research has shown that the health risks to people exposed to urban air toxics at sufficiently high concentrations or lengthy durations include an increased risk of contracting cancer, damage to the immune system, and neurological, reproductive, and/or developmental problems (EPA 2000).

To better understand the effects that urban air toxics have on human health, EPA developed a list of 21 mobile-source air toxics (MSATs) including acetaldehyde, benzene, formaldehyde, diesel exhaust, acrolein, and 1,3-butadiene (66 Federal Register 17230). EPA assessed the risks of various kinds of exposures to these pollutants.

In July 1999, EPA published a strategy to reduce urban air toxics; in March 2001, EPA issued regulations for automobile and truck manufacturers to decrease the amounts of these pollutants by target dates in 2007 and 2020. Under the March 2001 regulation, between 1990 and 2020, highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde will be reduced by 67% to 76% and on-highway diesel particulate matter emissions will be reduced by 90%. These reductions will be achieved by implementing mobile-source control programs including the reformulated gasoline program, a new cap on the toxics content of gasoline, the national low-emission vehicle standards, the Tier 2 motor vehicle emission standards and gasoline sulfur-control requirements, the heavy-duty engine and vehicle standards, and the on-highway diesel fuel sulfur-control requirements (EPA 2000).

In February 2007, EPA issued a final rule to reduce hazardous air pollutants from mobile sources. The final standards will lower emissions of benzene and other air toxics in three ways: (1) by lowering the benzene content in gasoline, (2) by reducing exhaust emissions from passenger vehicles operated at cold temperatures, and (3) by reducing emissions that evaporate from, and permeate through, portable fuel containers.

Under this rule, EPA is requiring that refiners meet an annual average gasoline benzene content standard of 0.62% by volume on all gasoline (the national benzene content of gasoline today is about 1.0% by volume). In addition, EPA is adopting new standards to reduce non-methane hydrocarbon exhaust emissions from new gasoline-fueled passenger vehicles at colder temperatures below 75 degrees Fahrenheit. Non-methane hydrocarbons include many MSATs, such as benzene. Finally, the February 2007 rule establishes standards that will limit hydrocarbon emissions that evaporate or permeate through portable fuel containers such as gas cans.

EPA expects that the new fuel benzene standard and hydrocarbon standards for vehicles and gas cans will together reduce total emissions of MSATs by 330,000 tons in 2030, including 61,000 tons of benzene. As a result of this rule, new passenger vehicles will emit 45% less benzene, gas cans will emit 78% less benzene, and gasoline will have 38% less benzene overall.

In addition, the hydrocarbon reductions from the vehicle and gas can standards will reduce volatile organic compound emissions (which are precursors to ozone and can be precursors to $PM_{2.5}$) by over 1 million tons in 2030. The vehicle standards will reduce direct $PM_{2.5}$ emissions by 19,000 tons in 2030 and could also reduce secondary formation of $PM_{2.5}$.

4.0 Affected Environment

Table 2 shows the air quality attainment status for motor vehicle–related pollutants in Weber County and Ogden.

Table 2. Air Quality Attainment Status for Motor Vehicle–Related Pollutants in Weber County and Ogden

Area	Pollutant	Attainment Status
Weber County	Particulate matter ($PM_{2.5}$)	Nonattainment area
Ogden	Carbon monoxide (CO)	Maintenance area
	Particulate matter (PM_{10})	Moderate nonattainment

Sources: Utah Division of Air Quality 2016a; WFRC 2018

As shown in Table 2 above, Ogden is classified as a maintenance area for CO and a moderate nonattainment area for PM_{10}. Portions of Weber County have also been designated as a nonattainment area for $PM_{2.5}$.

The Utah Division of Air Quality maintains a network of air quality monitoring stations throughout the state. In general, these monitoring stations are located where there are known air quality problems, so they are usually in or near urban areas or close to specific emission sources. Other stations are located in suburban locations or remote areas to provide an indication of regional air pollution levels.

Table 3 through Table 5 show the monitoring results for criteria pollutants (CO, PM_{10}, and $PM_{2.5}$) from 2010 through 2015 at the monitoring stations in Weber County.

Table 3. Summary of CO Monitoring Data for Weber County

Station	Parameter (ppm)	2015	2014	2013	2012	2011	2010
Ogden (2540 S. Washington Blvd., Ogden)	Peak 1-hour value[a]	ND	ND	9.0	4.4	2.6	6.6
	Peak 8-hour value[b]	ND	ND	2.8	1.8	1.8	2.0
	Days above standard	ND	ND	0	0	0	0
Ogden (228 32nd St., Ogden	Peak 1-hour value	2.8	9.4	2.8	2.7	2.8	16.9
	Peak 8-hour value	2.1	2.6	1.8	2.0	1.6	2.4
	Days above standard	0	0	0	0	0	0

Source: Utah Division of Air Quality 2016b

ND = No data available

[a] 1-hour CO standard = 35 ppm (not to be exceeded more than once per year)

[b] 8-hour CO standard = 9 ppm (not to be exceeded more than once per year)

Table 4. Summary of PM_{10} Monitoring Data for Weber County

Station	Parameter (µg/m³)	2015	2014	2013	2012	2011	2010
Ogden (228 32nd St., Ogden)	Peak 24-hour value	96	115	95	95	79	216
	Days above standard	0	0	0	0	0	5

Source: Utah Division of Air Quality 2016c

[a] 24-hour PM_{10} standard = 150 µg/m³ (not to be exceeded more than once per year on average over 3 years)

Table 5. Summary of $PM_{2.5}$ Monitoring Data for Weber County

Station	Parameter (µg/m³)	2015	2014	2013	2012	2011	2010
Ogden (228 32nd St., Ogden)	Peak 24-hour value	44.5	67.6	67.2	63.7	64.6	56.1
	98th percentile	28.0	25.7	49.4	26.7	43.8	42.1
	Annual mean	7.1	7.6	11.5	9.0	9.1	9.2
	Days above standard	0	0	0	0	0	0
Ogden #2 (425 West 2550 North, Ogden)	Peak 24-hour value	ND	ND	61.9	35.4	52.6	55.3
	98th percentile	ND	ND	44.6	27.4	32.9	39.3
	Annual mean	ND	ND	10.7	7.0	7.5	8.3
	Days above standard	0	0	0	0	0	0

Sources: Utah Division of Air Quality 2016d

ND = No data available

[a] Compliance with the $PM_{2.5}$ annual standard (12 µg/m³) is based on a 3-year average of annual mean concentrations.

[b] 24-hour $PM_{2.5}$ standard = 35 µg/m³.

[c] Compliance with the $PM_{2.5}$ 24-hour standard is based on the 98th-percentile value averaged over a 3-year period. 98th-percentile values shown in the table for a given year can exceed the 35-µg/m³ standard but would not necessarily cause the NAAQS to be exceeded.

5.0 Environmental Consequences

This section describes the expected effects of the No-Action and Action Alternatives on air quality in the project study area. Air quality effects were evaluated using guidelines from EPA, FTA, and FHWA as applicable to the project.

5.1 Effects of Planned Projects on Regional Air Quality

Regional emissions analyses are prepared by the appropriate metropolitan planning organization (in this case, WFRC) as part of the conformity determinations for transportation plans and transportation improvement programs. WFRC has included the proposed Ogden/Weber State University Transit Project as a "regionally significant" project in a draft of its most recent transportation conformity analysis (WFRC 2018).

The regional emissions analysis found that all of the regionally significant transportation projects included in WFRC's 2015–2040 Regional Transportation Plan, including the proposed project, would conform to the provisions of the State Implementation Plan or the EPA interim conformity guidelines for all pollutants in the applicable nonattainment and maintenance areas.

5.2 Effects of the No-Action Alternative

With the No-Action Alternative, the BRT and associated facilities would not be constructed. However, other regionally significant transportation projects identified in WFRC's long-range plans and by the local communities would be built with or without the proposed project, and these projects would contribute to local air quality impacts throughout the project study area. The No-Action Alternative includes current UTA route 603 bus service in much of the proposed transit corridor using standard buses.

Daily vehicle-miles of travel (VMT) on Harrison Boulevard between 2015 and 2040 are expected to increase by about 14%; from 47,600 VMT in 2015 to 54,400 VMT in 2040 between 25th Street and 36th Street (Allen 2016). This growth in traffic is due to population and development growth in the project study area. This growth is expected to occur with or without the proposed project and would have little effect on vehicle emissions as evidenced by WFRC's regional conformity analyses over the years showing that Ogden is (and will be) in conformity for transportation-related pollutants through 2040.

5.3 Transit-Related Effects of the Action Alternative

The transportation conformity regulations (40 CFR 93.123) require project-level quantitative analyses for certain types of transportation projects that are located in CO, PM_{10}, or $PM_{2.5}$ nonattainment and maintenance areas.

5.3.1 Quantitative PM_{10} and $PM_{2.5}$ Analyses

Project-level quantitative analyses for PM_{10} and $PM_{2.5}$ are required only for projects that are considered by EPA and other agencies to be of “local air quality concern.” According to the transportation conformity regulations and EPA guidance, examples of projects that could be of air quality concern for PM_{10} or $PM_{2.5}$ and require project-level quantitative analysis could include:

- **A new highway or expressway that serves a significant amount of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT), and 8% or more such AADT is diesel truck traffic (EPA 2010)**

  Harrison Boulevard is not a new highway, and, although the proposed project would not increase traffic capacity, it is worth noting that the highest daily volume on Harrison Boulevard in 2040 between 25th Street and 37th Street is projected to be about 54,000 vehicles per day (vpd) (Allen 2016), which is much less than the 125,000-vpd threshold at which point a quantitative PM hot-spot analysis could be warranted if Harrison Boulevard were a new transportation facility.

What is a hot-spot analysis?

A hot-spot analysis is a project-level analysis that looks at local air quality impacts, such as at intersection crosswalks or residences near a roadway.

- **Expansion of an existing highway or other facility that affects a congested intersection (operated at level of service [LOS] D, E, or F) that has a significant increase in the number of diesel trucks**

  The proposed project would not expand Harrison Boulevard nor cause a significant increase in the number of diesel trucks. The intersections that are projected to operate at LOS D, E, or F in 2040 would do so because of future traffic growth in the proposed transit corridor, not because of the proposed project.

What is level of service (LOS)?

Level of service is a measure of the operating conditions on a road or at an intersection. Level of service is represented by a letter “grade” ranging from A (free-flowing traffic and little delay) to F (extremely congested, stop-and-go traffic and excessive delay).

- **Similar highway projects that involve a significant increase in the number of diesel transit buses and/or diesel trucks**

  The proposed project would replace the existing UTA route 603 bus service with similar service that includes dedicated BRT through Weber State University using newer and larger buses. UTA is also considering the use of zero-emission, battery-electric transit technology for the proposed project as a way to reduce transportation-related energy use, vehicle emissions, and greenhouse gas emissions.

  The proposed project would not cause a significant increase in the number of diesel transit buses, nor would it significantly increase the number of diesel trucks operating on Harrison Boulevard.

In 2040, traffic volumes on Harrison Boulevard are projected to be relatively low when compared to the volumes that could warrant consideration of more quantitative analysis. In addition, because the proposed project would not cause a significant increase in the number of diesel-fueled transit buses, the project is not considered a project of air quality concern under the transportation conformity regulations. Project-level quantitative modeling for PM_{10} and $PM_{2.5}$ is not required. Vehicle emissions associated with the proposed project would be minor and would not result in significant air quality effects.

5.3.2 Quantitative Carbon Monoxide Analyses

In addition to PM_{10} and $PM_{2.5}$, the project study area is a maintenance area for CO. Under the transportation conformity rule, FHWA or FTA projects must not cause or contribute to any new localized CO violations, increase the frequency or severity of any CO violations, or delay timely attainment of the NAAQS in nonattainment or maintenance areas. Utah has been below the CO standard since 1994 (Utah Division of Air Quality 2018).

Under the transportation conformity rule, quantitative CO hot-spot modeling is not required if the project proponent demonstrates that, during the timeframe covered by the Regional Transportation Plan, no new local violations would be created, the severity of existing violations would not be increased as a result of the project, and the project has been included in a regional emissions analysis.

As stated in Section 5.1, Effects of Planned Projects on Regional Air Quality, the most recent air quality conformity analysis conducted by WFRC through the 2040 horizon year, includes the proposed project, and this analysis demonstrates that the region would conform to the SIP and the EPA conformity guidelines for all pollutants in applicable nonattainment or maintenance areas. In addition, depending on the type of bus chosen, the proposed project could replace the current UTA route 603 buses with buses that use newer, more advanced technology that would reduce bus emissions.

The proposed project would not cause any local exceedances of the CO NAAQS.

5.3.3 Mobile-Source Air Toxics (MSATs)

FHWA has developed a tiered approach to analyzing MSATs in environmental documents, including assessing incomplete or unavailable information as required by 40 CFR 1502.22(b) (FHWA 2012). Under FHWA's approach, three levels of analysis are identified, depending on the project circumstances and other considerations:

- No analysis is required for projects with no potential for meaningful MSAT effects.
- Qualitative analysis is required for projects with low potential MSAT effects.
- Quantitative analysis is required to differentiate alternatives for projects with higher potential MSAT effects.

Projects with low potential MSAT effects include those that are intended to improve the operation of highway, transit, or freight facilities without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. Examples of projects with low potential MSAT effects include highway-widening projects, new interchanges, and projects for which the design-year traffic volume is projected to be less than 140,000 to 150,000 vpd.

Traffic volumes on Harrison Boulevard in 2040 are projected to be about 40,000 vpd or less, which is below FHWA's suggested guideline of 140,000 to 150,000 vpd at which point a quantitative analysis of MSAT effects might be required (FHWA 2016).

The proposed project has a low potential for MSAT effects; therefore, no further analysis is required.

5.3.4 Greenhouse Gases

Climate change is an important national and global concern. Although the earth has gone through many natural changes in climate in its history, there is general agreement that the earth's climate is currently changing at an accelerated rate and will continue to do so for the foreseeable future. Anthropogenic (human-caused) greenhouse gas (GHG) emissions contribute to this rapid change. Carbon dioxide (CO_2) makes up the largest component of these GHG emissions. Other prominent transportation GHGs include methane (CH_4) and nitrous oxide (N_2O).

Transportation accounts for 29% of GHG emissions in the United States (FTA 2016). By moving more people with fewer vehicles, public transportation can reduce GHG emissions. According to FTA, national averages demonstrate that public transportation produces significantly lower GHG emissions per passenger-mile than private vehicles. Bus transit produces 33% less GHG emissions per passenger-mile than an average single-occupancy vehicle (FTA 2016). Transit can also reduce GHG emissions by facilitating compact development, which conserves land and decreases the distances people need to travel to reach destinations, which in turn can reduce emissions from cars stuck in traffic. Finally, transit can minimize its own GHG emissions, not to mention other tailpipe emissions, by using efficient vehicles and alternative fuels as described in Appendix B6, Energy Technical Report, of the Environmental Assessment.

To date, no national standards have been established for GHGs, nor has EPA established criteria or thresholds for ambient GHG emissions. GHGs are different from other air pollutants because their effects are not local or regional due to their rapid dispersion into the global atmosphere. The affected environment for CO_2 and other GHG emissions is the entire planet. In addition, from a quantitative perspective, global climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations.

In contrast to broad-scale actions such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions effects for a particular transportation project. At present there is no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

As described in Section 4.6 of the Environmental Assessment, the Action Alternative is expected to reduce regional VMT by about 1,300 miles per day, which in turn would reduce direct GHG emissions, though by a small amount. If ridership numbers increase and corresponding VMT are further reduced, then further reductions of GHG emissions would occur. In addition, the Action Alternative would provide an alternative transit mode that can connect with other transit options (commuter rail or buses), thereby contributing to reduced single-occupant-vehicle travel in Weber County and consequently reduced GHG emissions.

EPA's MOVES2014 model can be used to estimate vehicle exhaust emissions of CO_2 and other GHGs. CO_2 is frequently used as an indicator of overall transportation GHG emissions because the quantity of these emissions is much larger than that of all other transportation GHGs combined, and because CO_2 accounts for 90% to 95% of the overall climate impact from transportation sources.

For informational purposes, the MOVES2014 model was used to estimate GHG emissions in Weber County in 2015 and 2040 (Table 6).

Table 6. Estimated Greenhouse Gas Emissions in Weber County in 2015 and 2040[a]

In tons per year

Greenhouse Gas	2015	2040	
	Emissions	Emissions	Percent Change from 2015
Methane (CH_4)	16	14	–13
Nitrous oxide (N_2O)	6	4	–33
Atmospheric CO_2	894,615	769,911	–14
Distance traveled (miles)	1.63×10^9	2.08×10^9	+28

[a] MOVES2014 National Default Data

As shown in Table 6 above, GHG emissions are expected to decrease in the future because of more-efficient vehicle technology (including for transit vehicles) despite a 28% increase in VMT in Weber County between 2015 and 2040. In addition, at the project level, the VMT associated with the Action Alternative is less than 1% of the VMT on Harrison Boulevard. The GHG contribution of the Action Alternative would be a very small proportion of the overall GHG emissions in the county.

5.3.5 Construction-Related Effects of the Action Alternative

Constructing the Action Alternative would cause local and temporary air quality impacts. Typically, construction activities associated with roadway projects temporarily generate particulate matter (mostly dust), odors, and small amounts of other pollutants. Particulate emissions vary from day to day depending on the level of activity, specific operations, and weather conditions.

Thus, the quantity of particulate emissions during construction would be proportional to the area of the construction operations and the level of activity. Fugitive dust from construction activities would be noticeable near construction sites if it is uncontrolled. Emissions during construction activities would be temporary, limited to the immediate area surrounding the construction site, and would contribute only a small amount to the total emissions in the construction area.

5.4 Mitigation

Operation of the Action Alternative would not cause significant adverse air quality effects, so no mitigation for operational effects is proposed.

The following measures will be used to control dispersion of dust (PM_{10}), transmission of particulate matter, and emissions of CO and nitrogen oxides (NO_x) during construction:

- UTA will spray exposed soil with water to reduce emissions of PM_{10} and deposition of particulate matter.
- UTA will cover truckloads of material susceptible to scattering by the wind, and materials in trucks will be wetted or provided adequate freeboard (space from the top of the material to the top of the truck) to reduce PM_{10} and deposition of particulates during transport.
- Wheel washers, rock aprons, or other measures will be provided to remove particulate matter that would otherwise be carried off site by vehicles to decrease deposition of particulate matter on area roads.
- Dust deposited on public roads will be removed to reduce mud on area roads.
- Dirt, gravel, and debris piles will be covered or wetted during periods of high wind when the stockpiles are not in use.
- Construction trucks will be routed and scheduled to reduce travel delays and thereby prevent unnecessary fuel consumption and pollutant emissions.

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