

Memorandum

Date:	Monday, August 16, 2021
Project:	Northwest Billings Connector and Marathon Trail Project
To:	Heidy Bruner, PE, FHWA
From:	Jon Schick, CEP, HDR Environmental Planner
Subject:	Air Quality Conformity Analysis

Introduction

This memorandum provides the information necessary to demonstrate project-level conformity with applicable air quality provisions of the Clean Air Act (CAA) and demonstrate compliance with the National Environmental Policy Act (NEPA). The goal of transportation conformity is to ensure that Federal Highway Administration (FHWA) funding and approvals are given to transportation projects that are consistent with air quality goals. Transportation conformity must be demonstrated because the proposed Northwest Billings Connector and Marathon Trail Project intersects with a National Ambient Air Quality Standards (NAAQS) nonattainment or maintenance area for transportation-related criteria pollutants. This memorandum provides additional information and analysis to supplement Section C, Air Quality, of the Initial Site Assessment (ISA) form and Part 6.2, Air Quality, of the Categorical Exclusion Documentation Form NEPA document.

Project Description

In 2020, the City of Billings (City) was awarded \$11.6 million in funding from the Federal Better Utilizing Investments to Leverage Development, or BUILD, Transportation Discretionary Grant program to fund transportation improvements in the northwest Billings area. The overall scope of the Northwest Billings Connector and Marathon Trail Project (project) includes design and construction of five miles of new collector roadway and eight miles of trails. The proposed project includes two main project elements—the Inner Belt Loop and the Skyline Trail—as described in the 2020 grant application and as shown in Figure 1 and described below.

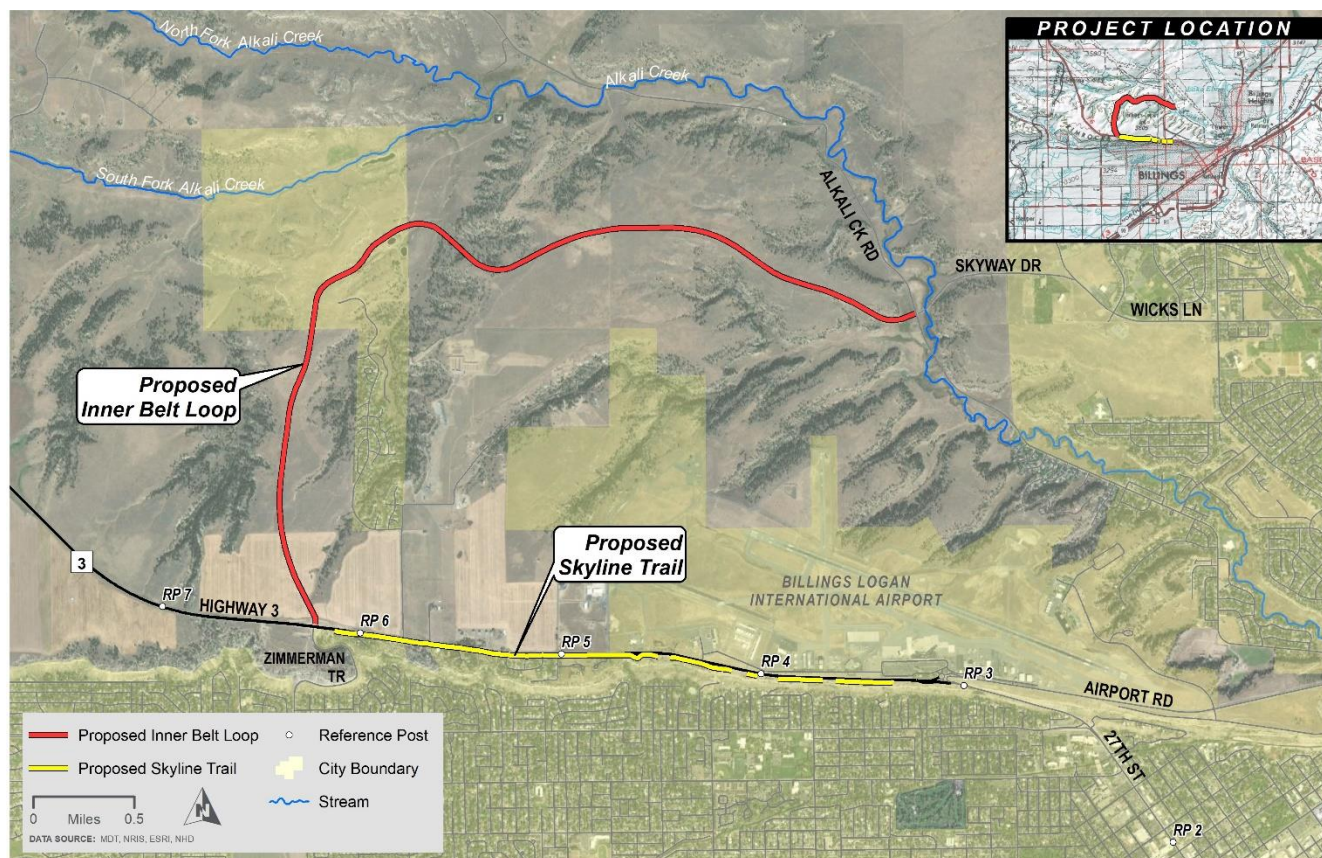


Figure 1. Northwest Billings Connector and Marathon Trail Project Elements

1. The Inner Belt Loop: This is a five-mile stretch of two-lane rural section roadway connecting Montana Highway 3 (MT-3)/Zimmerman Trail Road to Akali Creek Road/Skyway Drive accompanied by a separated multi-use trail. It will create a new connection between the Heights and West End. This proposed road is also referred to as the Northwest Billings Connector.
2. The Skyline Trail: This is an approximately three-mile long 10-ft-wide multi-use trail that will extend from the intersection of MT-3/Zimmerman Trail through Airport Road along the south side of MT-3.

The purpose of the proposed Northwest Billings Connector and Marathon Trail Project is to construct a new arterial roadway to provide an alternative transportation route between Billings' Heights area and West End area to alleviate widespread congestion near downtown resulting from a constrained arterial roadway and limited transportation options. In addition, the proposed project will enhance safety and travel time, provide economic development opportunities, and improve access to recreational opportunities.

Presently, Main Street (Highway 312) is the primary connector route between the Heights and downtown Billings and the West End and is the second highest volume roadway in Montana with a 2019 average annual daily traffic (AADT) volume of 41,309. High traffic volumes have resulted in above average crash rates and severe congestion occurring in the corridor.

Providing a new connection between the Heights and West End to address traffic and safety concerns has long been a transportation goal for the City of Billings.

Project Location

The project area is located on the northern edge of Billings, Montana, and is partially located within the City of Billings limits. The project area is located to the north of MT-3 and to the west of Alkali Creek Road. The project area is located within portions of Section 18 of Township 1 North, Range 26 East and Sections 13, 14, 15, 22, and 27 of Township 1 North, Range 25 East. The proposed project includes components that intersect with the Billings Carbon Monoxide (CO) and Sulfur Dioxide (SO₂) Maintenance Areas. It is important to note that the proposed Skyline Trail, a non-motorized trail, intersects the CO and SO₂ Maintenance Areas, while the proposed Inner Belt Loop roadway corridor does not. Therefore, for the purposes of the air quality analysis, the proposed project is conservatively assumed to be partially within the CO Maintenance Area.

Traffic Volumes and Operational Analysis Results

The Billings Metropolitan Planning Organization (MPO) Travel Demand Model (TDM) was used to analyze existing traffic volumes and predict future volumes as well as future levels of service (LOS). The TDM was updated in 2018 and has a forecast planning horizon of year 2040. Figure 2 through Figure 5 below are excerpted from the 2018 *Billings Urban Area Long Range Transportation Plan* (LRTP) and show the existing traffic volumes and intersection LOS in the project vicinity for 2017 (Figure 2 and Figure 3, respectively) and the future traffic volumes and intersection LOS for the future year of 2040 (Figure 4 and Figure 5, respectively).

The proposed project ties into two existing intersections: the MT-3/Zimmerman Road intersection, which is shown as a LOS E in 2017, and the Akali Creek Road/Skyway Drive intersection, which is shown as no data in 2017. These two intersections affected by the proposed project are projected to operate at an acceptable LOS ("D" or better) under year 2040 conditions with the proposed 2-lane Inner Belt Loop. With the proposed Inner Belt Loop in place, the MT-3/Zimmerman Road intersection improves to LOS C or better in 2040 and the Akali Creek Road/Skyway Drive intersection operates at a LOS C or better.

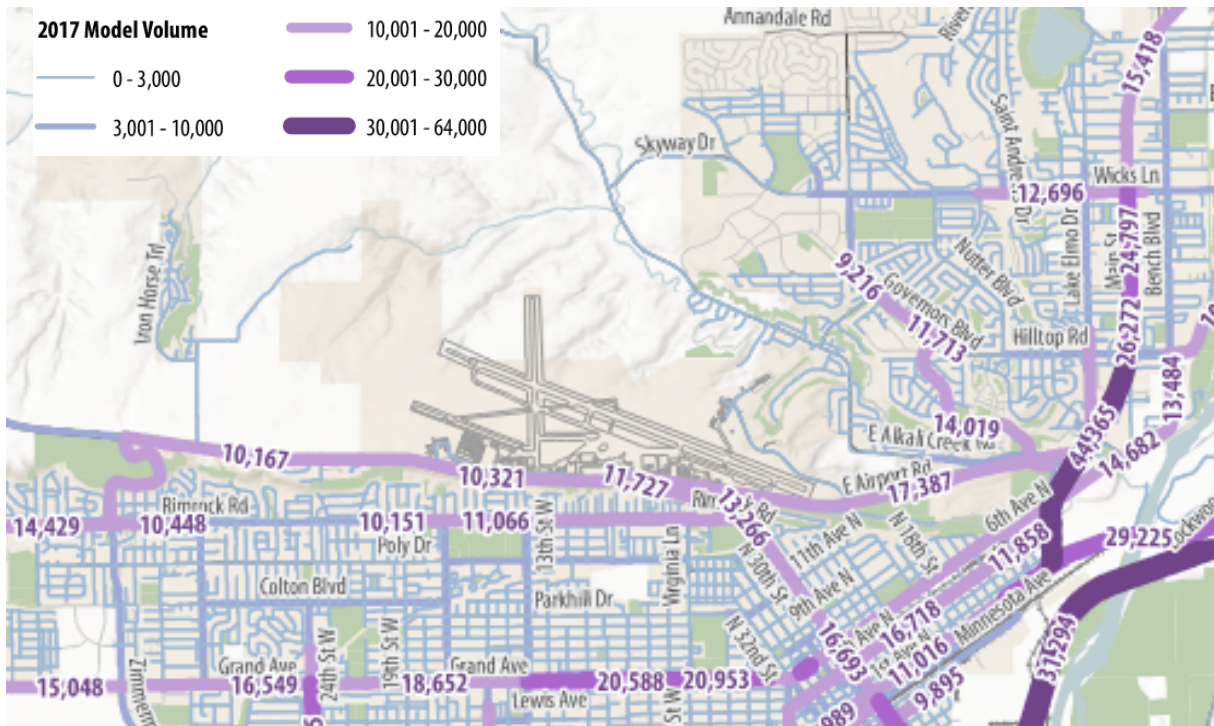


Figure 2. Existing Traffic Volumes in 2017 for Project Area Vicinity Roads

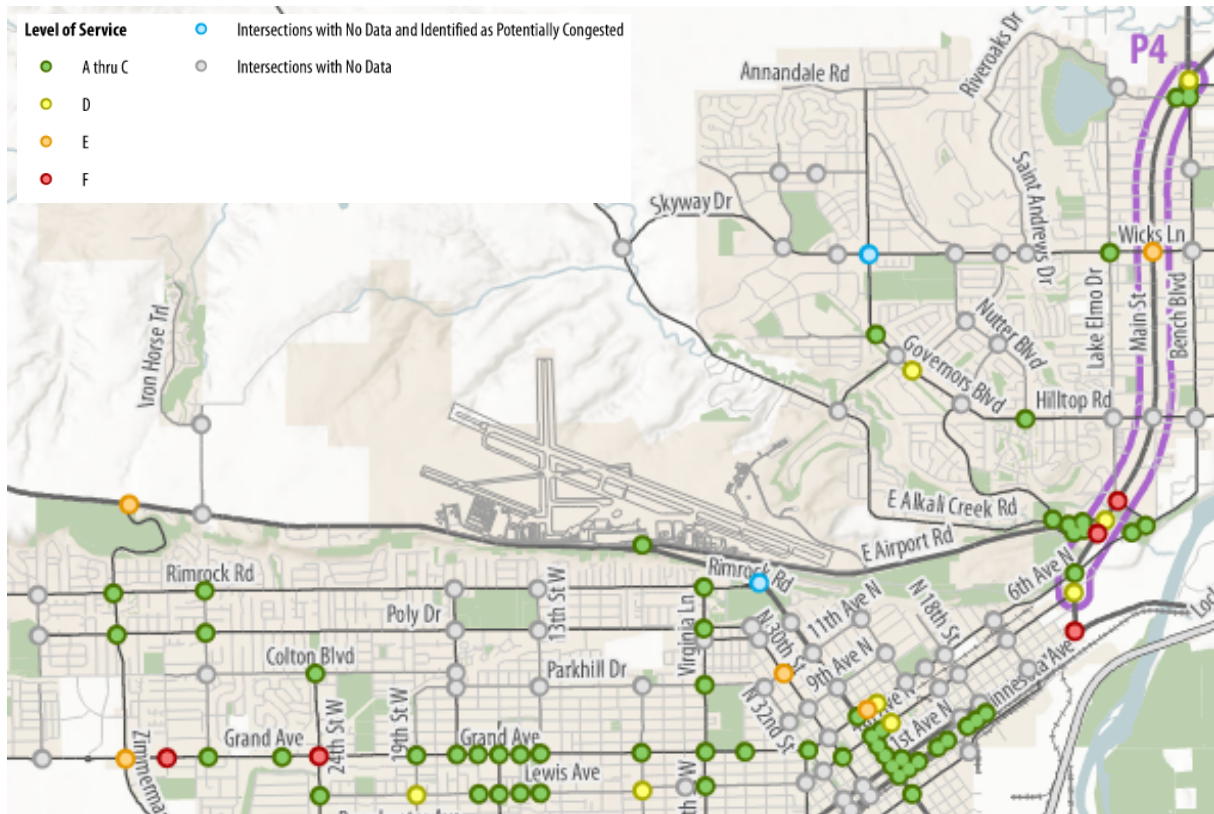


Figure 3. Existing Levels of Service (LOS) in 2017 for Project Area Vicinity Intersections

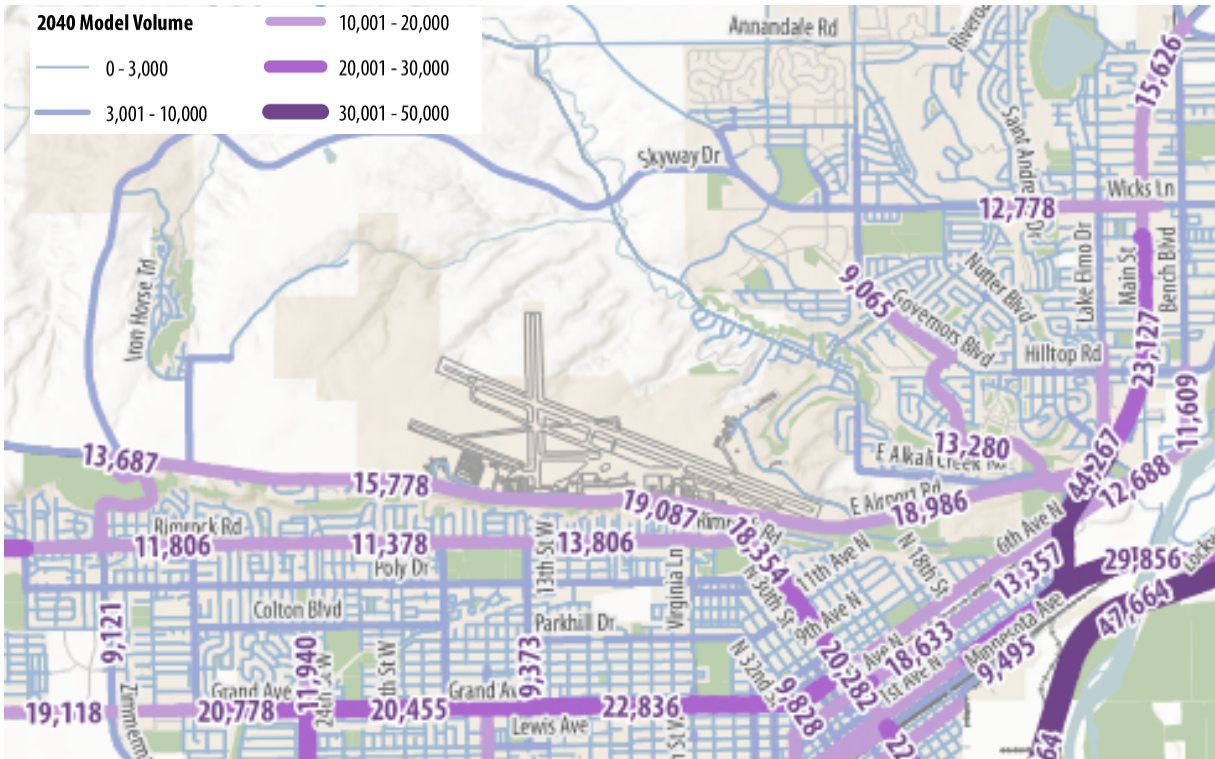


Figure 4. Future Traffic Volumes in 2040 for Project Area Vicinity Roads

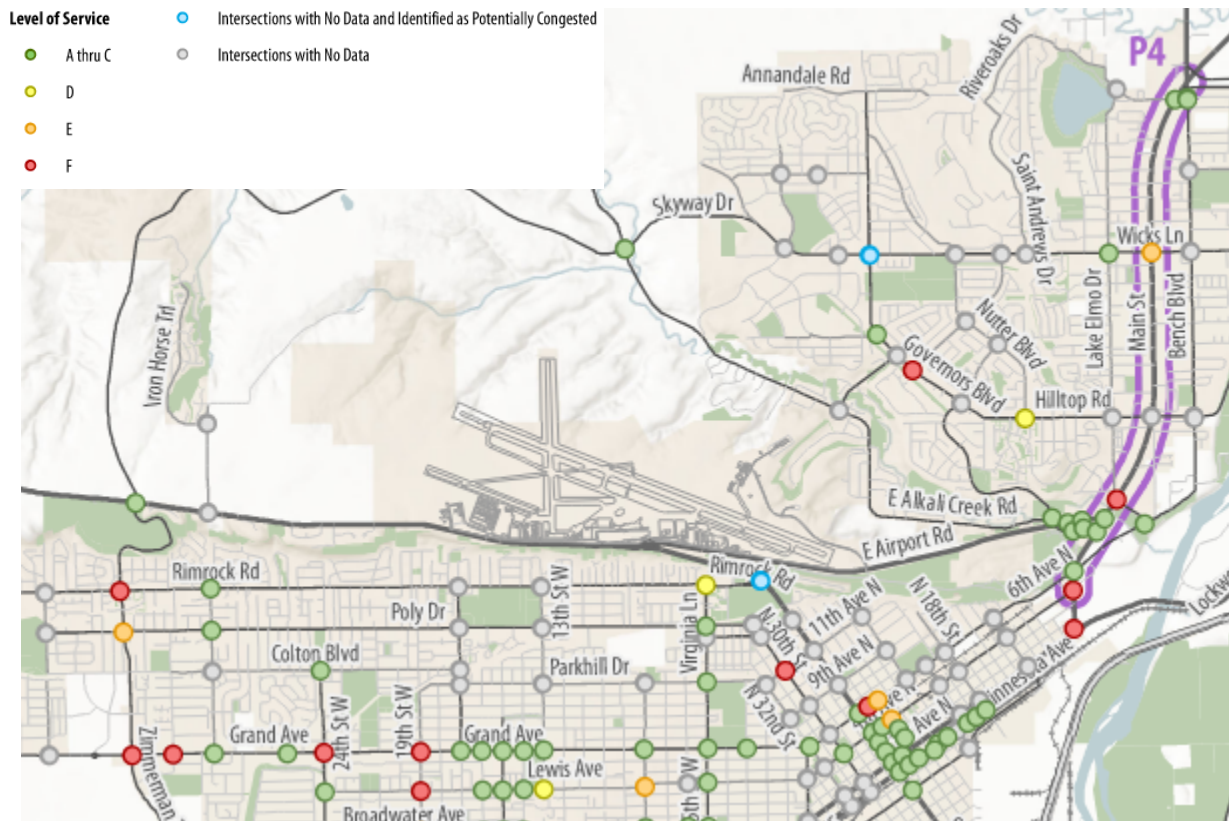


Figure 5. Future Levels of Service (LOS) in 2040 for Project Area Vicinity Intersections

Additional traffic analyses were conducted by the MPO to evaluate the effect the proposed Inner Belt Loop would have on vicinity roadways based on existing and projected future traffic volumes. Two scenarios, a no build scenario without the proposed Inner Belt Loop and a build scenario with the proposed Inner Belt Loop, were evaluated based on existing roadway configurations using current (2017) and projected future (2040) traffic volumes. Figure 6 and Figure 7 show the current and future forecasted daily traffic results, respectively, and call out daily traffic volumes for important roadways currently experiencing congestion.

As reported by the City in the 2019 BUILD grant application, the addition of the Inner Belt Loop was found to slow the growth of vehicle miles of travel (VMT) and vehicle hours of travel (VHT) relative to conditions without the Inner Belt Loop. Figure 6 shows that the immediate impact of building the Inner Belt Loop would be to lower daily traffic in already-developed parts of the city, including the Heights and downtown Billings. Figure 7 shows that this effect will continue into 2040. Importantly, the addition of the Inner Belt Loop is shown to have a positive effect in reducing daily traffic volumes along the congested Main Street and connecting streets.

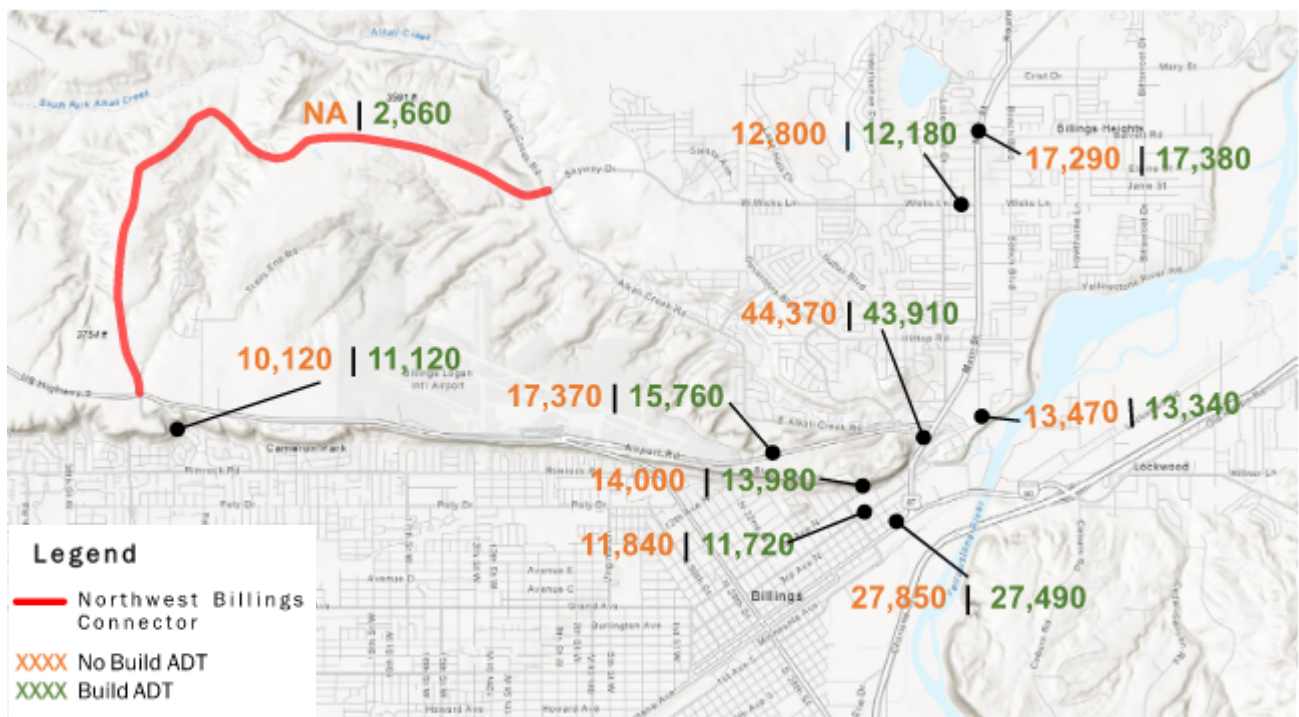


Figure 6. Current (2017) Daily Traffic – With and Without the Inner Belt Loop (NW Billings Connector)

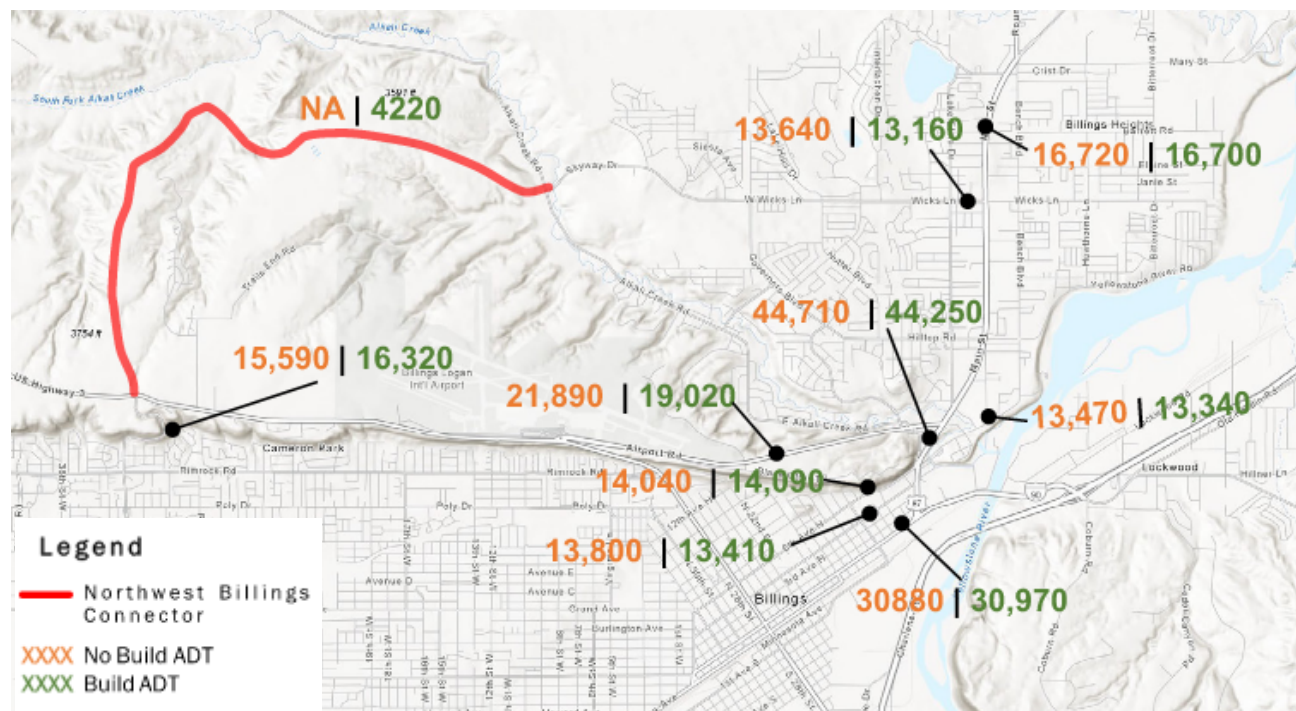


Figure 7. Forecasted (2040) Daily Traffic – With and Without the Inner Belt Loop (NW Billings Connector)

Air Quality Benefits Analysis

Information reported within this section was taken from the following publication:

- *Northwest Billings Connector and Marathon Trail – 2020 BUILD Program Application Benefit-Cost Analysis Memorandum* prepared on May 15, 2020, by SRF Consulting Group for the City of Billings

The 2020 Benefit-Cost Analysis (BCA) was prepared for the 2020 BUILD grant application and includes an in-depth analysis of select roadways evaluated within the constrained artery (i.e., Main Street and immediate connecting roadways) connecting the Heights to Billings and the West End. Several analyses were conducted in the BCA that provide a useful metric in demonstrating the air quality benefits that would be realized following implementation of the project. To establish estimates for VMT and VHT on routes in the constrained artery, a series of select link analyses were prepared using the Billing MPO TDM. Select link analysis included the following roadway segments: 1st Avenue/Main Street, 6th Avenue, 4th Avenue, Airport Road, Alkali Creek Road, and the proposed Inner Belt Loop. Results from the No Build and Build scenarios were compared to estimate the VMT and VHT impacts of adding the proposed Inner Belt Loop to the transportation network. The TDM captured travel time changes related to trip diversion. Benefits for the years between 2017 and 2040 were interpolated based on model results using an annual growth rate. VMT and VHT for years beyond 2040 were extrapolated based on the same growth rate. The analysis assumed that the project would be constructed in 2022 and, therefore, benefits are quantified beginning in 2023 and are projected out to 2043.

Table 1 lists the estimated VMT for the 20-year analysis period of 2023 through 2042 for the No Build and Build scenarios and the decrease in annual VMT as a result of the proposed project. Table 1 also includes the estimated change in emissions for the regulated pollutants of nitrogen oxides (NO_x), particulate matter under 2.5 microns diameter (PM_{2.5}), carbon dioxide (CO₂), and carbon monoxide (CO), which were calculated based on the change in VMT. As shown in Table 1, long-term air quality benefits are estimated to occur as a result of the proposed project.

Table 1. Vehicular Miles of Travel and Emissions for the 20-Year Period of 2023 through 2042, No Build versus Build Scenario

Analysis Year	No Build Annual VMT	Build Annual VMT	Decrease in Annual VMT	Decrease in NO _x (tons)	Decrease in CO ₂ (tons)	Decrease in PM _{2.5} (tons)	Decrease in CO* (tons)
2023	193,225,889	192,664,009	561,880	0.37	216.58	0.002	4.94
2024	194,505,474	193,747,366	758,108	0.50	292.22	0.003	6.67
2025	195,793,533	194,836,814	956,719	0.63	368.78	0.004	8.41
2026	197,090,122	195,932,389	1,157,733	0.76	446.26	0.005	10.18
2027	198,395,297	197,034,124	1,361,173	0.89	524.68	0.006	11.97
2028	199,709,115	198,142,054	1,567,061	1.03	604.05	0.006	13.78
2029	201,031,633	199,256,214	1,775,420	1.17	684.36	0.007	15.61
2030	202,362,910	200,376,638	1,986,271	1.30	765.64	0.008	17.47
2031	203,703,002	201,503,363	2,199,639	1.44	847.88	0.009	19.34
2032	205,051,969	202,636,424	2,415,545	1.59	931.10	0.010	21.24
2033	206,409,869	203,775,856	2,634,013	1.73	1015.32	0.011	23.16
2034	207,776,761	204,921,695	2,855,066	1.87	1100.52	0.012	25.11
2035	209,152,706	206,073,977	3,078,728	2.02	1186.74	0.012	27.08
2036	210,537,762	207,232,739	3,305,023	2.17	1273.97	0.013	29.07
2037	211,931,990	208,398,016	3,533,974	2.32	1362.22	0.014	31.08
2038	213,335,451	209,569,845	3,765,606	2.47	1451.50	0.015	33.12
2039	214,748,206	210,748,264	3,999,942	2.63	1541.83	0.016	35.18
2040	216,170,317	211,933,309	4,237,008	2.78	1633.21	0.017	37.26
2041	217,601,845	213,125,018	4,476,827	2.94	1725.65	0.018	39.37
2042	219,042,853	214,323,428	4,719,426	3.10	1819.17	0.019	41.50
TOTAL 2023 to 2042	4,117,576,703	4,066,231,542	51,345,161	33.7	19,792	0.21	451.55

Source: SRF Consulting Group, Northwest Billings Connector and Marathon Trail – 2020 BUILD Program Application Benefit-Cost Analysis Memorandum, May 2020

Notes:

1. Emissions per VMT, for both auto and truck, were obtained from the United States Environmental Protection Agency, Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks. These rates were applied to the difference in VMT between the Build and No Build Alternatives.
2. Truck percentage is estimated based on year 2018 Yearly Automatic Traffic Recorders (ATR) Profile prepared by Montana DOT.
3. * CO emissions were not included in the 2020 BCA and have been calculated by HDR using the same methodology and BCA spreadsheet.

Air Quality Conformity Determination

Information reported within this section was taken from the following publication:

- *2018 Billings Urban Area Long Range Transportation Plan* prepared on January 11, 2019, by Kittleson & Associates for the Billings MPO.

The 2018 Billings LRTP received approval for adoption from the Billings City Council on October 22, 2018, from the Yellowstone County Commissioners on October 16, 2018, from the Yellowstone County Board of Planning on October 23, 2018, and from the Policy Coordinating Committee (PCC) on October 30, 2018. The adopted 2018 LRTP includes the proposed Inner Belt Loop in its list of committed roadway projects that have been included in the regional TDM and subsequently evaluated for air quality conformity.

The 2018 LRTP conformity determination included interagency consultations conducted in accordance with consultation guidance found in the State of Montana Air Quality Rules on Conformity (ARM Chapter 17 Chapter 8 Subchapter 13). The consultation process involved a coordinated process including the Montana Department of Transportation, Montana DEQ, and Yellowstone County Planning Board.

The 2018 LRTP concluded that the plan was found to be in conformance with the applicable provisions of Section 176(c) of the Clean Air Act, 40 CFR 93 Subpart A, and the Billings CO Limited Maintenance Plan element of State Implementation Plan for the State of Montana. Because the proposed Inner Belt Loop is included in the conforming 2018 LRTP and Transportation Improvement Program (TIP), the project meets this criterion for conformity with the State Implementation Plan. It is important to note that the concept and scope of the proposed project has not changed since the conformity determination was made within the 2018 LRTP. Also, as explained below, because the proposed project will not affect LOS “D” or worse intersections within the CO maintenance area, quantitative CO hot-spot analysis is not required, and therefore the project meets this criterion for conformity with the State Implementation Plan.

Hot Spot Determination

Per the Montana Department of Transportation Project-Level Conformity Work Flow for Hot Spot Determinations, because the proposed project is in or immediately adjacent to a CO Maintenance Area, a hot-spot analysis is required to demonstrate project-level conformity. Per 40 CFR 93.123(a)(1), a quantitative CO hot-spot analysis is necessary for the following types of projects:

- Projects that impact a location identified in the SIP as a site of actual or possible violations
- Projects that affect intersections that are at LOS D or worse, or those that will change to LOS D or worse because of increased traffic volumes related to the project
- Projects affecting one of the 3 worst intersections in the area in terms of traffic volume or LOS

Billings' first recorded violations of federal CO standards occurred in 1978. Initiatives such as EPA's motor vehicle emissions standards, fleet improvements, and transportation improvements have since reduced CO emissions. In 2002, Billings was redesignated as in attainment for CO and currently is a maintenance area for CO. Billings is currently in its second 10-year maintenance plan.

As it relates to project types identified in 40 CFR 93.123(a), the proposed project: (1) is not expected to be a site of actual or possible CO violation given no CO violations in over 20 years; (2) does not adversely affect any intersections that are currently or projected to operate at LOS D or worse; and (3) does not adversely affect any of the top three worst intersections in the area in terms of traffic volume or LOS.

The regulation further describes in 40 CFR 93.123(a)(2) that a qualitative analysis is appropriate provided the requirements of 40 CFR 93.116 are met. In accordance with 40 CFR 93.116, the proposed project would not cause or contribute to any new localized CO violations, increase the severity or frequency of any existing CO violations, or delay the timely attainment of any NAAQS or other emission reductions. Based on the air quality analysis provided in Table 1, the proposed project is anticipated to benefit regional air quality by reducing VMT in 2043 by approximately 4.7 million miles annually, or approximately 12,930 miles/day, and, as reported in the BCA, but not included in Table 1, reducing vehicle hours of travel by approximately 171,197 hours annually, or approximately 470 hours/day. The reduction of VMT results in a corresponding reduction in CO emissions, which, for the year 2043, is estimated at 451.6 tons.

Requirements in 40 CFR 93.116 are satisfied because it has been demonstrated, as evidenced from the air quality conformity determination documented in the conforming 2018 LRTP, that during the timeframe of the LRTP no new local violations will be created and the severity or number of existing violations will not be increased as a result of the project, and the project has been included in a regional emissions analysis that meets applicable regulations.

The proposed project is not located within a PM-10 Maintenance Area (Billings area has not violated the CAA for PM-10 emissions and the project is not subject to transportation conformity requirements for PM-10). Regardless, a brief discussion of potential project effects on PM-10 is provided below for NEPA compliance purposes.

Because of the reduction in VMT and congested hours of travel projected with the addition of the new roadway, the proposed project is not expected to cause or contribute to any new localized PM-10 violations. Further, the proposed project is not a project type that would trigger a PM hot-spot analysis if it were subject to 40 CFR 93.116, which identifies the following project types:

- New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;
- Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and,
- Projects in or affecting locations, areas, or categories of sites which are identified in the PM10 or PM2.5 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

While the above analysis triggers from the transportation conformity rules do not apply to the project given the attainment status of the project area, they have been evaluated here for NEPA purposes only to help assess whether quantitative analysis should be considered. Given the project does not fit any of the project types listed, a PM-10 hot-spot analysis was not conducted for NEPA purposes.

Interagency Consultation

The Administrative Rules of Montana (ARM) found at ARM 17.8.1305 through 17.8.1306 describe state-level transportation conformity consultation requirements and procedures. This memo will be distributed to federal, state, and local air quality agencies to comply with the state consultation requirements. Agency comments will be documented and included in the administrative record to demonstrate compliance with NEPA and the CAA.

Public Review Process

Project-level conformity requires public review and opportunity for public comment on the conformity determination for the proposed project. To meet this requirement, this memorandum will be made available to the public through the project website found at <https://ci.billings.mt.us/2964/BUILD-Grant-2021>. Opportunity for public comment will be available through the website.