Washington State Department of Transportation

Memorandum

DATE: December 28, 2023

TO: Olympic Region Environmental MGR

FROM: Michael Minor & Associates, Inc

RE: **SR 3 Freight Corridor – Updated 2023** Air Quality Conformity Analysis and Qualitative Greenhouse Gas Emissions Evaluation

Summary

The purpose of this Air Quality Discipline Report is to describe the existing air quality in the vicinity of the SR 3 Freight Corridor Project (Project) and to discuss the potential air quality impacts from the construction and operation of the Project. This report provides a quantitative assessment of Greenhouse Gas emissions (GHGs) related to its construction and operation.

The project will not result in long-term changes in traffic volumes, level of service, or vehicle mix that would increase daily emissions of GHGs, criteria air pollutants, or Mobile Source Air Toxics (MSAT). It will therefore not cause any new, or will not contribute to any existing, exceedance of the National Ambient Air Quality Standards (NAAQS) or pose any special MSAT concerns.

Construction activities may cause temporary increases in GHG and air pollutant emissions. Construction contractors would be required to comply with State of Washington regulations that require the owner or operator of a source of fugitive dust to take reasonable precautions to prevent it from becoming airborne and to minimize emissions.

Introduction

The project is located in an attainment area for all six U.S. Environmental Protection Agency (EPA) criteria air pollutants, including carbon monoxide (CO), particulate matter (PM_{10} and $PM_{2.5}$), ozone, sulfur dioxide, lead, and nitrogen dioxide. Due in part to a lower population density and lack of industry, the area in question has no history of exceeding any state or federal standards for air pollutants.

Because there are no specific analysis requirements for transportation air quality conformity in an attainment area, project level air quality conformity using a hot-spot analysis was not performed for this project, but a qualitative analysis and a general discussion is included for informational purposes.

Following the Federal Highway Administration's (FHWA) 2023 *Updated Interim Guidance on MSAT Analysis for NEPA Documents*, it was determined that the project would have low potential impacts and therefore, only a qualitative MSAT analysis is required.

The assessment of Greenhouse Gas Emissions for the Project followed WSDOT *Guidance for Project-Level Greenhouse Gas and Climate Change Evaluations* and should be included in the Cumulative Effects section of the Environmental Assessment (EA).

Project Description

The proposed SR 3 Freight Corridor – New Alignment project would construct a two-lane 6-mile limited access highway with a design and posted speed of 50 miles per hour (mph) on a new alignment approximately 3,000 feet to the east of existing State Route (SR) 3. The major portion of the highway would run through Mason County while the northern end would be located in Kitsap County. The proposed alignment would begin at MP 22.81 on SR 3 and connect back to the existing SR 3 alignment at MP 29.49 (see Figure 1). The north end connection to existing SR 3 is proposed just north of SW Lake Flora Road, and the south connection is just south of the intersection with SR 302. The proposed bypass highway would carry regional through traffic from Shelton to Bremerton and would be the mainline for SR 3. The existing SR 3 would become a "Business Loop" serving downtown Belfair with connections to SR 106, SR 300, and the Old Belfair Highway.

The typical cross-section of the proposed improvement is shown in Figure 2 and its construction elements would include the following:

- Two 12-foot travel lanes with 8-foot shoulders.
- Stormwater treatment facilities – natural dispersion and infiltration, compost-amended vegetated filter strips, and treatment wetlands.
- Acquiring right of way and implementing managed access.
- A roundabout at the north end of the alignment to connect the existing SR 3 corridor to the new corridor at Lake Flora Road
- Two roundabouts to connect the south end of the new corridor to the existing SR 3 corridor at SR 302
    - The western roundabout would provide access to the existing SR 3 corridor,
    - The eastern roundabout would provide access to SR 302 and the proposed SR 3 Freight Corridor.
- Right-in-right-out access to provide access to North Mason High School and Belwood Lane

Figure 1. SR 3 Freight Corridor Project Vicinity

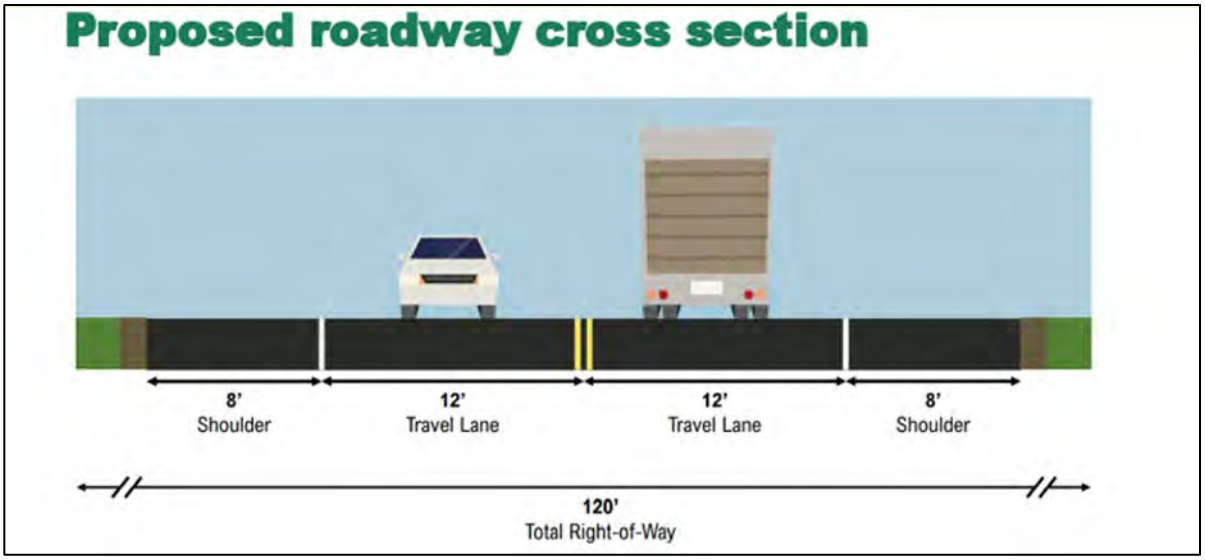


Figure 2. SR 3 Proposed Highway Cross-section

What is the Purpose of this Project?

The purpose of constructing the SR 3 Freight Corridor – New Alignment (Freight Corridor) is to provide a reliable high-speed regional route between Kitsap and Mason Counties, moving freight and regional traffic between Shelton and Bremerton, thus bypassing the urban center of Belfair. This project would reduce congestion and improve safety through Belfair and provide an alternate route during recurring highway closures resulting from vehicular crashes and other incidents. Implementation of this project would provide safe and reliable regional access to jobs, goods, and services, improve efficiencies for all public service providers, and lower the current crash rate on SR 3 through Belfair.

Why is the SR 3 Freight Corridor – New Alignment Project Needed?

A new Freight Corridor around Belfair is needed to improve regional mobility for freight, passenger vehicles and transit. The improvements would increase mobility, reduce congestion through Belfair, and improve safety.

Regional Mobility

SR 3 in the Belfair urban area experiences chronic traffic congestion and declining operational Levels of Service (LOS) for traffic. Because SR 3 is the major north- south link between Mason and Kitsap counties, Belfair is a choke point on this regional highway and serves as the only freight route through southwest Kitsap and northeast Mason Counties. SR 3 is designated as a critical rural freight corridor and is part of the National Highway Freight Network (NHFN). SR 3 is also identified as a National Highway System (NHS) route and as a Highway of Statewide

Significance (HSS). The National Highway System route designation extends from the Hood Canal Bridge in the north to Shelton in the south, passing through the Belfair urban area, the City of Bremerton, the Puget Sound Industrial Center - Bremerton (PSIC - B), and connecting with SR 16.

SR 3 carries most of the daily commute trips from SR 106, SR 300 and populated coastal areas in Mason County north to Bremerton and via SR 16 to points in Pierce and King Counties. Regional traffic using SR 3 must pass through the commercial area of Belfair having numerous access points with high turning volumes. Southbound traffic destined for Shelton, Grays Harbor, and Olympia also must pass through Belfair.

Traffic Operations

A combination of freight, commute, and recreational traffic volumes causes severe commute hour congestion through the Belfair urban area. Congestion is occurring during peak commute hours, weekends, holidays, and during the tourist season.

SR 3 had up to 19,000 annual average daily vehicles per day in 2018 south of Lake Flora Road. Highway LOS analysis shows the one-mile segment of the SR 3 mainline segment north of Lake Flora Road (MP 28.78 to MP 29.78) is LOS D. The signalized intersection at NE Clifton Lane operates at LOS D and E during the AM and PM peak periods, respectively, failing to meet LOS standards. The unsignalized intersection at Old Belfair Highway is operating at failing conditions of LOS E and F during the AM and PM peak periods, respectively.

Several studies conducted over the last decade have demonstrated that traffic congestion and safety concerns will eventually overwhelm SR 3 in the approaching years. Traffic projections show that without the Freight Corridor, operational performance for freight and regional through traffic on the portion of existing SR 3 through Belfair will continue to decline to the point of chronic failure. It is expected that the corridor will operate at LOS E in 2050 and that, if no action is taken, travel times in the project area will continue to worsen as future traffic volumes increase.

Crash Data

Crash records in the study area indicate that the type and severity of crashes appears to be consistent with congested urban conditions. Rear-end and property damage only (PDO) or non-injury crashes account for the greatest number of crashes. The number of crashes tends to increase under congested conditions, but the severity of those crashes is generally lower, due to lower speeds. At the study area intersections, between January 2014 and May 2019, two serious injury crashes occurred. There were no fatal crashes. The intersections of SR 3/NE Clifton Lane and SR 3/Lake Flora Road had the highest number of crashes in the study area, ranging from 3.8 crashes per year to 4.7 crashes per year. On SR 3 segments, between the study intersections, 350 crashes were reported, with the majority occurring between Lake Flora Road and NE Clifton Lane (41 percent) and between NE Clifton Lane and SR 106 (38 percent).

Regional System Linkage

The current highway does not support regional transportation needs. This route experiences seasonal fluctuations from tourist traffic and recreational users and is the most direct and expedient alternate land route for traffic from Bremerton to Interstate 5 if SR 16 or the Tacoma Narrows Bridge becomes blocked. Southbound traffic destined for Shelton, Grays Harbor, and Olympia must pass through Belfair. As land located in the corridor continues to be developed, and regional trips continue to increase, traffic congestion through Belfair will be exacerbated. The Bremerton Economic Development (BED) Study for US 101, SR 3 and SR 16 in Mason and Kitsap Counties (WSDOT 2012a) showed the Freight Corridor project was the top priority project for the local communities and stakeholders.

If the Freight Corridor project is not built, SR 3 will be an important regional facility that will fail to provide efficient regional and local traffic mobility. The operational analysis of the project area indicates that the roadway currently operates below minimum acceptable service standards on this portion of the highway. Operating conditions would reach failing conditions by 2050. A bypass would improve the roadway system around Belfair and would reduce travel time.

Support of Local Plans

The area is developing based on local agency comprehensive plans and zoning. However, the area lacks a completed transportation network appropriate for the community. Many traffic studies show that a SR 3 bypass around Belfair is needed to improve regional mobility, reduce congestion through Belfair, and improve safety. As already discussed, the BED Study showed the SR 3 Freight Corridor is the top priority project for the local communities and stakeholders. The Freight Corridor has been included in the transportation elements of the Mason County and the City of Bremerton comprehensive plans.

Description of Alternatives

After conducting preliminary studies, WSDOT narrowed the number of potential alternatives to the Build and No Build Alternatives. As outlined above, the proposed Build Alternative would provide one general-purpose lane in each direction, standard shoulders, and turn lanes at major intersections along the new route. Details regarding the Build Alternative are included in the Project Description section above.

No Build Alternative

Under the No Build Alternative, the project would not be built. Only routine maintenance, repair, and minor safety improvements would take place on SR 3 in the study area over the next 30 years. WSDOT is evaluating the No Build Alternative to provide a reference point for comparing the effects, both positive and negative, associated with the proposed build alternative.

Build Alternative (Project Action)

The proposed SR 3 Freight Corridor – New Alignment project Build Alternative would construct a two-lane 6-mile limited access highway with a design and posted speed of 50 miles per hour

(mph) on a new alignment approximately 3,000 feet to the east of existing SR 3. The major portion of the highway would run through Mason County while the northern end would be located in Kitsap County. The proposed alignment would begin at MP 22.81 on SR 3 and connect back to the existing SR 3 alignment at MP 29.49 (see Figure 1). The north end connection to existing SR 3 is proposed just north of SW Lake Flora Road, and the south connection is just south of the intersection with SR 302. The proposed bypass highway would carry regional through traffic from Shelton to Bremerton and would be the mainline for SR 3. The existing SR 3 would become a "Business Loop" serving downtown Belfair with connections to SR 106, SR 300, and the Old Belfair Highway.

Affected Environment

Air Quality

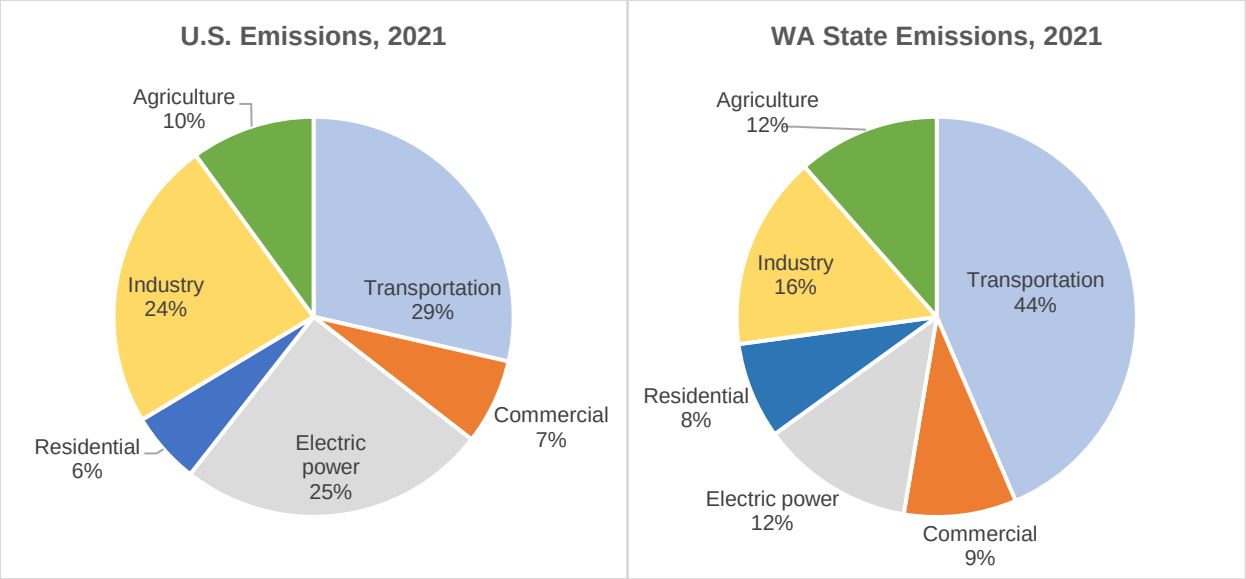
The project is located in an area that has a relatively mild climate with temperatures ranging from an average minimum monthly temperature of 45 degrees Fahrenheit in January to an average maximum monthly temperature of 72 degrees Fahrenheit in July. Winter is the wettest part of the year with approximately 70 percent of annual precipitation occurring between October and March (Western Region Climate Center).

Because the project is located in an attainment area where air quality is not an issue of concern, there are no air quality monitoring stations located in the project vicinity. The nearest air quality monitoring station is located in Shelton, approximately 23 miles south of the project area.

Climate Change – Greenhouse Gas Emissions

Vehicles emit a variety of gases during their operation; some of these are greenhouse gases (GHGs). The GHGs associated with transportation are water vapor, carbon dioxide (CO_2), methane (also known as "marsh gas"), and nitrous oxide (used in dentists' offices as "laughing gas"). Any process that burns fossil fuel releases CO_2 into the air. Carbon dioxide makes up the bulk of the emissions from transportation.

Vehicles are a significant source of greenhouse gas emissions and contribute to global warming primarily through the burning of gasoline and diesel fuels. National estimates show that the transportation sector (including on-road vehicles, construction activities, airplanes, and boats) accounts for almost 30 percent of total domestic CO_2 emissions. However, in Washington State, transportation accounts for nearly half of GHG emissions because the state relies heavily on hydropower for electricity generation, unlike other states that rely on fossil fuels such as coal, petroleum, and natural gas to generate electricity. The next largest contributors to total GHG emissions in Washington are fossil fuel combustion in the residential, commercial, and industrial sectors at 20%; and in electricity consumption, also 20%. Figure 3 shows the gross GHG emissions by sector, nationally and Washington State.



Source: EPA

Figure 3. GHG Emissions by Sector, U.S. and Washington State

State Efforts to Reduce Greenhouse Gas Emissions

In 2020, Governor Inslee and the legislature updated the greenhouse gas reduction goals for Washington State:

- 45% reduction below 1990 levels by 2030
- 70% reduction below 1990 levels by 2040
- 95% reduction below 1990 levels by 2050.

Also in 2020, Governor Inslee signed the Zero Emissions Vehicle (ZEV) standard, which replicates California's vehicle emissions standards.

In 2019, the Washington Legislature adopted new energy efficiency standards for buildings. In that same year, the Governor signed the Clean Energy Transformation Act (SB 5116), which requires all electric utilities in the state to transition to carbon-neutral electricity by 2030 and 100 percent carbon-free electricity by 2045. Also, the Department of Ecology adopted in 2019 a rule to transition away from the use of hydrofluorocarbons.

In addition to working with others in our state, WSDOT is leading the development of effective, measurable, and balanced emission reduction strategies. Current WSDOT activities that reduce GHG emissions include:

> **Transportation Options –**WSDOT supports carpooling, vanpooling, and public transportation through the funding, building, and maintenance of the freeway HOV system, ferries, rail, and other programs. Our Commute Trip Reduction program has been partnering with employers to offer alternatives to drive alone commuting since 1991 and we have the nation's largest public vanpool program. These programs continue to expand and with recent high gas prices, demand for these programs has surged.

These investments help to reduce the number of vehicles on the roadway during peak congestion and help reduce total vehicle miles traveled.

Investment in Electric Vehicle Network - WSDOT initiated and manages an alternative fuel vehicle charging and refueling infrastructure program known as Zero Emission Vehicle Infrastructure Partnerships (ZEVIP), which installs electric vehicle charging stations in Washington State.

Incident Response Team (IRT) – WSDOT has vehicles that patrol 500 miles of highway to clear blocking incidents quickly and safely. IRT clears 98.6 percent of all incidents in less than 90 minutes, reducing the amount of time motorists spend sitting and idling in traffic.

Reducing Fuel Consumption by Ferries – Each year, the state ferry system burns approximately 17 million gallons of diesel fuel in its ferries, making the agency a significant fuel consumer in Puget Sound. Since 2018, WSF began operating on new speed guidelines, which saved approximately 450,000 gallons of fuel in the first year. Also, WSF will begin the electrification of its fleet, replacing the existing diesel vessels with electric-hybrid vessels.

Potential Project Impacts

This section identifies potential effects and benefits to air quality associated with the No Build and Build Alternatives. Effects and benefits are discussed in terms of temporary effects associated with construction activities, and long-term effects associated with the operation and maintenance of the facility or permanent changes resulting from the project.

Regulatory Discussion

Air quality in the study area is regulated by the Environmental Protection Agency (EPA) and the Washington State Department of Ecology (DOE). The DOE is responsible for monitoring air quality within the state. The EPA sets national air quality standards and has oversight authority over the DOE.

The EPA has developed National Ambient Air Quality Standards (NAAQS) for six criteria pollutants to protect public health and welfare. The NAAQS specify maximum concentrations for carbon monoxide (CO), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), particulate matter less than 10 microns in diameter (PM_{10}), ozone (O_3), sulfur dioxide (SO_2), lead, and nitrogen dioxide (NO_2). These standards shall not be exceeded by ambient pollutant concentrations that are averaged over a defined time interval, ranging from one-hour to three-year averages. The DOE has the authority to adopt more stringent standards, however, the current state standards are equivalent to the federal standards.

DOE operates air quality monitoring stations to obtain data on actual ambient air quality concentrations. Information from these stations determines whether the region meets the NAAQS and assists in providing background level concentrations in the project vicinity.

The project area is in attainment for all EPA criteria pollutants, and there are no specific analysis requirements for transportation air quality conformity in an attainment area. Therefore, a project level air quality conformity using a hot-spot analysis, or an air pollutant emissions burden analysis was not performed for this project. A qualitative analysis and a general discussion are provided and included for informational purposes.

This project meets air quality conformity in accordance with state and federal regulations.

Temporary Effects and Benefits

No Build Alternative

There would be no temporary effects associated with the No Build Alternative because no new construction will occur.

Build Alternative

Construction activities, occurring over a two-year period, will cause temporary increases in air pollutant and GHG emissions.

Criteria Pollutants and Mobile Source Air Toxics

The construction phase of the project would consist of soil-disturbing activities, use of heavy-duty equipment, commuting construction workers, and the laying of asphalt that would generate emissions that can temporarily affect air quality. The total emissions and the timing of the emissions from these sources would vary depending on the construction phasing of the project. Table 1 summarizes the tasks involved in each construction phase and their associated emissions.

Table 1. Pollutants Generated by Construction Activities

Construction Task	Source of Emissions	Emissions
Clearing right of way	Track /wheel loaders, bulldozer, haul trucks	CO, PM_{10}, $PM_{2.5}$, NO_2, SO_2, fugitive dust, Mobile Source Air Toxics (MSATS)
Removing existing concrete & paved surfaces	Track /wheel loaders, bulldozer, haul trucks	Same as above
Removing of concrete debris	Haul trucks, dump trucks	Same as above
Re-grading of roadbed, laying the aggregate base	Track /wheel loaders, bulldozer, grader	Same as above
Trenching for new utilities	Backhoe, gravel trucks	Same as above
Building grade separation including drilling shafts and installation foundations and abutments	Track /wheel loaders, drill, haul trucks, concrete trucks and pumps, grader, and compactors	Same as above
Paving roadway	Concrete trucks, asphalt trucks, asphalt rollers	CO, PM_{10}, $PM_{2.5}$, NO_2, SO_2, MSATs
Painting lane markers	Paint spray equipment	Odorous compounds, MSATs

Temporary fugitive PM_{10} emissions from construction activities would be noticeable, if uncontrolled. Mud and particulates from trucks would also be noticeable if construction trucks are routed through residential neighborhoods.

In addition to PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate $PM_{2.5}$, CO, and NO_2 in exhaust emissions. If construction traffic and lane closures were to increase congestion and reduce the speed of other vehicles in the area, concentrations of these pollutants would increase temporarily while those vehicles are delayed. These emissions would be temporary and limited to the immediate area where the congestion is occurring. Some construction phases (particularly during paving operations using asphalt) would result in short-term odors. These odors might be detectable to some people near the site and would lessen as distance from the site increases.

The construction contractors would be required to comply with all local, state and federal regulations concerning air pollution abatement related to construction activities. The mitigation measures that were imposed under the 2003 Record of Decision that remain relevant to the project are listed below.

- Mitigation measures to control PM_{10}, deposition of particulate matter, and emissions of CO and NOx will be implemented during construction per the Associated General Contractors of Washington guidelines and Puget Sound Clean Air Agency regulations.
- Project construction staging will be managed to reduce overall system congestion and delays, which will reduce regional emissions of pollutants, to the greatest extent practicable

In addition to the measures above and in accordance with WSDOT's Environmental Manual M31-11, construction will comply with the procedures outlined in the October 1999 Memorandum of Agreement entered into by WSDOT and the Puget Sound Clean Air Agency for controlling fugitive dust emissions, which may require the following actions:

- Spray exposed soil with water or other dust suppressant to reduce emissions of particulate matter less than 10 microns in diameter (PM_{10}) by increasing deposition of particulate matter.
- Use phased development to keep disturbed areas to a minimum.
- Use wind fencing to reduce wind disturbance of soils.
- Minimize dust emissions during transport of excavated or fill materials by wetting down loads or ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks.
- Promptly clean up spills of transported material on public roads.
- Schedule work tasks to minimize disruption of the existing vehicle traffic on streets.
- Restrict traffic onsite to reduce soil upheaval and tracking material onto roadways.

- Provide wheel washers to decrease deposition of particulate matter on area roadways by removing particulate matter that would otherwise be carried offsite by vehicles.
- Locate construction equipment and truck staging areas away from sensitive receptors as practical and in consideration of potential effects on other resources.
- Cover dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris.
- Find alternatives to the burning of land-clearing debris, such as chipping for use as mulch or compost.
- Coordinating construction activities with other projects in the area to reduce the cumulative effects of concurrent construction projects.

Greenhouse Gas Emissions

The construction of the proposed Project would result in additional GHG emissions. To provide an estimate of construction related GHGs, the FHWA Infrastructure Carbon Estimator v.2.2 (ICE) tool was used. The results are shown in Table 2. Upstream emissions reflect the fuel used in the extraction, transportation and production of the raw materials used, while direct emissions reflect the fuel used in the transportation of the materials to the site and that used by construction equipment.

Table 2. GHG Emissions from Construction (metric tons CO_2 eq)

Construction: 2026 to 2028				
	Upstream Emissions	**Direct Emissions**		**Total**
		Construction	**Maintenance**	
CO_2eq (MT)	2856	2140	56	5052
Source: FHWA ICE				

Construction of the proposed Project would not affect the travelling public except for the south and north connections. At these connections construction traffic's plan will include detours and strategic construction timing (like night work) to continue moving traffic through the area and reduce backups to the traveling public to the extent possible. WSDOT will seek to set up active construction areas, staging areas, and material transfer sites in a way that reduces standing wait times for equipment. WSDOT will work with our partners to promote ridesharing and other commute trip reduction efforts for employees working on the project.

Even though minor effects may occur from GHG emissions during construction, these effects would be temporary and would not continue beyond project construction. The project design minimizes the potential for increasing vehicle emissions during the short-term and decreases vehicle emissions over the long-term. Therefore, WSDOT concludes that no substantial impacts would occur to this resource as a result of the proposed project.

As shown in Table 2, there are upstream GHG emissions associated with the production and transportation of the materials used in building the SR-3 Project. Furthermore, the construction of the Project would require the clearing of approximately 33 acres of land. This area has varying types of forest cover ranging from recently logged areas with new plantations, young stands of

Douglas fir and other species, to older (30–50-year-old) forests all of which sequester carbon dioxide as they grow. The amount of CO_2 stored by the forest cover that would be removed was estimated, using data from the U.S. Department of Agriculture, and is estimated at approximately 545 metric tons a year.

In addition, greenhouse gases will be emitted by the disposal of woody debris from land clearing. The amounts emitted will vary depending upon the method of disposal. Open burning and chipping /composting are the most common disposal methods. These emissions cannot be quantified as the actual mass of woody debris is not known. However, burning piled logging slash emits about 1.5 tons of CO_2 for every ton of debris. Total emissions would also have to include those from the diesel-powered machinery used to pile the slash.

GHG emission rates for the composting of similar material are estimated at 1% of its dry weight. Total emissions for composting would have to include those from the transportation of material to the processing site and the grinding and winnowing of the composting piles.

Long Term Effects and Benefits

No-Build Alternative

There would be no additional long term effects associated with the No Build Alternative because no new construction will occur.

Build Alternative

Under the 2028 and 2050 Build Alternatives, the projected peak hour volume is higher compared to existing (2021) conditions and slightly lower compared to the 2028 and 2050 No Build Alternatives.

The proposed SR 3 Freight Corridor Project would attract a significant amount of vehicle trips away from the existing SR 3, relieving congestion along the existing SR 3, and in downtown Belfair. Without the construction of the bypass, the existing SR 3 will be over-congested and PM peak hour demand on some sections of the road in 2050 will exceed road capacity. Volume-to-capacity ratios along the existing SR 3 would be substantively reduced with the Build Alternative compared the No Build Alternative. In the 2020 *SR 3 Freight Corridor Planning Study*, trucks were estimated to be 6% of all vehicles. It is assumed here that the percentage of truck traffic is the same in all years. Table 3 shows the vehicle miles traveled (VMT) for the years and alternatives under consideration. The existing SR 3 between milepost 29.49 and milepost 22.81 (the north and south ends of the project area) is 6.6 miles. The project will not increase the number of vehicles traveling in the area and by diverting a portion of traffic onto the shorter 6-mile corridor, the project will reduce overall VMT.

Table 3. Project Vehicles Miles Traveled (VMT)

	2021 Existing	2028 No Build	2028 Build	2050 No Build	2050 Build	% Change 2028 to 2048 No Build	% Change 2028 to 2050 Build	% Change 2050 No Build to 2050 Build
Daily VMT	84,967	114,077	109,824	168,728	160,432	48%	46%	-5%
Truck VMT*	5,098	6,845	6,589	10,124	9,626	48%	46%	-5%
*Truck VMT = 6% of Daily VMT								

Mobile Source Air Toxics

Following the FHWA Interim Guidance on MSATs (2023), the SR 3 Freight Corridor was determined to be a project with low potential impact, and therefore a quantitative analysis is not required. A project is considered to have low potential impact where projected Annual Average Daily Traffic (AADT) is less than 140,000 vehicles, there is no increase in truck traffic and where the proposed location will not worsen the air quality impacts on nearby population centers. The SR 3 Freight Corridor project will not result in AADT exceeding 140,000 vehicles, will not change the vehicle mix, and as shown in Figure 1, will route traffic away from existing nearby population centers.

The amount of MSATs emitted would be proportional to VMT. The project adds capacity to the existing roadway but does not increase the average daily traffic compared to the No Build Alternative. Because the estimated VMT with the future Build Alternative is not higher than under the future No Build Alternative, it is expected that there would be no appreciable difference in overall MSAT emissions between the Build and No Build Alternatives. Future year emissions would also likely be lower than present levels as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2020 and 2060 (See Figure 4). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

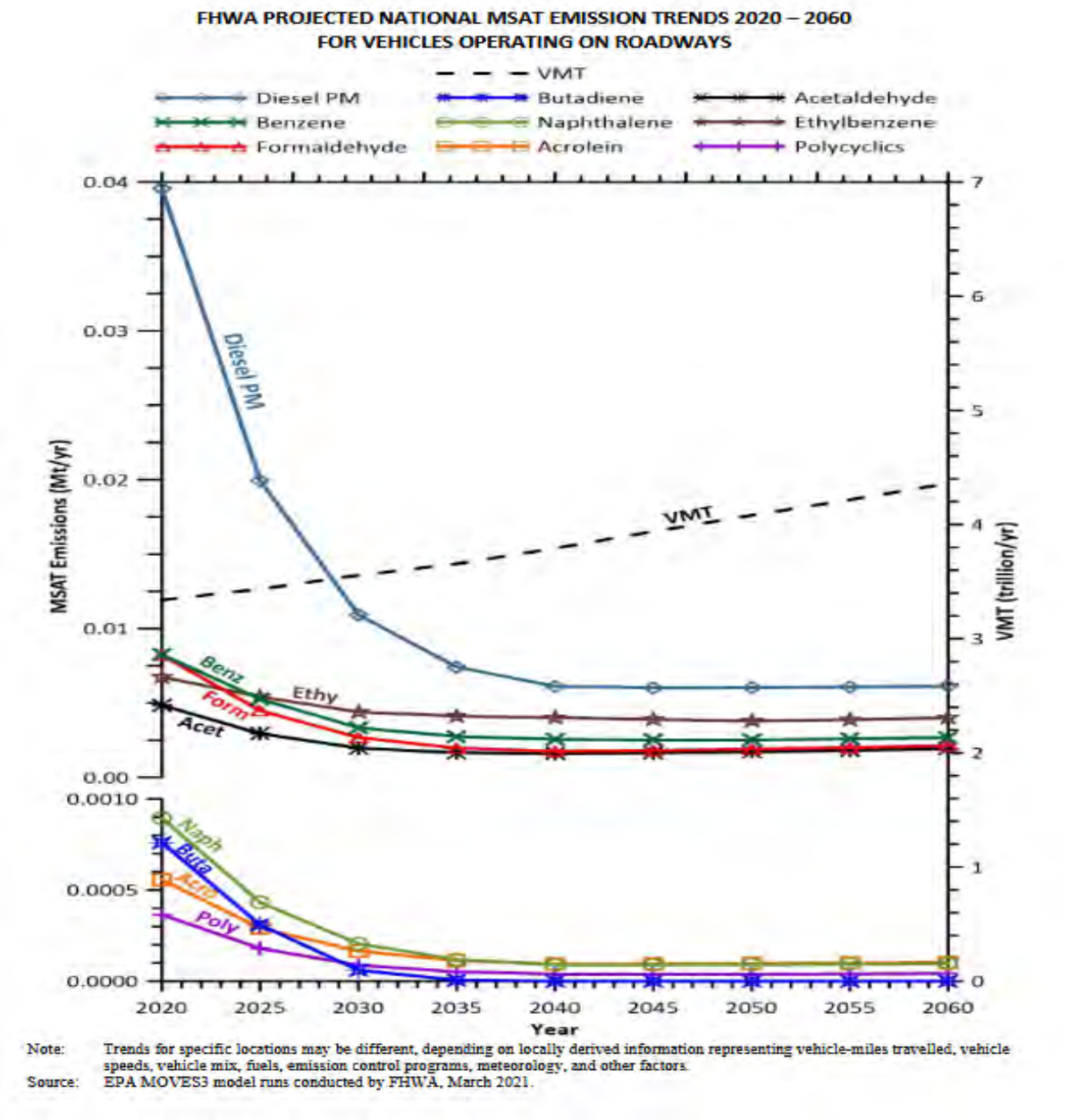


Figure 4. Vehicle Miles Traveled vs. Mobile Source Air Toxics

Greenhouse Gas Emissions - Operational

State and federal investments in transportation projects are made to improve current conditions of the multi-modal transportation network. The proposed highway project contains several features that would reduce GHG emissions:

- Reducing stop and go conditions
- Improving roadway speeds to a moderate level

- Improving intersection traffic flow to reduce idling
- Creating more safe and efficient freight movement

Using traffic volume data provided in the presented in the 2020 *SR 3 Freight Corridor Planning Study*, EPA's MOVES4 model was used to quantify operational GHG emissions from the SR 3 Freight Corridor in 2028 and 2050. Table 4 presents the estimated annual emissions in terms of CO_2 equivalence (CO_2eq), which reflects the emissions of gases like methane (CH_4) and nitrous oxide (NO_2) in addition to carbon dioxide (CO_2). It shows that the construction of the SR 3 Freight Corridor would lead to a reduction of GHG emissions compared to the no build alternative. Table 4 also shows the associated fuel cycle emissions: the emissions from fuel extraction, refining, and transportation to the end user. As per WSDOT guidance, fuel cycle emissions are calculated by multiplying operational emissions by 0.27.

Table 4. Annual GHG Emissions (metric tons CO_2 eq)

	2021 Existing	2028 No Build	2028 Build	2050 No Build	2050 Build	% Change 2028 to 2050 No Build	% Change 2028 to 2050 Build	% Change 2050 No Build to 2050 Build
Operational Emissions (MT CO_2 eq)	12,118	13,834	13,283	13,875	12,986	0%	-2%	-6%
Fuel Cycle Emissions (MT CO_2eq)	3,272	3,735	3,586	3,746	3,506	0%	-2%	-6%
Source: EPA MOVES4, WSDOT Guidance – Project-Level Greenhouse Gas Evaluations under NEPA and SEPA								

The SR 3 Freight Corridor project would not lead to an increase in regional emissions of GHGs. Compared to the No-Build scenario, emissions of GHGs are expected to decrease as the use of new corridor would lower VMT and reduce congestion on existing local roads.

Greenhouse Gas Emissions - Maintenance

The maintenance of the proposed Project would result in additional GHG emissions. To provide an estimate of these, the FHWA Infrastructure Carbon Estimator v.2.2 (ICE) tool was used. The results are shown in Table 5. These emissions reflect the fuel and materials used in the maintenance and rehabilitation of the SR 3 bypass.

Table 5. GHG Emissions from Maintenance (metric tons CO_2 eq)

Annual Maintenance & Operations	
CO_2eq (MT)	105
Source: FHWA ICE	

Monetary Damages from Greenhouse Gas Emissions

The social cost of CO2eq (SC-GHG) is a measure used by the EPA and other federal agencies to estimate the monetary value of climate change damages and includes changes in agricultural

productivity, human health, property damages from increased flood risk and changes in energy system costs.

The Council on Environmental Quality's (CEQ) 2023 interim guidance on analyzing GHGs recommends that GHG emissions be evaluated using the SC-GHG metric to best assess a project's costs or benefits compared to the No Build alternative. Table 6 shows a comparison of the Build and No Build scenarios in terms of the SC-GHG for the years studied. The calculations of the SC-GHG associated with the project use the dollar values presented in the 2021 Technical Support Document published by Interagency Working Group (IWG) on Social Cost of Greenhouse Gases.[1]

Table. 6 Social Cost of Carbon (Present Value) – Annual CO2eq Emissions

	2028 No Build	2028 Build	2050 No Build	2050 Build
Operational Emissions (2020 dollars)	$2,144,338	$2,058,857	$1,623,388	$1,519,394
Fuel Cycle Emissions (2020 dollars)	$578,971	$555,891	$438,315	$410,236
Construction (2028)/ Maintenance (2020 dollars)	$15,345	$798,405	$11,583	$23,868
Total (2020 dollars)	$2,738,654	$3,413,154	$2,073,286	$1,953,499
Source: EPA MOVES4, FHWA ICE, IWG Technical Support Document				

As shown in Table 6, the project will not increase damages in terms of the SC-GHG because the project will not increase annual GHG emissions.

Environmental Justice

As emphasized in the U.S. Department of Energy 2023 CEQ Interim Guidance, an important rationale for quantifying GHG emissions and estimating the SC-GHG is to enable agencies to better address issues of environmental justice. The costs of GHG emissions, including negative effects on human health, environmental degradation, and damages due to a higher frequency of extreme weather events, have not been borne equally. GHG emissions disproportionately effect communities of color, low-income communities, and Tribal Nations and Indigenous communities. It is therefore important to assess how much the GHG emissions caused by the project will contribute to these inequalities because of climate change.

The project is not expected to increase GHG emissions relative to the No Build scenario, and as shown in Table 6, the long-term costs associated with GHG emissions will not increase with the

[1] The Technical Support Document presents four estimates of SC-GHG based using different discount rates. The calculations here use the dollar values for the 95th percentile of estimates using a 3% discount rate which is intended to account for higher-than-expected economic impacts from climate change (with many researchers recommending lower rates.) The social cost of carbon was calculated to be $155 per metric ton in 2028 and $117 per metric ton in 2050 (both valued in 2020 dollars).

Build Alternative. It is therefore unlikely that the project itself will exacerbate inequalities in the health and environmental impacts of climate change.

Consideration of Future Conditions

WSDOT acknowledges that effects of climate change may alter the function, sizing, and operations of our facilities. Therefore, in addition to mitigating GHG emissions, WSDOT must also ensure that its transportation facilities can adapt to the changing climate. To ensure that our facilities can function as intended for their planned lifespan, they should be designed to perform under the variable conditions expected as a result of climate change. For example, drainage culverts may need to be resized to accommodate more intense rainfall events or increased flows due to more rapid glacial thawing.

The Pacific NW climate projections are available from the Climate Impacts Group at the University of Washington (http://cses.washington.edu/cig/fpt/ccscenarios.shtml) Washington State is likely to experience over the next 50 years:

- Increased temperature (extreme heat events, changes in air quality, glacial melting) changes in volume and timing of precipitation (reduced snowpack, increased erosion, flooding)
- Ecological effects of a changing climate (spread of disease, altered plant and animal habitats, negative impacts on human health and well-being)
- Sea-level rise, coastal erosion, saltwater intrusion

The project team considered the information on climate change with regard to preliminary design as well as the potential for changes in the surrounding natural environment.

As part of its standard design, this project has incorporated features that will provide greater resilience and function with the potential effects brought on by climate change.

References

Interagency Working Group on Social Cost of Green Gases. February 2021. Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide. https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf

Parametrix. July 2020. SR 3 Freight Corridor Planning Study.

U.S. Department of Energy – Office of NEPA Policy and Compliance. January 9, 2023. CEQ Interim Guidance on Greenhouse Gas Emissions and Climate Change. https://www.energy.gov/nepa/articles/ceq-interim-guidance-greenhouse-gas-emissions-and-climate-change-january-9-2023

U.S. Department of Transportation – Federal Highway Administration. January 18, 2023. Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/

Washington State Department of Transportation. February 2018. WSDOT Guidance – Project-Level Greenhouse Gas Evaluations under NEPA and SEPA. https://wsdot.wa.gov/sites/default/files/2019/02/08/ENV-ANE-GHGGuidance.pdf

Washington State Department of Transportation. April 2020. Guidance on Addressing Air Quality, Greenhouse Gas Emissions, and Energy for WSDOT Projects .https://wsdot.wa.gov/sites/default/files/2020/04/27/ENV-ANE-AQGuidance.pdf

Washington State Department of Transportation. June 1, 2020. Chapter 425, Environmental Manual 31-11. https://www.wsdot.wa.gov/publications/manuals/fulltext/M31-11/425.pdf