4. AIR QUALITY AND CLIMATE CHANGE

This section describes the regulatory setting, baseline conditions and potential direct and indirect impacts on air quality and greenhouse gases associated with the proposed project, and the measures to mitigate these potential impacts. Air quality can be impacted by the concentration of pollutants in the atmosphere. Within a geographic area, air quality is determined by examining:

- The type and amount of pollutants that are being emitted into the atmosphere
- The size of the geographic area and its topography
- Prevailing weather and climate conditions

Greenhouse gases (GHG) are air pollutants that trap heat within the earth's atmosphere, and that can contribute to climate change. Potential cumulative impacts of GHG on climate change are discussed in Section 4.8, Cumulative Impacts on Climate Change. Chapter 9, Environmental Health, discusses the potential health impacts of the air emissions.

The levels of pollutants and pollutant concentrations in the atmosphere are typically expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$) determined over various periods of time. The USEPA designates areas within the U.S. as attainment, nonattainment, maintenance, or unclassifiable, depending on the concentration of air pollution relative to ambient air quality standards. The air quality in the area of the proposed project is in attainment with the ambient air quality standards. Table 4.0 provides the designation definitions.

Table 4.0: Air Quality Area Designations

Designation	Definition
Attainment areas	Any area that meets the national primary or secondary ambient air quality standard for the pollutant (USEPA 2016a).
Nonattainment	Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant (USEPA 2016a).
Maintenance	An area that was previously nonattainment, but has met the national primary or secondary ambient air quality standards for the pollutant and has been designated as attainment (40 CFR 93.152).
Unclassifiable	Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant (USEPA 2016a).

4.1. LAWS, REGULATIONS, AND GUIDANCE FOR AIR QUALITY AND CLIMATE CHANGE

Table 4-1 provides a summary of the laws, regulations, and guidance applicable to air quality and GHG.

Table 4-1: Laws, Regulations, and Guidance for Air Quality and Climate Change

Regulation, Policy, or Guideline	Description
Federal	
Clean Air Act (CAA) of 1963 (42 USC §7401) as amended	The CAA establishes limits on how much air pollution can exist in an area at any given time, based on local climatological factors. The CAA also establishes limits on the level of air pollutants that can be emitted from both stationary (e.g., manufacturing facility) and non-stationary (e.g., motor vehicle) emission sources. For stationary sources, states and territories may implement more stringent standards than those set by the USEPA. For mobile sources, states or territories are required to adopt standards set by either USEPA or California (USEPA 2013).
National Ambient Air Quality Standards (NAAQS)	The USEPA has established NAAQS for six common pollutants, known as criteria pollutants. These include carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) including particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and sulfur dioxide (SO_2) (USEPA 2016b). Primary standards provide public health protection, including protecting the health of "sensitive" populations. Secondary standards provide public welfare protection. Areas of the country where ambient concentrations are greater than the NAAQS are identified as "nonattainment".
Regional Haze Rule/Protection of Visibility (40 CFR Part 51.3)	Requires states to develop programs to assure reasonable progress toward meeting the national goal of preventing any future, and remedying any existing, impairment of visibility in mandatory Class I federal areas where impairment results from manmade air pollution. Establishes necessary additional procedures for new source permit applications, states, and Federal Land Managers to use in conducting the visibility impact analysis required for new sources.
National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries (40 CFR Part 63, Subparts CC and UUU)	Establishes specific limits and control technology requirements to limit air toxic emissions from refinery process units and equipment.
Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act (NEPA) Reviews (08/01/2016)	The Council on Environmental Quality issues this guidance to assist federal agencies in their consideration of the impacts of GHG emissions and climate change when evaluating proposed federal actions in accordance with the NEPA.
Final Mandatory Reporting of Greenhouse Gases Rule (40 CFR Parts 86, 87, 89, et al. Final Rule October 30, 2009)	Establishes mandatory GHG reporting requirements for owners and operators of certain facilities that directly emit GHG as well as for certain suppliers.
State	
Washington State General Regulations for Air Pollution Sources (WAC 173-400)	Provides for the systematic control of air pollution from air contaminant sources and for the proper development of the state's natural resources. Establishes technically feasible and reasonably attainable standards and rules generally applicable to the control and/or prevention of the emission of air contaminants.
Washington Ambient Air Quality Standards (WAAQS) (WAC 173-476)	Establishes maximum acceptable levels in the ambient air for PM, lead (Pb), SO_2, nitrogen oxides (NO_X), ozone, and CO.
Washington State Operating Permit Regulation (WAC 173-401)	Establishes the elements of a comprehensive state of Washington air operating permit program consistent with the requirements of Title V of the Federal Clean Air Act.

Regulation, Policy, or Guideline	Description
Special Protection Requirements for Federal Class I Areas (WAC 173-400-117)	Ensures emissions from a proposed new major stationary source or the net emissions from a proposed major modification would not have an adverse impact on visibility in any federal Class I area.
Washington State Controls for New Sources of Toxic Air Pollutants (WAC 173-460)	Establishes systematic control of new or modified sources that emit toxic air pollutants in order to protect human health and safety. Requires best available control technologies for toxics (tBACT), toxic air pollutant emission quantification, and human health and safety protection demonstration.
Washington State Reporting of Emissions of Greenhouse Gases (WAC 173-441)	Establishes mandatory GHG reporting requirements for owners and operators of certain facilities that directly emit GHG as well as for certain suppliers of liquid motor vehicle fuel, special fuel, or aircraft fuel. For suppliers, the GHGs reported are the quantity that would be emitted from the complete combustion or oxidation of the products supplied.
Washington State Limiting Greenhouse Gas Emissions (RCW 70.235)	Establishes a regional multisector market-based system to limit and reduce emissions of GHG to 1990 levels by 2020, to twenty-five percent below 1990 levels by 2035, and to fifty percent below 1990 levels by 2050. Establishes the intent to minimize the potential to export pollution, jobs, and economic opportunities and to reduce emissions at the lowest cost to the state of Washington's economy, consumers, and businesses.
Washington State Clean Air Rule (WAC 173-442)	Establishes emission standards to cap and reduce GHG emissions from significant in-state stationary sources, petroleum product producers, importers, and distributors and natural gas distributors operating within the state of Washington.

Local air quality protection and permitting in the state of Washington is primarily the responsibility of the Washington State Department of Ecology (Ecology) and the local air districts. Ecology enforces the federal National Ambient Air Quality Standards (NAAQS) as set forth in the Washington Ambient Air Quality Standards (WAAQS). The Northwest Clean Air Agency (NWCAA) encompasses Whatcom, Skagit, and Island counties and NWCAA local regulations follow the federal and state requirements. For each pollutant, the most stringent standard in the state of Washington must be adhered to (throughout this section, the term *ambient air quality standards* [AAQS] is used to refer to the most stringent standard, inclusive of NAAQS and WAAQS). Table 4-2 summarizes the AAQS in Washington that are applicable to the proposed project.

The state of Washington also has a rule requiring controls for new sources of toxic air pollutants (WAC 173-460). This rule establishes systematic control of new or modified sources that emit toxic air pollutants in order to protect human health and safety. This rule requires tBACT[1] for toxics, toxic air pollutant emission quantification, and human health and safety protection demonstration. Typically, this compliance is met by modeling toxic emissions below an applicable acceptable source impact level (ASIL). The applicable ASILs are listed in Table 4-3.

[1] Best Achievable Control Technology (BACT) for Toxic Air Pollutants

Table 4-2: Ambient Air Quality Standards in Washington

Pollutant	Averaging Time	AAQS	Details
Ozone	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
$PM_{2.5}$	Annual	12.0 µg/m^3	Annual mean, averaged over 3 years
	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
PM_{10}	24-hour	150 µg/m^3	Not to be exceeded more than once per year averaged over 3 years
CO	8-hour	9 ppm (10 mg/m^3)	Not to be above this level more than once in a calendar year
	1-hour	35 ppm (40 mg/m^3)	
NO_2	Annual	53 ppb (100 µg/m^3)	Annual mean
	1-hour	100 ppb (188 µg/m^3)	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
SO_2	Annual	0.02 ppm (53 µg/m^3)	Not to be exceeded in a calendar year
	24-hour	0.14 ppm (365 µg/m^3)	Not to be exceeded more than once per year
	3-hour	0.50 ppm (1,300 µg/m^3)	
	1-hour	75 ppb (196 µg/m^3)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Lead	Rolling 3-Month Average	0.15 µg/m^3	Not to be exceeded

Source: WAC 173-476-900
µg/m^3 = micrograms per cubic meter; CO = carbon monoxide;, mg/m^3 = milligrams per cubic meter; NO_2 = nitrogen dioxide; PM = particulate matter () including particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$); ppb = parts per billion; ppm = parts per million; SO_2 = sulfur dioxide

Table 4-3: Toxic Pollutant Acceptable Source Impact Levels in Washington

Pollutant	Averaging Period	ASIL (µg/m3)
NO_2	1-hour	470
SO_2	1-hour	660
Ammonia	24-hour	70.8
M-xylene	24-hour	221
Manganese	24-hour	0.04
Sulfuric Acid	24-hour	1
Vanadium	24-hour	0.2
Arsenic	Annual	0.0003
Cadmium	Annual	0.000238
Chromium (hexavalent)	Annual	0.0000067
Ethylbenzene	Annual	0.4
Formaldehyde	Annual	0.167
Naphthalene	Annual	0.0294
7,12-Dimethylbenz(a)anthracene	Annual	0.0000141

Source: WAC 173-460-150
ASIL = acceptable source impact level; µg/m^3 = micrograms per cubic meter; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide

For proposed new or modified major stationary sources, like the proposed project, Washington implements the federal permitting programs for Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NANSR) (WAC 173-401 and 40 CFR 52.21), as referenced above. The NWCAA implements minor source construction and major source operating permit programs. The type of permit required in Washington is primarily based on the following considerations:

- The location of the proposed stationary source (attainment/maintenance versus nonattainment area)
- The type of proposed stationary source
- The potential amount of air pollutants that could be emitted per year from the proposed source

Facility-wide potential emissions of any criteria pollutant exceeding 250 tons per year (tpy) for a new stationary source triggers PSD. For modified stationary sources, the PSD thresholds vary by pollutant. Minor source permitting thresholds also vary by pollutant. The proposed project contains both new and modified stationary sources like the new boiler, new tanks, and modified NHT that must demonstrate that they can maintain compliance with the federal, state, and local air quality requirements.

4.2. Study Area and Methodology

This section describes the methodology used to assess potential impacts of the proposed project on air quality and climate change. The air quality and climate change study area considered the marine vessel transportation route, as detailed in Chapter 2, Proposed Action and Alternatives.

4.2.1. Study Area

The air quality and climate change study area evaluated in this assessment includes potentially impacted counties, federal Class I Areas, state of Washington, and the Puget Sound area that could potentially be directly or indirectly affected by emissions from the proposed project. The overall study area is a combination of areas that are described individually below. These extents were determined by both the limits of the air model selected and the requirement to assess impacts out to 100 km (62 miles) as stated in the Special Protection Requirements for Federal Class I Areas (WAC 173-400-117).

Specifically, four air quality and climate change study areas were assessed as follows:

- For ambient air quality impact assessment areas (AAQS and ASIL), a 50 km (31 miles) study area was assessed that encompasses the full air dispersion modeling domain. This region covered lands in the counties of Island, Jefferson, San Juan, Skagit, Snohomish, and Whatcom, as well as tribal lands. Model results have been compared to air quality criteria for this area to assess whether the proposed project would impact the current attainment status in this area for air pollutants.
- A smaller modeled domain within the 50 km (31 miles) study area, referred to as an “area of influence”, close to the proposed project area was also evaluated (see Figure 4-1). This

smaller area is where the model predicts the highest concentrations of chemicals from the proposed project's operations.

- For federal Class I areas, an extended study area of 100 km (62 miles) radius was assessed, encompassing the counties of Clallam, Island, Jefferson, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom. PSD reviews are required to evaluate potential impacts on Class I areas up to 100 km (62 miles) from the air emission source. Subpart D, Sections 81.401 through 81.437, lists those mandatory federal Class I areas, established under the Clean Air Act Amendments of 1977, where the Administrator, in consultation with the Secretary of the Interior, has determined visibility to be an important value. The following areas where visibility is an important value are international parks (IP), national wilderness areas (Wild) exceeding 5,000 acres, national memorial parks (NMP) exceeding 5,000 acres, and national parks (NP) exceeding 6,000 acres in existence on August 7, 1977.
- For climate change impact assessment area, the study focused on state of Washington and the Puget Sound area. However, because GHG is a contributor to cumulative global climate change, the potential contribution of the proposed project's GHG emissions is further evaluated in Section 4.8, Cumulative Impacts on Climate Change.

Source: Appendix 4-A of this Draft EIS (Attachment D–NWCAA Air Dispersion Modeling Report for the CPUP)

Figure 4-1: Area of Influence

4.2.2. Methodology

To evaluate potential impacts on air quality and climate change, baseline conditions for these resources were evaluated through analysis of the proposed project plans and procedures, public records, and scientific studies completed at the refinery (Tesoro 2016).

Potential impacts on air quality and climate change that were evaluated as part of this analysis were determined through an interagency and public scoping process and by considering the proposed project's potential to impact these resources. Potential impacts on air quality and climate change that could occur during both construction (short term) and operations (long term) of the proposed project were considered in the analysis. A series of scoping meetings were conducted during the scoping period for the proposed project, with the public, tribes, and government agencies providing verbal and written comments. The primary issues related to air quality and climate change that are addressed in this section include:

- Air emissions from construction equipment and from dust generated during construction
- Air emissions of pollutants during operations from the new project components and new traffic (vehicles and marine vessels)
- Air emissions of GHG during operations from the proposed project components and from new vehicle and marine vessel traffic
- Air emissions in the event of a spill at the refinery wharf structure or in the marine environment

In addition to assessing whether the proposed project's emissions would directly meet AAQS and ASIL concentrations, the proposed project also must not cause a significant degradation of air quality in the area. Regulations require new sources of air emissions to assess their impact on the airshed if the new emissions exceed certain thresholds, called significant emission rates (SER). If a proposed project has emission increases for the pollutants NO_X, SO_2, CO, PM_{10}, $PM_{2.5}$, and VOCs of less than the SERs, then the project is considered to only have a *de minimis* impact and is not required to perform air quality dispersion modeling as a major source. However, the air quality modeling policy for the NWCAA requires modeling of pollutants with emission increases above the SER thresholds (50 percent of SER for PM_{10} and $PM_{2.5}$), or upon request. Therefore, criteria pollutant emission increases below the SER thresholds would not require federal air quality dispersion modeling to determine if a NAAQS exceedance would occur, but PM_{10} and $PM_{2.5}$ do require air dispersion modeling based on NWCAA requirements.

Potential impacts were evaluated by assessing the changes in air concentrations of pollutants resulting from the proposed project's emissions. A significant impact on air quality was defined as one that would result in violations of the AAQS and/or ASILs as set forth by Ecology or the Class I significant impact levels (SILs), or that would contribute sufficient concentrations to the local airshed that would result in a violation when the proposed project's emissions are added to existing concentrations. A significant impact on climate change is one that would result in GHG emissions greater than 25,000 metric tons of CO_2e and no implementation of best available control technology (BACT).

The results of the analysis are summarized using a significance assigned for each potential impact on air quality. The process for characterizing the significance of each potential impact involved analyzing the magnitude, geographic extent, and duration of the impact (see Chapter 1, Section 1.7, Methodology). Based on the results of this analysis, the significance of each potential adverse impact was then assigned to one of two categories: *less than significant* or *potentially significant*. Criteria for assessing the significance of potential adverse impacts on air quality are included in Table 1-B.1 in Appendix 1-B, Impact Criteria Tables.

In addition to the potential impacts that could occur during regular and routine construction and operation activities over the life of the proposed project, impacts may also result from an unplanned event, such as a spill or vapor release. In the case of this chapter, land-based spills at the refinery and marine spills of xylenes or reformate at the refinery wharf or along the marine vessel transportation route fall into this category. The methodology for evaluating impacts related to unplanned events follows the same methodology as for planned events—impacts are characterized as to their potential magnitude, geographic extent, and duration. However, for unplanned events, if the impact of the unplanned event is potentially significant, then the likelihood, or probability, of an event occurring is assigned using a qualitative scale of probability categories described as Negligible, Low, Medium, or High (see Chapter 1, Section 1.7, Methodology).

4.3. AFFECTED ENVIRONMENT

One of the key indicators of current ambient air quality in a state or territory is the current compliance or attainment status of each region compared to the AAQS (refer to Table 4-2). Attainment is typically evaluated by county or, in some cases, large cities. The area of influence surrounding the refinery is in compliance with AAQS. The area has never been a nonattainment or maintenance area; therefore, the air quality has always met both the federal and state standards, except for rare cases (e.g., local meteorological conditions such as an inversion) where an exceptional event may have caused a short period of exceptionally poor air quality. The area does have some special requirements related to outdoor burning and SO_2 emissions, as discussed below that are meant to prevent visibility issues at Class I areas.

Emissions of CO, precursors of ozone (in the presence of sunlight, CO, NOx, and volatile organic compounds (VOCs) react to form ozone), PM_{10}, and $PM_{2.5}$ are of particular concern in the state of Washington, as portions of the state have previously been in nonattainment with at least one of these pollutants. The main sources of particulate matter-related air pollution in Washington are motor vehicles, wood smoke, and outdoor burning (Ecology 2016a, 2016b), all of which emit PM_{10} and $PM_{2.5}$. Emissions from motor vehicles also contribute to ground level ozone (photochemical smog), especially on hot summer days. Fireplaces and woodstoves are sources of PM_{10} and $PM_{2.5}$ during the winter. Outdoor burning is illegal within an Urban Growth Area (UGA), as designated under Washington's Growth Management Act. A number of UGAs are designated within the area of influence, such as Anacortes, Bayview Ridge, Bellingham, and Burlington (Ecology 2012). The UGA restrictions are meant to prevent visibility and air quality issues.

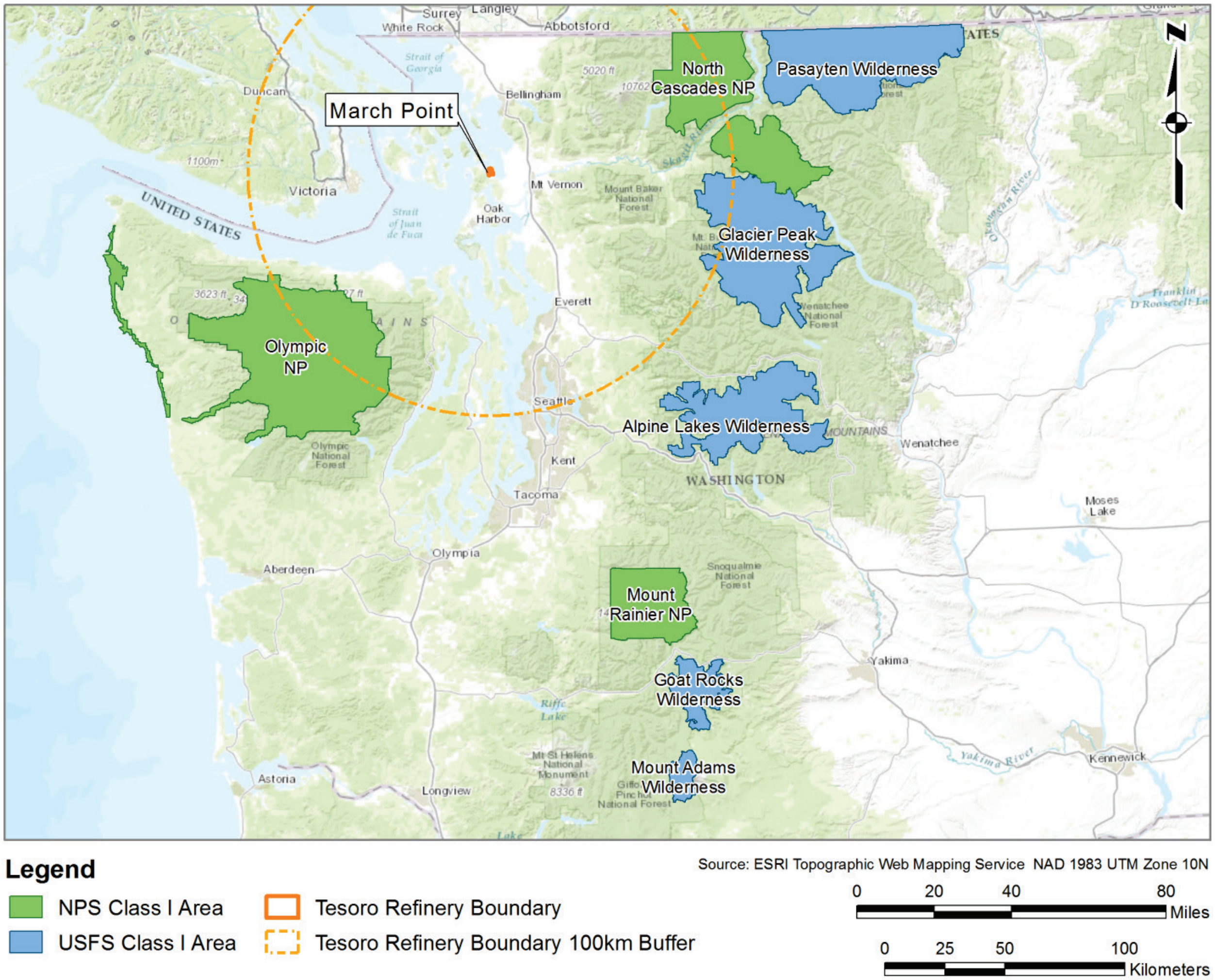
In addition to the outdoor burning ban during the winter, the other special requirement in the area of influence is the SO_2 cap that has been imposed by NWCAA on the March Point industrial facilities. Ecology tracks new or modified sources of SO_2 emissions in the area to ensure that the contribution of any new SO_2 sources in the area would not result in a violation of AAQS in the area.

Current ambient background concentrations were obtained from the Bartholomew Road station noted on Figure 4-1 (AQS[2] Site ID 53-057-0011) for $PM_{2.5}$. The CO, NO_2, and SO_2 background concentrations were obtained from the 12 km (7.5 miles) grid Community Multi-scale Air Quality (CMAQ) modeling analyses conducted in cooperation with Washington State University (NWCAA 2007).

The larger study area looks at compliance with the nearby federal Class I areas. Washington's Class I areas are administered by the National Park Service (NPS) and the U.S. Forest Service (USFS). Class I areas are also protected through visibility protection programs, including USEPA's 1999 Regional Haze Rule (see Table 4-1). Compliance is evaluated by comparing the proposed project's net emission impacts against the Class I Significant Impact Levels (SILs). A Class I analysis was required because three (Glacier Peak Wilderness, North Cascades National Park, and Olympic National Park) of the following eight Class I areas in the state of Washington are within 100 km (62 miles) of the proposed project (NPS 2011; see Figure 4-2):

- Alpine Lakes Wilderness
- Glacier Peak Wilderness
- Goat Rocks Wilderness
- Mount Adams Wilderness
- Mount Rainier National Park
- North Cascades National Park
- Olympic National Park
- Pasayten Wilderness

[2] USEPA Air Quality System (AQS) Site Identification



Source: NPS 2011

Figure 4-2: State of Washington Class I Areas in Relation to the Proposed Project

While PSD and visibility programs are critical to air quality in attainment/unclassifiable and Class I areas, respectively, conformity requirements are a key concern in nonattainment and maintenance areas. Conformity requirements are established to ensure that actions taken by government agencies do not interfere with local plans to maintain state and national standards for air quality. General conformity does not apply to the proposed project because no county in the study area is designated as nonattainment or maintenance (USEPA 2016c).

4.3.1. Historical Climate

The *Third National Climate Assessment* published in 2014 concludes that the Northwest U.S. (Washington, Oregon, and Idaho) temperatures increased from 1895 to 2011 with a regionally averaged warming of 1.3 degrees Fahrenheit (°F) (Mote et al. 2014). Average annual precipitation has generally increased, but trends are small compared to natural variability (Mote et al. 2014).

The mountains of the North Cascade Range have seen area-average snowpack on April 1 decrease about 20 percent since 1950 (Mote et al. 2014). This results in more snowmelt during the year and can leave areas vulnerable to late summer droughts. As the snow is melting earlier in the year, this leaves the land and forests warmer and drier. Since 1970, the number and extent of wildfires observed in the Northwestern U.S. has increased (Mote et al. 2014).

4.3.2. Existing Climate and Meteorology

General meteorological conditions including temperature, precipitation, wind direction, and wind speed over a 30-year period (unless otherwise defined) are presented in Table 4-4 for two of the most populated regions in Washington (Seattle and Spokane) and three rural areas (Yakima, Walla Walla, and Quillayute). The data were extracted from historic climate information published by the National Climatic Data Center (NCDC) Comparative Climatic Data for the U.S. from 1981 through 2010.

Table 4-4: Annual Average Temperature, Humidity, Precipitation, and Wind Speed Data for Seattle, Spokane, Yakima, Walla Walla, and Quillayute

Parameter	Seattle	Spokane	Yakima	Walla Walla	Quillayute
Temperature (°F)	52.6	48.2	49.7	53.6	49.3
Relative Humidity: Morning/Afternoon (%)	83/63[a]	75/52[a]	73/45[a]	71/50[a]	90/74[b]
Precipitation: Rain (in)	37.49	16.56	8.25	20.85	99.54
Precipitation: Snow/Sleet (in)	6.80	44.90	21.60	11.70	8.90
Wind Speed (mph)	7.9[a]	8.8[a]	6.3[a]	7.9[c]	5.5[a]
Max (Gust) Wind Speed (mph)	69[d]	77[e]	77[f]	69[c]	69[g]
Wind Direction	SW	ENE	SW	ESE	ENE

Source: NOAA 2016a

°F = degrees Fahrenheit, % = percent, ENE = east-northeast, ESE = east-southeast, in = inches, mph = miles per hour, SW = southwest

[a] Date range is from January 1984 to December 2015
[b] Date range is from August 1966 to December 2015
[c] Date range is from November 1998 to December 2015
[d] Date range is from October 1972 to December 2015
[e] Date range is from April 1965 to December 2015
[f] Date range is from December 1969 to December 2015
[g] Date range is from February 1976 to December 2015

Severe weather data recorded over the last 20 years (1996 to 2015) within the state of Washington include flooding, hail, lightning, thunderstorm (marine/wind/heavy rain), tornado/funnel cloud, and high wind (40-plus knots). Severe weather data for the state of Washington is listed in Table 4-5. High wind (greater than 40 knots) is the most common severe weather phenomenon within the state with 1,054 occurrences. This data is a culmination of records across the entire state of Washington, which may not represent the typical severe weather that occurs within the area of influence. Therefore, this analysis is considered conservative.

Table 4-5: Recorded Severe Weather Occurrences for Washington (1996-2015)

State	Flooding[a]	Hail	Thunderstorm[b]	Tornado/Funnel Cloud	High Wind (40+ knots)
Washington	531	296	670	130	1,054

Source: NOAA 2016b

[a] Includes National Climatic Data Center Event Type: Coastal Flood, Flash Flood, and Flood
[b] Includes NCDC Event Type: Marine Thunderstorm Wind, Thunderstorm Wind, Lightning, and Heavy Rain

4.4. POTENTIAL IMPACTS ON AIR QUALITY AND GHG

This section evaluates the potential direct and indirect impacts of air emissions during construction and operations of the proposed project and from air emissions resulting from a chemical spill event. The proposed project would generate air emissions from construction machinery, delivery of equipment and supplies, and transportation during the construction phase, and from transportation of materials and operations of the facility during the operations phase. These potential impacts are caused by the emissions from fuel combusted during the construction phase; fuel combusted in the new boiler and new Marine Vapor Emissions Control system; fugitive emissions from three new storage tanks for mixed xylenes and medium reformate; and new component equipment within the new ARU, new Isom Unit, NHT, and storage and product load-out areas. The proposed project would indirectly reduce sulfur and benzene emissions from motor vehicles as the Tier 3 gasoline would burn cleaner. The project would result in a simultaneous decrease in GHG emissions by removing a portion of fuel production that is typical within the refinery and converting it into xylene production (a chemical feedstock) that would be exported to global markets. Therefore, a portion of Tesoro's fuel produced at the refinery would be removed from the U.S. fuels market.

Impacts are described separately below for construction, operations, and unplanned events (i.e., spills). Each section discusses potential air quality and GHG impacts. Impacts are summarized in Section 4.4.7.

4.4.1. Impacts on Air Quality and GHG from Construction

The use of construction equipment would result in temporary dust, vehicle exhaust, and other construction-related emissions related to excavation, grading, and heavy equipment usage. Table 4-6 that summarizes the estimated emissions from the construction activities.

Table 4-6: Estimated Construction Emissions

Construction Equipment or Activity	NO_x (tons)	CO (tons)	PM_{10} (tons)	SO_2 (tons)	$PM_{2.5}$ (tons)	CO_{2e} Total (metric tons)
Large engines (diesel)	2.1	36.9	12.0	0.06	0.08	14,523
Small engines (gasoline)	2.9	1.7	0.2	0.00	0.00	519
Diesel trucks	7.6	1.6	0.5	0.00	0.00	258
Propane forklifts	0.1	0.0	0.0	0.01	0.00	46
Construction employee vehicles	11.8	7.2	0.7	0.01	0.29	1,066
Construction materials ships	8.4	1.8	0.6	0.00	0.00	358
Construction materials trucks	2.4	0.5	0.2	0.00	0.00	81
Excavation haul trucks	3.2	0.7	0.2	0.00	0.00	109
Net Emission Totals:	**38.5**	**50.4**	**14.4**	**0.08**	**0.37**	**16,960**

During construction, BMPs and mitigation measures would be implemented to help avoid or minimize potential air quality emissions. During the proposed project's construction phase, the following measures would be implemented to reduce or control emissions:

- Install mufflers on construction equipment in proper operating order.
- Wet exposed soils to minimize dust during dry weather.
- Cover and/or wet surfaces as necessary when transferring excavated materials offsite.
- Cover stockpiled materials.
- Cover loads on trucks, as necessary.
- Use existing electrical infrastructure to minimize gas or diesel driven generators.

Due to the limited amount of land disturbance required for the proposed project, fewer large excavation and haul trucks and large diesel engines will be required on-site. Construction emissions duration would be short-term (about 19 months), the frequency is intermittent, and there would be no changes in air quality attainment status within the geographic extent of the proposed project (area of influence). The magnitude of emissions is not anticipated to result in air quality exceedances above the AAQS or ASILs. Consequently, construction criteria pollutant emission quantities and impacts are anticipated to be ***less than significant.***

The majority of the proposed project area is within previously developed areas of the refinery with a portion of the proposed project (New Tanks Area) consisting primarily of upland vegetated areas. No forested lands would be cleared so there would not be any reduction of CO_2 intake by forested plants. Based on current use of the proposed project area, and because construction emissions are temporary, of short duration, and less than 25,000 metric tons per year, the GHG emissions from construction are anticipated to be ***less than significant.***

4.4.2. Impacts on Air Quality and GHG from Operations and Maintenance

Operations and maintenance emissions would be generated by new and modified sources as part of the proposed project (see Table 4-7). New air emission sources include a boiler, MVEC System, three new storage tanks for mixed xylenes and medium reformate, and new component equipment that could release VOCs (connectors, pumps, and valves) within the new ARU, Isom Unit, modified NHT, and storage and product load-out areas. The new boiler (combusting natural gas) and MVEC System (combusting natural gas and waste streams) would produce emissions consisting of criteria and toxic air pollutants (TAPs). Emissions of VOC and TAPs would occur from the new storage tanks and component equipment in VOC service. The proposed project would reduce potential VOC and TAP emissions from the existing marine vessel loading system by installing the new high efficiency/low emission MVEC System. The MVEC is being installed to ensure total VOC emissions remain below the significant emission rate threshold (under PSD for VOCs).

4.4.2.1. *Impacts on Air Quality*

The potential impacts associated with air emissions were determined based on whether they exceed air quality standards, contribute to an exceedance of air quality standards, exceed certain total emission regulatory thresholds (see Table 4-2), or whether emissions would result in a change in attainment status. The air quality criteria used for evaluation are shown in Tables 4-2 and 4-3. Criteria pollutants with emission increases above the SERs require air quality dispersion modeling to determine if a NAAQS exceedance would occur and require major source or minor source permitting. In major source permitting, a proposed project's reductions in criteria pollutant emissions are subtracted from the proposed project's emissions increases in a process called "netting." The proposed project has emission reductions from the existing marine vessel loading system by installing the MVEC System. Table 4-7 lists emission increases and decreases for each emission source and the proposed project emissions increases against the SERs.

Table 4-7: Proposed Project Emissions

Emissions Unit	NO_X	SO_2	CO	PM_{10}	$PM_{2.5}$	VOC	GHG (CO_2e)
	(tons per year)						(metric tons per year)
New Boiler (F-6870)	28.0	6.4	18.9	19.2	19.2	14.1	299,524
Fuel Gas System	-	-	-	-	-	-	5,449
New Tanks Area							
New Reformate Feedstock Tank 285	-	-	-	-	-	14.6	-
New Mixed Xylenes Product Tank 286	-	-	-	-	-	13.8	-
New Mixed Xylenes Product Tank 287	-	-	-	-	-	7.2	-
MVEC							
New MVEC System	3.1	32.6	14.0	1.3	1.3	15.4[A]	29,439
New Fugitive Equipment MVEC System	-	-	-	-	-	1.1	
ARU							
New Fugitive Equipment at ARU	-	-	-	-	-	1.4	
New Fugitive Equipment at ARU Tankage	-	-	-	-	-	0.2	
Isom Unit							
New Fugitive Equipment at Isom Unit	-	-	-	-	-	9.2	
NHT							
NHT Feed Heater (F-6600)	-	-	-	-	-	0.2	-
NHT Stabilizer Column Reboiler (F-6601)	-	-	-	-	-	0.2	-
New Fugitive Equipment at CR/NHT	-	-	-	-	-	5.5	
CR Feed Heater (F-6650)	-	-	-	-	-	0.1	-
CR Inter-reactor Heater 1 (F-6651)	-	-	-	-	-	-	-
CR Inter-reactor Heater 2 (F-6652)	-	0.2	-	-	-	0.3	-
CR Inter-reactor Heater 3 (F-6653)	-	-	-	-	-	0.0	-
CR Column Heater (F-6654)	-	-	-	-	-	0.1	-
CR Regeneration Heater (F-6655)	-	-	-	-	-	-	-
RSC Reboiler (F-6602)	5.7	0.1	0.1	1.2	1.2	0.2	18,245

Emissions Unit	NO_X	SO_2	CO	PM_{10}	$PM_{2.5}$	VOC	GHG (CO_2e)
Existing Storage Tanks	-	-	-	-	-	18.2	-
Proposed Project Emissions Increase	36.7	39.3	33.0	21.6	21.6	101.9	352,659
PSD Significant Emission Rate	40	40	100	15	10	40	75,000
Is Proposed Project Emissions Increase > SER?	No	No	No	Yes	Yes	Yes	Yes
Netting Analysis: Sum of Changes	-	-	-	NA	NA	-429.1	NA
Net Emissions Increase	-	-	-	NA	NA	-327.3	NA
Is Net Emissions Increase > SER?	-	-	-	Yes	Yes	No	Yes
Is Net Emissions Increase > 0.25*SER?	Yes	Yes	Yes	Yes	Yes	No	Yes

– = no emissions; * = times; ARU = Aromatics Recovery Unit; CO = carbon monoxide; CO_2e = carbon dioxide equivalents; CR = catalytic reforming; GHG = greenhouse gas; MVEC = Marine Vapor Emissions Control; NA = not applicable; NHT = Naphtha Hydrotreater Unit: NO_X = nitrogen oxides; PM = particulate matter; RSC = reformate splitter column; SER = significant emission rates; SO_2 = sulfur dioxide; VOC = volatile organic compounds

As shown in Table 4-7, proposed project emissions of PM_{10} and $PM_{2.5}$ are above the SER thresholds and require a PSD permit air dispersion modeling analysis. Proposed project emissions of NO_x, SO_2, and CO are not above the SER thresholds and therefore do not require air dispersion analysis.

The PSD permit air dispersion modeling requires all project-related emission increases to be modeled against the significant impact levels (SILs). If a pollutant's modeled concentration is below the SIL, then the project-related emission increases would not cause or contribute to a violation of the NAAQS. As shown in Table 4-8, the 24-hour and annual PM_{10} and $PM_{2.5}$ averaging periods are below the SILs and would not cause or contribute to a NAAQS violation. Since the proposed project demonstrates compliance below the SILs, no additional visibility degradation is expected. Therefore the proposed project has complied with Regional Haze requirements.

Table 4-8: PSD Permit Modeling Results

Pollutant	Averaging Period	Predicted Concentration ($\mu g/m^3$)	SIL ($\mu g/m^3$)	Less than SIL?
PM_{10}	24-hour	2.73	5	Yes
	Annual	0.13	1	Yes
$PM_{2.5}$	24-hour	1.06	1.2	Yes
	Annual	0.13	0.3	Yes

$\mu g/m^3$ = micrograms per cubic meter; PM = particulate matter; SIL = significant impact levels

The NWCAA requires proposed projects to use air dispersion modeling to demonstrate that project-related emission increases plus the ambient background concentrations would be less than the AAQS. If a pollutant's modeled concentration and ambient background concentration is below the AAQS, then the project-related emission increases would not cause or contribute to a violation of the AAQS. Proposed project emissions of CO, NO_X, and SO_2 are below the PSD SERs, but are required to be assessed by NWCAA for compliance against the SILs. As shown in Table 4-9, the CO, NO_2, and SO_2 averaging periods are below the AAQS and would not cause or contribute to a violation of the AAQS.

Table 4-9: Northwest Clean Air Agency Modeling Results

Pollutant	Averaging Period	Background Concentration (μg/m^3)	Proposed Project Modeled Concentration (μg/m^3)	Total Concentration (μg/m^3)	AAQS (μg/m^3)	Less than AAQS?
CO	1-hour	1,113	100.7	1,213.7	40,000	Yes
	8-hour	806	20	826	10,000	Yes
NO_2	1-hour	58.2	47.04	105.2	188	Yes
	Annual	16.9	0.7	17.6	100	Yes
SO_2	1-hour	58	133	190	196	Yes
	3-hour	55	190	245	1,300	Yes
	24-hour	20	54	74	260	Yes
	Annual	11.2	5.3	16.5	53	Yes

AAQS = ambient air quality standards; CO = carbon monoxide; μg/m^3 = micrograms per cubic meter; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide

In addition to criteria pollutant modeling, NWCAA requires air dispersion modeling for TAPs with a project-related emission increase greater than the respective small quantity emission rates (SQERs). Each TAP with emission increases greater than the SQER must be modeled against the ASILs. Table 4-10 demonstrates that none of the TAP modeled concentrations exceed the ASILs for project-related emission increases, therefore demonstrating compliance with the WAC (WAC 173-460). For additional details on the modeling results, see Section 5.0, Toxic Air Pollutant Modeling Results, in Appendix 4-A, *Attachment D - NWCAA Air Dispersion Modeling Report for the Clean Products Upgrade Project*, which is an attachment in the *CPUP Air Permit Application* (Tesoro 2015).

Table 4-10: Toxic Air Pollutant Modeling Results

Pollutant	Averaging Period	Maximum Concentration (μg/m^3)	ASIL (μg/m^3)	Less than ASIL?
NO_2	1-hour	447	470	Yes
SO_2	1-hour	570	660	Yes
Ammonia	24-hour	3.1	70.8	Yes
m-Xylene	24-hour	4	221	Yes
Sulfuric acid	24-hour	0.01	1	Yes
Manganese	24-hour	<0.01	0.04	Yes
Vanadium	24-hour	<0.01	0.2	Yes
Arsenic	Year	2.2E-06	3.03E-04	Yes
Cadmium	Year	1.2E-05	2.38E-04	Yes
Chromium (hexavalent)	Year	3.2E-06	6.7E-06	Yes
Ethylbenzene	Year	0.2	0.4	Yes
Formaldehyde	Year	8.4E-04	0.167	Yes
Naphthalene	Year	<0.01	0.0294	Yes
7,12-Dimethylbenz(a)anthracene	Year	1.8E-07	1.41E-05	Yes

ASIL = acceptable source impact level; E-0*x* = times ten to the negative *n*th power, for example E-06 = times ten to the minus sixth power (10^{-6} or 0.000001); μg/m^3 = micrograms per cubic meter; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide

Operations and maintenance emissions duration would be long-term, the frequency would be intermittent to constant, there would be no changes in air quality attainment status for the geographic extent of the proposed project (area of influence), and the magnitude of emissions is not anticipated to result in air quality exceedances above the AAQS or ASILs. Consequently, operation or maintenance criteria pollutant emission quantities and impacts are anticipated to be ***less than significant*** by demonstrating that air dispersion modeling of the proposed project's criteria and toxic emissions increases would not cause an exceedance for any AAQS or ASILs within Washington or tribal lands. As an embedded control measure, BACT would be incorporated on the Boiler (F-6870) and VCU.

4.4.2.2. Impacts on GHG Emissions

The proposed project's GHG potential emission increases are greater than 25,000 metric tons; therefore, Ecology requires quantitative disclosure of GHG emissions. The primary source of GHG emissions for the proposed project would be from stationary combustion sources (mainly from the new natural-gas-fired boiler). Additional sources of GHG emissions include fugitive emissions from the process, electricity usage, and transportation. The estimated emissions are summarized in Table 4-11. Based on the predicted GHG emissions for the proposed project, GHG emissions would need to be included in annual reports to the USEPA and Ecology.

Table 4-11: Summary of Annual Estimated Greenhouse Gas Emissions

Source	Stationary Combustion	Fugitive Emissions	Electricity Use	Transportation	Total
Emissions	(metric tons CO_2e)				
Summary	352,659	435	28,087	8,315	389,496

CO_2e = carbon dioxide equivalent

The GHG emissions from stationary combustion and fugitive emissions from new equipment are included in the Table 4-11 estimates. GHG emissions from electricity usage and transportation were calculated using Ecology's GHG Calculation tool and assumptions recommended from Ecology's 2011 Guidance for Including Greenhouse Gas Emissions in SEPA Reviews. For transportation, it was assumed that there would be an additional five marine vessels traveling to and from the refinery wharf per month (60 vessels per year) for receiving feedstock and shipping mixed xylenes and other gasoline components. For shipments of mixed xylenes and feedstock components, travel distances were estimated by applying the 12-nautical mile U.S. territorial waters boundary plus the distance from Anacortes to Neah Bay.

Operations and maintenance emissions duration would be long-term, the frequency would be intermittent to constant, the geographic extent would be the study area, and the magnitude of GHG emissions is above the 25,000 metric tons CO_2e. GHG BACT is required to be implemented on the new sources and BACT methodologies are included in the GHG emissions calculations. Ecology considers implementation of BACT to reduce the proposed project's GHG emissions to be sufficient for the required air permit as GHG BACT is required to be implemented on the new sources.

The potential for the proposed project's GHG emission to be a contributor to cumulative global climate change is evaluated in Section 4.8, Cumulative Impacts on Climate Change. Also see Section 4.6 for further discussion of additional mitigation measures and GHG BACT.

4.4.3. Impacts on Air Quality from Vessel Traffic during Operations

As described in Chapter 2, Proposed Action and Alternatives, the proposed project would result in an additional five marine vessels traveling to and from the refinery wharf per month (60 vessels per year). These additional vessels would be emitting some levels of criteria pollutants and GHG emissions. By the time the proposed project begins operation, new air emission standards for Category 3 marine vessels would come into effect resulting in reduced air pollution emitted from the vessels. Older marine vessels have lacked strict emission controls and burned fuel oil with high sulfur content. This resulted in the large quantities of NO_X, SO_2, and $PM_{2.5}$ released to the atmosphere.

The proposed project estimates that 40 vessel calls would occur each year for the delivery of reformate and approximately 20 vessel shipments of xylene per year for a total increase of 60 vessel calls on an annual basis. The estimated vessel transportation and unloading criteria emissions are estimated in Table 4-12. The GHG emissions are estimated in Table 4-11. USEPA's emission standards for Category 3 marine diesel engines and diesel fuel sulfur limits (40 CFR 80, 85, 86, et al.) have been and are expected to continue to gradually reduce the CO, NO_X, SO_2, $PM_{2.5}$, and hydrocarbon emissions generated by Category 3 engines on large ocean-going vessels associated with the proposed project. The emission standards are regulated in two tiers: near-term standards for newly built engines were implemented in 2011 and long-term standards requiring an 80 percent reduction in NO_X emissions were implemented in 2016. With the proposed project vessel traffic increasing from the current vessel traffic baseline, but with the newer marine engine and fuels standards, the air pollutant emissions associated with vessel traffic to and from Tesoro are not expected to significantly impact the study area air quality. See Table 4-12.

Table 4-12: Vessel Shipments' Emissions

Vessel Operation	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
	(tons per year)					
Transportation	1.3	9.6	4.1	2.6	2.6	0.8
Unloading	0.3	2.1	0.9	0.6	0.6	0.2

CO = carbon monoxide; NO_X = nitrogen oxides; PM = particulate matter; SO_2 = sulfur dioxide; VOC = volatile organic compounds

The increased emissions of criteria pollutants and GHGs from the increased vessel traffic are expected to be ***less than significant***, as the proposed project would not cause air quality violations of the AAQS, emissions duration would be short-term, the frequency would be intermittent, and the geographic extent is within the study area and the Strait of Juan de Fuca.

4.4.4. Impacts on Air Quality and GHG from Spills

This section addresses potential impacts from spills and air emissions associated with a spill related to the proposed project.

4.4.4.1. Impacts on Air Quality from Refinery Spills during Construction, Operations and Maintenance

Emissions from small spills that could occur during normal operations and maintenance and during construction are not quantitatively assessed here. However, Chapter 9, Environmental Health, provides a qualitative discussion of health impacts and refinery spills. These spills would be expected to be in the 1 to 1,000 bbl size range and emissions could impact air quality on

Tesoro property and could exceed ASIL thresholds. The impact on the air quality study area would be of very short duration.

4.4.4.2. Impacts on Air Quality from Marine Spills from Vessels During Operations

The production and export of xylene would result in an additional five marine vessels traveling to and from the refinery wharf per month (60 vessels per year). This would include shipment of medium reformate to the refinery and shipment of product from the refinery.

Computer models were used to simulate hypothetical, uncontrolled releases of mixed xylene and reformate into the marine environment for three spill scenarios based on theoretical spill volumes consistent with volumes used for spill response planning purposes: a worst-case scenario, a maximum most probable scenario, and an average most probable scenario (see Chapter 13, Section 13.5, Marine Spills and Spill Response).

The average most probable spill scenario, whereby 50 bbl are spilled in any location, would result in the material being evaporated or dispersed within 24 hours and would not likely exceed ASIL concentrations. Therefore this would be *less than significant* impact and not expected to impact people near the spill site. In the worst-case scenario modeled, the area covered by spilled material was estimated at up to 23.5 square miles of surface water, and up to 11.5 miles of shoreline. The thickness of floating spilled material in this area was reduced to less than 0.1 µm within 2 days as the material dispersed and evaporated. The model indicated that, after 3 days, 99.5 percent of spilled material had evaporated or dissipated. No persistent residue would remain.

Initially large amounts of volatile compounds would evaporate from the surface waters into the atmosphere as a result of a worst-case xylene or reformate spill. Through evaporation, the lighter, more volatile compounds of the product would separate and become vapors that transfer VOCs from the water surface to the atmosphere.

The releases to the atmosphere could lead to increased ozone formation given the presence of NO_X under the correct atmospheric conditions (i.e., strong sunlight, light winds, and low-level temperature inversions). The area of influence is currently in attainment with ozone AAQS and is expected to remain in attainment for the future. Therefore, the short-term duration of large quantities of VOCs emitted into the atmosphere from a product spill is not expected to directly cause a long-term violation of the ozone AAQS but a short-term “exceptional event” could occur. An exceptional event is defined by USEPA as unusual or naturally occurring events that can affect air quality, but are not reasonably controllable using techniques that air agencies may implement in order to attain and maintain the AAQS. Exceptional events include wildfires, stratospheric ozone intrusions, and volcanic and seismic activities (USEPA 2016d).

The worst-case spill from reformate, reformate (backhaul), or mixed xylenes would release large quantities of VOC hazardous air pollutants (HAPs), specifically mixed xylene isomers, toluene, ethylbenzene, and isopropylbenzene. Ecology has ASIL concentration thresholds for 24-hour averaging periods for all components of the spill excluding ethylbenzene, which has an annual averaging period.

High level refined air dispersion modeling was performed for a worst-case spill scenario at the refinery wharf (spill volume of 5,045 bbl) (see Chapter 13, Section 13.5, Marine Spills and Spill Response). The modeling took the 12-hour geographical extent of a wharf-side spill and assumed that 99 percent of the spill would evaporate at a constant rate over the 24-hour period. This is conservative as the majority of a spill would evaporate from the water within the first 6 hours of the spill event. Additionally, the modeling assumed a constant evaporation rate over the entire 12-hour geographical extent. These assumptions result in over-prediction, rather than under-prediction, of potential air concentrations. Using these assumptions, the following six different scenarios representing seasonal variability of wind patterns were analyzed and modeled to determine the spill impacts:

- Neap tide during winter with a 5.1 mph wind from the south-southeast
- Spring tide during winter with a 5.1 mph wind from the south-southeast
- Neap tide during summer with a 7.5 mph wind from the south-southwest
- Spring tide during summer with a 7.5 mph wind from the south-southwest
- Neap tide during winter with a 9.2 mph wind from the southwest
- Spring tide during winter with a 9.2 mph with from the southwest

The modeling results demonstrate that for the worst-case and maximum most probable spills, all modeled VOC constituent concentrations would exceed the respective ASILs for up to 24 hours; ASILs would also be exceeded in the vicinity of a vessel if a worst–case spill occurred in the shipping channel (spill volume of 330,000 bbl). ASILs are not exceeded for the average most probable spill volume, which is the spill amount most likely to occur.

A large volume spill would be *potentially significant* and could impact people and marine life near the spill event (see Chapter 9, Environmental Health, Chapter 6, Terrestrial Plants and Animals, and Chapter 7, Marine and Nearshore Resources). The duration of the impact would be short-term due to the high evaporation rate and reactivity of the airborne chemicals that would convert to less harmful ones within hours (xylenes and reformate convert to carbon dioxide and water). The spill's geographical extent could be large due to the movement of chemicals on top of the water as these chemicals are insoluble and don't dissolve significantly into the water column. The wind would increase the evaporation rate and disperse the pollutants over a large volume of air, thereby reducing the concentrations and increasing the reactivity of the airborne chemicals into less harmful ones. The emissions generated from the maximum spill volume could produce 87,400 metric tons of GHG. This exceptional event could produce impacts similar to a forest fire.

Because a spill is an unplanned event, the significance of a spill is examined within the context of the likelihood of a spill occurring and the available resources to respond to a spill if it should happen. Based on both the historical record and a spill risk analysis study by Ecology, there is a negligible to low likelihood of a spill occurring, depending on the specific location in the study area (see Chapter 13, Marine Transportation). Safety measures are in place to prevent spills from marine vessels transiting the marine vessel transportation route and for loading/unloading petroleum products safely at the wharf (see Chapter 13, Section 13.4, Vessel Safety, and Appendix 2-A, Existing Programs and Operations).

Spill response resources (both equipment and personnel) are also available to respond immediately in the event of a spill throughout the study area as described in Chapter 13, Section 13.5.7, Spill Response. Spills in the shipping channel would be initially addressed by the vessel's oil spill response contractor under the direction of the U.S. Coast Guard (see Chapter 13, Marine Transportation). In the event a large volume spill occurred near a habitable area, spill response related to air emissions could require establishing exclusion zones, that could include short-term evacuations, and also could include shelter-in-place requirements for residence and businesses within the exclusion zones. The size of the exclusion zone where evacuations and/or shelter in place would be required would be dependent on the location and volume of the spill and the tidal and meteorological conditions at the time of the event. The potential for a vapor cloud explosion within the exclusion zone would also exist due to the flammable characteristics of both xylene and reformate.

4.4.5. Impacts on Air Quality and GHG from Spill Response

Response to marine spills of xylenes or reformate would consist of eliminating sources of ignition, taking steps to notify people and vessels in downwind areas of the potential hazards (fire and inhalation risks), short-term evacuations for the downwind general public and vessel crew, and placement of sorbent booms, where needed to protect sensitive areas including wildlife and people. These types of spills do not use any cleaning agents (such as dispersants) and cleanup would not require the use of additional chemicals. Spill response activities would last only about 2 days. During the period of response there would be some potential increase in emissions due to the vehicles and vessels involved in potential evacuations, establishment of access restrictions, and boom placement in the area of influence for the proposed project. The impacts of marine spill response on criteria pollutant emissions would be ***less than significant***.

4.4.6. Impacts on Air Quality and GHG from Fuels Conversion to Xylenes

The proposed project would convert fuel blending stock into xylene production that will take a portion of fuel produced at the refinery and convert it into petrochemical feedstock, thereby removing it from the U.S. fuels market. A portion of these fuels are typically produced in the state of Washington. This reduction in fuels production will constitute a reduction in combustion emissions that typically occur in the state of Washington. The fuels reduction will reduce NOx, CO, VOC, toxic air pollutants, and GHG emissions. Tesoro Anacortes Refinery has disclosed that approximately 5,200 barrels of fuel production per day would be converted to xylene product (Tesoro 2017). The fuels reduction could create a credit for GHG emissions as the Clean Air Rule includes fuels produced at the refineries. The GHG reduction credit could be calculated by multiplying the volume of fuels, in barrels per year, converted to xylene by the EPA GHG emission factor to determine the reduction of GHG emissions per year. This reduction based on Tesoro's anticipated fuel conversion volume would be 695,237 metric tons per year.

This potential GHG reduction credit calculation is shown in Table 4-13 Proposed Project GHG Emissions Reduction Credit.

The proposed project's facility GHG emissions would be approximately 389,000 metric tons per year from stationary combustion and fugitive emissions on-site, as well as electricity usage and transportation (see Section 4.4.2). The proposed projects' fuel reduction within the state of Washington could result in an estimated concurrent GHG emissions reduction of 695,000 metric tons per year. The net proposed project GHG emissions could be a reduction of 306,000 metric tons per year.

Skagit County recognizes that Tesoro's proposed strategy to reduce GHG emissions to comply with the Clean Air Rule has not been reviewed or approved by Ecology. After receiving input from Ecology, Tesoro's proposed compliance strategy may change. Regardless of the methodology used, Skagit County recognizes that Tesoro's emissions will ultimately be reduced as required under the Clean Air Rule.

Table 4-13: The Proposed Project's GHG Emissions Reduction Credit

Description	Amount	Units
Daily quantity of xylenes removed from fuel (as sourced only from the Tesoro Anacortes Refinery)	5,200	barrels per day
Annual quantity of xylenes removed from fuel (as sourced only from the Tesoro Anacortes Refinery)	1,898,000	barrels per year
USEPA emission factor	0.3663	CO_2e per barrel
Annual GHG emission reduction associated with fuel reduction from the Tesoro Anacortes Refinery	695,237	CO_2e metric tons per year

USEPA Emission Factor is sourced from Table MM-1 to Subpart MM of Part 98, *Default factors for petroleum products and natural gas liquids*.

4.4.7. Summary of Potential Impacts on Air Quality and GHG

The potential impacts of the proposed project discussed in this section are summarized in Table 4-14.

Table 4-14: Summary of Potential Impacts on Air Quality

Impact Topic	Impact Summary	Potential Impact Significance	
		Less than Significant	***Potentially Significant***
Construction			
Reductions in air quality	Temporary increases in emissions due to construction equipment and earth moving activities would occur intermittently during 19 months of construction activities, including 6 months of soil disturbance. With implementation of BMPs and mitigation measures, concentrations of air emissions would not result in AAQS or ASIL exceedances.	✓	
Contribution to climate change through GHG emissions	Temporary increases in GHG emissions would occur intermittently during 19 months of construction activities. The increase in GHG emissions would be minor and less than 25,000 metric tons of CO_2e annually.	✓	

Impact Topic	Impact Summary	Potential Impact Significance	
		Less than Significant	***Potentially Significant***
Operations			
Reductions in air quality from refinery operations	Operation of the new refinery components, primarily the new boiler, MVEC System, and increased vehicle traffic would result in long-term increases of air emissions. As an embedded control measure, BACT would be incorporated on the Boiler and VCU. Concentrations of air emissions would not result in AAQS or ASIL exceedances or changes in the attainment status in the area.	✓	
Contribution to climate change through GHG emissions from refinery operations	Operation of the new refinery components including stationary combustion and fugitive emissions on site, as well as electricity usage and transportation would result in long term increased GHG emissions. However, BACT would be implemented to control the local emissions from the proposed project and GHG emissions from the refinery could be reduced due to the conversion of fuel production to petrochemical feedstock production. As a result, net GHG emissions could be reduced by approximately 306,000 metric tons per year.	✓	
Reductions in air quality and GHG emissions from additional marine vessel traffic	The operation of five additional vessels per month calling at the refinery wharf during operation of the proposed project would cause a long term increase in air and GHG emissions. Emissions associated with the proposed project would be intermittent and short-term, and would not cause air quality violations of the AAQS. In addition, vessel traffic would not increase the current vessel traffic emission baseline, due to the adoption of lower emission rates from new fuel standards that would be in effect when the proposed project begins operations.	✓	
Unplanned Events			
Spill: Decrease in air quality	Air emissions would temporarily increase during a spill into the marine environment, and HAPs would evaporate into the atmosphere from the surface of the water. Spills with a volume greater than the maximum most probable spill would potentially result in air concentrations above ASILs for up to 24 hours. Increased emissions of ozone and GHGs could cause an exceptional event of greater than 87,400 metric tons of GHG. However, increases in GHG and air emissions would be temporary and short term, and marine spills would have a low likelihood of occurring.	✓ (average most probable)	✓ (maximum most probable)
Spill Response: Decrease in air quality	Concentrations of air emissions from the vehicle and vessel traffic related to a spill response ,would not result in AAQS or ASIL exceedances. Increased vehicle and vessel traffic needed to respond to a spill would result in a temporary increase in air and GHG emissions. Increased emissions from spill responses activities would be temporary, lasting up to 2 days before the spill would be contained and evaporated to below levels of concern. The increased emissions would occur within the immediate vicinity out to greater than 1 mile from the spill.	✓	

4.5. Potential Impacts of the No Action Alternative

Under the no action alternative, Tesoro would not proceed with the proposed project. Because no construction or operations would take place under the no action alternative, there would be no new impacts on air quality or GHG resources.

4.6. Additional Mitigation Measures

To protect ambient air quality in the study area, no additional mitigation measures are recommended beyond the embedded controls that are already incorporated into the proposed project design (see Chapter 2, Proposed Action and Alternatives). However, while no additional mitigation measures are recommended, Ecology's GHG Guidance document states that projects subject to PSD air permit requirements under the Clean Air Act may mitigate their GHG emissions by applying BACT for GHGs. Ecology has approved Tesoro's GHG BACT. The proposed project's new GHG emission units would have BACT installed to minimize GHG production, and, as opportunities arise, would be evaluated continually for other potential emission-reduction opportunities. GHG BACT emissions controls were selected as described in the Ecology PSD permit for the proposed project. These BACT selections included good combustion practices and the addition of the new components to the refinery leak detection and repair program. Carbon sequestration was deemed not technically feasible for this project.

Under the Washington State Clean Air Rule conditions, the refinery would need to reduce GHG emissions at a rate of 1.7 percent per year from their current baseline determined by their average emissions between 2012 and 2016. These new GHG sources would need to adhere to the requirements of that rule and proceed through the benchmarking process that will establish a baseline and assign a reduction plan. The proposed project concurrently creates GHG emissions credit by reducing the fuel produced and marketed within the state of Washington.

There are no additional recommendations for mitigation measures to prevent spills beyond the embedded controls and BMPs that are already mentioned, such as the safety measures currently in place to prevent vessel collisions/containment loss, and preparation of an oil spill contingency plan to help prevent a spill from occurring and to respond quickly and effectively in the event that a spill does occur (see Chapter 2, Section 2.4, Existing Refinery Design and Operations, and Chapter 13, Marine Transportation).

4.7. Cumulative Impacts on Air Quality

As described above, construction and operation of the proposed project could result in *less than significant* impacts on air quality and climate change. These impacts would be minimized by implementations of BMPs and embedded controls. Within the study area, there has been significant past agricultural, industrial, commercial, and residential growth that has resulted in impacts on air quality and climate change. There are no present or reasonably foreseeable future actions that would impact air quality and climate change in the area of the proposed project. Pending permits and permit applications from the NWCAA, Puget Sound Clean Air Agency, and Olympic Clean Air Agency were reviewed, and no major new stationary emissions sources were identified. Cumulative impacts as a result of the proposed project in addition to the past impacts associated with refinery development on March Point are considered negligible.

Impacts from operations within the marine vessel transportation corridor (including increased air and GHG emissions) have the potential to combine with impacts from increased marine vessel traffic from other sources that would contribute to cumulative impacts on air quality and climate change. However, the additional five vessels traveling to and from the refinery wharf each month are not considered to substantially increase existing vessel traffic air and GHG emissions. Increased emissions would also be limited by the adoption of lower emission rates from new fuel standards that would be in effect when the proposed project begins operations. It has been estimated that due to increased activity at currently existing facilities and operation of proposed facilities, vessel traffic could be increased by 60 to 120 percent by 2030 (see Chapter 13, Section 13.6, Cumulative Impacts from Marine Transportation). This increase in vessel traffic would increase air and GHG emissions. Because the proposed project's increase in current vessel traffic is 2.2 percent or less compared to current large marine vessel movements in the study area, cumulative impacts on air quality and GHG emissions due to the contribution in vessel traffic from the proposed project are not anticipated to be significant.

The air modeling analysis presented in Section 4.4.2.1 found that the proposed project would not result in any exceedances of air pollutants above the existing air quality standards within the air shed which includes the Swinomish Reservation. Historically, the area of influence surrounding the refinery has never been a nonattainment or maintenance area; therefore, the air quality has always met both the federal and state standards, except for rare cases (e.g., local meteorological conditions such as an inversion) where an exceptional event may have caused a short period of exceptionally poor air quality. There would remain a buffer below the NAAQS for PM post-project in the Class II areas (including in Anacortes), Class I scenic areas (identified in Section 4.3), and the Swinomish Reservation. Even if there is a cumulative increase in PM emissions in the area from other projects, such as the BP Cherry Point Dock (approximately 50 miles north of the proposed project), it does not appear that the PM NAAQS are likely to be exceeded. According to the PSD modeling for the proposed project, the areas that most closely approached the SILs for PM emissions are localized around the fence line of the Tesoro Anacortes Refinery on the north and northeast sections of the refinery (these are on the opposite side of the Tesoro Anacortes Refinery from the Shell Puget Sound Refinery). These areas do not extend more than several hundred feet from the refinery fence. Other activities in Skagit County and surrounding areas could contribute to overall increases in PM emissions, including agricultural activities, increases in road traffic, and construction activities.

Although all the pollutants modeled in the NWCAA review were below NAAQS, the maximum 1-hour SO_2 concentration is approximately 97 percent of the NAAQS, meaning that the ambient concentrations for SO_2 would be particularly susceptible to exceeding the 1-hour NAAQS if there is an increase in emissions from other sources (particularly sources on March Point). The modeling indicates that the area that would approach but still be in compliance with the 1-hour SO_2 NAAQS is southwest of the proposed project across Fidalgo Bay, with the highest concentration at a point near the shoreline. This concern only exists for the 1-hour SO_2 concentrations, as the 3-hour, 24-hour, and annual concentrations remain well below the

NAAQS. In Skagit County, the majority of SO_2 emissions (approximately 70 percent) originate from the industrial facilities on March Point (almost all of it from the Tesoro Anacortes Refinery, the Shell Refinery, and the Chemtrade sulfur processing plant); just under 20 percent originates from marine vessels, and the remainder originates from smaller stationary sources and mobile sources (Ecology 2011). There are no pending plans for any new major sources of SO_2 in Skagit County. If there are increased emissions from other sources, particularly on March Point, then the 1-hour NAAQS could be exceeded in the area described above. If these other sources increase their emissions because of new facilities or a significant change in operations, those sources would have to undergo their own PSD review and comply with existing statutory requirements. The project would contribute to a cumulative increase in emissions of local air pollutants, but the impact is expected to be ***less than significant***, as concentration levels would remain below existing air quality emission standards.

4.8. Cumulative Impacts on Climate Change

The direct and indirect impacts from the proposed project's GHG emissions were considered ***less than significant.*** Because GHG is a contributor to cumulative global climate change, the potential contribution of the proposed project's GHG emissions is further evaluated here.

Ecology has made the following observations about considering a single project's GHG emissions under a cumulative impacts analysis related to climate change (Ecology 2016c):

> Greenhouse gas emissions have direct impacts by contributing to the accumulation of greenhouse gases in the atmosphere, which impacts climate. There are also the indirect effects of the accumulation of greenhouse gases in the atmosphere, which include on-the-ground impacts like sea level rise and increased flooding. These indirect impacts are also "cumulative" because it is the addition of greenhouse gases to the existing gases in the atmosphere that cause or exacerbate these effects.
>
> Since any level of greenhouse gas emissions arguably contributes to these impacts, this leads to the first question of how to avoid or reduce those emissions and the more difficult question of what volume of emissions from a specific proposal is considered "significant" under SEPA. Some commenters have suggested that the emissions of greenhouse gases from a single proposal will never qualify as significant in light of the fact that a project's emissions are a mere fraction of the entire global problem. Federal and state courts have already rejected similar arguments.

The remainder of this section describes the potential impacts of climate change resulting from GHG emissions, including specifically in the state of Washington and the Puget Sound area, then considers the net emissions of the proposed project.

4.8.1. Climate Change

In 2014, the Intergovernmental Panel on Climate Change (IPCC) completed its fifth assessment report. The IPCC brings together experts from countries around the world to review the state of knowledge from the scientific study of climate change, its causes, and its impacts.

Climate change is driven by changes in the composition of the Earth's atmosphere, which influence the greenhouse effect. The greenhouse effect is a natural process whereby the Earth's atmosphere retains thermal energy from the sun (rather than being reflected back into space). Small changes in the atmospheric concentration of certain gases (primarily CO_2, CH_4, NO_2, HFCs, PFCs, and SF_6) can have large impacts in how much energy the Earth's atmosphere retains. These changes drive an average warming of the atmosphere, which causes climate change.

The IPCC has observed that the overall warming of the Earth's atmosphere since the middle of the last century is "unequivocal" (IPCC 2014). Human activity causing emissions of GHGs (primarily CO_2 from fossil fuel combustion) has led to large increases in the atmospheric concentration of certain GHGs. The levels of CO_2, CH_4, and N_2O in the atmosphere are the highest they have been in 800,000 years. This increase in GHGs caused by human activity is extremely likely to be the dominant cause of global warming since the middle of the 20th century (IPCC 2014).

Unlike other air pollutants, such as SO_2 and PM that are relatively short-lived in the atmosphere and have greater environmental impacts locally, GHGs stay in the atmosphere for decades or centuries and contribute to global climate changes. The GHGs get well-mixed in the atmosphere over their lifetime–a ton of GHGs emitted in Washington has the same impact as a ton emitted in Europe or Asia.

Climate change is already having impacts on natural and human systems, and those impacts are expected to increase over time. The impacts are already being observed, as the majority of the hottest average years on record have occurred in the past decade. Impacts from these increased average temperatures include the loss of glaciers, changes in precipitation pattern, and changes in habitat ranges for plants and animals. Impacts on agricultural production have been observed, and the negative impacts on crop yields outweigh any positive impacts (IPCC 2014). The impacts of climate change are expected to increase and become more severe over time. The impacts are most likely to disproportionately impact disadvantaged peoples, but they would be felt in all countries in the world.

Major expected impacts include:

- More droughts and heat waves
- More extreme weather events, including stronger and more severe hurricanes
- Average sea level rise of between 1 and 4 feet by 2100, causing inundation and flooding of coastal communities
- Longer growing seasons
- Increases in ocean acidity (having wide ranging impacts on ocean life)
- Increased temperatures that aggravate air quality problems

The net impacts of these climate changes are expected to cause trillions of dollars in global damage. The damages are expected to result from extreme weather, rising sea levels, and impacts on human health, but also from overall reduced economic productivity caused by higher temperatures.

Washington can expect to experience a variety of adverse impacts as a result of climate change. The expected impacts in Washington include (Ecology 2016d; Climate Impacts Group 2015):

- Average air temperatures in the Puget Sound area are expected rise between 2.9 and 5.4 degrees Fahrenheit by 2050.
- Sea level would rise in the Puget Sound by 4 to 56 inches by 2100.
- Decline in state water supplies (which comes primarily from glacier and snowpack that would decline) as well as changes in the timing of water supplies would result in less hydro-power electricity generation and water availability challenges in dry summer months.
- Winter flooding would increase (due to the rising sea level, more winter rainfall, and more frequent and intense heavy rains).
- Risks to human health would increase, including heat-related illness and mortality, aggravated respiratory problems from urban smog made worse by higher summer temperatures, and possible increases in insect-borne diseases (such as West Nile from mosquitoes and Lyme disease from ticks).
- Increased pests in forests and crops would be facilitated by warmer winters that would kill off fewer insects (for example forests in Northeast Washington are already experiencing large die-offs of pine forest from pine bark beetles) and an increased risk for invasive species to proliferate.
- Salmon declines would be caused by increased flooding in the fall and winter, earlier spring high river flows, and warmer water temperatures and lower water flow in the summer months.
- The quantity of wetlands would be reduced due to drying out, flooding, or otherwise being impacted by climate change, which would reduce their effectiveness at providing habitat for plants and animals and reduce their effectiveness at filtering stormwater.
- Heat waves are expected to become more frequent. The heat waves are expected to be more severe in Eastern Washington, but there is likely a bigger public health risk in Western Washington because communities are less prepared for extreme heat.
- Wildfires are expected to increase. The worst wildfire year on record occurred in 2015 and wildfires are projected to double by 2040.
- Increasing ocean acidification would impact the shellfish industry in Puget Sound.

In 2009 and 2010, Ecology commissioned reports estimating the costs of climate change impacts on the state of Washington under the then business-as-usual (BAU) pathway.[3] Examining 20

[3] Since that time, many actions have been taken to address climate change beyond the 2009-2010 BAU pathway by the state of Washington and other states, by the federal government (new vehicle fuel efficiency standards), and the international community (the Paris Climate Agreement). Further actions would be required to achieve an emissions pathway consistent with the international goal of maintaining average global temperature rise to well below 2 degrees Celsius.

different parameters, those reports estimated total costs from climate change damages in the state of Washington of $10.98 billion per year in 2020, rising to $17.5 billion per year in 2040 and $30.8 billion per year in 2080 (Climate Leadership Initiative 2009, 2010).

The most likely direct impact from climate change on the proposed project is sea level rise, which could impact the proposed project infrastructure. As noted above, sea level rise in Puget Sound is estimated to between 4 inches and 56 inches (5 feet) by 2100 – approximately 100 years in the future. The proposed project infrastructure at the refinery is above these levels, even the new infrastructure that would be placed on the wharf. In addition, the useful life of the new infrastructure is expected to be less than 100 years and thus it is not anticipated that sea level rise would adversely impact the proposed project.

4.8.2. Project Greenhouse Gas Emissions Cumulative Impact

The proposed project's facility GHG emissions would be approximately 389,000 metric tons per year from stationary combustion and fugitive emissions on-site, as well as electricity usage and transportation (see Section 4.4.2). The proposed projects' fuel reduction within the state of Washington would result in an estimated concurrent GHG emissions reduction of 695,000 metric tons per year. The net project GHG emissions could be a reduction of 306,000 metric tons per year. The direct impacts and indirect impacts from these emissions are considered ***less than significant.***

There are a variety of methods to place GHG emissions in context. One method is to estimate how the GHG emissions from the proposed project would contribute to emissions increases at a variety of levels, beginning at the facility level of the Tesoro Anacortes Refinery and proceeding to the total U.S. emissions. This information is presented in Table 4-15.

Table 4-15: Proposed Project GHG Emissions Change

Emissions Sources	Change in GHG Emissions (million metric tons per year CO_2e)	Percent Change in GHG Emissions from Proposed Project (as a percent change in total GHG emissions for that source)
Proposed Project	-0.31	-
Tesoro Anacortes Refinery plus fuel products	17.84	-1.7%
State of Washington	94.4	-0.33%
United States	6,870	< -0.01%

Sources: Tesoro 2017; Ecology 2014, 2016e, 2016g; USEPA 2016g

Climate change is an environmental justice issue because certain groups of people in the U.S. are disproportionately affected by climate change and are less able than others to adapt to or recover from climate change impacts. These groups include people of color, low-income communities, immigrants, tribes, and people who are not fluent in English. Specifically individuals that may be most susceptible to climate change related environmental justice issues include those:

- Living in areas particularly vulnerable to climate change (like communities along the coast)
- Coping with higher levels of existing health risks when compared to other groups

- Living in low income communities with limited access to healthcare services
- Having high rates of uninsured individuals who have difficulty accessing quality healthcare (USEPA 2016f)

Social Cost of Carbon

A way to help contextualize the potential impacts from GHG emissions is to use the social cost of carbon (SCC). The SCC is an estimate of the economic damages associated with one additional metric ton of CO_2 emissions in a given year. It also represents the value of damages avoided for achieving one metric ton of emissions reductions in a given year. There are a variety of estimates of the social cost of carbon. One of the most widely used in the U.S., and one referenced by the Washington Department of Commerce for use in acquisition processes by state agencies, is the SCC developed by the federal government. The SCC "is meant to be a comprehensive estimate of climate change damages and includes changes in net agricultural productivity, human health, property damages from increased flood risk, and changes in energy system costs, such as reduced costs for heating and increased costs for air conditioning" (USEPA 2016e). The IPCC has noted that current estimates of SCC, including the estimates developed by the federal government, do not currently include all impacts of climate change and thus, likely understate the total damages.

Several considerations are key in using an SCC. First, the SCC represents an estimate of global damages from climate change. Thus, it includes damages that would occur outside Washington. Second, the SCC per ton increases in later years. In other words, the damage associated with a ton of CO_2 emitted in 2030 is greater than the damages associated with a ton emitted in 2015. Third, the dollar value of the SCC is very sensitive to the discount rate that is selected. The SCC calculates damages that would occur many decades in the future, and therefore must use what is referred to as an "intergenerational discount rate" to translate those future damages into current dollars.

There is disagreement about what is an appropriate intergenerational discount rate. To give an example of the SCC sensitivity to intergenerational discount rates, if a rate of 5 percent per year is selected, the SCC ranges from $11/ton in 2015 to $26/ton by 2050. If a discount rate of 2.5 percent per year is selected, the 2015 SCC is $56 per metric ton rising to $95 in 2050. For this reason, the federal SCC is given as a range of estimates based on different discount rates. The range for 2015 is $11 to $56 per metric ton of CO_2 and the projected range for 2050 is $26 to $95 per metric ton.

The State of Washington Department of Commerce has made recommendations for standardizing the use of SCC by Washington state agencies when making acquisition decisions. The Department of Commerce recommended using the 2.5 percent discount rate (Commerce 2014).

To complete an estimate of the potential damages associated with the GHG emissions from a given decision, such as the proposed project, one would multiply the expected GHG emissions for each year of the lifespan of the project by the SCC for that year. This would provide a full monetization of costs from the GHG emissions.

The Tesoro facility (including the proposed project, if it is approved) is subject to Washington's climate change regulations. Ecology has developed a regulation aimed at reducing statewide GHG emissions to 1990 levels by 2020 (WAC 173-441; RCW 70.235.020). To achieve this goal, facilities that produce over 10,000 tons of GHGs annually and suppliers of liquid motor fuel must report their emissions (WAC 173-441). GHGs, as defined by the rule, include CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, and any other gas designated by the department by rule.

On September 15, 2016, Ecology published the Clean Air Rule that requires reductions from facilities that emit 70,000 metric tons of GHG annually. This rule was published after the air permit applications for the proposed project. The Clean Air Rule would require such facilities to reduce their emissions by an average of 1.7 percent each year below a baseline as determined by the average of the facility's average emissions between 2012 and 2016. The proposed project's new GHG emissions unit would not be considered a part of Tesoro's initial baseline emissions. These new GHG sources would need to adhere to the requirements of that rule and proceed through the benchmarking process, which will establish a baseline and assign a reduction plan.

Ecology has estimated the impact of the new Clean Air Rule on GHG emissions in the state. The estimates include economic growth in the state (including the possibility of new sources of emissions). Ecology estimates that without the Clean Air Rule, Washington emissions would grow to approximately 95 million tons of CO_2e per year by 2035. The Rule would reduce emissions to below 80 million tons of CO_2e per year by 2035, moving toward the state goal of reducing GHGs to 25 percent below 1990 levels by 2035 (Ecology 2016f).

The analysis provided here demonstrates the proposed project would be a small contribution to the reduction of state of Washington GHG emissions.

Skagit County recognizes that Tesoro's proposed strategy to reduce GHG emissions to comply with the Clean Air Rule has not been reviewed or approved by Ecology. After receiving input from Ecology, Tesoro's proposed compliance strategy may change. Regardless of the methodology used, Skagit County recognizes that Tesoro's emissions will ultimately be reduced as required under the Clean Air Rule.

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