

3.2 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

The following section compares the probable significant impacts from the Preferred Alternative and the Straight Street Grid Option on air quality conditions to those associated with the Redevelopment Alternatives (Alternatives 1 - 3) in the 2008 *New Whatcom Redevelopment Project Draft EIS* (DEIS) and identifies any new or increased significant impacts and/or mitigation. This section is based on the September 2008, *Supplemental Air Quality Technical Memorandum* prepared by The Landau Associates (see **Appendix F** for the full report).

The following section also analyzes the probable significant impacts from the Preferred Alternative on greenhouse gas emissions. For analysis purposes, a discussion of greenhouse gas emissions associated with the No Action Alternative is also provided in this section, as this element was not previously analyzed in the DEIS.

3.2.1 Affected Environment

Air Quality

Study Area

A study area extending to at least 500 feet beyond the site was established for the DEIS air quality analysis to represent the locations most likely to be impacted by redevelopment of the New Whatcom site. It was determined that significant air quality impacts would not likely occur beyond this 500-foot distance due to ambient conditions, dispersion and/or topographic changes. The major sensitive receptors surrounding the site were grouped into four areas: North, Downtown, South and Onsite Receptors (see Figure 3.2-1 in the DEIS for an illustration of the Air Quality Receptor Areas).

- North Receptors – Single and multi-family residential uses north of C St. to Broadway Ave. are referred to as the North Receptors. The North Receptors are located on a bluff approximately 250 feet or more from the New Whatcom site.
- Downtown Receptors - The Downtown Receptors include the Central Business District core, where people shop, eat, work, and use park facilities in proximity of the area from Maple St. to C St.
- South Receptors - The South Receptors include the single and multi-family residential uses located south of Cornwall Ave. and west of Maple St. The majority of residences are situated on a vegetated bluff located 300 to 1,000 feet from the site boundary and at an elevation of nearly 70 to 100 feet above the elevation of the site.
- Onsite Receptors - Additionally, the mix of residential and commercial uses at the site would create future onsite sensitive receptors.

Methodology

As discussed in Section 3.2.1 and Appendix E of the DEIS, provisions in the 1990 amendments to the federal Clean Air Act and the Washington Clean Air Act require that regional transportation plans and individual projects within these plans in non-attainment or maintenance areas, demonstrate conformity with Clean Air Act requirements for non-exempt transportation

projects, including the National and Regional Ambient Air Quality Standards (NAAQS). The NAAQS are shown in Table 3.2.1 of the DEIS. However, because the New Whatcom site is located in an attainment area for all air pollutants regulated by the NAAQS and the state air quality standards, a conformity analysis is not required. Discussions of conformance with NAAQS are provided for analysis purposes only in the DEIS and this SDEIS.

The DEIS provides a quantitative analysis of potential traffic-related emission impacts for Alternative 1. The emission analysis was conducted for the signalized intersections with the greatest amount of traffic and the longest predicted delays (idling time), in order to determine “worst-case” emissions and possible impacts. Data from the *Transportation Discipline Report* (see Appendix N in the DEIS) regarding the three worst-performing intersections within the existing offsite roadway network were analyzed for future carbon monoxide (CO) emissions using the Washington State Intersection Screening Tool (WASIST). The three signalized intersections analyzed for 2016 and 2026 represented intersections within the site area with the worst expected traffic delays (Level of Service E or F) within the existing roadway network.

Existing Air Emission Sources

As the DEIS indicates, typical existing sources of air pollution in the site area include automobile and truck traffic, railroad activity and locomotives, marine vessels at the Bellingham Shipping Terminal (BST) and a variety of industrial sources including the PSE Encogen facility and any remaining Georgia-Pacific (GP) operations. With exhaust from diesel locomotives and diesel trucks, the air pollutants of primary concern are typically small particulate matter (PM₁₀ and PM_{2.5}) and general odors. With other vehicular traffic, the primary pollutant of concern is carbon monoxide (CO). Vehicle traffic also generates small amounts of PM₁₀ and PM_{2.5} due to exhaust and tire friction on pavement and trace amounts of sulfur and nitrogen oxides.

Air pollutant emissions in the site area are from point, area, and mobile sources. Point sources are stationary sources that include, but are not limited to, industrial sources and power plants. Area sources include consumer products and smaller stationary sources, such as dry cleaners. Mobile sources consist of on-road sources and non-road sources. On-road sources include cars and trucks. Non-road sources include, but are not limited to, lawn mowers and other landscaping equipment, construction equipment, trains, water vessels, and agriculture equipment.

Existing sources of emissions and air quality conditions on the New Whatcom site and in the site vicinity have generally remained the same as presented in the DEIS; therefore, no changes to the discussion of existing conditions are warranted in this SDEIS (see DEIS Section 3.2.1 for a detailed description of the existing air quality conditions).

Greenhouse Gas Emissions

Global climate change (CGG) is a change in the average weather of the earth, which can be measured by wind patterns, storms, precipitation and temperature. The extent of the change or the exact contribution from sources influenced by human activity, including the construction and operation of developments such as the New Whatcom redevelopment, remains in debate. This analysis provides a qualitative discussion of the potential impacts of the New Whatcom redevelopment on global climate change and associated greenhouse gas emissions based upon the best information available at this time.

Background

The global climate is continuously changing, as evidenced by repeated episodes of warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. Scientists have observed, however, an unprecedented increase in the rate of warming in the past 150 years. This recent warming has coincided with the global Industrial Revolution, which resulted in widespread deforestation to accommodate development and agriculture and an increase in the use of fossil fuels which has released substantial amounts of greenhouse gases into the atmosphere.

Greenhouse gases (GHG) such as carbon dioxide, methane and nitrous oxide trap heat in the atmosphere and are emitted by both natural processes and human activities. The accumulation of GHG in the atmosphere affects the earth's temperature. While research has shown that the Earth's climate has natural warming and cooling cycles, evidence indicates that human activity has elevated the concentration of GHG in the atmosphere beyond the level of naturally occurring concentrations resulting in more heat being held within the atmosphere. The International Government on Climate Change (IPCC), an international group of scientists from 130 governments has concluded that it is "very likely" - a probability listed at more than 90 percent - that human activities and fossil fuels explain most of the warming over the past 50 years."¹

The IPCC predicts that under current human GHG emission trends, the following results could be realized within the next 100 years:²

- global temperature increases between 1.1 – 6.4 degrees Celsius;
- potential sea level rise between 18 to 59 centimeters or 7 to 22 inches;
- reduction in snow cover and sea ice;
- potential for more intense and frequent heat waves, tropical cycles and heavy precipitation; and
- impacts to biodiversity, drinking water and food supplies.

The Climate Impacts Group (CIG), a Washington-state based interdisciplinary research group which collaborates with federal, state, local, tribal, and private agencies, organizations, and businesses, studies impacts of natural climate variability and global climate change on the Pacific Northwest. CIG research and modeling indicates the following possible impacts of human-based climate change in the Pacific Northwest:³

- changes in water resources such as decreased snowpack; earlier snowmelt; decreased water for irrigation, fish and summertime hydropower production; increased conflict over water; and, increased urban demand for water.

¹ IPCC, Fourth Assessment Report, February 2, 2007.

² IPCC, Summary for Policymakers, April 30, 2007.

³ Climate Impacts Group, Climate Impacts in Brief, accessed February 7, 2008, <http://www.cses.washington.edu/cig/pnwc/ci.shtml>.

- changes in salmon migration and reproduction.
- changes in forest growth and species diversity and increases in forest fires; changes along coasts such as increased coastal erosion and beach loss due to rising sea levels; increased landslides due to increased winter rainfall; permanent inundation in some areas; and increased coastal flooding due to sea level rise and increased winter streamflow.

Regulatory Environment

United States Environmental Protection Agency

The United States Environmental Protection Agency (EPA) is charged with enforcing the Clean Air Act and has established air quality standards for common pollutants. In addition, the EPA has been directed to develop regulations to address the GHG emissions of cars and trucks. At the time of this writing, however, EPA regulations for GHG emissions do not exist and are not expected until late 2008.

State of Washington

In February of 2007, Governor Christine Gregoire signed Executive Order No. 07-02 establishing goals for reductions in climate pollution, increases in jobs, and reductions in expenditures on imported fuel. This statewide effort is intended to address climate change, grow the clean energy economy and move Washington toward energy independence. This executive order directed the Washington Departments of Ecology (Ecology) and Community, Trade and Economic Development (CTED) to lead the "Washington Climate Challenge," a process intended to engage business, community and environmental leaders over the next year. Washington Climate Challenge was directed to consider the full range of policies and strategies that could be adopted to achieve the goals established by the Governor.

In 2007, the Washington legislature passed SB 6001, which among other things, adopted the Governor's Climate Change Challenge goals into statute and created a performance standard for electrical utilities that serve Washington. Utilities may capture and store (sequester) carbon associated with the production of electricity to meet the performance standard.

"Climate" has always been designated as an element of the environment for review under SEPA (WAC 197-11-444). As scientific research has evolved to understand the link between greenhouse gas emissions and climate change, Ecology is in the process of creating guidance for local agencies to evaluate climate change and associated greenhouse gas emissions under SEPA. Currently, there is no regulatory context for estimating emissions associated with climate change. Ecology is to have rules on implementing the SEPA reporting requirements available sometime in 2009; no regulatory guidance has been provided from Ecology to date.

Until specific regulatory guidance from Ecology is available, proponents must use the best available information to discuss project impacts to greenhouse gas emissions. Ecology has referenced tools developed by other jurisdictions to use as guidelines, such as the *Greenhouse Gas Emissions* calculation tool developed by King County. This tool was developed to estimate the direct and embodied greenhouse gas emissions over the lifespan of a project. Since October 2007, (Executive Order PUT 7-10-1), King County has required that all SEPA documents include this GHG emissions worksheet. The City of Seattle has also required all SEPA documents to include this GHG worksheet since March 2008 (Ordinance 122574). More

details regarding this methodology are provided in **Appendix G**. For the purpose of meeting the requirements of conducting a greenhouse gas analysis, the model developed by King County is used for this SDEIS. Potential climate change impacts to the site associated with sea-level rise are discussed in **Section 3.1**, Earth.

City of Bellingham

Along with 370 mayors across the country, Bellingham is a signatory to the Mayors Climate Protection Agreement and is striving to meet its obligations through the Cities for Climate Protection program. Through this agreement, Bellingham has committed to: (1) urging the Federal and State governments to enact policies that will achieve the goals of the Kyoto Protocol (7% reduction in climate changing pollution from 1990 levels); (2) urging Congress to pass the Climate Stewardship Act and to create a market based system of tradable allowances; and (3) agreeing to strive to achieve emissions reductions to meet or exceed the Kyoto targets within their own communities.

In May 2007, the City also completed its own *Greenhouse Gas Inventory and Climate Protection Action Plan*. Based on the findings of the inventory, the City Council approved (Resolution 2007-10) the establishment of a series of targets for municipal operations and for the entire community. The recommended target for City government is: reduce greenhouse gas emissions by 64 percent from 2000 levels by 2012 and by 70 percent by 2020. For the community, City staff recommends that Bellingham strive for overall reductions of 7 percent from 2000 levels by 2012 and 28 percent from 2000 levels by 2020.

Methodology

The scale of global climate change is so large a project's impacts can only be considered on a "cumulative" scale. It is not anticipated that a single development project, such as the New Whatcom redevelopment, would have an individually discernable impact on global climate change. It is more appropriate to conclude that New Whatcom redevelopment greenhouse gas emissions would combine with emissions across the state, country and planet to cumulatively contribute to global climate change.

Neither the EPA, Ecology nor City of Bellingham currently have regulations in place to provide guidance on analysis of the impacts of climate change and associated greenhouse gas emissions under NEPA or SEPA. For the purposes of discussion of the potential climate change impacts of the New Whatcom redevelopment for this SDEIS, a SEPA Greenhouse Gas Emissions calculation tool formulated by King County is used to grossly estimate the emissions footprint of the New Whatcom redevelopment for the lifecycle (buildout and ongoing operation) of the development, specifically:

- The extraction, processing, transportation, construction and disposal of materials and landscape disturbance (embodied emissions);
- Energy demands created by the redevelopment after it is completed (energy emissions); and
- Transportation demands created by the redevelopment after it is completed (transportation emissions).

The completed SEPA Greenhouse Gas Emissions Worksheets for this analysis as well as an explanation of the methodology employed by King County to create the formulas are included in **Appendix G** to this SDEIS.

Existing GHG Emission Sources

As the New Whatcom site is currently transitioning from heavy industrial uses under the former GP operations to other uses, the majority of the site is currently vacant with few existing sources of GHG emissions. Due to the interim vacant status of the majority of the site, modeling the existing greenhouse gas emissions from onsite sources would not provide a realistic baseline of greenhouse gas emissions for the site. Further, it is not feasible to model historical greenhouse gas emissions levels for the site prior to the closure of GP operations.

In order to formulate a realistic baseline of greenhouse gas emissions for the redevelopment for this analysis, the DEIS No Action Alternative has been modeled to analyze emissions of redevelopment under existing zoning (a scenario that assumes that the New Whatcom redevelopment project is not approved and implemented). For purposes of this analysis, **Table 3.2-1** illustrates the industrial uses assumed under the No Action Alternative (as described in Section 3.2.3 of the DEIS) and the estimated associated greenhouse gas emissions.

**Table 3.2-1
DEIS ALTERNATIVE 4 - NO ACTION
LAND USE ASSUMPTIONS AND GREENHOUSE GAS EMISSIONS**

Uses	Amount	Assumed Lifespan (years)	Estimated GHG Lifespan Emissions (MTCO ₂ e) ²	Estimated Annual GHG Emissions (MTCO ₂ e) ²
Residential Uses				
Housing	0 units	80.5		
Non-residential Uses				
Office	0 sq. ft.	62.5		
Institutional	0 sq. ft.	62.5		
Light/Marine Industrial ¹	2,000,000 sq. ft.	62.5	3,148,351	50,374
Retail	0 sq. ft.	62.5		
Restaurant	0 sq. ft.	62.5		
Warehouse	190,000 sq. ft.	62.5	108,632	1,738
Paving				
Including Surface Parking, Street Right-of-Way and other Impervious Area	116.2 acres/ 5,061,400 sq. ft.	62.5	253,100	4,050
TOTAL EMISSIONS			3,510,083	56,162

Source: *CollinsWoerman, 2008 and King County.*

¹. Includes new development and reuse of existing industrial space.

². MTCO₂e is defined as Metric Tonne Carbon Dioxide Equivalent; equates to 2204.62 pounds of CO₂. This is a standard measure of amount of equivalent CO₂ emissions.

It is important to note that the calculations used for the light/marine industrial uses represent general GHG emission assumptions for industrial uses; actual emissions for specific light and marine industrial uses could vary widely.

Emissions related to the existing PSE Encogen plant have not been included in this estimate.

3.2.2 Impacts

As described in **Chapter 2**, levels of redevelopment under the Preferred Alternative and Straight Street Grid Option would be within the range of redevelopment assumed for DEIS Alternatives 1 - 3 and similar to Alternative 2. For purposes of this air quality analysis, Alternative 2 is described and compared to the Preferred Alternative. The greenhouse gas emissions analysis compares the Preferred Alternative and Straight Street Grid Option to the DEIS No Action Alternative described in **Section 3.2.1**.

Draft EIS (Alternatives 1 – 4)

Under Alternative 2, vehicular traffic, point source and railroad and marine vessel traffic and emissions are expected to generate the same types and levels of emissions as described for Alternative 1; significant air quality impacts are not anticipated.

Air Quality

Construction

Construction activities resulting in soil disturbance, dust emissions and combustion pollutants from onsite construction equipment and from offsite trucks hauling soil, cement or building materials, would create a temporary addition of pollutants and odors to the local air shed over the phased construction period.

Construction activities would produce a range of air emissions, including particulates (PM), dust, carbon monoxide (CO) and nitrogen oxides (NO_x). It is expected that construction activities would be intermittent and phased over time and would be conducted consistent with typical air quality control measures required by federal, state and local regulations. Therefore, it is anticipated that construction activities would not result in onsite or offsite adverse air quality impacts or significant risks to on or offsite sensitive receptors (residential uses, schools, hospitals).

It is assumed that the new roadway connections to the existing City street network would pose the greatest potential for short-term construction impacts to existing offsite sensitive receptors due solely to proximity. However, as these improvements would be phased over the long-term and would be temporary in nature, only short-term air quality impacts would result during construction; such impacts are not anticipated to be significant.

Operations

Operational emissions and related potential air quality impacts could result from the primary emission sources in the site area including traffic and non-road (railroad and marine vessels) sources.

Traffic Emissions: On-road emission sources would primarily include vehicles and trucks. Redevelopment of the site would increase vehicle trips and associated emissions within this historically industrial area but would provide for a relatively small contribution to the regional concentrations of criteria pollutants (PM, CO, and ozone). These emissions would not be expected to pose significant air quality impacts to existing sensitive receptors within the area due mainly to ambient air quality conditions in the area (Whatcom County is currently in

attainment for all air quality criteria pollutants) and the distance of the majority of onsite roadways to nearby sensitive receptors. Further, the potential for air quality impacts from on-road sources throughout the region, as well as with the site area, is expected to be offset by an increase in the efficiency of future vehicles and the availability of cleaner fuels over the long term (at both 2016 and 2026).

The DEIS analysis of local traffic-related air quality impacts results confirms that acceptable air quality conditions would result and mobile source CO emissions would conform to all applicable air quality standards at all onsite and offsite intersections; vehicular traffic would not result in unacceptable operational air quality impacts in the site area (see Section 3.2.2.2 in the DEIS for details).

Non-road Emissions Non-road emissions sources would include railroad operations, marine vessel traffic and point source emissions.

Railroad Operations. Alternatives 1 and 2 assume that a portion of the current BNSF railroad corridor on the site would be relocated to the eastern and southern border of the site by 2016. This relocation would position the rail line adjacent to the bluff and could increase the NO_x and PM concentrations for some receptors, including residences located near Laurel St.; however, the limited frequency of trains in the area and the distance to most receptors following the relocation would limit the duration of potential exposure. The railroad corridor relocation is not anticipated to result in any significant impacts. Further, the EPA has proposed standards to reduce emissions of diesel trains. The potential relocation would be subject to a specific permitting and environmental review process in the future.

Marine Vessels. Under all of the EIS Alternatives, a new marina would be developed at the ASB which would likely result in an increase in recreational boat traffic. Although the number of small recreational vessels would increase, large marine vessel traffic is expected to decrease with New Whatcom redevelopment. An overall net increase or decrease in air quality emissions generated by marine vessels would not likely be significant in the short-term, but a net improvement in air quality could be realized over the long-term due to new marine vessel technology and reduced large marine vessel traffic. EPA also has proposed standards to reduce emissions from marine diesel emissions in the future.

Point Source Emissions. Under the Redevelopment Alternatives, decommissioning of the onsite Encogen facility is assumed to occur by 2026. The result of this effort could be removal of up to approximately 76 tons of criteria pollutants entering the atmosphere per year in the site area. (It should be noted that it is possible that the Encogen facility could relocate to another site in the Bellingham area.) Based on the transition of the site from industrial operations to a mixed-use neighborhood, and the assumed removal of the Encogen facility from the site, a reduction in criteria pollutants associated with implementation of New Whatcom redevelopment could result in a net benefit to air quality in the site area. In the interim, no significant impacts to onsite uses would result from ongoing Encogen operations.

Preferred Alternative

Air Quality

Construction

The type and timing of the construction activities associated with the Preferred Alternative would be similar to DEIS Alternatives 1 - 3; therefore, the Preferred Alternative construction air emissions would be similar to those outlined in the DEIS.

As the construction activities associated with the Preferred Alternative would be phased over the buildout period and would be temporary in nature, only short-term construction air emissions would result and would not be expected to be significant.

Operations

Traffic Emissions: The traffic volumes for the Preferred Alternative are estimated to be less than Alternative 1. Therefore, it is reasonable to conclude that mobile source CO emissions would also conform to the NAAQS at both onsite and offsite intersections under the Preferred Alternative and additional air quality modeling is not required. Under the Preferred Alternative, vehicular traffic would not result in unacceptable operational impacts to onsite or offsite receptors.

Non-road Emissions: The expected air emissions from non-road sources such as rail operations, marine vessels and point sources under the Preferred Alternative would be assumed to be similar to those analyzed for the DEIS Alternatives. No significant impacts to air quality from non-road emission sources would be anticipated.

Greenhouse Gas Emissions

As indicated previously, the methodology developed by King County for estimating greenhouse gas emissions is used for this SDEIS analysis (see **Appendix G** for details). Land use assumptions and estimated associated greenhouse gas emissions are shown in **Table 3.2-2**.

Although the Preferred Alternative is estimated to generate GHG emissions greater than the No Action Alternative baseline, thresholds have not been established to determine the significance of these emission estimates. It is important to note that these gross calculations have not taken into consideration any potential efforts to reduce the carbon footprint of the Preferred Alternative (see **Section 3.2.4** below) such as: LEED building techniques; vehicle trip reductions through building a walkable community where residents can live, work and play; energy conservation measures, etc. Therefore, these estimates could be considered worst-case. Given the commitment to development of the site as a LEED-Neighborhood Design project and relative to historical emissions from the site from industrial sources, emissions would likely be reduced.

It should be noted that GHG emissions associated with the proposed marina and marine vessel traffic are not included in this analysis. However, similar to the discussion of air quality emissions under DEIS Alternatives 1 - 3, net improvement in greenhouse gas emissions could result over the long-term due to a reduction in large marine vessel traffic (associated with mixed-use redevelopment relative to historical industrial use), advances in vessel technology and proposed EPA standards to reduce emissions from marine diesel engines.

Table 3.2-2
PREFERRED ALTERNATIVE
LAND USE ASSUMPTIONS AND GREENHOUSE GAS EMISSIONS

Uses	Amount	Assumed Lifespan (years)	Estimated GHG Lifespan Emissions (MTCO ₂ e) ¹	Estimated Annual GHG Emissions (MTCO ₂ e) ¹
Residential Uses				
Housing	1,892 Units	80.5	2,186,574	27,162
Non-residential Uses				
Office	2,000,000 sq. ft.	62.5	2,698,690	43,179
Institutional	670,000 sq. ft.	62.5	700,472	11,208
Light/Marine Industrial	685,000 sq. ft.	62.5	1,078,310	17,253
Retail	310,000 sq. ft.	62.5	267,454	4,279
Restaurant	65,000 sq. ft.	62.5	168,598	2,698
Paving				
Surface Parking Including Surface Parking, Street Right-of-Way and other Impervious Area	69.4 acres/ 3,021,800 sq. ft.	62.5	151,150	2,418
TOTAL EMISSIONS			7,251,248	108,197

Source: CollinsWoerman and King County, 2008.

¹ MTCO₂e is defined as Metric Tonne Carbon Dioxide Equivalent; equates to 2204.62 pounds of CO₂. This is a standard measure of amount of equivalent CO₂ emissions.

Straight Street Grid Option

Air Quality and Greenhouse Gas Emissions

Redevelopment under the Straight Street Grid Option would include a similar mix of land uses and densities to those proposed under Preferred Alternative. Accordingly, it is assumed that operations of the redevelopment under the Straight Street Grid Option would result in air quality impacts similar to those described under the Preferred Alternative; no significant impacts to air quality would be anticipated. Similarly, it is assumed that operations of the redevelopment under the Straight Street Grid Option would result in GHG emissions similar to those described under the Preferred Alternative; thresholds for the significance of those impacts have not been established and cannot be determined at this time.

3.2.3 Conclusions

Air Quality

The potential for significant impacts under the Preferred Alternative and the Straight Street Grid Option on air quality would be within the range of impacts identified under DEIS Alternatives 1 - 3. Specifically, the air emissions and associated impacts of the Preferred Alternative and the Straight Street Grid Option would be similar to Alternative 2. As under DEIS Alternatives 1 - 3, the transition of the site from industrial operations to a mixed-use neighborhood, and the assumed removal of the PSE Encogen facility from the site, could result in a reduction of criteria pollutants and a net benefit to air quality in the site area (assuming the Encogen facility does not relocate within the site vicinity). No additional significant impacts on air quality would be anticipated with the Preferred Alternative or the Straight Street Grid Option.

Greenhouse Gas Emissions

Redevelopment under the Preferred Alternative and the Straight Street Grid Option would result in greenhouse gas emissions over the lifespan of the project and on an annual basis. Thresholds for the significance of estimated emissions have not been established and cannot be determined at this time.

3.2.4 Mitigation Measures

Air Quality

Mitigation measures to address the potential for significant air quality impacts of Alternatives 1 - 3 are identified in the DEIS (see DEIS Section 3.2.3 for a list of these measures). These mitigation measures would also apply to the Preferred Alternative and the Straight Street Grid Option. Because no additional significant impacts were identified for the Preferred Alternative or the Straight Street Grid Option, no additional mitigation measures would be warranted.

Greenhouse Gas Emissions

Although the Preferred Alternative and Straight Street Grid Option would generate GHG emissions, thresholds have not been established by Ecology to determine the significance of these estimated emissions. Further, reductions in greenhouse gas emissions could result from the transition of the site from industrial to mixed uses.

Maintaining a small carbon footprint and building an environmentally sustainable community has been stated by the Port to be a guiding principle of the New Whatcom redevelopment. The Port and City have worked with the United States Green Building Council (USGBC) and other organizations to designate the New Whatcom site as one of the nation's first LEED-Neighborhood Design pilot projects. Various strategies related to sustainability would also apply to reduction of greenhouse gas emissions. Efforts to reduce the carbon footprint and associated greenhouse gases of the New Whatcom redevelopment could include:

- The Preferred Alternative would provide a road network and connections to link the site to downtown and the waterfront and would provide a range of jobs, goods and services. Transit and non-motorized connections would reduce vehicular trips from onsite residents and employees and associated emissions.
- Energy used for heating and cooling buildings is a contributor to greenhouse gas emissions. The greenhouse gas emissions reduction strategy would consider promoting high efficiency buildings and reducing electrical energy used for thermal needs.
- Construction strategies, including green roofs, natural ventilation and solar orientation could be used as part of fundamental building design principles.
- Maximizing energy production from renewable energy sources such as solar, wave, tidal, wind or biomass could be considered, as feasible.
- Potable water demand could be reduced by conservation and substituting reclaimed water for uses that do not require drinking water quality. Reclaimed and/or reused water

could result from captured rainwater stored for reuse. The rainwater could be reused for various functions such as flushing toilets and irrigating landscaping during dry periods.

- A Membrane Bioreactor (MBR) process or similar onsite treatment system could be considered for wastewater treatment. This process is a system for purifying and reclaiming water for other uses.

3.2.5 Significant Unavoidable Adverse Impacts

Air Quality

No significant adverse impacts to air quality would be anticipated to result from redevelopment under the Preferred Alternative or the Straight Street Grid Option.

Greenhouse Gas Emissions

Declaring an impact significant or not significant implies an ability to measure incremental effects of global climate change. The body of research and adopted regulations necessary to connect individual land uses, development projects, operational activities, etc. with the broader issue of global warming do not currently exist. Scientific research and analysis tools sufficient to determine a numerical threshold of significance have not been established at this time and any conclusions regarding impact significance would be speculative.

As discussed in **Section 3.2.4** above, the Port is considering opportunities to employ sustainable development strategies, when feasible, to reduce greenhouse gas emissions and to reduce the carbon footprint of the New Whatcom redevelopment.