3.2 AIR AND ATMOSPHERIC VALUES

This section describes existing ambient air quality and climatological conditions in the vicinity of the proposed project. Because of the regional nature of air quality, the discussion includes general, relevant data from the surrounding area. Given the proximity of the alternative routes to one another and the regional level of analysis, variations in the existing air quality along the routes are not expected.

3.2.1 Environmental Setting

3.2.1.1 Climate and Meteorology

Because the study area spans a 415- to 500-mile-long corridor, climate conditions vary greatly depending on the analysis area portion. The Continental Divide crosses the project area, generally separating the portions in Montana from those in Idaho. To the west of the Continental Divide, the maritime influences of the Pacific Ocean result in milder winters, a more even distribution of annual precipitation, cooler summers, and lighter winds than on the eastern side, where climate conditions are considered more "continental" (WRCC 2009a). East of the Continental Divide, soils and rocks, which have a much lower heat capacity than water, gain and lose heat much more quickly. Areas to the west of the Continental Divide are also cloudier with higher humidity.

Daily temperatures vary greatly as a result of the topography of the study area. Average annual daily temperatures across the study area range from 35 degrees Fahrenheit (°F) to 52°F. Average daily temperatures during winter range from the mid to high teens to approximately 30°F. Daily average summer temperatures range from the low 60s to the mid 70s (WRCC 2009a).

Precipitation in the study area varies greatly depending on geographical location and topography of a particular alternative. Those portions adjacent to mountain regions experience greater rainfall. On a statewide scale, Idaho averages approximately 19 inches of rainfall per year, while Montana averages approximately 15 inches per year (WRCC 2009a). On an annual basis, wind speeds average approximately 8 to 10 miles per hour along the alignment (WRCC 2009a).

3.2.1.2 Ambient Air Quality

Existing air quality conditions in the areas surrounding the proposed project and its alternatives are designated as in attainment[1] with federal and state ambient air quality standards, with the exception of areas near Butte, Montana, and Pocatello, Idaho, as discussed below and in Section 3.2.1.4. An area is generally considered to have good to excellent air quality if it is meeting state and federal ambient air quality standards. Please note that federal ambient air quality standards are the NAAQS but the term "federal ambient air quality standard" is used throughout this section.

The sections below summarize existing air quality conditions in each of the six project zones, which are shown in Figure 3.2-1.

[1] An area designated as in attainment means that the ambient concentrations of carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter ($PM_{2.5}$ and PM_{10}), and sulfur dioxide do not exceed the National Ambient Air Quality Standards (NAAQS) or state air quality standards. See Section 3.2.1.4 for discussion.

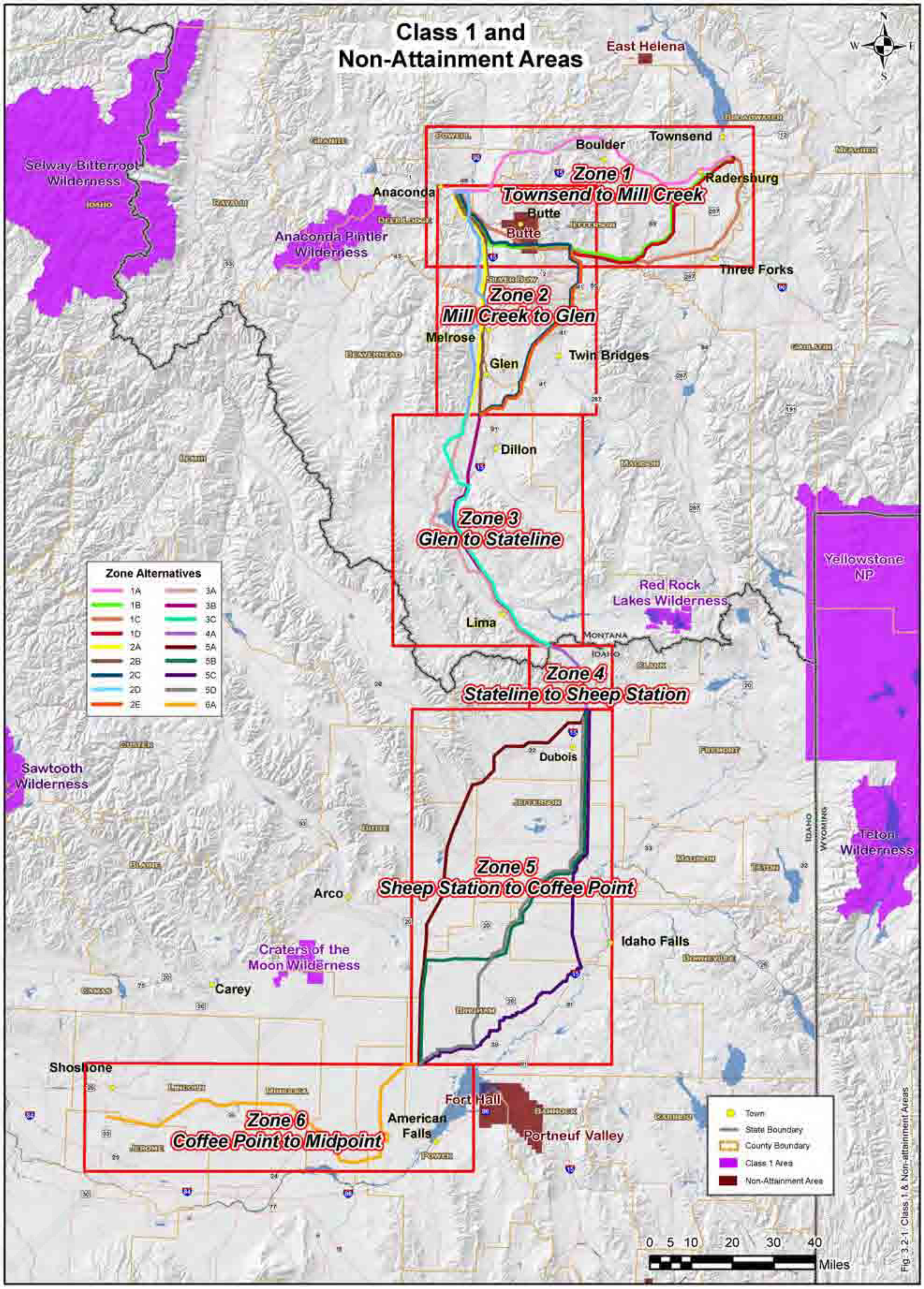

Figure 3.2-1. Class 1 and Non-Attainment Areas

Zone 1. Zone 1 is generally in attainment with federal and state ambient air quality standards, with the exception of the Butte area. As discussed in Section 3.2.1.4, Butte is a non-attainment area for the particulate pollutant PM_{10}, which is a particulate pollutant of 10 micrometers or less in diameter. $PM_{2.5}$ is a particulate pollutant of 2.5 micrometers or less in diameter. A PM_{10} and $PM_{2.5}$ ambient air monitoring station is located in Butte at the Greeley School near current mining activities (MDEQ 2007a).

Zone 2. Zone 2 generally encompasses the area between the Mill Creek Substation to Dillon, Montana. Zone 2 also includes the PM_{10} non-attainment area in Butte.

Zone 3. Zone 3 generally encompasses the area near Dillon to the Idaho-Montana border. Zone 3 is in attainment with state and federal ambient air quality standards.

Zone 4. Zone 4 generally encompasses the area from the Montana-Idaho border to near Spencer, Idaho. Zone 4 is in attainment with state and federal ambient air quality standards.

Zone 5. Zone 5 generally encompasses the area near Spencer to Springfield, Idaho. Zone 5 is in attainment with state and federal ambient air quality standards. The southern border of Zone 5 is in the vicinity of the Fort Hall PM_{10} non-attainment area and the Portneuf Valley PM_{10} maintenance area near Pocatello. Primary sources of pollution in the Portneuf Valley include dust from roads, agricultural windblown dust, construction activities, and the J.R. Simplot Don Plant (IDEQ 2004). The primary identified source of PM_{10} pollution for Fort Hall was the Astaris facility that was closed in December 2001 (NorthWestern 2008a). Ambient air quality monitoring stations are located in Idaho Falls ($PM_{2.5}$) and Pocatello (PM_{10} and sulfur dioxide).

Zone 6. Zone 6 generally encompasses the area near Springfield to the Midpoint Substation near Jerome, Idaho. Zone 6 is in attainment with state and federal ambient air quality standards. The eastern border of Zone 6 is in the vicinity of the Fort Hall PM_{10} non-attainment area and the Portneuf Valley PM_{10} maintenance area. A $PM_{2.5}$ monitoring station is located in Twin Falls.

Existing Emission Sources

A variety of air emission sources exists within the zone boundaries. These sources include natural gas compressor stations, crematoriums, concrete mix plants, asphalt mix plants, gravel crushers, and mine sites. Several of these facilities have specific permit limits for criteria pollutants and hazardous air pollutants. Other potential sources of emissions along the route include fugitive dust from paved and unpaved roads, fugitive dust and gaseous emissions from farming activities, and smoke from open burning events and activities. A discussion of past, present, and reasonably foreseeable projects is presented in Chapter 4.

3.2.1.3 Climate Change

Gases that trap heat in the atmosphere are called greenhouse gases (GHG) because they transform the light of the sun into heat, similar to the glass walls of a greenhouse. Common GHGs include water vapor, carbon dioxide (CO_2), methane, nitrous oxide, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Without the natural heat trapping effect of GHGs, the earth's surface would be considerably cooler. However, ongoing scientific research has identified that anthropogenic (manmade) GHG emissions and changes in biological carbon sequestration due to land management activities are affecting the global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO_2 equivalent (CO_2e) concentrations to increase dramatically and are likely to contribute to overall global climate changes.[2] The Intergovernmental Panel on Climate Change (IPCC) recently concluded that "warming of the climate systems is unequivocal" and "most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations" (IPCC 2007).

Global mean surface temperatures have increased nearly 1.3°F from 1890 to 2006 (NOAA 2008). Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited a temperature increase of nearly 2.1°F since 1900, with nearly a 1.3°F increase since 1970. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change (Magnuson et al. 2000).

In its 2007 Fourth Assessment Report, the IPCC indicated that by the year 2100, global average surface temperatures would increase 1.1°F to 6.4°F. The National Academy of Sciences has confirmed these findings but has indicated there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed but are likely to be accentuated at higher latitudes. Warming during the winter is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Rising temperatures would increase water vapor in the atmosphere and reduce soil moisture, worsening generalized drought conditions, while at the same time enhancing heavy storm events. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict (IPCC 2007).

As with any field of scientific study, uncertainties are associated with the science of climate change. This does not imply that scientists do not have confidence in many aspects of climate change science. Some aspects of the science are known with virtual certainty because they are based on well-known physical laws and documented trends (EPA 2008c).

Contributing to the phenomena of climate change are emissions of GHGs (especially CO_2 and methane) from fossil fuel use, large wildfires, and activities using internal combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (known as albedo[3]).

Individual GHGs have varying global warming potentials and atmospheric lifetimes (Table 3.2-1). Global warming potential is defined as the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas (EPA 2009c). The reference gas for global warming potential is CO_2, which has a global warming potential of one. By comparison, the methane global warming potential is 21, as methane has a greater global warming effect than CO_2 on a molecule to molecule basis (EPA 2006b). The CO_2e is therefore a consistent methodology for comparing GHG emissions because it normalizes them to a consistent metric.

Of all GHGs in the atmosphere, water vapor is the most abundant, important, and variable. It is not considered a pollutant; in the atmosphere, water maintains a climate necessary for life. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves.

CO_2 is an odorless, colorless gas that has both natural and anthropogenic sources. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation

[2] CO_2e is a metric measure used to compare the emissions from GHGs based upon their global warming potential.
[3] Albedo is the measure of solar energy reflected back into space by the Earth's atmosphere.

from oceans; and volcanic outgassing. Anthropogenic sources of CO_2 are from burning coal, oil, natural gas, and wood. Concentrations of CO_2 were 379 parts per million globally in 2005, which equates to an increase of 1.4 parts per million per year since 1960 (IPCC 2007). Other activities that create CO_2 emissions include mineral production, waste combustion, and land use changes that reduce vegetation.

Table 3.2-1. Global Warming Potentials and Atmospheric Lifetimes of Select Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-Year Time Horizon)*
CO_2	50–200	1
Methane	12 ±3	21
Nitrous oxide	120	310
Hydrofluorocarbon (HFC-23)	264	11,700
Hydrofluorocarbon (HFC-134a)	14.6	1,300
Hydrofluorocarbon (HFC-152a)	1.5	140
Perfluorocarbon: Tetrafluoromethane (CF_4)	50,000	6,500
Perfluorocarbon: Hexafluoroethane (C_2F_6)	10,000	9,200
Sulfur Hexafluoride	3,200	23,900

Source: EPA 2008d.

* The global warming potential values shown correspond to the IPCC second assessment report (1996). Although a third assessment report with different numbers was prepared in 2007, per the U.S. Environmental Protection Agency (EPA), 1996 values are to be used to maintain consistency with international practice (EPA 2008d).

Methane is a flammable gas and is the main component of natural gas. When one molecule of methane is burned in the presence of oxygen, one molecule of CO_2 and two molecules of water are released. A natural source of methane is from the anaerobic decay of organic matter. Geological deposits of methane are known as natural gas fields, and the methane is extracted for fuel. Other sources are landfills, fermentation of manure, and cattle.

Nitrous oxide, also known as laughing gas, is produced naturally by microbial processes in soil and water. Anthropogenic sources of nitrous oxide include agricultural sources, industrial processing, fossil fuel-fired power plants, and vehicle emissions. Nitrous oxide is also used as an aerosol spray propellant and in medical applications.

Other gases that contribute to the GHG effect are chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride; however, for the purposes of this analysis, CO_2, methane, and nitrous oxide are considered the primary contributors to global climate change. Black carbon has also been studied for potential climate impacts, but it has yet to have a global warming potential assigned to it by IPCC or the EPA; as a result, calculations of these emissions have been excluded, consistent with the Montana and Idaho GHG inventories (see below). Further, black carbon emissions are expected to decline in the U.S. because of new federal emissions standards for engines and fuels.

3.2.1.3.1 Greenhouse Gas Inventories

A GHG inventory is an accounting of the amount of GHG emitted to or removed from the atmosphere over a specified period of time that can be attributed to activities by a particular entity (e.g., annual emissions and reductions attributed to the states of Montana and Idaho). A GHG inventory also provides information on the activities that cause emissions and removals, as well as the methods used to make the calculations. In 2004 total worldwide GHG emissions were estimated to be 49,000 million metric tons (MMT) CO_2e (IPCC 2007). In 2005 GHG emissions in the U.S. were 7,130 MMT CO_2e, a 16.0 percent increase over 1990 emissions of about 6,148.3 MMT CO_2e (EPA 2008d).

Idaho GHG Inventory. In Spring 2008, the Idaho Department of Environmental Quality (IDEQ) released the statewide GHG emissions inventory (IDEQ 2008). The inventory includes calculated historical emissions from 1990 to 2005 and projected emissions through 2020. Idaho's GHG emission levels are rising faster (31 percent) than the U.S. as a whole (16 percent). The majority of GHG emissions in Idaho are attributed to transportation and agriculture, accounting for approximately 27 percent and 25 percent, respectively, of the state's gross emissions (IDEQ 2008). Idaho is anticipating a 56 percent increase in GHG emissions by 2020 from 1990 levels.

Within Idaho's GHG emissions projections, imported electricity (including electricity from Montana) is included as part of the annual GHG calculations for the state because Idaho provides the end use for certain imported electricity supplies from Montana. Imported electricity GHG emissions averaged approximately 12.9 percent of Idaho's gross GHG emissions inventory for the years shown in Table 3.2-2.

Montana GHG Inventory. In September 2007, Montana completed its GHG inventory. As shown in Table 3.2-2, statewide gross GHG emissions were calculated at 32.2 MMT CO_2e in 1990 and are projected to increase to 41.7 MMT CO_2e in 2020. Statewide, Montana's rate of GHG emissions increase is lower than the national average (14 percent statewide, compared to 16 percent nationwide) (MDEQ 2007e). Montana is anticipating a 30 percent increase in GHG emissions by 2020 from 1990 emission levels. Per the state's GHG inventory, exported electrical emissions are viewed as emissions attributed to the destination, not the origin (MDEQ 2007e).

Table 3.2-2. Idaho and Montana Greenhouse Gas Emission Projections

	Gross Emissions (MMTs CO_2e)	Percentage of U.S. Gross Emissions
1990		
Idaho	28.4	0.46
Montana	32.2	0.52
2005		
Idaho	37.2	0.52
Montana	36.8	0.52
2020		
Idaho	44.1	N/A
Montana	41.7	N/A

Sources: EPA, 2008d; IDEQ 2008; Montana Department of Environmental Quality (MDEQ) 2007e

3.2.1.3.2 Predicted Effects of Climate Change

Substantial scientific evidence indicates that increased atmospheric concentrations of GHGs, as well as land use changes, are contributing to an increase in average global temperature (IPCC 2007). This warming is associated with climatic variability that exceeds the historic norm (climate change). Though the average global temperature has increased by 1.3°F from 1890 to 2006, temperature change and climatic variability are not evenly distributed across the globe. Observed temperature increases in northern latitudes have been greater than those in other areas, and seasonal low temperatures are generally increasing faster than high temperatures. Other unevenly distributed effects of climate change are altered weather patterns, sea levels, precipitation rates, wildfire occurrences, seasonal timing, desert distribution, and plant and animal distribution. Given the observed and anticipated long-term dynamic of climate change, change-related impacts on the resources within the planning area have been analyzed to the degree practicable and reasonably foreseeable.

3.2.1.4 Regulatory Setting

The sections below describe laws and regulations that govern and provide for the management of air quality.

Clean Air Act

National Ambient Air Quality Standards

The Clean Air Act of 1970 and its amendments give the EPA authority to establish and enforce air quality standards to protect human health and the environment. The Clean Air Act directs EPA to establish the NAAQS for six criteria air pollutants of concern: carbon monoxide, lead, nitrogen oxides, ozone, $PM_{2.5}$ and PM_{10}, and sulfur dioxide. If the ambient concentration of any of the six pollutants exceeds the NAAQS, the affected area is designated a non-attainment area. An area can be designated non-attainment for one or more of the six pollutants.

The EPA delegates to each state the primary responsibility for maintaining air quality within its boundaries per Section 107 of the Clean Air Act. The Clean Air Act of Montana reinforces this responsibility and goes further by allowing smaller regions of the state to develop local air pollution control programs. The Idaho Environmental Protection and Health Act (Idaho Administrative Code, Title 39, Chapter 1) grants IDEQ similar authorities. States can develop more stringent air quality standards than the NAAQS. Table 3.2-3 lists relevant state and federal air quality standards.

Attainment status with the national and state ambient air quality standards is determined by monitoring ambient pollutant concentrations. An area designated as in attainment is meeting the air quality standards. Non-attainment status means that air pollution levels within a defined area have been proven to exceed an air quality standard. Maintenance status means that air pollution levels in a defined area were previously designated non-attainment but are now consistently meeting air quality standards.

Butte is a designated non-attainment area for PM_{10} (MDEQ 2007c). Three proposed alternatives would pass through and two alternatives would be within 10 kilometers (km) (6.2 miles) of the Butte PM_{10} non-attainment area (Table 3.2-4) (Figure 3.2-1).

The Pocatello area includes the Fort Hall PM_{10} non-attainment area and the Portneuf Valley PM_{10} maintenance area (EPA 2009b) (Figure 3.2-1). None of the alternatives pass through or are within 10 km (6.2 miles) of either area. The Fort Hall non-attainment area and Portneuf Valley maintenance area are discussed in Section 3.2.3.1.

Of the six criteria pollutants, PM is most commonly associated with the construction of transmission lines. PM can be a solid or liquid particle in the air and can be created by a variety of sources. PM can be emitted directly into the air or can be formed when certain gaseous pollutants react to form particles. Studies have shown that PM, particularly in the $PM_{2.5}$ size category, poses significant health risks because of its ability to infiltrate and impact the human respiratory system (Annesi-Maesano et al. 2007; Pope et al. 2002). The major health concerns from prolonged PM_{10} and $PM_{2.5}$ exposure are effects on breathing and respiratory systems, damage to lung tissue, cancer, and premature death (EPA 2008a). $PM_{2.5}$ is also a major contributor to regional haze and impaired visibility (EPA 2008b). In 1999 EPA promulgated rules requiring every state to develop and submit a State Implementation Plan (SIP) to EPA addressing regional haze reduction (EPA 2009a). Thirty-seven states, including Idaho and Montana, failed to meet the December 2007 deadline for submitting a regional haze SIP (EPA 2009a). The MDEQ determined that it could not develop a sufficient regional haze SIP and relinquished this responsibility to EPA (MDEQ 2007d). The EPA will develop a Federal Implementation Plan for regional haze by 2011 for all states relinquishing SIP responsibility (EPA 2009a). The IDEQ is continuing to work on the state's Regional Haze SIP and anticipates that a draft will be available for public comment in 2010 (Edwards 2009).

Table 3.2-3. Idaho, Montana, and National Ambient Air Quality Standards

Pollutant	Averaging Time	Air Quality Standard Concentration (μg/m³)		
		Idaho	Montana	National[4]
Ozone	1 hour	235	196	235
	8 hour	—	—	157
Carbon monoxide	1 hour	40,000	26,450	40,000
	8 hour	10,000	10,000	10,000
Nitrogen oxides	1 hour	—	564[5]	188[4]
	Annual	100	94	100
Sulfur dioxide	1 hour	—	1,300	—
	3 hour	1,300	—	1,300
	24 hour	365	262	365
	Annual	80	52	80
PM_{10}	24 hour	150	150	150
	Annual	50	50	—
$PM_{2.5}$	24 hour	—	—	35
	Annual	—	—	15
Lead	90-day rolling average	—	1.5	.15
	Quarterly	1.5	—	—

Sources: Idaho Administrative Code, Idaho Administrative Procedures Act (IDAPA) 58.01.01 §577.; MDEQ 2007b

[4] As of April 2010, stricter NAAQS are either proposed or being considered for ozone, carbon monoxide, sulfur dioxide, and $PM_{2.5}$.
[5] A stricter national standard for nitrogen oxides was adopted in February 2010. Montana, as well as other states, will have to update their state ambient air quality standards so that they are not less strict than the federal standards.

Prevention of Significant Deterioration Classification

Certain areas such as national parks and some national wilderness areas receive special protection under the Clean Air Act. These areas are referred to as mandatory Class I areas under the Prevention of Significant Deterioration (PSD) section of the Clean Air Act and allow only small incremental degradation of air quality over baseline levels. States and tribal governments have the authority to designate additional, non-mandatory Class I areas.

Twenty-one PSD Class I areas have been designated within 300 km of the alternatives.[6] No alternatives are within a Class I area (Figure 3.2-1). The closest distance was determined from the 21 Class I areas to each alternative. Table 3.2-5 shows the three closest Class I areas and corresponding distances for each alternative route segment. The three closest Class I areas to the alternatives are the Anaconda Pintler Wilderness (16 miles), the Craters of the Moon Wilderness (24 miles), and the Red Rock Lakes Wilderness (24 miles). The distances from the alternatives to each of the 21 Class I areas within the study area are shown in Appendix C.2.

Table 3.2-4. Zone Alternatives Near Butte PM_{10} Non-Attainment Area

Zone Alternative	Closest Distance to Butte PM_{10} Non-Attainment Area (Miles)	Miles of Alternative Within 10 km (6.2 miles) of Butte PM_{10} Non-Attainment Area
1A	8	0
1B	Passes Through	25
1C	Passes Through	23
1D	11	0
2A	5	6
2B	5	6
2C	Passes Through	25
2D	8	0
2E	11	0

[6] A 300-km radius from the alternatives was used to provide a conservatively large area of potential impacts to Class I areas. The 300-km radius to determine areas of potential impacts is based on the accuracy limits of the air emissions modeling programs. The actual impacts to air quality from construction activities will occur in much closer distances to the construction activities (less than 1 mile).

Table 3.2-5. Three Closest Class I Areas and Distances to Each Alternative

	Alternatives and Distances to Class I Areas (Miles)																	
Class I Area	**1A**	**1B**	**1C**	**1D**	**2A**	**2B**	**2C**	**2D**	**2E**	**3A**	**3B**	**3C**	**4A**	**5A**	**5B**	**5C**	**5D**	**6A**
Anaconda Pintler Wilder-ness	16	16	16	43	16	16	16	16	43	48	49	48	106	124	124	124	124	193
Craters of the Moon Wilder-ness	184	173	176	178	132	133	133	132	133	90	90	90	86	24	24	30	30	28
Red Rock Lakes Wilder-ness	102	84	83	84	64	62	60	64	60	24	24	24	19	24	24	24	24	119

The areas surrounding the proposed project and its alternatives are classified as PSD Class II areas (40 CFR 52.1382). PSD Class II areas allow for moderate growth or degradation of air quality from baseline levels within certain limits.

Air Quality Permitting

The MDEQ and IDEQ require air quality permits for many stationary emissions sources, certain portable emissions sources, and some open burning activities. Each potentially applicable permit is discussed below. No stationary air emissions sources are expected to be associated with construction or operation of the proposed project; therefore, no stationary source air quality permits would be required. Construction activities must, however, include precautions to control fugitive dust emissions per ARM 17.8.308 and IDAPA 58.01.01 §§650–651.

Portable Source Permits

Portable sources of air emissions include portable crushers, screens, and mixers. Montana and Idaho both require air quality permits to install and operate certain portable sources (ARM 17.8.743 and IDAPA 58.01.01 §§790–799). Depending on the availability of concrete, construction of certain segments of the various alternative routes could call for the use of a portable concrete batch plant that may require a portable source air quality permit from one or both agencies.

Open Burning

When necessary, the proposed project would require the clearing of vegetation for the transmission line right-of-way and the construction of access roads. In forested areas, logging would likely be used where feasible, resulting in slash. Slash may be chipped, scattered, or burned. Slash burning would be subject to MDEQ, IDEQ, USDA Forest Service (USFS), and Bureau of Land Management (BLM) open burning regulations.

The MDEQ requires that entities qualifying as a “major open burner” apply for and obtain an open burning permit before conducting open burning (ARM 17.8.610). A major open burner is defined as any person, agency, institution, business, or industry conducting any open burning that will emit more than 500 tons per calendar year of carbon monoxide or 50 tons per calendar year of any other pollutant (ARM 17.8.601). A major open burner must apply impact-limiting management practices such as:

- Scheduling burning during periods and seasons of good ventilation
- Limiting the amount of burning to be performed at any one time
- Using ignition and burning techniques that minimize smoke production

- Selecting sites that will minimize smoke impacts
- Precluding the burning of listed materials such as treated wood and animal carcasses
- Notifying local fire control authorities before any burning activities occur

Open burning activities below the major open burning thresholds would follow the minor open burning guidelines in Montana (MDEQ 2007e). Minor burning activities have restrictions based on current air quality conditions and the time of year. Burning activities would require notifications to MDEQ and local health departments, fire, or law enforcement authorities.

The IDEQ has developed similar permit requirements and open burning restrictions as Montana. Idaho's open burning requirements are in IDAPA 58.01.01 §§600-623.

The Montana/Idaho Airshed Group is a multi-agency coalition that manages large open burning projects to minimize effects to air quality. The Montana/Idaho Airshed Group Operating Guide (2008) provides guidance to potential major open burners in the affected area of the proposed project.

3.2.2 Analysis Methods

The sections below describe the methods that were used to analyze the proposed project's potential to affect both air quality and atmospheric values.

3.2.2.1 Air Quality

Generally, the air quality impact analysis has been adapted from information prepared by NorthWestern (2008a) in support of the MFSA Application, and has been updated as necessary.

The analysis area (Chapter 2, Figure 2-1) and surrounding airsheds were evaluated based on anticipated impacts and mitigating actions. The analysis area includes the airsheds within the zone boundaries along the proposed routes.

3.2.2.2 Climate Change

Climate change analyses are comprised of several factors including GHGs, land use management practices, and the albedo effect. The tools necessary to quantify climatic impacts are currently unavailable; consequently, impact assessment of specific effects of anthropogenic activities cannot be determined. Additionally, specific levels of significance have not yet been established. Therefore, climate change analyses for the purpose of this EIS are limited to accounting and disclosing of factors that contribute to GHG emissions. Qualitative and/or quantitative evaluations of potential contributing factors are included where appropriate and practicable. As stated in the CEQ *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, "[i]n accordance with NEPA's rule of reason and standards for obtaining information regarding reasonably foreseeable significant adverse effects on the human environment, action agencies need not undertake exorbitant research or analysis of projected climate change impacts in the project area or on the project itself, but may instead summarize and incorporate by reference the relevant scientific literature. See, e.g., 40 CFR 1502.21, 1502.22" (CEQ 2010).

GHG emissions are typically expressed in terms of CO_2e emissions. Contained within any quantified CO_2e emissions projection are three generally separate emissions (CO_2, methane, and nitrous oxide), which, using the global warming potential of each, are expressed as one (CO_2e) emission. The combustion of fossil fuels during construction and operation of any proposed project typically yields CO_2 and, to a much smaller extent, methane and nitrous oxide. The analysis shown below is based on a technical memorandum prepared by Bison Engineering (2010) that summarizes the anticipated CO_2e emissions during construction of the proposed project, the BLM Land Use Planning Handbook (BLM 2005c), and information from the Climate Registry.

The analysis in this section focuses on the nature and magnitude of the change in GHG emissions due to implementation of the proposed project. GHG emissions associated with the proposed project would result from project construction. The proposed project would not increase the overall capacity of the existing electrical generation system and, as such, no direct operational emissions would be associated with its implementation. Construction-related activities would generate emissions along the preferred alignment and on roadways. Impacts associated with construction emissions are quantitatively discussed, although, as noted above, no formal thresholds have been developed that would aid in the determination of significance of effect of the proposed project.

The proposed project does not involve an increase in capacity of an electricity generation facility; it does involve modifying existing electrical transmission facilities. As noted in both the Idaho and Montana GHG inventories (Section 3.2.1.3.1), electrical exports from Montana and imports by Idaho are expected to increase between now and 2020 and have already been assumed as part of both states' inventories. It is assumed that a portion of those additional electricity supplies exported would use the proposed project. Further, it is assumed that electrical exports from Montana would increase even without implementation of the proposed project. As such, no direct emissions associated with additional electricity supplies would result from implementation of the proposed project. Therefore, unless otherwise noted, the effects of the proposed project would be limited to construction activities.

Construction emissions associated with the proposed project have been estimated using a combination of emission factors and formulas as provided in the U.S. Department of Energy Transportation Energy Data Book, 27th Edition (DOE 2008a), the Climate Registry's General Reporting Protocol (version 1.1, 2008), EPA's Compilation of Emission Factors, also known as AP 42 (EPA 1996), the National Aeronautics and Space Administration Biomass Burning and the Production of Greenhouse Gases (1994), and the information provided in Chapter 2 of this EIS.

While global and national inventories are established, regional and state-specific inventories are in varying levels of development. Montana and Idaho have developed their own state-specific GHG inventories; however, due to the evolving nature of GHG emission evaluations and calculations, it is reasonable to assume that the existing inventories may be revised in the future based on new quantification techniques; additional quantification techniques are currently in development. For example, there is a good understanding of climate change emissions related to fuel usage; however, the measuring and understanding of the effects of albedo are less comprehensive. Analytical tools necessary to quantify climatic impacts are currently unavailable, although quantification of GHG emissions is possible. As a consequence, impact assessment of the specific effects of anthropogenic sources cannot be determined.

3.2.3 Impact Analysis

This section describes the potential impacts to regional air quality and climate change that may result from the proposed project.

3.2.3.1 Resource Impacts

3.2.3.1.1 Air Quality

Impacts to air quality would occur from the following activities: construction, fugitive dust emissions from access roads, and small amounts of ozone and nitrous oxides generated from the transmission line corona. Construction activities would have the greatest potential to impact air quality in the study area. Emissions during construction activities would include particulate and gaseous pollutants.

Potential sources of particulate emissions (PM_{10} and $PM_{2.5}$) during construction would include fugitive dust and, to a lesser degree, engine exhaust from vehicles and mobile equipment traveling on access roads; diesel generators; portable concrete batch plants; and open burning associated with land clearing.

Potential sources of gaseous pollutants would include motorized construction equipment, vehicles used to transport workers and equipment, open burning associated with land clearing, and diesel generators required for concrete batch plants. Gaseous pollutants that would be generated include the criteria pollutants nitrogen dioxide, sulfur dioxide, and carbon monoxide and the GHGs CO_2, methane, and nitrous oxide.

The potential for gaseous and particulate emissions is higher for alternatives requiring larger areas of disturbance to construct towers, set up staging areas, operate portable concrete batch plants, and construct access roads. Table 3.2-6 summarizes the estimated land disturbance for each alternative from these activities and ranks the potential for air quality impacts from each alternative within each zone based on the amount of cleared area required for construction.

Zone 1. Zone 1 includes the PM_{10} non-attainment area in Butte and is adjacent to the Anaconda Pintler Wilderness, a Class I area. This zone has four alternatives, with two of them (Alternatives 1B and 1C) passing through the PM_{10} non-attainment area (Table 3.2-4). In Zone 1, Alternative 1A would have the most total disturbed area, and Alternative 1D would have the least (Table 3.2-6). The four alternatives would come within 16 to 43 miles of the Anaconda Pintler Wilderness Area (Table 3.2-5). None of the Zone 1 alternatives are anticipated to measurably impact the Butte non-attainment area or the Anaconda Pintler Wilderness Area due to construction activity occurring over large geographical areas. The mitigation measures discussed in Section 3.2.4 would further reduce potential impacts to these airsheds. The proposed project also includes building one new substation in Townsend and building a new substation adjacent to the existing substation in Mill Creek if Alternative 1A, 1B, or 1C is chosen as the route through Zone 1. The Townsend Substation site would be approximately 52 acres. The addition of the new Mill Creek Substation would result in approximately 42 acres of ground disturbance.

Table 3.2-6. Estimated Land Disturbance of Alternatives

Zone	Alternative	Length of Alternative (Miles)	Permanently Disturbed Area (Acres)	Temporarily Disturbed Area (Acres)	Total Disturbed Area (Acres)	Impacts to Air Quality Within Each Zone
1	1A	82	1,139	538	1,678	Highest
	1B	90	699	840	1,539	Second highest
	1C	95	426	1,008	1,434	Second lowest
	1D	54	353	533	886	Lowest
2	2A	58	293	564	857	Lowest
	2B	57	331	573	904	Third lowest
	2C	90	723	828	1,551	Highest
	2D	63	576	558	1,134	Second highest
	2E	54	377	520	897	Second lowest
3	3A	72	278	759	1,037	Lowest
	3B	67	367	707	1,074	Second lowest
	3C	72	403	747	1,150	Highest
4	4A	20	71	217	289	Highest
5	5A	107	259	1,142	1,401	Lowest
	5B	114	294	1,207	1,501	Second highest
	5C	117	299	1,280	1,579	Highest
	5D	111	283	1,211	1,494	Second lowest
6	6A	105	334	1,172	1,505	Highest

Zone 2. The northern portion of Zone 2 overlaps Zone 1. Zone 2 includes the Butte PM_{10} non-attainment area and is adjacent to the Anaconda Pintler Wilderness Area. This zone has five alternatives with one (Alternative 2C) passing through the PM_{10} non-attainment area (Table 3.2-4). Alternative 2C would also result in the most disturbed area of the Zone 2 alternatives. Alternatives 2A and 2B would come within 5 miles of the non-attainment area at their closest points and would have similar estimated disturbed areas. Alternative 2D would come within approximately 8 miles of the non-attainment area at its closest point and would have the second highest estimated disturbed area. Alternative 2E would be approximately 11 miles from the Butte PM_{10} non-attainment area at its closest point. Alternative 2E would have similar land disturbance impacts as Alternatives 2A and 2B (Table 3.2-6). The five alternatives would come within 16 to 43 miles of the Anaconda Pintler Wilderness Area (Table 3.2-5). None of the Zone 2 alternatives are anticipated to measurably impact the Butte non-attainment area or Anaconda Pintler Wilderness Area because of the distances to the sensitive airsheds and air dispersion over the large geographical construction areas. The mitigation measures discussed in Section 3.2.4 would further reduce potential impacts to these airsheds.

Zone 3. Zone 3 is in attainment with Montana and federal ambient air quality standards and includes three alternatives. The Zone 3 alternatives would come within 24 miles of the Red Rock Lakes Wilderness, a Class I area (Table 3.2-5). Alternatives 3A, 3B, and 3C are similar in length and disturbed area impacts (Table 3.2-6). None of the Zone 3 alternatives are anticipated to measurably impact air quality in the Red Rock Lakes Wilderness Area primarily because of the distance to this airshed. The mitigation measures discussed in Section 3.2.4 would further reduce potential impacts to these airsheds.

Zone 4. Zone 4 is in attainment with Idaho and federal ambient air quality standards. This zone has one alternative (Table 3.2-6). Alternative 4A would come within 19 miles of the Red Rock Lakes Wilderness Area. Alternative 4A is not anticipated to measurably impact air quality in the Red Rock Lakes Wilderness Area primarily because of the distance to this airshed. The mitigation measures discussed in Section 3.2.4 would further reduce potential impacts to these airsheds.

Zone 5. Zone 5 is in attainment with Idaho and federal ambient air quality standards and includes four alternatives. The four Zone 5 alternatives are similar to one another in length and estimated disturbed area impacts (Table 3.2-6). The Zone 5 alternatives would come within 8 to 30 miles of three sensitive airsheds. The first of these is the Fort Hall PM_{10} non-attainment area that is currently considered to exceed state and federal ambient air quality standards. The second sensitive airshed is the Portneuf Valley that formerly violated PM_{10} ambient air quality standards and is now under an air quality maintenance program. The third sensitive airshed is the Craters of the Moon Wilderness Area, a federal Class I area encompassing approximately 42,000 acres in Southern Idaho. Alternatives 5C and 5D would come within approximately 8 miles of the Fort Hall non-attainment area, within approximately 14 miles of the Portneuf Valley maintenance area, and within 30 miles of the Craters of the Moon Wilderness Area. Alternatives 5A and 5B would come within approximately 21 miles of the Fort Hall area, approximately 29 miles from the Portneuf Valley area, and approximately 24 miles from the Craters of the Moon Wilderness Area.

The Craters of the Moon National Monument and Preserve is an area encompassing approximately 750,000 acres of public lands located on the Snake River Plain of Southern Idaho. The CMNMP is cooperatively managed by the BLM and the National Park Service (NPS) and includes the approximate 42,000 acre Craters of the Moon Wilderness Area. The Craters of the Moon National Monument and Preserve has a management plan developed jointly by the BLM and the U.S. National Park Service (BLM 2007) which includes management considerations to protect air quality within the Craters of the Moon Wilderness Area as well as the rest of the Craters of the Moon National Monument and Preserve.

The "Desired Future Condition" related to air quality within the Craters of the Moon National Monument and Preserve management plan is: "Air quality-related values, particularly visibility, within the Class I Craters of the Moon Wilderness Area are not degraded, and adverse impacts do not occur. Air quality parameters that negatively affect human health, visibility, or biological diversity remain at or below current levels (BLM 2007, pg 35)."

Management Actions related to air quality within the Craters of the Moon National Monument and Preserve include: "The agencies will work proactively with surrounding communities, land management agencies, and the Idaho Department of Environmental Quality to limit increases in particulate matter and sulfur dioxide, which could reduce visibility throughout the entire Monument (BLM 2007, pg 35)."

Additional air quality in this management plan includes: "Dust control measures would be used during construction activities, and all construction machinery would be required to meet air emission standards. Appropriate smoke management controls will be incorporated in plans for prescribed fire operations to protect the air quality-related values of Class 1 airsheds (BLM 2007, Appendix A, pg 112)."

Alternative 5A would also pass through the Sagebrush Steppe Ecosystem Reserve (SSER) on the Idaho National Laboratory (INL) Site. The Reserve management plan includes considerations to protect air quality (BLM 2004). Per the management plan, the air quality in SSER is most affected by smoke from wildfires and dust from wind erosion following fires and other soil disturbance (BLM 2004).

None of the Zone 5 alternatives are anticipated to measurably impact any of these sensitive airsheds because of construction activity occurring over a large geographical expanse and the distances to these airsheds. The mitigation measures discussed in Section 3.2.4 would further reduce potential impacts to these airsheds, and they are consistent with the air quality management considerations of The Reserve and the Craters of the Moon National Monument and Preserve.

Zone 6. Zone 6 is in attainment with Idaho and federal ambient air quality standards and includes one alternative. Alternative 6A is approximately 20 miles from the Fort Hall non-attainment area, approximately 29 miles from the Portneuf Valley maintenance area, and 28 miles from the Craters of the Moon National Monument and Preserve. Construction activities are not anticipated to have an effect on the Fort Hall, Portneuf Valley, Craters of the Moon National Monument and Preserve areas because of construction activity occurring over a large geographical expanse and the distances to these airsheds. The mitigation measures discussed in Section 3.2.4 would further reduce potential impacts to these airsheds.

Within Zone 6, the proposed project includes expanding the Midpoint Substation located about 12 miles northeast of Jerome, Idaho. Engineering studies would be completed to determine the ultimate modifications required at the Midpoint Substation. Any required improvements to this substation are not expected to affect local air quality.

The proposed project considers seven microwave locations in Montana and seven microwave locations in Idaho. Of the seven locations in Montana, only three (Cardwell Hill, Fleecer, and Mauer Mountain) would require tower construction, building placement, or fencing. Of the seven locations in Idaho, four (Humphrey Ridge, Big Grassy Substation, Howe Peak, and American Falls SE) would require tower construction, building placement, or fencing. None would require new access roads. Because of the pre-existing development at these locations, no adverse effects to air quality from construction, operation, or maintenance of the communication system are anticipated.

Normal transmission line operations would produce a small amount of ozone and nitrogen oxides from a photochemical reaction generated by corona activity. During damp or rainy weather, the ozone produced would be less than 1.0 part per billion, which would be insignificant when compared to natural levels and their fluctuations (NorthWestern 2008a). The amount of nitrogen oxides generated from corona activity would also be insignificant as it has been found to be less than one sixth of the amount of ozone generated from corona activity (Electric Power Research Institute 1982). The corona activity generated can also vary in intensity with altitude changes (BPA 2008).

Vehicular emissions and fugitive dust from access road travel associated with the long-term maintenance and repair of project components are additional sources of emissions. The quantities of gaseous and particulate pollutants generated during operation and maintenance are expected to be insignificant and would have minimal impacts on local and regional air quality.

3.2.3.1.2 Air Quality Impacts Summary

The potential for air quality impacts would be greatest for alternatives requiring the most disturbed area to construct the proposed project. Alternatives with the greatest potential for air quality impacts within each zone are 1A, 2C, 3C, and 5C. Alternatives with the least potential for air quality impacts within each zone are 1D, 2A, 3A, and 5A. Alternatives 4A and 6A are the only alternatives within Zones 4 and 6, respectively.

Federal, state, and local air quality regulatory programs provide a useful baseline for determining the significance of impacts to air quality from a proposed project. Generally, these programs regulate emissions from mobile and stationary sources to an extent that has been determined adequate to promote a healthful environment. With that framework in mind, a project that complies with the full set of applicable air quality regulations is considered to emit air pollutants at an acceptable level resulting in impacts that are, by extension, not considered substantial. Many of the activities associated with the proposed project are not regulated because they have not been identified as potentially significant contributors to air quality degradation. These include various construction activities and traveling on paved and unpaved roads. Some proposed project activities such as operating portable cement batch plants or open burning may be regulated depending on characteristics of the specific activity. The project owner would be responsible for complying with all limits and conditions that apply to these activities. Finally, some emissions activities such as operating fuel burning equipment and vehicles are regulated at the manufacturer level by placing requirements on the products.

Because the proposed project-related air emissions are either deemed too insignificant to regulate or insignificant as a result of adherence to applicable regulations, the considerations described below lead to a conclusion that impacts of the proposed project would not be substantially adverse.

Construction activity would be dispersed over a relatively long period of time and over a geographical expanse covering hundreds of miles. Consequently, no single area would be exposed to project emissions for more than 1 month. In many cases, the exposure period would be much shorter.

Most of the proposed project would be constructed in rural areas with little or no potential to affect local human populations. Further, the types of sources that would accompany the project do not produce emissions that travel long distances; rather, their impacts would be localized within a distance of less than 500 yards.

Finally, implementation of the mitigation measures described in Section 3.2.4 for all construction areas would further reduce impacts to air quality from construction.

Overall, the differences in potential impacts to air quality from construction of any of the alternatives are negligible, and no alternative is expected to cause substantially adverse air quality affects.

Operation of the proposed project would not substantially affect air quality. The agency stipulations (Section 3.2.4) would further reduce impacts from pollutants generated on access roads and remaining disturbed areas following construction.

3.2.3.1.3 Climate Change

During construction of any of the contemplated alternatives, heavy construction equipment would be used to remove vegetation and to construct and install the high-voltage transmission towers associated with the proposed project. Because the proposed project and its alternatives would involve different route segments from the point of origin in Montana to the endpoint in Idaho, the amount of vegetation to be disturbed would vary depending on the selected route for each zone. However, as currently proposed, the number of pieces of heavy equipment and the length of construction would remain the same under all alternatives. The amount of vegetation clearing required before construction was used to generate the potential emissions from slash burning. Equipment emissions were generated from a standard list of construction equipment used in power line construction and emission rates for these individual pieces of equipment. Maximum slash burn GHG emissions for each zone of the proposed alignment and overall equipment emissions are shown in Table 3.2-7.

If the alternatives from each zone with the highest emissions associated with them are combined, total maximum emissions associated with the proposed project would result in about 74,008 metric tons of CO_2e or 27,750 metric tons annually during construction activities (Table 3.2-7). These emissions represent 0.00006 percent of 2004 global GHG emissions and 0.0004 percent of 2004 U.S. GHG emissions (EPA 2008d). In terms of the statewide inventories, the maximum annual GHG emissions generated by the proposed project in Montana and Idaho (Table 3.2-7) would represent 0.04 percent of Idaho's 2005 GHG emissions (IDEQ 2008) and 0.1 percent of Montana's 2005 GHG emissions (MDEQ 2007e). There is no currently accepted methodology to quantify the effects of a project's contribution to statewide, national, or global GHG emissions. The ability to quantify incremental climate change effects of specific activities such as the proposed project and alternatives is not currently available. As a result, a quantitative assessment of the proposed project's effects on climate change cannot be performed. Therefore, climate change analysis in this EIS is limited to the accounting of emission levels to the maximum extent feasible and disclosing of factors that contribute to climate change. For the purposes of this analysis, equipment emissions are assumed to be spread evenly across the six zones, with approximately 5,355 metric tons of CO_2e associated with the use of heavy construction equipment in each zone. The discussion below clarifies the GHG emissions associated with slash burn activities under each alternative.

Zone 1. Of the four alternatives in Zone 1, Alternative 1A would result in clearing more vegetation than the other three alternatives and would therefore have a correspondingly higher contribution to GHG emissions. This would occur because Alternative 1A is 83.8 miles long and would involve the temporary and permanent disturbance of 854 and 1,027 acres of vegetation, respectively. The majority of acreage in this zone is forest land and would result in the release of approximately 29,708 metric tons of CO_2e emissions. Of the other three alternatives in Zone 1, Alternative 1B would result in the release of about 13,465 metric tons of CO_2e compared to 4,261 and 4,759 metric tons from Alternatives 1C and 1D, respectively (Table 3.2-7). Alternative 1C is the longest in this zone, but emissions are predicted to be lower because it would remove fewer acres of vegetation.

Zone 2. Zone 2, which has five alternatives, represents the second greatest potential for vegetation clearing along the proposed alignment. Alternatives 2C and 2D would result in approximately 11,654 and 10,173 metric tons of CO_2e as a result of slash burn activities. Alternative 2C represents the longest segment in this zone, approximately 90 miles, with 360 acres of disturbed land. Alternatives 2A, 2B, and 2E would have substantially fewer slash burn activities, resulting in 4,309, 4,152, and 3,258 metric tons of CO_2e, respectively (Table 3.2-7).

Table 3.2-7. Greenhouse Gas Emissions Associated with Construction Activities

Activity	CO_2 (Metric Tons)	Nitrous Oxide (Metric Tons)	Methane (Metric Tons)	CO_2e[1] (Metric Tons)
Slash Burning				
1A	24,677	6	151	29,708
1B	11,128	3	67	13,465
1C	3,510	1	21	4,261
1D	3,945	1	24	4,759
2A	3,537	1	22	4,309
2B	3,401	1	21	4,152
2C	9,795	2	59	11,654
2D	8,461	2	52	10,173
2E	2,612	1	16	3,258
3A	272	–	2	314
3B	381	–	2	423
3C	354	–	2	394
4A	22	–	–	22
5A	73	–	–	73
5B	–	–	–	–
5C	–	–	–	–
5D	–	–	–	–
6A	–	–	–	–
Equipment Emissions	31,700	0.68	10.4	32,128
Total Maximum Emissions (1A, 2C, 3A, 4A, 5B, 6A, and equipment)				74,008
Maximum Emissions in Montana[2]				57,849
Maximum Emissions in Idaho[2]				16,159
Maximum Annual Emissions[3]				~27,750

Source: Bison Engineering, Inc. April 2010.

1 Nitrous oxide and methane emissions are multiplied by their global warming potential (310 and 21, respectively) when converting emissions to CO_2e.

2 Assumes that 50 percent of construction equipment emissions would occur in Montana and 50 percent would occur in Idaho.

3 Based on a 32-month construction period.

Zone 3. Compared to Zones 1 and 2, Zone 3 would result in the need for slash burn activities on fewer than 15 acres for each of the contemplated alternatives. Of the three alternatives, Alternative 3B would require vegetation removal on 14 acres, resulting in approximately 423 metric tons of CO_2e and would represent the highest level of potential GHG emissions. Alternatives 3A and 3C would generate 314 and 394 metric tons of CO_2e, respectively, during slash burn activities (Table 3.2-7).

Zone 4. In Zone 4, approximately 3 acres of slash burn activities would be required, resulting in 22 metric tons of CO_2e (Table 3.2-7).

Table 3.2-7. Greenhouse Gas Emissions Associated with Construction Activities

Activity	CO_2 (Metric Tons)	Nitrous Oxide (Metric Tons)	Methane (Metric Tons)	CO_2e[1] (Metric Tons)
Slash Burning				
1A	24,677	6	151	29,708
1B	11,128	3	67	13,465
1C	3,510	1	21	4,261
1D	3,945	1	24	4,759
2A	3,537	1	22	4,309
2B	3,401	1	21	4,152
2C	9,795	2	59	11,654
2D	8,461	2	52	10,173
2E	2,612	1	16	3,258
3A	272	–	2	314
3B	381	–	2	423
3C	354	–	2	394
4A	22	–	–	22
5A	73	–	–	73
5B	–	–	–	–
5C	–	–	–	–
5D	–	–	–	–
6A	–	–	–	–
Equipment Emissions	31,700	0.68	10.4	32,128
Total Maximum Emissions (1A, 2C, 3A, 4A, 5B, 6A, and equipment)				74,008
Maximum Emissions in Montana[2]				57,849
Maximum Emissions in Idaho[2]				16,159
Maximum Annual Emissions[3]				~27,750

Source: Bison Engineering, Inc. April 2010.

1 Nitrous oxide and methane emissions are multiplied by their global warming potential (310 and 21, respectively) when converting emissions to CO_2e.

2 Assumes that 50 percent of construction equipment emissions would occur in Montana and 50 percent would occur in Idaho.

3 Based on a 32-month construction period.

Zone 3. Compared to Zones 1 and 2, Zone 3 would result in the need for slash burn activities on fewer than 15 acres for each of the contemplated alternatives. Of the three alternatives, Alternative 3B would require vegetation removal on 14 acres, resulting in approximately 423 metric tons of CO_2e and would represent the highest level of potential GHG emissions. Alternatives 3A and 3C would generate 314 and 394 metric tons of CO_2e, respectively, during slash burn activities (Table 3.2-7).

Zone 4. In Zone 4, approximately 3 acres of slash burn activities would be required, resulting in 22 metric tons of CO_2e (Table 3.2-7).

Zone 5. In Zone 5, only Alternative 5A would require slash burn activities. Approximately 10 acres would be affected, resulting in 73 metric tons of CO_2e (Table 3.2-7).

Zone 6. Construction activities in Zone 6 would require no slash burn activities. Emissions associated with construction activities would be attributed only to the use of heavy construction equipment (Table 3.2-7).

In terms of direct effects of operation of the project, vehicular emissions and fugitive dust from unpaved access road usage are the only additional sources of emissions associated with the long-term operation of project components. These emissions would be associated only with maintenance of the proposed project and would be performed as needed. As a result, emissions associated with these activities would be minimal. Potential GHG emissions from operation of the proposed project are not considered an adverse affect, and mitigation is not required for long-term operations. As currently proposed, no indirect effects to climate change would result from construction of the proposed project.

Indirect effects of operation of the proposed project would be limited to transmission losses along the proposed alignment. Per the Climate Registry (2009), a portion of the electrical current sent along a high-voltage transmission line is lost during the transfer from origin to destination. A suggested default transmission loss factor for high-voltage lines, such as the proposed project, is 3 percent (Climate Registry 2009). A transmission loss factor of 3 percent is considered to be a reasonable upper bound estimate based on data published by the North American Electric Reliability Corporation and the Federal Energy Regulatory Commission (NorthWestern 2008). Therefore, it is reasonable to assume that the proposed project would require NorthWestern to transmit approximately 3 percent additional electricity at the point of origin to provide the desired electricity supplies at the destination.

The proposed project currently involves an increase in transmission capacity but no increase in electricity generation capacity. Existing electrical generation capacity in Montana and Idaho would continue to provide the electricity that would be transmitted along the proposed alignment. This electricity would be transmitted along other corridors at similar loss rates if the proposed project is not constructed; therefore, an increase in generation required to generate the extra 3 percent would occur regardless of project implementation. The proposed project is not anticipated to result in indirect effects resulting from transmission loss and corresponding increases in generation beyond existing conditions.

Normal transmission line operations would produce a small amount of ozone and nitrogen oxides from a photochemical reaction generated by corona activity. During damp or rainy weather, the ozone produced would be less than 1.0 part per billion and nitrogen oxide production would be less than one sixth of the ozone production. This is not considered an adverse impact of the proposed project.

3.2.4 Mitigation Measures

The sections below describe potential mitigation measures as they relate to air quality, agency management plans, and cumulative impacts.

3.2.4.1 Agency Stipulations

Air quality impacts during construction and operation of the proposed project would be reduced by requirements in the agency stipulations (Appendix B.4). These stipulations are requirements that will be attached to the decision documents issued by MDEQ, BLM, and USFS.

MDEQ Specification 2.8.1 requires that all air quality requirements are met. This specification requires that all necessary permits are obtained and that the proposed project meet all applicable air quality standards.

Dust emissions from disturbing vegetated areas and traffic during construction would be mitigated by the USFS and BLM Interagency Operating Procedures for Air Emissions and Air Quality Measures (USFS 2009a; BLM 2009c). The following MDEQ specifications would also minimize dust emissions from these activities: 2.8.2, 2.8.3, 2.8.5, and 2.8.9.

MDEQ Specifications 2.8.9, 2.11.9, and 2.11.17 would mitigate for potential wind erosion and resultant fugitive particulate emissions.

The following MDEQ specifications would minimize the amount of disturbed areas caused by construction activities and the potential for fugitive particulate emissions: 2.8.6, 2.8.7, 2.9.2, 2.9.3, 2.9.4, 2.9.5, 2.9.9, and 2.9.10.

Emissions from burning activities would be minimized by the USFS and BLM Interagency Operating Procedures Fire Management Plan Measures (USFS 2009a; BLM 2009c). The following MDEQ specifications would also minimize emissions from burning activities: 2.13.1, 2.13.2, 2.13.4, 2.14.6, 2.14.17, 2.14.9

Emissions from burning waste would be mitigated by MDEQ Specification 2.14.8.

3.2.4.2 Resource Specific Mitigation

The agency stipulations reduce the potential effects of the proposed project to a level not considered substantially adverse; therefore, no additional mitigation is required.

Residual Impacts

Air Quality. Minor localized degradation in air quality would be temporary and would rapidly disperse; therefore, there would be no residual impacts to air quality.

Climate Change. Similar to the direct and indirect analysis of the proposed project, the residual impacts to climate change associated with implementation of the proposed project cannot be determined because the quantification capabilities do not exist; therefore, the contribution of the proposed action to the climate change effects discussed in this and other EIS sections cannot be quantified. It should be noted that because the proposed project would result in minimal long-term emissions of GHG, the long-term residual impacts would not be considered adverse.