

3.2 AIR QUALITY

3.2.1 Affected Environment

Comments made during public scoping for this project identified the following issues with respect to air quality:

- Construction of the proposed Pateros/Twisp route may result in air and light pollution.
- Diesel generation that would likely be required for a cold rebuild alternative would have negative effects on air quality in the Methow Valley.

3.2.1.1 Regulation

Air quality is regulated by the U. S. Environmental Protection Agency (EPA) under the Federal Clean Air Act. The EPA has established National Ambient Air Quality Standards (NAAQS) to limit the concentrations and exposure duration of pollutants known to be harmful to public health. Ambient air refers to the portion of the atmosphere to which the general public is exposed. Two types of national standards exist: 1) primary standards, which are strict guidelines set in the interest of protecting public health, particularly “at risk” segments of the population, including children, elderly, and asthmatics; and 2) secondary standards, which protect public welfare interests such as decreased visibility and damage to animals and vegetation.

The EPA has designated six potentially harmful pollutants to serve as criteria for monitoring air quality: ground-level ozone (smog), carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. The EPA has delegated authority for administering and enforcing the Clean Air Act to several states. In the state of Washington, the Washington State Department of Ecology (Ecology) is the responsible agency. The state is further subdivided into clean air agencies. Where there are no significant air quality concerns, Ecology regional offices uphold and enforce the Clean Air Act regulations. Okanogan County is part of Ecology’s Central Regional Office air quality area.

Washington State and Okanogan County do not have any regulations regarding light pollution.

3.2.1.2 Air Quality Standards

Current national and state air quality standards are identified for these “criteria” pollutants in Table 3.2-1. There are no national or state standards for light pollution.

If the concentration of a pollutant in an area exceeds these standards, the area is designated as non-attainment. Ecology has established a network of air quality monitors throughout the state with the intent of assessing air quality in areas known to have experienced relatively high levels of pollution (i.e., metropolitan areas) (Ecology, 2004a). Accordingly, the number and location of monitors vary depending on current conditions (Ecology, 2004a).

Okanogan County has not been within any of these monitoring locations and is currently designated as an attainment area for all criteria pollutants (EPA, 2003). A new monitoring station was established at Twisp in December 2004 but no historic or trend data are available. In addition to monitoring concentrations of air pollutants, Ecology also assesses visibility by measuring the scattering of light caused by fine particles in the air (visibility impairment). In 2002, visibility monitoring stations were established in Okanogan County, but due to operator error, no measure of visibility is available (Ecology, 2004a).

Table 3.2-1. National and State Air Quality Standards

| Pollutant | Averaging Times | National | | Washington State |
|---|-------------------|-----------------------|-----------------------|-----------------------|
| | | Primary | Secondary | |
| Total Suspended Particles | Annual (Average) | No standard | No standard | 60 µg/m ³ |
| | 24-hour | No standard | No standard | 150 µg/m ³ |
| Lead (Pb) | Quarterly Average | 1.5 µg/m ³ | 1.5 µg/m ³ | No standard |
| Particulate Matter (PM ₁₀) | Annual (Average) | 50 µg/m ³ | 50 µg/m ³ | 50 µg/m ³ |
| | 24-hour | 150 µg/m ³ | 150 µg/m ³ | 150 µg/m ³ |
| Particulate Matter (PM _{2.5}) | Annual (Average) | 15 µg/m ³ | 15 µg/m ³ | 15 µg/m ³ |
| | 24-hour | 65 µg/m ³ | 65 µg/m ³ | 65 µg/m ³ |
| Sulfur Dioxide (SO ₂) | Annual (Average) | 0.03 ppm | No standard | 0.02 ppm |
| | 24-hour | 0.14 ppm | No standard | 0.10 ppm |
| | 3-hour | No standard | 0.5 ppm | No standard |
| | 1-hour | No standard | No standard | 0.4 ppm |
| Carbon Monoxide (CO) | 8-hour | 9 ppm | 9 ppm | 9 ppm |
| | 1-hour | 35 ppm | 35 ppm | 35 ppm |
| Ozone (O ₃) | 8- hour | 0.08 ppm | 0.08 ppm | No standard |
| | 1-hour | 0.12 ppm | 0.12 ppm | 0.12 ppm |
| Nitrogen Dioxide (NO ₂) | Annual (Average) | 0.053 ppm | 0.053 ppm | 0.05 ppm |

Notes:
 ppm = parts per million µg/m³ = micrograms per cubic meter
 Source: Ecology, 2004a.

3.2.2 Environmental Effects

This section assesses the potential effects on air quality and light pollution associated with the Methow Transmission Project. The following discussion is divided into five sections. The first section discusses the evaluation criteria used to assess the potential effects of the alternatives.

The next three sections assess the direct and indirect effects of the proposed project on air quality and light pollution during construction, during use of temporary generation as proposed in Alternative 6, and during operation. The fifth and final section discusses the cumulative air quality effects associated with the proposed project. Section 4.2 contains measures for mitigating potential effects of the alternatives on air quality.

3.2.2.1 Evaluation Criteria

Air quality impacts would be considered significant if project activities result in a widespread reduction in air quality that could pose a probable risk to human health and safety and would violate established Federal or state air quality standards. A localized reduction in air quality on a temporary basis that would not violate an air quality standard would not be considered a significant effect. Short-term air emissions due to construction operations are exempt from air quality permitting requirements.

Lighting that substantially changed the level of light in a residential area would be considered significant.

3.2.2.2 Construction Effects

A short-term reduction in local ambient air quality would occur during construction and operation under all action alternatives. Grading, earth moving, vehicle travel along unpaved roads, and structure installation could all create short-term fugitive dust emissions. The only burning that will be done under any alternative would be incidental burning of slash piles, which is unlikely to create much smoke. The amount of smoke would be under the tonnage that requires a permit from Washington State. Consequently, the potential for air quality issues resulting from dust, smoke, and other

particulate matter emissions is not a deciding factor among alternatives and does not violate established standards. Under all alternatives, the use of Best Management Practices (BMPs) for dust control, including watering roads during construction, if necessary, would be applied. Fugitive dust emissions during construction would therefore be less than state and Federal standards and impacts would be less than significant.

Heavy equipment and vehicles used during construction and maintenance activities emit pollutants such as carbon monoxide, nitrogen oxides, sulfur oxides, particulates, and volatile hydrocarbons. Under all alternatives, impacts associated with vehicle emissions during construction of the transmission lines are expected to be short term, thus resulting in a low impact on long-term air quality and visibility. Vehicle emissions associated with maintenance activities would be negligible.

Construction would take place during the day and there would be no increase in lighting for construction at night. Therefore, none of the action alternatives would have an impact on light pollution during construction.

3.2.2.3 Temporary Generation Effects (Alternative 6 Only)

In order to provide adequate power to the Methow Valley during construction, 20-megawatt (MW) diesel generation capacity would be installed in Twisp. This facility would be installed in Twisp because it is a location for a generation facility of that capacity that does not require a new transmission line to interconnect with the existing substation.

This generating facility would be temporary in that it is not intended to be used as a permanent source of power. It would need to be in place for less than 12 months total, and the leased generator sets would be removed between seasons if construction could not be completed during the first construction season.

The PUD plans to use 12¹ generator sets similar in size and configuration to those located in Ophir, Washington. The PUD would likely lease, rather than purchase, the generator sets for this temporary situation. The PUD would install these generators in Twisp adjacent to the existing substation. They would be enclosed in a 2-acre fenced yard. This yard may be expanded if noise mitigation requirements cannot be met within this area.

To produce a maximum of 20 MW with a planned base load of 15 MW, the diesel generators would require approximately 28,000 gallons of diesel a day. Trucking diesel would require three 10,000-gallon diesel trucks of fuel daily, or four trucks daily if deliveries were only conducted during the work week. To meet emission standards, ultra-low sulfur fuel would have to be trucked in from the Puget Sound area. There is no source of this type of fuel nearer to Twisp. Total fuel supply consumed over the construction period is estimated to be 4,938,560 gallons of diesel. In addition, the units would require the installation of air “scrubbers” (Selected Catalytic Reduction) to meet air quality standards.

The Ophir installation received its Notice of Construction (NOC) approval on September 24, 2004 (Ecology, 2004c). Based on the Ophir installation NOC permit and implementation of Best Available Control Technology (BACT), emissions of CO will be less than 100 tons per year provided diesel fuel consumption remains under 5,417,200 gallons per year (Ecology, 2004b). Other potential contaminants would also remain under the threshold of significance if annual fuel consumption is equal to or less than this estimate.

¹ If Ophir-type generators were used, 12 would be needed. In developing the cost estimate, 14 smaller generator sets were estimated based on what is available in leased units. The diesel consumption and emissions would be very similar to the Ophir-size sets because diesel use and emissions are directly related to power output, not machine size.

Table 3.2-2 lists the conditions that Ecology outlined in the Ophir Substation Generator NOC approval. Because the Ophir project is similar to this alternative, it is assumed that emission rates per hour/per engine would be similar to rates for those generator sets:

Table 3.2-2. Emission Rates Per Engine without CO catalysts for the Ophir project

| Pollutant | Pounds per Hour/per engine | Ecology Standards |
|------------------|-----------------------------------|--------------------------|
| NO _x | 3.79 | 3.44 |
| CO | 3.96 | 3.96 |
| PM ₁₀ | 0.26 | 0.52 |

Based on the PUD's experience with the Ophir generators, the anticipated number of hours the diesel generators would need to be operated during the cold rebuild is approximately 44,896 machine-hours. This is calculated by assuming base load generation by 10 diesel generators, running 24 hours a day, 7 days a week, for 6 months, and an additional peak load generation by 2 diesel units running 2 hours a day, 7 days a week, for 6 months. Using 44,896 hours and the above rates yields the estimated total tonnage for each air pollutant described in Table 3.2-3. As required by WAC 173-400-113(2), BACT was employed to control emissions of these pollutants. For the Ophir project this includes the use of Selective Catalytic Reduction (SCR) to control NO_x emissions and the use of Ultra-Low Sulfur Fuel (ULSF). However, when ULSF is used, catalysts must be installed in all engines to lower sulfate emissions, which reduces the efficiency of SCR in controlling NO_x emissions. Consequently, the hourly NO_x emission rate reported in Table 3.2-3 exceeds the Ecology standard for engines without CO catalysts; when catalysts are required, the Ecology standard for hourly NO_x emissions is raised to 4.13 pounds per hour, and both the Ophir units and the proposed Twisp units would meet this standard.

Table 3.2-3. Estimated Total Emissions

| Pollutant | Air Emissions in Tons at Site |
|------------------|--------------------------------------|
| NO _x | 85 |
| CO | 89 |
| PM ₁₀ | 5.8 |

Because the total amount of emissions is below the established standard, Ecology would not require either a Prevention of Significant Deterioration (PSD) Construction Permit or an Air Operating Permit (AOP) in order to permit these generators in the Twisp area. The overall impact to air quality in the Methow Valley would be less than significant.

Conditions at the Twisp site would vary from those of Ophir. The PUD would likely be required to conduct additional air modeling studies and obtain information from the units proposed for installation at the Twisp site for its application to Ecology for a temporary air permit. Depending on the availability of leased diesel generators, the number of generating units and related emissions could vary from those of the Ophir site. However, since diesel generation emits approximately the same amount of air pollutants per kilowatt-hour (kWh) of generation, the expected level of emissions will be closely similar to the Ophir calculations. None of the other alternatives would have any effect on NO_x or CO.

The generator location would be provided with security lighting at a pedestrian scale. The noise walls installed to prevent excess noise emission would prevent this lighting from substantially adding to nighttime light levels in the town of Twisp.

3.2.2.4 Operation Effects

During operation, transmission lines emit small amounts of ozone and nitrogen oxides. However, the amount emitted by a 115-kilovolt (kV) system would be too small to measure and would have no adverse effect on human health or the environment (BPA, 2003a). Alternative 1 would have no effect on ozone or nitrogen oxide, although the existing Loup Loup line does emit small amounts.

The construction of the Gold Creek Substation, proposed under Alternatives 2, 3, and 5, would add a small amount of nighttime light in the Gold Creek area because the substation would be provided with security lighting. The substation would only be lit if maintenance personnel were present, it is located away from residential areas, and would not add substantially to nighttime light in a residential area. Alternatives 1, 4, 6, and 7 would have no effect on light.

3.2.2.5 Cumulative Effects

This section considers the incremental effects of the proposed alternatives when added to other past, present, and reasonably foreseeable future actions. The geographic boundary where there is potential for future actions to contribute to the cumulative effects of this project on air quality includes the Methow Valley plus the Loup Loup Pass. There is no other existing air basin designated by the state. The Ecology Central Regional air quality monitoring area, which includes Okanogan, Chelan, Douglas, and Kittitas Counties, encompasses an area much larger than the airshed that any of the alternatives would have the potential to influence.

Past actions impacting air quality would no longer have an effect on current air quality. Ongoing activities, or pre-existing sources of air pollution, in the project area include vehicular traffic on State Highways 153 and 20; off-highway vehicle use (including over-snow vehicles); residential wood burning for heating; periodic forest fires; and industrial emissions near Pateros, Twisp, and Okanogan. Traffic-related pollution and wood stove use are likely to increase as the population increases in the area. Use of off-highway vehicles is restricted by the private landowners and public land managers in the area and is likely to remain constant or increase slightly with increased population pressure. These activities have not resulted in violations of air quality standards nor are they likely to do so in the future.

Forest fires are more likely to burn in the area if fuels continue to accumulate as they have in the past. While wildfires may result in temporary, large increases in smoke and PM₁₀ pollutants, the impact is not long term or permanent; no air quality standards are used for wildfires. The only burning that will be done under any alternative would be incidental burning of slash piles, which is unlikely to create much smoke. It is also unlikely that activities creating smoke would be allowed during the time a forest fire is burning in the area.

In March 2001, the PUD acquired 16 Cummins diesel generators capable of producing 1.6 megawatts (MW) each, to cover power shortages (Ecology, 2004a). A permanent plant was established between Monse and Malott at the top of Ophir grade. In 2004, this plant was permitted based on non-significant levels of emissions for nitrous oxides and other pollutants (Ecology, 2004b). These generators are run during emergency power outages only and do not have ongoing emissions. During 2004, the generators were run for test purposes only and were not used at all for power generation. The PUD does not plan to operate the generators for any routine power generation. Therefore they do not contribute to the cumulative effects on air quality.

Reasonably foreseeable future actions are defined for the purposes of this analysis as future actions that are planned within or in the immediate vicinity of the project area are discussed in Section 3.1. These activities include grazing allotment actions on NFS lands, fuels management and timber salvage projects on NFS lands, Forest Practices on local government, state, and private forestlands, and residential and commercial development. Because there are no other past, present, or proposed

activities that would create levels of pollutants other than PM₁₀ of any concern, this section refers only to PM₁₀ cumulative impacts.

Of these reasonably foreseeable actions, fuels management and timber salvage projects on NFS lands and Forest Practices on local government, state, and private forestlands would likely produce cumulative air quality impacts for PM₁₀. The three reasonably foreseeable fuels management and timber salvage projects on NFS lands would meet all applicable Forest Plan standards and guidelines intended to protect air quality and are not expected to have significant effects on this resource. According to the Decision Memo for the Loup Loup Blowdown Salvage Categorical Exclusion, the project was designed to meet Clean Air Act standards and air quality would be only be slightly affected with burning conducted during unstable atmospheric conditions to dilute and disperse pollutants. The 16 reasonably foreseeable Forest Practices authorized by the WDNR within or in the immediate vicinity of the project area would meet all Forest Practices rules also, which are, among other things, designed to specifically address cumulative effects (WAC 222-12-046). Exhaust emissions from vehicles and machinery associated with these fuels management and Forest Practices projects would temporarily impact local air quality. When prescribed burning is implemented during stand improvement efforts, there will be a temporary increase of smoke and PM₁₀ pollutants from the burning, which will have a temporary adverse impact on local air quality. Exhaust, dust emissions, and particulate matter from slash burning from the proposed projects are likely to result in short-term, local reductions in air quality, but will not contribute significantly to cumulative effects on air quality because they are not likely to mix emissions from this project.