

2.0 Summary

Starbuck Power Company, LLC (SPC), of Bellevue, Washington, proposes to build and operate a 1,200-megawatt (MW), natural gas–fueled, combustion turbine power plant and associated facilities. This section provides a summary of the proposed project (Section 2.1) and the existing conditions, impacts and mitigation measures (Section 2.2) described in the environmental assessment (EA) prepared as a part of the Potential Site Study for the Washington State Energy Facility Site Evaluation Council (EFSEC).

The EA was prepared to (1) provide an understanding of the basic potential impacts of the proposed project, (2) identify aspects of the proposed project and potential impacts that SPC should focus on in its Application for Site Certification (ASC), and (3) identify measures that could potentially reduce impacts based on the preliminary design information provided by SPC. Where possible, impacts have been identified as either significant or not significant based on the State Environmental Policy Act (SEPA) definition of “significant” presented in WAC 197-11-794.

Because the EA was a part of the Potential Site Study process, it is not a rigorous study of the project and its potential impacts. That level of analysis is to be provided in the ASC and in the ensuing draft environmental impact statement (EIS).

2.1 Description of the Proposed Project

2.1.1 Project Location

SPC proposes to construct the power plant on approximately 40 acres of a 100-acre site located approximately 6 miles northwest of the town of Starbuck in Columbia County. The site is located at the top of a steep bluff above the Snake River, approximately 200 feet above normal river elevation, between Little Goose Dam and Lower Monumental Dam. The property boundary is approximately 350 feet (horizontal distance) from the river, and the site slopes away from the river. State Route (SR) 261 extends along the western side of the site and is the main highway in the area.

The SPC property is zoned for industrial use, although a conditional use permit would be required for a power plant.

2.1.2 Project Facilities and Operation

The project would consist of the power generation plant, a 20-inch-diameter, 200-foot-long natural gas pipeline connection to a nearby gas mainline, and a 4-inch-diameter, 6-mile-long water pipeline extending to the town of Starbuck. In addition, the plant would be connected to an electrical switchyard located adjacent to the power plant. This switchyard would be owned and operated by Bonneville Power Administration (BPA) and would connect to the

500-kilvolt (kV) transmission lines that pass directly over the SPC property and to a new 500-kV transmission line that would extend from the switchyard to the Lower Monumental Dam switchyard, located approximately 15 miles west-southwest of the plant site. BPA is developing the route location and facilities design for this transmission line.

As proposed, and the project would generate electrical power using four combined-cycle combustion gas turbines, four heat recovery steam generators, two steam turbine generators, and two air-cooled condensers. Except for the condensers and the heat recovery steam generators, the electrical generation equipment would be enclosed in a power generation building approximately 90 feet tall, 120 feet wide, and 515 feet long. Each of the exhaust stacks for the heat recovery steam generators would be approximately 20 feet in diameter, with a stack height of approximately 150 feet (the actual stack height would be determined after completion of the air quality and dispersion modeling being conducted by SPC).

SPC plans to use combined-cycle combustion turbines equivalent to the Siemens Westinghouse Model 501F. This equipment would include dry low-NO_x combustors to minimize NO_x production and a selective catalytic reduction (SCR) system to control concentrations of NO_x generated by the combustion turbines and duct firing. Aqueous ammonia would be used in the SCR system.

Two roadways would be constructed for plant access to and egress from the adjacent SR 261. The plant would be surrounded by a chain link security fence approximately 8 feet high.

The plant would obtain natural gas through the pipeline connection to the 36-inch-diameter natural gas mainline owned by Pacific Gas and Electric, Gas Transmission-Northwest (GT-NW). GT-NW would install, own, operate, and maintain a mainline block valve, two mainline taps, and the building enclosing the required equipment and control room at the plant site. SPC would be responsible for installing and maintaining the connecting pipeline.

Total water usage for the project is expected to be approximately 74,000 gallons per day (gpd). SPC has secured an option to purchase 100 gallons per minute (gpm), or up to 144,000 gpd, of water from the town of Starbuck's existing water right. SPC plans to install a new well near the existing town well and construct and operate the water pipeline from the town to the project site. This pipeline would be located primarily in an abandoned railroad right-of-way that parallels SR 261 from Starbuck to just south of the project site. At the Tucannon River, the pipeline would be routed north from the abandoned right-of-way to SR 261, where it would parallel the roadway, cross the river on the highway bridge, and be routed back to the abandoned right-of-way.

Approximately 51 gpm of project "blow down" water from the closed-system steam cycle would be routed to a wastewater infiltration pond. Stormwater from areas with the potential for the presence of oil would be routed through an oil/water separator and also would be directed to the wastewater pond. General project stormwater would be collected in a separate retention pond located at the south end of the property and discharged into an onsite "tile field" through a system of perforated pipes, with the system engineered to provide a sand and gravel filtering material. Approximately 2 gpm of sanitary wastewater would be routed to an onsite septic tank and drainfield.

The plant would be operated 24 hours per day, 7 days per week, with a total of 35 employees working in three shifts. Electricity from the proposed project would be sold on the open market.

2.1.3 Construction and Costs

Construction of the plant would take place over a 2-year period. The peak labor force during plant construction would be approximately 550 individuals during a 3-month period. The water pipeline would be constructed concurrently with the plant and would require approximately 2 months to complete, with a peak work force of 40.

The total capital cost of the project would be approximately \$688 million (1999 dollars), with the cost of construction approximately \$540 million. The cost of the BPA transmission facilities is not included in this amount.

Annual operating costs would be approximately \$26 million, with an additional \$120 million per year spent to purchase and transport natural gas (based on the 1999 price of natural gas).

2.2 Existing Conditions, Impacts, and Mitigation Measures

This section presents a summary of potential environmental impacts associated with the project, including brief descriptions of existing conditions where relevant. The primary recommended mitigation measures are also identified below.

2.2.1 Earth

Construction of the plant is not expected to result in significant adverse impacts on site geology and soil conditions. Based on historical seismicity and the limited information available for onsite subsurface conditions, the seismic hazard to the proposed generation plant appears to be limited to moderate levels of ground shaking. Because of the lack of known faults, fault rupture does not appear to be a concern, and ground failure due to liquefaction or lateral spreading is unlikely given the relatively small earthquakes characteristic of the area and the deep water table underlying the site.

Although the proposed route for the water pipeline has not been subject to a geotechnical evaluation, the excavation and backfill activities are not expected to result in significant impacts on soil and geology along the abandoned right-of-way.

The terrace where the SPC property is located is a unique topographic feature formed by backwater flooding of the Snake River Canyon during a catastrophic glacial breakout flood from glacial Lake Missoula approximately 12,700 years ago. This terrace is one of several places on the Columbia plateau where topographic evidence of catastrophic backwater flooding has been preserved. This evidence includes asymmetrical giant ripple marks, which are indicative of upstream movement of the vast quantity of floodwater. These ripple marks are best expressed on the northwestern part of the 100-acre site, in an area beyond the

proposed location for plant construction. Use of this northwestern area as a lay down or fabrication area for the plant site or its associated switch yard would likely obscure or obliterate part of this unique geographic feature.

SPC has developed a preliminary erosion and sediment control plan, a site construction plan, and a stormwater management plan that have been designed to minimize erosion during both construction and operation of operation of the facility. With implementation of these plans, there would be no significant erosion.

The primary mitigation measures recommended in the EA also addressed the potential for erosion and the need to provide control measures in addition to those presented in SPC's preliminary plans to further reduce erosion potential. Measures identified include special care in preparing slopes and placing fill, installing and maintaining silt fences in selected areas until other erosion protection measures can be implemented, reseeding disturbed areas as soon as feasible, and protecting exposed slopes from rainfall and runoff by installing erosion protective coverings until permanent protection can be installed.

In addition, SPC should consider restricting use of the northwestern half of the property to preserve the unique topographic expression of the Missoula floods. Further, geotechnical investigations of the plant site, the natural gas pipeline route, and the water pipeline route would be necessary to evaluate foundation conditions, determine seismic design criteria, assess the suitability of site soils for structural fill, and provide information required to design the tile drain field. Finally, because the abandoned railroad bed could include contaminated soils, an environmental evaluation of the area to be excavated would be needed before construction to provide for the health and safety of workers and to determine appropriate disposition of contaminated soils if they are encountered.

2.2.2 Air Quality

Because of the isolated nature of the proposed plant site and the implementation of dust suppression measures, the impact of dust generated during construction is expected to be highly localized, temporary, and not significant. Emissions from combustion engines used during construction would not result in significant offsite air quality impacts.

Based on modeling conducted by SPC's consultant, the proposed facility would produce emissions greater than the Prevention of Significant Deterioration (PSD) thresholds for oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter less than or equal to 10 microns in diameter (PM₁₀), and volatile organic compounds (VOCs). This analysis is based on the project's use of dry low-NO_x combustors to minimize NO_x production, and an SCR system to control concentrations of NO_x generated by the combustion turbines and duct firing. For the proposed turbine configuration, project impacts are below the PSD Class II increments and ambient air quality standards for all criteria pollutants except PM₁₀. Based on the preliminary modeling, the project would also exceed the PSD "air monitoring" significant impact level for SO₂, NO₂, O₂, and PM₁₀. These modeled exceedances indicate that air quality monitoring would be required for these pollutants. To date, no air modeling has been conducted to examine the project's impacts on Class I areas. The two Class I areas closest to the site, and the only ones within 120 miles,

are located approximately 72 miles south-southeast of the site, and 82 miles southeast of the site.

Dispersion modeling conducted for the project used assumed worst-case meteorological data in lieu of onsite data. As a result, the modeling results noted above are likely to show higher concentrations than would occur with actual onsite meteorological data. SPC has indicated that onsite meteorological data will be collected during 2001. Unless SPC can demonstrate that the project would not result in exceedances of the PM₁₀ increments, the project impacts would be considered significant.

In addition to the identified need for obtaining onsite meteorological data and conducting additional monitoring, it may be appropriate for SPC to obtain more refined vendor estimates for the PM₁₀ emissions from the combustion turbines or add PM₁₀ emissions controls. It may also be necessary to develop and implement mitigation for CO₂ production.

Cumulative impacts on visibility and PM₁₀ deposition will be addressed by BPA in the draft SEPA/National Environmental Policy Act (NEPA) EIS to be prepared for the project.

2.2.3 Water Resources

There is no permanent surface water on the plant site, although four small ravines in the southern portion of the site collect precipitation and direct it to the southwest, away from the Snake River and toward SR 261. SPC has proposed several protection measures, including using stormwater best management practices, implementing a stormwater management system during construction, installing a permanent stormwater management system that includes oil/water separators, and stabilizing disturbed areas. As a result, it is not anticipated that there would be significant impacts on surface water or runoff during either construction or operation of the proposed generation plant.

Further studies of the proposed route of the water pipeline, including the contamination assessment listed in Section 2.2.1 (Earth), and additional information on construction methods for the pipeline would be necessary to determine the potential for impacts on surface water in the vicinity of the pipeline construction corridor.

The proposed site of the generation plant is not within the 100- or 500-year floodplains. Approximately 2.5 miles of the water pipeline route is located on or immediately adjacent to the eastern side of the alluvial floodplain of the Tucannon River and are within areas of the 100-year or 500-year flood boundary. Installation and operation of a water pipeline in these floodplain areas would not be affected by or have an effect on the Tucannon River floodplain.

The greatest threats to groundwater would be from leaks or spills of fuels and lubricants that are stored on the plant site and along the water pipeline construction corridor for use by construction equipment. As a result of the protection measures proposed by SPC to minimize uncontrolled releases of contaminants during construction and operation, the proposed project is not expected to cause groundwater contamination. However, if an uncontrolled release did occur, contamination of the underlying aquifers would likely occur.

The town of Starbuck has two water supply wells, both of which withdraw groundwater from basalt aquifers. One well withdraws from a depth of 65–80 feet below ground surface, and the other from a depth of approximately 410–420 feet. SPC plans to use up to 100 gpm, which amounts to approximately 35% of the town of Starbuck’s total water right of 270 gpm. Because the town is reportedly using only approximately 15% of the water right, this added usage would not likely result in an adverse impact on the public water supply.

Several of the recommended measures to mitigate impacts on surface water are identical to those referred to in Section 2.2.1 (Earth). The following is a brief summary of additional recommended mitigation measures.

- Provide information in the project’s spill control and cleanup plan on how spills and leaks would be mitigated.
- Conduct periodic testing of stormwater to confirm that contaminants are not being released to soils from the stormwater retention basin.
- Conduct hydrogeological testing to evaluate soil permeabilities along the ravines adjoining the stormwater retention basin and the drain field.
- Assess the value of lining the retention basin with an impermeable membrane to reduce increased runoff and erosion downslope from the basin.
- Evaluate potential impacts on the town of Starbuck water supply, including testing to confirm that the pumping of water required to supply both the town and the power plant can be sustained without an impact on the water supply of the town or on wells in the vicinity.
- Consider attempting to acquire a water right from one of the wells adjoining the plant site, buying another source of groundwater to provide mitigation for installing a new well, or transferring part of the town of Starbuck water right to a new bedrock well drilled onsite.
- If the Starbuck water right is used, obtain approval from the Department of Ecology for a change of location use because the existing water right is specifically for use in the town of Starbuck.

2.2.4 Wetlands, Vegetation, and Agricultural Crops

The proposed plant site is used for grazing, and there are no wetlands or agricultural crops on the site. Vegetation on the site is typical of the surrounding area, consisting primarily of rangeland, with native shrub-step grasses and areas dominated by non-native invasive species. As a result, construction of the project would not result in a significant impact on vegetation.

The proposed water pipeline would be installed primarily in an abandoned railroad right-of-way. Because no known wetlands or agricultural crops are within this portion of the

corridor, the impacts on vegetation in this portion of the construction corridor would not be significant.

SPC has not identified the preferred route for the water pipeline in areas where it leaves the abandoned right-of-way to extend to SR 261, cross the Tucannon River on the SR 261 bridge, and extend back to the abandoned right-of-way. As a result, it is unclear whether or not there would be impacts on wetlands, vegetation, or agricultural crops in those areas. Similarly, impacts on these elements of the environment in the area between the end of the abandoned right-of-way and the plant site are unknown because the route has not been identified in that area either.

For the plant site, recommended mitigation measures include seeding areas not targeted for cut and fill or grading operations, hydroseeding after construction to minimize erosion runoff, landscaping the generation plant with native vegetation compatible with or similar to natural occurring species in adjacent areas, and incorporating measures designed to minimize the establishment of noxious weeds. These latter measures could include cleaning vehicles before they enter construction areas and using weed-free straw bails for erosion control.

In addition, the EA identifies many mitigation measures that should be implemented if wetlands are encountered along the construction corridor for the water pipeline.

2.2.5 Wildlife

Construction of the generation plant would displace wildlife species, predominantly birds and small mammals, and the value of the remaining nearby habitat for general wildlife species would be decreased. Although construction activities would result in the loss of individuals of species using the plant site and adjacent areas, it is not expected that priority habitats species of the Department of Fish and Wildlife would be affected. As a result, the impact of construction on wildlife is not expected to be significant.

A ferruginous hawk nest is located approximately 0.5 mile from the plant site. Because of topographic features between the nest and the plant site, disturbance of the nest is not expected to occur. Permanent conversion of 40 acres of potential foraging habitat for the ferruginous hawk and the prairie falcon is not expected to significantly affect these species. Similarly, although the plant site is in the winter range of mule deer, the loss of 40 acres would not result in a significant impact on this species.

Construction of the water pipeline in the abandoned railroad right-of-way would not have a significant impact on wildlife species because of the existing disturbed nature of the alignment, the short construction period, and the planned revegetation. If the alignment extends through wetlands in areas where it is not on the abandoned right-of-way, there may be impacts on species directly associated with wetlands vegetation. Impacts on these species would be evaluated in the SPC application and in the draft EIS prepared by EFSEC and BPA.

The Priority Habitats and Species database of the Washington Department of Fish and Wildlife indicates that several federally listed threatened or endangered wildlife species or habitats are known to occur in the vicinity of the plant site or the proposed water pipeline

corridor. The U.S Fish and Wildlife Service (USFWS) stated that no threatened or endangered species are present in the vicinity of project facilities. However, USFWS indicated that the Washington ground squirrel, a federally listed candidate species, potentially occurs in the area.

Recommended mitigation measures include the following:

- Conduct preconstruction surveys for wildlife nest locations, burrows, and dens on the plant site and along the water pipeline right-of-way.
- Select a water pipeline alignment that avoids sensitive habitats where the pipeline leaves the abandoned railroad right-of-way.
- Time construction activities to avoid impacts on breeding birds.
- After construction is complete, restore disturbed areas not used for operation of the project to allow continued used by wildlife.

2.2.6 Fisheries

The proposed plant site has only intermittent surface water present, and no fish species are present on the site. In addition, the plant site is located a minimum of 350 horizontal feet from the Snake River and is downslope from a bluff that is more than 200 feet above the river. As a result there will be no impacts on fisheries associated with construction of the plant. Similarly, there would be no significant impact on fisheries associated with operation of the generation plant attributable to the presence of the high ground between the site and the bluff coupled with the proposed water collection system to be installed on the site.

SPC has not identified the preferred route for the water pipeline in areas where it leaves the abandoned right-of-way to extend to SR 261, cross the Tucannon River on the SR 261 bridge, and extend back to the abandoned right-of-way. As a result, it is unknown whether or not construction would result in impacts on fish species in the Tucannon River. However, it is likely that the alignment would not be close to the river, and no significant impacts on fish species are anticipated.

The recommended mitigation measures for fisheries are included in those presented in Section 2.2.3 (Water Resources).

2.2.7 Energy and Natural Resources

Construction of the proposed Starbuck Power Project would result in the consumption of building materials, electricity, gasoline, diesel fuel, and oil. The amount of energy that would be used during construction is anticipated to be typical for a construction project of this size and would not result in a significant impact on available energy supplies in Columbia County.

Because air-cooled condensers would be incorporated into the project design, operation of the project would consume less water than it would if other types of condensers were used.

The project would consume approximately 100,000 cubic feet of gas per day. Although the existing gas supply appears to be sufficient to fuel the proposed project, it is not clear what the cumulative impact of other proposed and possible projects would be on the supply. This issue would be addressed in the draft EIS that would be prepared by EFSEC and BPA for this project.

The plant's electrical requirements during operation would be met by electricity provided by the Columbia Rural Electrical Association (REA). Power demands from the plant are not expected to be high and are not expected to have a significant impact on the REA. REA transmission lines are located on the SPC property.

Electricity generated by the project would be transmitted to the BPA power grid and sold on the open market. Electrical energy from the project would be available to customers on the BPA power grid and future customers who connect to the grid. The project would provide additional electrical energy to the western United States.

To minimize power consumption by the generation plant, an overall plant energy conservation plan should be prepared and implemented.

2.2.8 Noise

The primary source of construction noise would be the operation of heavy equipment and support vehicles. Based on preliminary observations, the closest permanently occupied residence is about 1.1 miles northwest of the project site. However the residence is at the base of a bluff that is between the residence and the site. At this distance, and with intervening terrain to block the line of sight to the facility, it would be highly unlikely that construction noise would be audible at the residence.

Lyons Ferry State Park is located approximately 1.5 miles northwest of the plant site, at an elevation approximately 200 feet below that of the plant site. During most of construction, the more elevated eastern and northern portions of the SPC property would block a straight-line view of equipment used on the ground at the site. This topography and the 1.5-mile distance would likely attenuate the construction-generated sounds received at the park, although the sounds may be audible. Projected construction noise levels at the state park would have to be determined as a part of the SPC noise analysis conducted for its ASC. However, construction noise is exempt from regulation under Chapter 173-60 WAC.

In the town of Starbuck, several residences are close to the proposed water pipeline route, and construction noise would likely be noticed at some of these locations. As noted above, further analysis would be required to assess noise impacts, although construction noise is exempt from regulation.

The proposed generation plant would be an industrial activity located in an industrially zoned area. In addition, the site is adjacent to industrially zoned property on the northwest, on the

south, and by the Snake River on the east. Much of the nonindustrially zoned property around the project site is agricultural land, which has the same environmental noise designation as industrial property, according to the state noise regulation that pertains to Columbia County.

Because of the distance to the nearest residential receptor for the Starbuck Power Project (approximately 1.1 miles), noise from the plant would likely not exceed residential noise limits established by regulation, particularly with the noise-blocking effect of the intervening terrain. At Lyons Ferry State Park, noise from the proposed project could be discernible against the relatively low level of background noise, but it is unlikely that noise levels would exceed the residential standard. However, SPC would provide more quantitative analyses of sound levels generated and received during operation, including receptors at the nearest residence and the state park, in its ASC. This would include an analysis of low-frequency noise associated with the project.

2.2.9 Land Use

The proposed site of the generation plant is in Columbia County's Heavy Industrial (HI-1) zoning designation. In this designation, construction and operation of the generation plant would require a conditional use permit (CUP). If SPC does not apply for and receive a CUP from the county before submittal of its ASC, it will be necessary for EFSEC to determine how to include the CUP process in its application review process.

Much of the land use adjacent to and near the proposed plant site location is grazing. One exception is the Columbia County Grain Growers elevators located adjacent to the SPC property on the south. Construction and operation of the generation plant would reduce the amount of grazing land of the project area by approximately 40 acres, and because SPC would take possession of the farmhouse located on the northern portion of its 100-acre property, it is anticipated that the remaining 60 acres would not be used for agriculture or grazing and would remain fallow. This does not represent a significant land use impact.

Construction and operation of the well in the town of Starbuck and the water pipeline from the town to the plant site would appear to be a permitted use with a CUP because these are uses associated with the generation plant. Future development in the vicinity of the pipeline right-of-way would not be precluded, provided that appropriate measures are taken to avoid the pipeline.

Use of the abandoned railroad right-of-way for the water pipeline would require coordination with AT&T because a fiber optic cable is present in at least a portion of the route.

2.2.10 Visual Resources, Light and Glare

The SPC property is in a rural area, with most views in the vicinity dominated by canyon walls with shades of brown and tan, rolling hills, open sky, and the Snake River. South of and directly adjacent to the property are the buildings associated with the Columbia County Grain Growers elevators. SR 261 extends along the western side of the property, with the

southern end of the SR 261 bridge across the Snake River approximately 1.2 miles to the northwest. At the opposite end of the bridge, on the eastern side of SR 261, is Lyons Ferry State Park, approximately 1.5 miles from the proposed plant site location.

Implementation of the project would result in long-term changes to the visual environment by introducing a 90-foot-high, 515-foot-long generation plant and associated facilities, including four 150-foot-high exhaust stacks. To reduce visual impacts, the stacks and buildings would be painted in dark and tan colors to blend into the landscape, and down-lighting would be used to reduce the glow of facility at night.

Preliminary assessments of visual impacts were made from the state park, from the bluff on the east side of the Snake River across from the plant site, from a boater's perspective on the Snake River south of the plant site, from the grain elevator site, and from SR 261 in the project the vicinity.

Visual impacts associated with construction of the plant would occur over a period of 2 years. Except for travelers along SR 261 and workers at the grain elevator facility to the south, much of the construction work would not be visible from other viewpoints because of intervening topography. Because there would be relatively few viewers and the majority of viewers would see the site for a short duration, the overall potential visual impact from construction of the generation plant would not be significant. Potential visual impacts during construction of the water pipeline and water well would not be significant because there would be relatively few viewers and construction would be limited to a 2- to 3-month period.

The completed plant would be visible to recreationists, travelers, and workers in the key viewing areas described above. The overall potential visual impact would not be significant because there would be relatively few viewers, and the majority of viewers would see the site for a short duration. Although the stacks and upper portions of the buildings would be visible to viewers at the state park who are looking southeast, the impact is not expected to be significant because this view would be a small portion of the available viewscape and the grain elevators are visible from this location.

At night, outside lighting at the generation plant, including warning lights on the stacks, could be visible from all five viewing areas. The overall impact of light and glare would not be significant because there would be relatively few viewers and the majority of viewers would see the site for a short duration.

Mitigation measures to be considered during design of the project include development and implementation of a landscape plan that would help to block and soften views of the plant and switchyard. This could include planting trees along the northern and eastern portions of the property boundary to reduce visual impacts on viewers at the state park, hikers walking along the opposite bank of the Snake River, and boaters on the river south of the plant site area.

2.2.11 Population, Housing, and Economics

Construction of the Starbuck power project would occur over a 2-year period, with a peak workforce of approximately 550 individuals over a 3-month period. The average workforce is expected to be approximately 300 individuals. During construction of the water pipeline, the peak workforce would be approximately 40 individuals, and construction of the pipeline would be completed in 2–3 months. This 40-person peak workforce would be approximately 13% of the average generation plant construction workforce for a relatively short period of time. Therefore, the influence of construction of the pipeline on population, housing, and economics can be considered to be included in the following discussions of impacts of the generation plant.

At the present stage of project development, SPC has not determined where the workforce would originate from or where it would be housed. As a result, the negative impacts on Columbia County and the town of Starbuck could range from minor to significant, depending on where the workforce resides.

Because of the lack of an available workforce in Columbia County, SPC would likely have to hire much of its workforce from throughout the project area, including Walla Walla, Franklin, Asotin, and Garfield Counties, all of which are within a 75-mile commuting distance from the plant site. The largest and most experienced labor pool from which workers would likely originate or commute would be the Tri-Cities (Pasco, Richland, and Kennewick), Walla Walla, and possibly the Lewiston/Clarkston areas.

Using a 1.5 multiplier, the peak construction work force would generate a total of 825 direct and indirect jobs, and the average labor force would result in a total of approximately 450 direct and indirect jobs. If this peak direct and indirect workforce is housed in Columbia County, it would represent a 20% increase in population compared to the 4,158 people estimated to be living in the county in 1998. As a result, the proposed project would have a significant impact on population levels in Columbia County and the town of Starbuck. However, if most of the construction workforce is hired from throughout the existing five-county labor pool and if most workers continue to reside at their current locations, they would commute to the plant site on a daily basis and the population increases would be negligible.

The 1990 census (the most current data available when the EA was prepared) indicated that only 26 out of the total of 105 housing units were available in the town of Starbuck. In that census, Columbia County had a total of 2,046 housing units, of which 464, or 22.7%, were vacant. If housing stock and vacancies are similar to these levels during construction, there would be sufficient housing for a considerable portion of the workforce. However, it is likely that this increase in housing demand would eliminate most if not all of the available housing in the county and would create a temporary housing shortage.

The average wage for construction workers would be approximately \$6.50 per hour higher than recently reported average wages in Columbia County. In addition to the direct labor force, there would be an estimated additional 275 indirect jobs created by the project. The project is expected to reduce Columbia County's unemployment rate of 13.3%, although the available workforce probably would not have the required training and skills to perform

many of the construction tasks. However, the project would have a positive impact on the county's economy by providing jobs to at least some qualified unemployed county residents.

The project would have an operational workforce of 35 full-time employees. This would result in a minor, positive impact on unemployment and income in the overall economy in Starbuck and Columbia County. In addition to the 35-person project workforce, family members also would migrate into the project area, with an assumed 3.06 people per family (based on statewide data), or 109 individuals. If all these people moved into the area from elsewhere, this would result in a direct population increase of less than 1% of the county's 1998 population levels, which does not represent a significant impact.

If the employees and their families used only existing housing, there are sufficient units available to meet their housing needs, and there would not be an impact on housing. However, it is not clear whether or not the quality of available housing would be acceptable to new residents.

Using data from previous studies, which show that each direct operational job for a power plant typically generates 0.8 indirect jobs, an estimated 30 indirect jobs would be generated by the Starbuck power plant and likely would be located in Starbuck and other nearby portions of Columbia County. Although these indirect jobs generated by the project could employ some of the 74 family members of the operational workforce, the new employment would help to reduce unemployment in the area, although not significantly.

In addition, the annual operational payroll of approximately \$1.8 million per year would increase local expenditures.

SPC should determine the location of primary labor pool for the construction workforce, whether or not the labor force would in-migrate, and where workers would be housed. If the workforce is housed throughout the five-county area surrounding the site, SPC should determine how workers would be transported to the project site. If the workforce is to be housed locally, SPC should indicate what provisions would be made to provide such local housing (such as a company-provided trailer park).

2.2.12 Public Services and Utilities

With a peak workforce of approximately 550 individuals and an average workforce of approximately 300 over the 24-month plant construction period, and because of the rural nature of the area, the county and local communities likely would incur increased costs and experience negative impacts while accommodating the workforce. Because SPC has not yet developed a plan for housing in transporting this workforce, the summary provided below addresses a range of potential impacts.

Public services and utilities could be significantly affected by in-migration of the construction workforce because (1) there is not sufficient housing available for the workers in the nearest town, Starbuck; (2) there does not appear to be enough temporary housing available in Columbia County overall; and (3) it is not known where the workforce would be housed. The potential 20% increase in population in the county could have a significant

negative impact on the ability of the county and the town of Starbuck to provide police, fire, emergency medical, and educational services to the new residents. Existing facilities and staff are minimal and would not have the capacity to address such a large increase in service needs. In addition, local police, fire, and emergency medical facilities would not likely be able to meet the demands placed on them if there were a sizable fire or a major construction accident at the power plant. These service providers may have to increase staff levels, facilities, and equipment to meet these new demands.

The costs of providing the services could be somewhat mitigated by the \$3.3 million increase in county sales tax and the \$21.1 million increase in state sales taxes generated by the project during construction. However, some of the public services are funded with property and other taxes and would experience revenue shortfalls.

If a large workforce migrates into the area, the delivery of new electrical services could require coordination between the county and the three service providers to ensure that the electrical needs are met.

If workers decide to camp at parks and campgrounds that allow overnight camping, they could displace and have a significant negative impact on existing recreational users. In addition, it is possible that construction workers would take advantage of the recreational opportunities in the county or throughout the region when not working. Areas most likely to be affected include boat launches and beaches, wildlife areas and refuges, and forest or wilderness areas.

The full-time workforce of 35 full-time employees during operation is expected to bring a total of approximately 74 family members into the area, for a total of 109 people moving into the county during the operational phase.

The need for public services and utilities would depend on where the operational workforce resides and whether it uses existing housing or whether new housing is constructed to accommodate the increase in population. If housing stocks at the onset of operation are similar to the conditions present for the 1990 census, there appears to be adequate housing in Columbia County to meet the needs of 35 new families, and there would not be a significant impact on the daily provision of services and utilities.

Because the town of Starbuck's water system operates at 15% of capacity, it appears that there is sufficient capacity to meet the needs of the plant (100 gpm) and both the current and future water demands of the town. Sanitary wastewater in the town of Starbuck is treated in septic systems, and "gray water" is routed to the town's treatment plant, which was recently upgraded. It is anticipated that the upgraded treatment facility can accommodate the needs of in-migrating families; however, if necessary, the treatment plant could be further upgraded to increase capacity by 15%.

As during construction, local police, fire, and emergency medical facilities would be unable to meet the demands placed on them if there were a sizable explosion, fire, or large industrial accident at the power plant during operation.

The project would result in significant tax revenues over the anticipated 30-year plant life, including \$52.1 million in gas taxes, \$47.3 million in property taxes, and \$26.3 million in sales taxes. This increase in tax revenues represents a positive economic impact for Columbia County and state of Washington.

Recreational uses throughout the area are likely to be negligibly affected as a result of use by the operational workforce and their family members. Lyons Ferry State Park and the Lyons Ferry Marina and Recreation Area are the facilities closest to the project site and thus would likely experience minor additional use from this workforce.

Until SPC can identify the source of the construction workforce and how workers would be accommodated in the area, it is not possible to identify specific mitigation measures to reduce impacts. After SPC's proposed plan to accommodate workers is reviewed, mitigation measures will be considered and recommended.

Because of the minimal size of the workforce and indirect labor in-migration and the relatively large amount of tax revenues that would be generated, mitigation would not likely be required during operation.

2.2.13 Cultural Resources

The proposed plant site lies in the traditional use area of the Palouse, Yakima, Spokane, Umatilla, and Nez Perce Tribes. The Palouse Tribe is one of the Confederated Tribes of the Colville Reservation, and the Umatilla Tribe is part of the Confederated Tribes of the Umatilla Indian Reservation.

Previous archaeological investigations in the vicinity of the proposed plant site have documented culturally sensitive sites, archaeological districts, and Traditional Cultural Properties. Archaeological studies of the SPC property, including subsurface test pits at the proposed plant site location, did not result in the discovery of cultural resources.

One historic structure in the town of Starbuck, the Bank of Starbuck, was nominated for listing in the National Register of Historic Places in 1975.

Based on the results of the field reconnaissance and subsurface test excavations conducted previously, impacts on cultural resources are not expected as a result of construction. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) have requested that the SPC property be formally submitted for a determination of eligibility to the National Register of Historic Places as a Traditional Cultural Property. This would have to be accomplished in consultation with BPA, who would serve as the government-to-government coordinator. The CTUIR also requested that attention focus on the potential for buried cultural resources.

Because the proposed route of the water pipeline is primarily in an abandoned railroad right-of-way, it is unlikely that there would be impacts on cultural resources along those portions of the route. After SPC identifies the planned routes for those portions of the water pipeline to be installed outside of the abandoned railroad right-of-way, cultural resources surveys would be conducted and impacts assessed.

The water pipeline route is approximately 0.25 mile from the Bank of Starbuck, and installation of the pipeline would not result in an impact on the bank.

Operation of the project would not have an impact on any known archaeological materials or historic structures.

During construction, an archaeological monitor should be present during all excavation activities. If historic or archaeological materials are discovered during construction, further surface-disturbing activities at the site should cease, and appropriate BPA and EFSEC personnel notified by SPC or its subcontractors to ensure proper handling of the discovery by a qualified archaeologist. If cultural resources are encountered, impacts would have to be mitigated following the procedures specified in 36 Code of Federal Regulations (CFR) 800 because there would be federal involvement (BPA) on the project.

2.2.14 Traffic and Transportation

SR 261, a two-lane roadway with narrow gravel shoulders, drainage ditches, and no sidewalks, extends along the west side of the SPC property. The plant site would be accessed from SR 261 using two proposed driveways.

Traffic along the highway is relatively low, with an average daily traffic level of approximately 430 at the intersection of SR 261 with U.S. Highway 12, about 13 miles southeast of the site, and approximately 290 at the intersection with Palouse Falls Road, about 8 miles northwest of the plant site. The SR 261 bridge across the Snake River (Lyons Ferry Bridge) is load restricted, with truck traffic limited to no more than 21,500 pounds per axle.

There are no regional or municipal airports in the vicinity of the plant site, with the nearest airport located near Walla Walla, approximately 35 miles to the south. An active Union Pacific Railroad line extends parallel to and several hundred feet west of SR 261 in the vicinity of the site.

The surface condition of the pavement of SR 261 near the site is good, and the delivery of construction materials and equipment by trucks is not expected to significantly degrade existing conditions. Trucks that exceed the load restrictions established for the Lyons Ferry Bridge would have to access the site from SR 261 from the south, by way of U.S. Highway 12. It is not known how combustion turbines or other large equipment would be transported to the site. However, it is likely that this equipment would be transferred from either a railroad car or barge to an oversized truck. Transport with this type of truck would have a short-term impact on traffic along SR 261 or other roadways used.

The peak workforce of 550 during a 3-month period and the average workforce of 300 may add significantly to the average daily traffic of the existing road system at and near the plant site, and, if SPC developed a work camp, in the vicinity of the camp. The nature and extent of these effects would depend on where the workforce resides and how the workers commute to the site, as well as the number of road-based deliveries of materials and equipment to the

site. The workers vehicles probably would be parked on the site property to the north of the existing BPA transmission lines.

Although a more detailed construction management plan is needed to evaluate traffic impacts associated with construction of the water pipeline, it is anticipated that this activity would be of short duration and would not result in a significant impact on local traffic.

If rail transport is required to deliver large primary components of the facility (such as turbines), it is expected that the Union Pacific Railroad would be able to coordinate transport and unloading activities without affecting its system. It is unknown what options may be under consideration for barge transport.

Project-generated traffic volumes during operation would be minimal, with no more than about 15 individuals expected to be present onsite at any point. The likely traffic increase would be low, and the cumulative volumes on SR 261 are expected to remain reasonably low relative to the capacity of the roadway.

It is not expected that the exhaust stacks of the generation plant would increase the potential for airplane collisions beyond the current risk associated with the existing BPA transmission lines that traverse the site and the river. As a result, it is not anticipated that the plant would result in a significant impact on air traffic.

After SPC determines the location of the workforce and determines whether or not a work camp is necessary, it may be appropriate to identify mitigation measures to reduce traffic impacts.

2.2.15 Health and Safety

The plant site has been used primarily for grazing, and no industrial soil contamination is expected on the site. Because the water pipeline would be installed in an abandoned railroad bed, the potential exists for contamination to be present in the ballast from past activities associated with railroad operation and maintenance.

A 36-inch-diameter natural gas pipeline is located approximately 200 feet from the southwest corner of the plant site and would serve as the source of natural gas for the project. Two 500-kV electrical transmission lines currently cross the project site with an unquantified electromagnetic field (EMF).

SPC has proposed a series of measures designed to minimize or eliminate the release of chemicals, petroleum products, hazardous waste, other types of waste, and other materials that could negatively affect environmental conditions. By following these measures, the potential for uncontrolled releases from the site would be low, and there would not be a significant impact on health and safety during construction or operation.

Two primary types of major accidents could occur that would pose a health and safety risk to individuals in nearby areas: (1) rupture of the common ammonia storage tank and (2) a natural gas explosion and fire, either in the generation plant or along a pipeline because of

rupture. If a major accident were to occur at the site, those at primary risk would include workers and visitors at the plant site, workers at the adjacent grain elevators south of the site, and those traveling along SR 261 adjacent to the site. Because of the remote location of the plant and the low volume of traffic along SR 261, major accidents at the plant would not threaten a large population.

As noted in Section 2.2.1 (Earth), an environmental evaluation of the abandoned railroad bed should be conducted to provide for the health and safety of construction workers. The following mitigation measures are also recommended for inclusion in the project:

- Maintain proper clearance between construction equipment and the existing power lines on the SPC property.
- Develop and implement a Spill Prevention, Control, and Countermeasures Plan for the facility in accordance with applicable regulations.
- Develop a plan for periodic inspections and leak surveys of the natural gas pipeline.
- Develop and implement emergency preparedness plans, including coordination with local medical facilities and fire departments. These plans should include training of local fire departments for fighting natural gas fires and other types of emergencies that could occur at the generation plant.