# EXECUTIVE SUMMARY

## Introduction

The Southern Montana Electric Generation and Transmission Cooperative, Inc. (SME) proposes to build a 250-megawatt (MW), Circulating Fluidized Bed (CFB), coal-fired power plant – called the Highwood Generating Station (HGS) – and 6 MW of wind generation at a site near Great Falls, MT. This final Environmental Impact Statement (FEIS) discusses this Proposed Action and analyzes its potential effects on the environment.

SME is based in Billings, Montana. As an electric generation and transmission cooperative, it is a non-profit utility owned by its members. As such, it provides wholesale electricity and related services to five electric distribution cooperatives and one municipal utility. The SME member systems are:

- Beartooth Electric Cooperative, Inc., headquartered in Red Lodge, Montana.
- Fergus Electric Cooperative, Inc., headquartered in Lewiston, Montana.
- Mid-Yellowstone Electric Cooperative, Inc., headquartered in Hysham, Montana.
- Tongue River Electric Cooperative, Inc., headquartered in Ashland, Montana.
- Yellowstone Valley Electric Cooperative, Inc., with headquarters at Huntley, Montana.
- Electric City Power, Great Falls, Montana.

SME's 58,000-square mile (150,220-square kilometer) service area encompasses 22 counties in two states – Montana and a very small area of Wyoming. Under its charter, SME is required to meet the electric power needs of the cooperative member systems it serves. SME does not have the capacity to meet all of its members' power needs beyond roughly 2010. After considering various ways to meet those future needs, SME identified the construction of a new coal-fired power plant near Great Falls – the proposed Highwood Generating Station (HGS) – supplemented with four wind turbines on the same site, as its best course of action to meet the electric energy and related service needs of approximately 120,000 Montanans.

SME has applied for a loan guarantee to construct the HGS from the Rural Utilities Service (RUS), an agency which administers the U. S. Department of Agriculture's Rural Development Utilities Programs (USDA Rural Development). The RUS application covers the financing needs of the five cooperative members of SME, representing approximately 75 percent or 185 MW of the total projected load needs of SME. The remaining 25 percent or approximately 65 MW of projected load is planned to be financed separately by Electric City Power. SME has also applied for an air quality permit and other environmental permits and licenses from the Montana Department of Environmental Quality (DEQ). In order to fulfill their respective obligations under the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA), RUS and DEQ have jointly prepared this Environmental Impact Statement (EIS). The Proposed Action includes the construction and operation of a 250-MW (net), CFB coal-fired generating plant and four 1.5-MW wind turbines. The FEIS analyzes the potential environmental effects of the Proposed Action and alternatives to that action.

RUS has established procedures for determining if a proposed project for which a loan or loan guarantee is sought is feasible both from an engineering and financial perspective. Following RUS procedures, SME prepared several proposal development documents, including a System Load Forecast, Alternative Evaluation Study and a Site Selection Study. These studies were subject to RUS's review and approval. Their information and analyses are incorporated into this EIS; they are also available to the public on RUS's website at: http://www.usda.gov/rus/water/ees/eis.htm .

The draft EIS (DEIS) on the HGS was released in June 2006 and public hearings were held in Great Falls and Havre, in July and August respectively. Upon request by an interested party, the comment period on the DEIS was extended by two weeks; it closed on August 30, 2006. Subsequently, in response to public and agency comments and concerns, a number of changes were made to the DEIS text itself – including new alternatives and revised significance findings – and the location of the preferred alternative was shifted to reduce cultural and visual impacts on the Great Falls Portage National Historic Landmark (NHL). The FEIS reflects those changes, which are shown in double-underlining. Also included in the appendices of the FEIS are the comments and agencies' responses to comments, a draft Memorandum of Agreement (MOA) on the NHL, and the final draft Biological Assessment (BA) prepared in compliance with Sec. 7(c) of the Endangered Species Act.

## Purpose, Need for, and Benefit of the Proposed Action

Presently, SME meets all of the power requirements for its cooperative member systems by purchasing power from two Federal power suppliers – the Bonneville Power Administration (BPA) and the Western Area Power Administration (WAPA). However, its major supplier (BPA) will end its sales of power to SME by 2011. Thus, SME will need to close the large projected gap between the amount of power it can provide to its cooperative member systems and the amount of power those cooperative member systems need to supply their residential, commercial and industrial customers.

Currently, approximately 20 percent or 20 MW of the cooperative member systems' wholesale supply requirements are met through a power purchase agreement with WAPA. The remaining 80 percent or about 100 MW is met by purchase from BPA under an "all supplemental requirements" contract effective from 2000-2017. The wholesale power requirements of Electric City Power are met with purchases from PPL Montana that will expire in 2011.

A provision of SME's power purchase agreement with BPA allows "recall" of a portion of SME's purchase rights beginning in 2008, and the remaining power purchase rights of the contract by 2011. BPA has now exercised this provision because it has determined that the load requirements of the region which it has a statutory requirement to serve will have needs in excess of its current generating capacity. Under the laws governing BPA, SME is an "extra-regional" customer because it is located east of the continental divide. SME thus faces an imminent wholesale power supply shortfall of major proportions.

Based on SME's existing and projected capacity and energy requirements, in 2009 it will have a resource requirement or deficit of approximately 116 MW. By 2012 this deficit will grow to approximately 160 MW as the BPA power purchase agreement is phased out. Given the price

volatility of natural gas and the lack of viable wholesale power purchase options, SME needs to seriously consider developing an alternate wholesale power supply resource. In addition, Electric City Power has projected resource requirements of approximately 65 MW.
In demonstrating to RUS how to best meet its power supply obligations in the face of a looming phase-out of its main existing power source, SME concluded that owning its own source of electric generation would be in the best interest of its cooperative member systems. SME proposes to construct a 250 MW, CFB coal-fired power plant near Great Falls, Montana. The Proposed Action would also include four 1.5 MW wind turbines, construction of approximately 14 miles (23 km) of transmission lines, substation facilities, pipelines for raw water, potable water and wastewater, and about six miles of railroad tracks for delivery of coal to the plant, in addition to other components.

In addition to providing a reliable supply of electricity at an affordable price, the Proposed Action would furnish local employment in the Great Falls area during construction and operation. It would also provide tax benefits for Cascade County and the City of Great Falls, as well as other associated socioeconomic benefits.

## Alternatives Eliminated from Detailed Consideration

The Alternative Evaluation Study and FEIS examined a total of 29 alternative means of responding to the identified purpose and need for the project. These alternatives were evaluated in terms of cost-effectiveness, technical feasibility, and environmental soundness. Twenty-six alternatives were considered but dismissed from more detailed analysis on one or more grounds:

- Power Purchase Agreements – Eliminated because of higher cost and no probable environmental advantage; SME would contribute indirectly to impacts from other generation sources.

- Renewable Non-Combustible Energy Sources –
  *Wind Energy* – Incapable of providing approximately 250 MW of base load due to its intermittency.
  *Solar Energy* (photovoltaic and thermal) – Much higher overall cost and inability to serve as base load due to intermittency.
  *Hydroelectricity* – Scarcity of remaining undeveloped hydro resources in Montana and generally unacceptable environmental impacts.
  *Geothermal Energy* – Unavailability of sufficient geothermal resources to generate electricity on a commercial scale in Montana.

- Renewable Combustible Energy Sources –
  *Biomass* – Infeasible due to distance to and uncertainties associated with wood waste supply.
  *Biogas* – Infeasible due to dispersed locations and insufficient quantities of fuel sources in Montana such as digester gas from organic material and landfill gas.
  *Municipal Solid Waste* – Unavailability of municipal solid waste in Montana in sufficient quantities to generate 250 MW plus generally high emissions and other environmental problems such as toxic ash and residues.

- Non-Renewable Combustible Energy Sources –

  *Natural Gas Combined Cycle* – Price volatility and likelihood of significantly higher future costs as a result of rising demand and limited supplies.
  *Microturbines* – Infeasible due to dispersed locations and insufficient quantities of fuel sources in Montana such as digester gas from organic material and landfill gas.
  *Pulverized Coal* – Somewhat higher emissions of air pollutants and somewhat higher capital cost than CFB.
  *Integrated Gasification Combined Cycle* – Not currently cost-effective and requires further research to achieve an acceptable level of reliability; except for still undemonstrated potential to sequester carbon dioxide, does not enjoy significant emissions advantages over CFB.
  *Oil* – High prices and price volatility, with prospect for even higher prices and volatility in the foreseeable future.

- Nuclear Power – Permitting and construction of nuclear power plants takes considerably longer than for PC or CFB plants and a new plant would face stiff public opposition; moreover, nuclear power is not cost-effective at the scale needed by SME.

- Combinations of Energy Sources –

  *Smaller CFB Plant and Renewable Energy Sources* – This combination alternative only partially meets the purpose and need of this project in the short-term. It would not provide reliable, cost effective, and consistent energy generation for the predicted long-term load; in addition, transmission constraints and impacts were a key factor in this alternative not being viable.
  *Combination of Renewable Energy Sources* – This combination alternative would not meet the purpose and need of this project. It would not provide long-term term reliable, cost effective, and consistent energy generation for the predicted load; in addition, transmission constraints and impacts were a key factor in this alternative not being viable.

- Other Coal-Fired Power Plant Sites –

  *Decker* – More expensive than Great Falls sites; also has a higher degree of risk associated with environmental permitting and approvals; subject to water disruption and the lack of available water rights.
  *Hysham* – More expensive than either of the Great Falls sites; also has a higher degree of risk associated with environmental permitting and approvals and available water supply and water rights.
  *Nelson Creek* – More expensive than either of the Great Falls sites; also has a higher degree of risk associated with environmental permitting and approvals and available water supply and water rights.

- Salem Site-Specific Alternative Components –

  *Obtaining Potable Water From Other Sources* –

  - *Importing bottled water* – Bottled water would not be cost effective in large quantities for site-wide use for anything other than drinking water.

- *Drinking water wells drilled onsite* – Rejected in part because of the 300-450-foot depth to the water-bearing Madison limestone formation.
- *Additional river diversion* – The water treatment facility would be classified as a public water supply and would be subject to state and county regulations; no environmental advantage over connection to and use of City of Great Falls water system.

*Directly Discharging Wastewater into the Missouri River* – Rejected in favor of discharging into the City of Great Falls' wastewater treatment system on the grounds of environmental benefits and the cost to construct, operate, maintain, and monitor the facility.

*Disposing of Sanitary Wastewater in Septic System* – Offers no environmental benefits over SME's proposed connection and use of the City of Great Falls wastewater treatment

*Alternate Railroad Spur Alignments* –

- *Routed south of power plant to abandoned railroad grade* – Rejected because of disadvantages including need for replacing sections of existing, abandoned railroad grade, conversion of privately owned croplands, and routing of coal train traffic through City of Great Falls.
- *Routed north of power plant to City of Great Falls along property lines* – Rejected because of difficult and expensive installation due to rougher terrain, greater environmental impacts at crossings of coulees and watercourses, and the highest estimated cost from the bridges or trestles that would be needed.

*Hauling Ash to High Plains Landfill* – Rejected because of greater cost and the need to haul 10-12 trucks per day carrying ash through City of Great Falls.

## Alternatives Assessed in Detail

*No Action Alternative*

Under the No Action Alternative, the HGS would not be constructed or operated to meet the projected 250-MW base load needs of SME. There would be no facilities constructed at either the Salem or Industrial Park sites to meet the purpose and need.

However, it is unreasonable to assume that no alternative source of electricity would be provided for SME customers once the current power purchase agreement with the Bonneville Power Administration begins to expire. Therefore, the primary assumption for the No Action Alternative is that the need for a reliable energy supply for the SME service area would still be met by some means, mostly likely the purchase of power from other sources of generation in the West, including those already online and those currently being developed. While no specific generation sources have been identified, it is assumed that power would likely be provided by some mixture of coal, natural gas, oil, hydro, nuclear fission, and renewable electricity sources.

*Proposed Action: Highwood Generating Station – Salem Site*

Under this alternative, the HGS would be built and operated approximately eight miles east of Great Falls. The Salem site is located in Sections 24 and 25, Township 21 North, Range 5 East

at about 3,300 feet (1,006 m) above sea level. It is east and north of the intersection of Salem Road and an abandoned railroad bed. In addition, four 1.5-MW wind turbines would be constructed and operated on the same site.

In response to public concern about visual and cultural resources impacts on the NHL, SME has moved the locations of the footprints of the HGS itself and the four wind turbines. The footprint of the power plant has shifted about one-half mile south to a location just outside the eastern NHL boundary. However, due to property constraints and the necessity of keeping the wind turbines upwind of the power plant, it was not possible to move the wind turbines outside the NHL; they have been relocated toward the north, and still remain within the NHL.

Construction is estimated to take approximately four years and three months (51 months) from ground breaking to commercial operation of the plant. Construction would begin with site preparation, foundations, and underground utilities, while design of the above-ground mechanical, piping, buildings, structures, and electrical systems is being developed. Site grading and preparation has a planned duration of approximately two months and would be followed by foundation construction, with a planned duration of approximately a year. Using a phased process, boiler and baghouse construction would commence approximately five months after the beginning of the foundation construction and would be completed in approximately two years.

Construction of the four 1.5-MW wind turbines would take place concurrently with power plant construction. The towers are anticipated to have a height of 262 feet (80 m) at the rotor. The wind turbine is expected to have three blades, with an overall diameter of 250-270 feet (77-82.5 m) or radius of 125-135 feet (38-41 m).

In addition to construction of the HGS and wind turbines on the Salem site itself, construction of the following utility facilities and infrastructure would take place in the vicinity: a rail spur, raw water intake at the Morony Reservoir on the Missouri River, raw water pipeline, two 230 kV transmission lines, a new switchyard, potable and wastewater lines, and access roads.

Once construction was completed, plant start-up activities would be initiated with a planned duration of eight months and must be completed before commercial operation of the plant could begin. Plant operation would employ approximately 65 permanent workers. The plant design consists of a CFB boiler, single re-heat tandem compound steam turbine, seven stages of feedwater heating, water-cooled condenser, wet cooling tower, hydrated ash reinjection or equivalent flue gas desulfurization (FGD) system, baghouse, and material handling system. The plant would withdraw and use for cooling approximately 3,200 gallons per minute of water from the Missouri River.

The HGS would purchase sub-bituminous coal from either the Spring Creek or Decker mines in Montana's Powder River Basin (PRB), or other suitable supply from which comparable PRB coal supplies are produced. Coal consumption is estimated to be 300,000 lb/hr or 1,314,000 tons/yr. Coal would be delivered approximately twice a week in 110-car bottom-dump unit trains. Fly ash from the coal combustion process would be disposed of onsite in an engineered monofill, lined with clay.

Limestone and ammonia would be purchased and utilized to reduce air pollutants. Limestone would be consumed at a rate of approximately 5,780 lb/hr or 25,300 tons/yr. Limestone would be delivered to the plant by truck or train from the Graymont Lime Plant and limestone quarry near Townsend, Montana. Ammonia would be consumed at a rate of 239 lb/hr (1,047 tons/yr). Anhydrous ammonia would be purchased and delivered to the plant by rail or by truck.

Electricity from the operation of the proposed HGS would furnish the base load component of SME's proposed integrated power supply portfolio. However, under the Proposed Action, SME and its member cooperatives would continue to purchase power from WAPA as well as continue to invest in energy conservation and efficiency, as mandated since 1997 by the State of Montana in Senate Bill 390. In addition, SME proposes to purchase and/or generate an environmentally preferred product, probably wind energy.

SME has applied for an air quality permit under the Montana Clean Air Act and would comply with the conditions and limits in the final permit. The preliminary determination or draft permit is included in the FEIS. The on-site ash monofill would comply with all requirements of Montana's Solid Waste Management Act; SME intends to apply for a solid waste license once appropriate zoning changes were made even though this facility is exempt under the law.

*Alternative Site – Industrial Park Site*

The Industrial Park site is located in the southern half of Section 30, Township 21 North, Range 4 East. It is just east of Highway 87, about ¾ mile (1.2 km) north of the Missouri River and ½ mile (0.8 km) east of a mobile home park. The City of Great Falls has designated this site as the Central Montana Agricultural and Technology Park, that is, as an industrial park. Construction and operation of the 250-MW, CFB coal-fired power plant at the Industrial Park site would be very similar to that described for the Salem site, except for the differences described below.

Eight miles (13 km) of new track and railroad bed would be needed, slightly more than the distance for the Salem site. The rail spur would start north of the Missouri River and travel north and west to the plant site. A 4.5-mile (7.2-km) long pipeline (compared to less than three miles for the Salem site) would be needed to transport make-up water from an intake structure on the Missouri River to the plant. Precise locations of transmission line corridors have not yet been determined, though it is likely that one transmission line would go to the Great Falls Switchyard, which is about 5.5 miles east of the Industrial Park site. A second line of 18 miles in length would likely be built to a switchyard installed on the Great Falls to Ovando line. The specific rights-of-way for potable water and wastewater lines have been selected, and are 1.5 and two miles in length, respectively, which are shorter than for the Salem site.

Construction at the Industrial Park site would take the same length of time as at the Salem site, approximately three and a half years, and the workforce would be about the same size – averaging between 300 and 400 workers at any one time with an estimated peak construction workforce approaching 550.

The proposed generating station at the Industrial Park site would include the same equipment and component parts, would be operated identically and would consume the same quantities of raw materials as in the Proposed Action. Disposal of fly and bed ash would not take place onsite at

the Industrial Park site, because of the smaller area. Instead, ash would be shipped away for disposal in an approved landfill or for reuse as an industrial byproduct, or both.
Unlike the Salem site, the Industrial Park site would not include four wind turbines due to space constraints on the site.

As with the Salem site, SME would comply with its air quality limit, but would not apply for a solid waste license as there would be no ash monofill at the Industrial Park site.

## Impact Analysis

*No Action Alternative*

In general, the No Action Alternative would result in no impacts or negligible effects on the environment at either the Salem or Industrial Park sites. The only impacts that would occur at these sites under the No Action Alternative would result from the continuation of existing unrelated actions and trends, such as agricultural activities, the physical expansion of the City of Great Falls, and the movement of traffic. However, since SME would have to purchase electricity from other generation sources in the West in order to supply its members and customers, the No Action Alternative would contribute indirectly and incrementally to cumulative environmental impacts associated with these fuels and forms of generation. While these impacts cannot be specified at this time, they can be reasonably assumed to correspond to the various impacts known to result from different methods of power generation.

The No Action Alternative would entail no impacts on the topography or the geology of the Salem or Industrial Park sites. Negligible to minor, long-term adverse impacts on soils (e.g. erosion, gradual loss of fertility) would occur from existing land use practices (dryland farming).

This alternative would not adversely affect water resources at or near the Salem site or the Industrial Park, though negligible to minor, long-term adverse impacts on water resources would continue from existing agricultural land uses.

The No Action Alternative would not result in any direct air quality impacts on either the Salem or Industrial Park sites. However, it would contribute indirectly and cumulatively to air quality impacts at those power plants from which SME would purchase electricity, although these impacts cannot be specified or quantified.

This alternative would produce no direct impacts on biological resources at either the Salem or Industrial Park sites. It would likely contribute indirectly and cumulatively to impacts on flora and fauna from those power plants from which SME would purchase electricity, although these impacts cannot be specified or quantified.

No direct noise impacts on either the Salem or Industrial Park sites would result from the No Action Alternative. Likewise, neither would it have direct impacts on recreation, cultural resources, visual resources, transportation, farmland and land use, waste management, or human health and safety.

The No Action Alternative would have potential adverse effects on two resource topics covered in the EIS – socioeconomics and environmental justice. Due to the higher electric rates it would likely lead to for SME's members and consumers, the socioeconomic impacts from the No Action Alternative would be potentially significant and adverse. While there would be no direct impact or effect from a power plant on persons living in poverty or children at either the Salem or Industrial Park sites, higher electricity prices could disproportionately affect low-income residential consumers at any of SME's member cooperatives. These adverse impacts are expected to be of moderate magnitude, intermittent-term duration, and small extent, and have a possible likelihood of occurring.

*Proposed Action: Highwood Generating Station – Salem Site*

Overall impacts of the Proposed Action on **soils** at the Salem site would be adverse and most likely non-significant. The Proposed Action would have negligible to minor impacts on **topography and geology**. Soils impacts from construction activities would have a moderate magnitude, medium-term duration, and medium extent, and have a probable likelihood of occurring. The overall rating from construction impacts would be adverse and non-significant. Impacts from operation of the waste monofill would be adverse but non-significant, and of minor magnitude, long-term duration, and small extent, and have a probable likelihood of occurring.

The overall rating for impacts on **water resources** from the operation phase of the power plant would be adverse and non-significant. Construction of the HGS would likely entail increased stormwater runoff, carrying sediment and contamination loads into surface waters, with the potential for contamination from construction equipment and activities infiltrating area soils and percolating down into the groundwater. Impacts to water quality would be mitigated – reduced but not entirely eliminated – through Best Management Practices (BMPs). Impacts on wetlands and floodplains would be negligible to minor. Water withdrawals from the Missouri River for HGS operation would reduce flows by 0.31% in a worst-case scenario. Effluent would be discharged to the City of Great Falls sewage treatment system rather than directly into the Missouri River, in compliance with applicable pre-treatment requirements of the city. Impacts from power plant operation would be of minor magnitude, long term duration, and medium extent, and have a probable likelihood of occurring.

Overall **air quality** impacts from the Proposed Action would be adverse and most likely non-significant. Heavy equipment tailpipe emissions and fugitive dust would probably entail short-term, minor to moderate degradation of local air quality during construction of the HGS and wind turbines. HGS operations would result in long-term minor to moderate degradation of local air quality. There would be long-term minor impacts on sensitive species from criteria pollutant emissions and/or trace element deposition. Off-site impacts on PSD Class I increments and Air Quality Related Values (AQRVs) – regional haze and acid deposition – would likely range from negligible to moderate in intensity. Annual mercury emissions from the HGS would be approximately 36.4 lbs. (16.5 kg) initially, constituting a minor incremental contribution to cumulative state, national, and global mercury emissions. State and national mercury emissions are declining due to new rules and controls; global emissions are still rising. HGS's mercury emissions are unlikely to present unacceptable health risks to humans or wildlife locally or in the state. The HGS would also result in a minor, incremental contribution to the accumulation of atmospheric greenhouse gases, which scientists believe is forcing climate change.

Overall **biological resources** impacts would be adverse and non-significant. The Proposed Action would temporarily displace terrestrial wildlife due to removal of vegetation and disturbance from construction equipment. It would also eliminate potential habitats, but it would be unlikely to adversely affect state-listed species of concern from permanent removal of vegetation. There would be minor short-term harm to wildlife and vegetation by degrading air quality, as well as minor, localized short-term harm to aquatic biota from degraded water quality. The HGS would result in a long-term increase in mortality of terrestrial mammals by rail strikes and increased traffic on the access road(s). There is some potential for increased mortality to birds and bats from blade strikes on the four proposed wind turbines at the Salem site. The Proposed Action may also temporarily disturb habitats along water pipeline routes during construction activities, as well as temporarily disturb wetland habitats over a small area along Morony Reservoir for installation of the raw water intake. In sum, impacts on biological resources would be of minor magnitude, long-term duration, and small extent, and have a probable likelihood of occurring.

Overall **noise** impacts from the Proposed Action would be minor, localized and long-term; while impacts on Great Falls and Salem area residents would most likely be non-significant, there would be a significant adverse impact on the acoustical environment of the Great Falls Portage National Historic Landmark. Noise levels from the operation of the HGS, including intermittent noise sources, would be audible for several miles from the site. Predicted noise levels are equal to or less than the EPA guideline at the receptor locations around the Salem site. Noise levels are predicted to be approximately equal to the existing ambient noise levels during quiet periods at approximately 3.1 miles (5 km) from the Salem site. At all receptor locations, the power plant noise levels are predicted to be less than the 50 dBA nighttime noise limit of the Great Falls Municipal Code for residences, and less than or equal to the EPA Ldn 55 dBA guideline. Noise from operation of the proposed wind turbines on the Salem site would not appreciably increase overall noise levels at that site; the dominant the dominant noise source(s) associated with the project would be the power plant equipment, not the wind turbines.

Overall **recreation** impacts from the Proposed Action would be adverse and non-significant. Construction and operation of the HGS would entail negligible to at most minor impacts on recreation in the immediate project vicinity and wider Great Falls area. The Lewis and Clark staging area historic site would be impacted by the Proposed Action.

Overall impact of the Proposed Action on **cultural resources** would be adverse and significant; the significance of these impacts could be reduced but not eliminated by mitigation. The HGS, wind turbines, and related facilities and infrastructure would have an adverse visual effect on the Great Falls Portage National Historic Landmark (NHL). Other cultural properties within the Area of Potential Effect would not be affected by the Proposed Action. It also appears that no Traditional Cultural Properties would be affected. However, constructing transmission lines, water supply and wastewater lines could potentially affect undiscovered cultural resources. In sum, cultural resources impact would be of major magnitude, long-term duration, and medium or localized extent, and have a probable likelihood of occurring. Moving the HGS outside the NHL boundary, but not the wind turbines, would reduce but not eliminate the significance of the Proposed Action's adverse impact. As a result of Section 106 consultation, SME has also offered to implement a number of off-site mitigations, such as acquiring key properties and assisting the Lewis and Clark Interpretive Center in Great Falls.

The overall rating for **visual impacts** from the Proposed Action would be adverse and significant. The HGS and wind turbines would have scenic impacts of major magnitude, long-term duration, and small extent, and have a high probability of occurring. While the HGS and wind turbines would clearly diminish scenic values within the Great Falls Portage NHL, they would not eliminate them; certain views would remain unaffected. Proposed mitigation measures, such as landscaping and compatible earth-tone color schemes, as well as shifting the HGS to a site just outside the NHL boundary, could reduce the significance of the visual impacts somewhat, but not to a level of non-significance.

The overall rating for impacts on long-term **traffic** congestion from the Proposed Action would be non-significant and adverse. Construction-related impacts on traffic would be of moderate magnitude, medium-term duration, and small extent, and have a probable likelihood of occurring. According to Montana Department of Transportation criteria, short-term construction-related impacts would be significantly adverse; a mitigation plan will be developed to minimize these impacts. Over the long term, during operation of the proposed HGS and wind turbines, impacts on road, rail and air transportation would be generally negligible.

Overall rating for impacts on **farmland and land use** at the Salem site would be adverse and while impacts would most likely be non-significant, there is some potential for impacts to become significant. Construction of a power plant at the Salem site would involve the direct conversion of agricultural lands to an industrialized facility with supporting infrastructure. No homesteads or residences would be displaced. In the context of the amount of quality farmland in other areas of Cascade County, the impact of converting farmland to developed land required for the plant would be of minor magnitude, long-term (permanent) duration, and medium extent, and have a probable likelihood of occurring. Overall rating for impacts on land use from the construction phase of the power plant would be adverse and non-significant. Operation of the power plant at the Salem site would cause no additional direct impacts to land use or farmland. However, the power plant and its associated support facilities could indirectly influence land uses on adjoining or nearby properties in the vicinity of the site. Development of the Salem site may reduce market values of nearby rural, agricultural land, affecting sales of those lands. Property values are less likely to be affected, but if they are reduced then there would be repercussions on land assessments and property taxes.

The overall rating for impacts on **waste management** from the operational phase of the power plant at the Salem site would be adverse; impacts would likely be non-significant. Construction-related impacts on waste management would be of minor magnitude, medium-term duration, and small extent, and have a probable likelihood of occurring. Ash and water treatment system byproducts would be disposed of in an onsite monofill, which would be managed with appropriate environmental controls, including groundwater monitoring. Operation-related impacts would be of moderate magnitude, long-term duration, and medium extent, and have a probable likelihood of occurring.

Overall **health and safety** impacts of the plant would be adverse but non-significant. Construction-related impacts at the Salem site would be of minor magnitude, medium-term duration, and small extent, and have a probable likelihood of occurring. Operation-related

impacts on human health and safety for the Salem site would be of minor magnitude, long-term duration, and medium extent, and have a probable likelihood of occurring.

Construction of the HGS would have a moderately beneficial effect on the **socioeconomic environment** of the local and regional area, including increases in employment opportunities, total purchases of goods and services, and an increase in the tax base. During the long term operation of the HGS, it would yield beneficial and potentially significant socio-economic impacts on aggregate income, employment, and population in Great Falls and Cascade County. The HGS would also provide reliable electricity at reduced rates for SME's customer base.

The Proposed Action would have a negligible effect on children or persons living in poverty, as these population groups are not generally present at or near the Salem site.

*Alternative Site – Industrial Park Site*

Overall impacts of constructing and operating the proposed power plant at the alternative Industrial Park site would in many respects be comparable to those of the Proposed Action at the Salem site, with some important exceptions, as noted below. In general, the closer proximity of the Industrial Park site to residential areas on the northern edge of Great Falls is a disadvantage of this alternative.

The impacts of plant operation on **soils** at the Industrial Park site would be adverse and non-significant. Nevertheless, since the amount of ash waste would not change, an alternative disposal site would have to be located. Impacts to soils at a new location are unknown and site-dependent. The alternative site, like the Proposed Action, would have negligible to minor impacts on **topography and geology**. Soils impacts from construction activities would have a moderate magnitude, medium-term duration, and medium extent, and have a probable likelihood of occurring. The overall rating from construction impacts would be adverse and non-significant. Operation-related impacts on soil resources would be adverse but non-significant, and of minor magnitude, short-term duration, and small extent, and have a possible likelihood of occurring.

The overall rating for impacts on **water resources** from the operation phase of the power plant at the alternative site would be adverse and non-significant. Construction of the HGS would likely entail increased stormwater runoff, carrying sediment and contamination loads into surface waters, with the potential for contamination from construction equipment and activities infiltrating area soils and percolating down into the groundwater. Impacts to water quality would be mitigated – reduced but not entirely eliminated – through Best Management Practices (BMPs). Impacts on wetlands and floodplains would be negligible to minor. Water withdrawals from the Missouri River for HGS operation would reduce flows by 0.31% in a worst-case scenario. Effluent would be discharged to the City of Great Falls sewage treatment system rather than directly into the Missouri River, in compliance with applicable pre-treatment requirements of the city. Impacts from power plant operation at the alternative site would be of minor magnitude, long term duration, and medium extent, and have a probable likelihood of occurring, the same as they would be at the Salem site.

Overall **air quality** impacts from the power plant at the alternative site would be adverse and most likely non-significant, but with the potential to become significant. Heavy equipment tailpipe emissions and fugitive dust would probably entail short-term, minor to moderate degradation of local air quality during construction of the HGS and wind turbines. HGS operations would result in long-term minor to moderate degradation of local air quality. There would be long-term minor impacts on sensitive species from criteria pollutant emissions and/or trace element deposition. Off-site impacts on PSD Class I increments and Air Quality Related Values (AQRVs) – regional haze and acid deposition – would likely range from negligible to moderate in intensity. Annual mercury emissions from the HGS would be approximately 36.4 lbs. (16.5 kg) initially, constituting a minor incremental contribution to cumulative state, national, and global mercury emissions. State and national mercury emissions are declining due to new rules and controls while global emissions are still rising. HGS's mercury emissions are unlikely to present unacceptable health risks to humans or wildlife locally or in the state. The HGS would also result in a minor, incremental contribution to the accumulation of atmospheric greenhouse gases, which scientists believe is forcing climate change.

Overall **biological resources** impacts from developing the alternative site would be adverse and non-significant. The Proposed Action would temporarily displace terrestrial wildlife due to removal of vegetation and disturbance from construction equipment. It would also eliminate potential habitats, but it would be unlikely to adversely affect state-listed species of concern from permanent removal of vegetation. There would be minor short-term harm to wildlife and vegetation by degrading air quality, as well as minor, localized short-term harm to aquatic biota from degraded water quality. The HGS would result in a long-term increase in mortality of terrestrial mammals by rail strikes and increased traffic on the access road(s). The Proposed Action may also temporarily disturb habitats along water pipeline routes during construction activities, as well as temporarily or disturb wetland habitats over a small area on the Missouri River for installation of the raw water intake. In sum, impacts on biological resources would be of minor magnitude, long-term duration, and small extent, and have a probable likelihood of occurring.

Overall **noise** impacts at the alternative site would be minor, localized and long-term; while these impacts would most likely be non-significant, there is some potential for them to become significant, especially if nearby residential development continues. Noise levels from the operation of the power plant, including intermittent noise sources, would be audible for several miles from the site. Predicted noise levels are equal to or less than the EPA guideline at the receptor locations around the Salem site. Noise levels are predicted to be approximately equal to the existing ambient noise levels during quiet periods at approximately 1.2 miles (1.9 km) from the Industrial Park site. At all receptor locations, the power plant noise levels are predicted to be less than the 50 dBA nighttime noise limit of the Great Falls Municipal Code for residences, and less than or equal to the EPA Ldn 55 dBA guideline.

Overall **recreation** impacts from the alternative Industrial Park site would be adverse and non-significant. Construction and operation of the SME power plant at the alternate Industrial Park site would entail negligible to at most minor impacts on recreation in the immediate project vicinity and wider Great Falls area. Upper portions of the proposed generating station would be visible to park users and recreationists along the Missouri River in Great Falls.

The overall impact on **cultural resources** of developing the power plant at the alternative site is likely to be negligible to minor. It would likely have no effect on cultural resources at the site proper due to their apparent absence from the Industrial Park site. It also appears that no Traditional Cultural Properties would be affected at the site proper. However, constructing transmission lines, water supply and wastewater lines could potentially affect undiscovered cultural resources.

The overall rating for **visual impacts** from the alternative Industrial Park site would be adverse and non-significant. It would have scenic impacts of moderate magnitude, long-term duration, and medium or localized extent, and have a high probability of occurring.

The overall rating for impacts on long-term **traffic** congestion from the alternative site would be non-significant and adverse. Construction-related impacts on traffic would be of moderate magnitude, medium-term duration, and small extent, and have a probable likelihood of occurring. According to Montana Department of Transportation criteria, short-term construction-related impacts would be significantly adverse; a mitigation plan would be developed to minimize these impacts. Over the long term, during operation of the proposed SME power plant, impacts on road, rail and air transportation would be generally negligible.

Overall rating for impacts on **farmland and land use** at the Industrial Park site would be adverse and non-significant, but with some potential for the impacts to become significant. Construction of a power plant at this site would involve the direct conversion of agricultural lands to an industrialized facility with supporting infrastructure. No homesteads or residences would be moved. In the context of the amount of quality farmland in other areas of Cascade County, the impact of converting farmland to developed land required for the plant would be of minor magnitude, long-term (permanent) duration, and medium extent, and have a probable likelihood of occurring. Overall rating for impacts on land use from the construction phase of the power plant would be adverse and non-significant. Operation of the power plant at the alternative site would cause no additional direct impacts to land use or farmland. Indirectly, however, the greater proximity of residential areas and other businesses to the Industrial Park site could potentially create more land use conflicts than at the Salem site. Development of the Industrial Park site may reduce market values of nearby agricultural or residential land, affecting sales of those lands. Property values are less likely to be affected, but if they are reduced then there would be repercussions on land assessments and property taxes.

The overall rating for impacts on **waste management** from the operational phase of the power plant at the alternative site would be adverse; while impacts might likely be non-significant, there is some potential for impacts to become significant. Construction-related impacts on waste management would be of minor magnitude, medium-term duration, and small extent, and have a probable likelihood of occurring. All non-hazardous waste generated during operation of the power plant, including ash, would be disposed of at the High Plains Sanitary Landfill and Recycle Center north of Great Falls. Operation-related impacts on waste management for the Industrial Park site would be of minor to moderate magnitude, long-term duration, and small extent, and have a probable likelihood of occurring.

Overall **health and safety** impacts of building and operating the power plant at the alternative site would be adverse most likely non-significant. Construction-related impacts at the Industrial

Park site would be of minor magnitude, medium-term duration, and small extent, and have a probable likelihood of occurring. Operation-related impacts on human health and safety for this site would be of minor magnitude, long-term duration, and medium extent, and have a probable likelihood of occurring.

Construction of the SME power plant at the Industrial Park site would have a moderately beneficial effect on the **socioeconomic environment** of the local and regional area, including increases in employment opportunities, total purchases of goods and services, and an increase in the tax base. During the long term operation of the power plant, it would yield beneficial and potentially significant socio-economic impacts on aggregate income, employment, and population in Great Falls and Cascade County. The power plant would also provide reliable electricity at reduced rates for SME's customer base.

This alternative's overall impacts related to **environmental justice and protection of children** would be adverse but non-significant. There is some potential of a slightly increased risk of impacting children and persons living in poverty from this site, due to the fact that it is located in closer proximity to higher population areas and additional industrial sites. These impacts are judged to be of minor magnitude, long-term duration, and medium extent, and have an improbable likelihood of occurring.

## Agencies' Preferred Alternative

USDA Rural Development's and DEQ's preferred alternative is the Proposed Action – the Highwood Generating Station at the Salem site.

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