

**BASIN ELECTRIC
POWER COOPERATIVE**

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May 13, 2005

FOR DELIVERY MONDAY, MAY 16, 2005

RECEIVED
MAY 16 2005
SOUTH DAKOTA PUBLIC
UTILITIES COMMISSION

Pam Bonrud, Executive Director
South Dakota Public Utilities Service
Capitol Building; 1st Floor
500 East Capitol Avenue
Pierre, SD 57501-5070

**IN THE MATTER OF THE APPLICATION OF BASIN
ELECTRIC POWER COOPERATIVE FOR AN ENERGY
CONVERSION FACILITY PERMIT FOR THE
CONSTRUCTION OF A COMBUSTION TURBINE
GENERATOR NEAR GROTON, SOUTH DAKOTA**

STIPULATION

EL-04-041

Dear Ms. Bonrud:

Enclosed herewith are an original and 10 copies of a Stipulation relating to the above-captioned docket. The Stipulation has been executed on behalf of the Applicant, Basin Electric Power Cooperative (**Basin Electric**).

Please forward these documents to Karen Cremer for appropriate execution on behalf of the South Dakota Public Utilities Commission staff.

Thank you for your assistance. Please contact me at 701/225-5319 with any questions or comments.

Very truly yours,

R. Russell Mather
Staff Counsel

/mw

Enclosures

C: Claire Olson
Jim Berg
Myron Steckler



BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF)
BASIN ELECTRIC POWER COOPERATIVE)
FOR AN ENERGY CONVERSION FACILITY)
PERMIT FOR THE CONSTRUCTION OF A)
COMBUSTION TURBINE GENERATOR)
NEAR GROTON, SOUTH DAKOTA)

STIPULATION

EL04-041

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SOUTH DAKOTA PUBLIC
UTILITIES COMMISSION

It is hereby stipulated and agreed by and between the Applicant, Basin Electric Power Cooperative, and staff of the South Dakota Public Utilities Commission ("**Staff**"), that the following Findings of Fact and Conclusions of Law, and an appropriate Order consistent with said Findings and Conclusions may be adopted by the South Dakota Public Utilities Commission (the "**Commission**") in the above-captioned matter. In support of its Application, the Applicant hereby offers this Stipulation, the Application filed December 22, 2004 and all responses submitted by the Applicant to the Staff's data requests. Staff offers no answering testimony or exhibits conditioned upon the Commission accepting the following Findings of Fact and Conclusions of Law.

FINDINGS OF FACT

1. INTRODUCTION

Applicant, a consumer-owned electric cooperative corporation headquartered in Bismarck, North Dakota, has applied for a permit to construct certain electric generation and associated fuel and transmission facilities collectively (referred to hereinafter as the "**East Side Peaking Project**"), the components of which will be located in Spink County and Brown County, South Dakota.

The proposed East Side Peaking Project will be comprised of the following principal components:

- 1.1 A simple-cycle gas electric turbine (maximum capacity of ≥ 100 megawatts);
- 1.2 An underground gas pipeline approximately 11.5 miles in length;
- 1.3 A 115 kV overhead transmission line approximately 0.5 miles in length;
- 1.4 Various upgrades to the existing Groton and Western Area Power Administration ("Western") substations located in Brown County, South Dakota near the town of Groton.

The East Side Peaking Project does not constitute or include any activities relating to or located upon abandoned railroad rights-of-way.

2. PURPOSE OF FACILITY

Construction of the proposed East Side Peaking Project is required to meet growing demand by Applicant's membership for electric power, energy and capacity. Specifically, the purpose of the East Side Peaking Project is to provide a generation resource in this area sufficient to assure Applicant's ability to serve its projected member loads on a reliable basis during periods of peak demand on the most cost efficient basis reasonably possible.

3. DESCRIPTION OF PROJECT

The East Side Peaking Project facilities will be comprised of four (4) primary components, viz. (A) a simple-cycle gas turbine; (B) approximately 11.5 miles of underground gas pipeline and associated facilities; (C) approximately 0.5 miles of 115 kV overhead transmission line; and (D) terminal bay facilities at the existing Groton Substation and the Western Substation, both of which are located in Brown County, South Dakota.

4. DEVIATIONS FROM DESCRIBED CENTERLINE

The 115 kV transmission line and the underground gas pipeline will be located as described in paragraph 7 of this Stipulation. It might be necessary to deviate slightly from the

described centerline to accommodate engineering and applicable safety and construction requirements and situations based upon actual conditions encountered during construction. Deviations will not infringe on the property or property rights of adjacent landowners.

5. ESTIMATED COST OF PROJECT

The estimated total cost of this facility is \$69 million, with the cost of separate project components estimated as follows:

Simple-cycle gas turbine	\$47.7 million
Underground gas pipeline	\$6.7 million
115 kV overhead transmission line and substation upgrades	\$3.0 million
Engineering, overhead, interest during construction, contingency	\$11.6 million

6. DEMAND FOR THE FACILITIES

Using reasonable and customary forecasting and analysis techniques, Applicant has concluded that it will face a power deficit of 80 to 100 MW during the summer seasons, which deficit will first appear in the summer of 2005 and will grow significantly over time. Those studies also demonstrate that a peaking facility is the type of energy resource needed immediately to address such deficit, and that the proposed self-build East Side Peaking Project is the lowest cost, most reliable option available to Applicant. The East Side Peaking Project also has been identified as the option most compatible with long-term plans to satisfy Applicant's projected membership load growth.

7. SITE DESCRIPTION

The site for the East Side Peaking Project is located in a predominantly agricultural area. The Combustion Turbine Generator (CTG) itself will be located in Section 18, Township 122 North, Range 60 West, on property owned by Applicant, which is approximately five (5) miles

south of Groton, South Dakota. The site is comprised of relatively level terrain adjacent to two electrical substations. The proposed CTG site will include a drainage pond, with the only other significant feature being the remnant (bed) of abandoned railroad line which will not be disturbed in connection with the Project. The fuel (natural gas) for the CTG will be supplied by and through a 10.75-inch diameter underground natural gas pipeline, approximately 11.5 miles in length, which will originate in Section 13, Township 120 North, Range 61 West at an existing meter site owned by Northern Border Pipeline (**NBPL**). For approximately 2 miles, the proposed pipeline component of the Project will cross privately owned agricultural property (easements that have already been acquired from the private landowners) at a diagonal until it reaches the existing utility and road right-of-way (**ROW**) on the west side of State Highway 37. The remaining pipeline segment will be located in the public ROW along the west side of State Highway 37 until it reaches a point northwest of the CTG site, at which point the pipeline will cross beneath the highway and be continued onto the CTG site. The pipeline will roughly parallel an existing underground pipeline owned by Northern Natural Gas Company (**NNG**) and NorthWestern Energy from the NBPL meter site to the point it diverts under State Highway 37 and continues onto the CTG site. A diagram showing the general layout of the CTG site is attached hereto for reference as Exhibit "A".

8. ALTERNATIVE SITES

Applicant conducted a systematic evaluation of alternative routing and location for the East Side Peaking Project, which evaluation included consideration of such significant items as access to the high-voltage transmission system; availability of adequate supplies of natural gas and water; low cost and minimum impact to the environment and to the public. Other major considerations were minimization of need for construction of additional transmission lines and minimization of costs of transporting CTG power and energy to Applicant member loads. Twelve potential project locations initially were studied, 10 of which were eliminated based upon

various environmental concerns. Of the two remaining locations, the site described hereinabove was selected. The site described in this Stipulation is superior to other alternatives in that it is compatible with existing land uses in the region; minimizes impacts to the environment; avoids impact to existing public features (e.g. schools, residential communities, commercial development) to the maximum extent reasonably possible and minimizes the degree to which transmission line and pipeline easements will be required to cross private land because the CTG will be located in an area with good access to the transmission grid with minimum additional construction of transmission facilities.

9. ENVIRONMENTAL FACTORS AND PHYSICAL ENVIRONMENT

Applicant has completed an Environmental Report for the East Side Peaking Project that is located in Appendix A of its Permit Application. The affected environment is described in detail in Section 4.0 of the Environmental Report. Estimates of the changes and impacts to the existing environment from activities associated with construction and maintenance of the Project facilities are discussed in detail in Section 5.0 of the Environmental Report.

The proposed location of the East Side Peaking Project facilities would minimize changes and impacts to the existing environment by following existing property boundaries, using road and utility ROW where possible, siting in areas with compatible land use and minimizing the need to cross environmentally sensitive or significant features. The Environmental Report (Appendix A) demonstrates that the Project will have no significant environmental impact on all factors evaluated. It is anticipated that this Project will not create any significant direct, cumulative or synergistic hazards to the health and welfare of human, plant or animal communities. No other major industrial facilities under regulation will have an adverse effect upon the environment as a result of being located in the Project's proposed siting area.

- 9.1 **Regional Land Forms.** The Project will use the existing level to nearly level terrain for the CTG and associated facilities. The grading and earthmoving required will not be significant. No direct, indirect or cumulative impacts to regional landforms are anticipated.
- 9.2 **Topography.** Modifications to approximately 15 acres of cultivated farm fields will result from grading an area for a pad upon which the CTG will sit and to establish appropriate drainage of storm water across and around the site. A retention pond for site surface runoff water and non-contact cooling water also will be constructed. It is anticipated that there will be no direct, indirect or cumulative impacts to topography relating to construction and operation of the Project.
- 9.3 **Geologic Features.** The Project facilities will be located in the Lake Dakota Plain within the James Basin Physiographic Division of the Central Lowlands province. Construction, operation and maintenance of the Project facilities are highly unlikely to cause or to encounter any significant problems or issues relating to geologic features in the Project area.
- 9.4 **Economic Deposits.** No economic mineral deposits are identified in the Project area. The proposed project is located in an area of poor probability of sand and gravel occurrence.
- 9.5 **Soil Type.** Soils at the CTG site are described as Aberdeen (silt clay loam), Nahon (silty clay loam) and Exline (silt loam) series. These silty clay loam and silt loam soils have moderate organic matter and their available water capacity is moderately high. These soils are easily eroded by wind and water-related forces.
- 9.6 **Potential for Erosion and Sedimentation.** Impacts to soils from the Project will be insignificant. Direct impacts to soils within the CTG site and the proposed pipeline corridor could include localized short-term increases in the potential for erosion from wind, water runoff, compaction and rutting. Areas that are cleared or disturbed by

construction of the CTG could be susceptible to erosion. Some portions of the proposed pipeline corridor may be located in areas with steeper slopes, which will require regrading and stabilization immediately after the pipeline crossing is complete. No significant increases in the potential for erosion are anticipated by virtue of construction, operation or maintenance of the proposed Project facilities. Areas that are disturbed by construction are expected to recover naturally with vegetative re-establishment or reseeding if and as necessary.

- 9.7 **Seismic Risks, Subsidence Potential and Slope Instability.** Seismic hazards in the study area are rated as very low. No potentially hazardous geologic areas, such as slumps or landslides, would be affected by construction of the CTG or the gas pipeline. As a result, no direct, indirect or cumulative impacts to geologic resources are anticipated to occur as a result of activities relating to the Project.

The proposed CTG and associated pipeline will be designed and constructed in accordance with all applicable codes. In general, soils in the project area are expected to provide adequate foundation for the CTG without concern of subsidence. The Project area is flat, and slope instability will not be an issue.

- 9.8 **Geological Constraints.** There do not appear to be any geological characteristics that present unusual constraints to the design, construction or operation of the proposed CTG or pipeline facilities.

- 9.9 **Hydrology.** No mapped surface water bodies are located within the proposed area of the CTG site. Several ephemeral drainage channels occur along the proposed path of the associated underground pipeline. Impacts to surface water attributable to the Project are anticipated to be insignificant. Impacts to the quality of water in small, ephemeral or unmapped water are likewise anticipated to be insignificant. After construction is completed, it is anticipated that there will be no direct, indirect or cumulative impacts to surface water quality relating to the Project.

No impacts to the flood handling capability of the 100-year flood plain in the Project area are anticipated because the CTG site is not located within a 100-year flood plain. The CTG site is located within a 500-year flood zone, but it is anticipated that there will be no significant direct, indirect or cumulative impacts upon the flood-handling capability of the 500-year flood zone or existing or potential floodplains near the CTG site due to mitigation measures that will be incorporated into the design and construction of the CTG site.

The proposed underground gas pipeline will cross the 100-year floodplains associated with a tributary of Mud Creek and tributaries of Dry Run. No significant impacts to those floodplains are anticipated to occur as the result of the construction of the gas pipeline because the pipeline will be buried and the ground surface returned to its pre-construction condition.

No significant direct, indirect or cumulative impacts to groundwater quality are anticipated relative to the construction or operation of the Project. No aquifers are known to be present at the shallow depth (approximately four feet) required to construct the gas pipeline.

- 9.10 **Effect on Current Planned Water Uses.** WEB Water Development Association in Aberdeen, South Dakota will provide all of the water required for operation of the Project from its existing rural water distribution pipeline located adjacent to the CTG site. Accordingly, the Project will have no impacts on planned water uses by communities, agricultural, recreation, fish or wildlife.
- 9.11 **Surface and Groundwater Use by Proposed Facility.** The Project will not require consumptive use of or discharge to any surface water body or groundwater (other than use of water purchased from WEB Water Development Association). All non-contact cooling water will be collected in an on-site storage pond, from which it will evaporate or percolate into the soil.

- 9.12 **Aquifer Use by Proposed Facility.** The Project will not use groundwater.
- 9.13 **Water Storage, Reprocessing and Cooling by Proposed Facility.** Turbine injection water for nitrogen oxide (NO_x) control will be demineralized in trailer-mounted vessels. Spent vessels will be removed from the CTG site for regeneration at an authorized facility. All non-contact cooling water will be collected in an on-site storage pond from which it will evaporate or percolate into the soil. Contaminated industrial waste water and sewage will be collected in underground storage vessels and ultimately transferred into trucks and removed from the CTG site for treatment at authorized disposal facilities.
- 9.14 **Deep Well Injection Use by Proposed Facility.** No deep well injection would be required for the construction or operation of any of the components of the Project.
- 9.15 **Effect on Terrestrial Ecosystems.** Detailed information resulting from biological field surveys conducted to identify and quantify the terrestrial fauna and flora potentially affected by the Project are contained in Sections 4.5 through 4.7 of the Environmental Report located in Appendix A of the Permit Application. It is anticipated that construction and operation of the Project will have no significant adverse impact on the terrestrial biotic environment.
- 9.16 **Effect on Terrestrial Fauna.** The Project construction is not anticipated to have any significant adverse impact upon wildlife in the Project area. No threatened, endangered or candidate animal species were observed or indicated in or around the Project area.
- 9.17 **Effect on Terrestrial Flora.** Impacts to vegetation in the Project area are anticipated to be insignificant since most vegetation in the area already has been altered from its original state. The majority of the acreage that will be disturbed in connection with the Project presently is devoted to agricultural uses. Non-agricultural areas to be disturbed will consist of acreage presently utilized for or in connection with existing electrical facilities or devoted to public ROW along an existing state highway. Short-term impacts (that affect vegetation for one (1) year or less) could include disturbance, removal and

soil compaction caused by: (A) trenching and installing the gas pipeline; (B) performing geotechnical investigations; (C) preparing equipment yards and construction trailer sites; and (D) clearing, grubbing, grading and constructing Project components. These short-term impacts will be mitigated by reclamation soon after construction is completed.

Construction associated with the Project may have minor indirect effects on vegetation in the project area by increasing the potential for establishment of noxious weeds. Disturbed soil creates a hospitable environment for invasion of weeds and Project-related traffic may provide a transport mechanism for seeds of noxious weeds to the area. Removal of vegetation may increase erosion and sedimentation. Increased runoff on bare and compacted soils could create gullies and change the overall landscape.

Cumulative impacts to vegetation are anticipated to be insignificant and include the effects from existing farming and ranching. The primary land use in the Project area consists of cultivated fields of corn, soybeans, small grains and alfalfa that have been changing the landscape for many years. Future agricultural use of the area may continue to change the landscape significantly. This Project should have an insignificant impact on vegetation, as most Project areas have been altered from their natural state.

9.18 Effect on Aquatic Ecosystems. The Project is not expected to cause significant, direct, indirect or cumulative impacts on wetlands in the Project area. Less than 10 acres of isolated herbaceous wetlands are located within the total quarter section surrounding the CTG site, and the gas pipeline will cross only one small, non-jurisdictional wetland. Access to the pipeline and to the CTG site will consist primarily of existing roads, thus minimizing impacts on any nearby wetlands. Temporary, indirect impacts to the wetlands would be less than one day in duration.

The single most significant contributing factor insofar as cumulative impacts to wetlands in the Project area is the conversion of mixed grass prairie grasslands to

cultivated fields of corn, soybeans, small grains and alfalfa – which conversion pre-exists the Project.

- 9.19 **Water Quality.** Construction of the Project will comply with all applicable federal, state and local permits required for alteration of wetlands, streams or rivers relating to the Project. The following are specific measures that would be taken to protect water quality in the proposed Project: (A) Best management practices would be implemented to minimize erosion and sedimentation, runoff and surface instability during construction; (B) Current drainage patterns in areas affected by construction would be maintained to the extent possible; (C) Staging areas for project-related construction equipment will be located in areas that are not environmentally sensitive to control erosion; (D) Staging and laydown yards for project-related construction will be established at least 50 feet from waterways or wetlands, if permitted by topography; (E) Construction equipment will not be serviced within 25 feet of waterways or wetlands; (F) Equipment will not be fueled within 100 feet of the waterways or wetlands; (G) Any spills of fuels or other hazardous materials during construction or system maintenance will be promptly contained and cleaned up; and (H) Any herbicides used in ROW maintenance will be approved by the U.S. Environmental Protection Agency and applied by licensed professionals. Application of herbicides would be limited to the extent necessary for regular maintenance of the CTG site.

- 9.20 **Air Quality.** Construction of the Project will comply with all applicable federal, state and local permits required. Air pollution impacts from CTG emissions will be below National Ambient Air Quality Standards (**NAAQS**) and South Dakota Ambient Air Quality Standards in accordance with South Dakota Air Regulation § 74:36:05:06 – Standard for Issuance of Operating Permit. The predicted maximum impacts from the CTG demonstrate that operation of the CTG will not cause or contribute to violations of applicable air quality standards. Predicted maximum modeled concentrations of NO_x

and CO are well below the applicable PSD significance levels, and are below the South Dakota ambient air quality standards and NAAQS.

10. LAND USE

- 10.1 Land Use.** The CTG site itself will encompass approximately 15 acres of land. The pipeline, which will be approximately 11.5 miles long, will parallel an existing gas pipeline and primarily will be constructed in previously disturbed areas, existing utility and public ROW.

The CTG and pipeline will be constructed in a landscape that involves a variety of land uses, including public ROW alongside a state highway; a small amount of commercial, industrial and transportation-related uses; row crops; and hay and pasture land. The CTG will occupy land solely owned by the Applicant, the use of which is subject to regulation and oversight by Brown County, South Dakota. The CTG will not alter any transportation corridors. The majority of the gas pipeline will be constructed in the public ROW along side State Highway 37. Agriculture is the principal enterprise in Brown and Spink Counties in the areas located near the Project facilities; however, no “prime farmland” exists in the Project area. The proposed CTG site does not include any land that is formally classified or administered by federal or South Dakota state governmental entities. The gas pipeline will be subject to classifications administered by the state of South Dakota due to its location in the public ROW.

- 10.2 Homes and Persons Displaced.** There will be no homes or persons displaced as a result of the construction, operation or maintenance of the proposed facilities.
- 10.3 Land Use Compatibility.** The Project facilities are compatible with the present land uses of the surrounding area. The CTG will be constructed on private land owned by the Applicant and will be adjacent to two existing electric substations. The addition of the CTG and associated pipeline to the area would have minimal direct or indirect impacts

on the already linear features of the landscape, as existing roads, fencing and power lines transect the area. Construction would temporarily alter the area. There will be no impact to "prime farmland" by the construction or operation of the Project.

- 10.4 **Effect on Land Use.** The Project will have minimal impact on land use. The majority of the Project facilities will occupy private land that is regulated with respect to land use by Brown and Spink County land use plans and ordinances. The short-term impacts could include disruption of vegetation and farming caused by: (A) Preparing equipment yards and construction trailer sites; (B) Clearing, grubbing and grading for installation of the CTG; and (C) Clearing, grubbing, grading and drilling hole foundations for installation of transmission poles. The short-term disturbances to vegetation that will result from construction of the gas pipeline will be mitigated by appropriate reclamation activities soon after construction is completed. Most disturbances to farming would be expected to be infrequent and last only a day per disruption.

The long-term impacts could include disruption of vegetation and farming caused by loss of crops, hay or livestock forage as the result of construction of the CTG and any future expansion thereof. Based upon the small amount of acreage involved, the cumulative impact of the Project upon land use is anticipated to be insignificant. The gas pipeline largely will be located in existing public ROW pursuant to a permit issued by the South Dakota Department of Transportation. The portion of the pipeline not located in the public ROW will parallel an existing natural gas pipeline.

- 10.5 **Local Land Use Controls.** The Project facilities will be located predominantly on private land the use of which is subject to Brown and Spink County land use plans and ordinances. The Project will comply with all applicable and reasonable local land use, zoning and building rules, regulations and ordinances. On November 3, 2004, the Brown County Planning and Zoning Commission issued a Special Exception Permit

allowing construction of the CTG.

11. TIME SCHEDULE

Initial CTG site work and construction is planned to commence June 23, 2005, with construction of the gas pipeline and transmission interconnection facilities planned for a two-month period in the fall of 2005. Commercial operation is scheduled to commence in June of 2006. Appendix E of the Application sets out the planned schedule in more detail.

12. COMMUNITY IMPACT

- 12.1 Forecast of Socioeconomic Impact.** No significant adverse socioeconomic impacts to the local communities and governmental facilities or services are anticipated as a result of the construction, maintenance and operation of the Project. It is expected that the Project will provide socioeconomic benefit by creating construction employment opportunities, increased demand for locally supplied construction equipment, and increased reliability and availability of electrical power.
- 12.2 Forecast of Taxation Impacts.** No significant immediate or long-term impact on property and other taxes of any taxing jurisdictions are anticipated as a result of the construction, maintenance or operation of the Project.
- 12.3 Forecast of Agricultural Impacts.** Short-term impacts to agriculture are expected to last no more than a day per disruption and would primarily impact access to livestock and farm irrigation, tilling and harvesting operations. The small conversion of agricultural land to the CTG site is expected to have minimal impact on the overall crop production within the proposed project area.
- 12.4 Forecast of Population and Community Impacts.** The Project is not expected to substantially impact the population, income, occupational distribution or the integration and cohesion of the adjacent communities. The populations of Brown and Spink

Counties in 2000 were estimated at 35,460 and 7,454, respectively (Census 2003) and are not expected to change on a short-term basis as a result of this Project. The temporary workforce associated with construction of the Project will be housed in existing facilities, such as motels and hotels, in the Project area. However, increased electric power availability in the area could facilitate long-term population growth.

Impacts related to ambient noise and television interference attributable to the Project are expected to be insignificant. Existing background (ambient) noise levels at the CTG site (obtained by and through noise survey) show that the late night sound levels are as low as 33A-weighted decibels (**dBA**) and that daytime noise levels typically range from 45 to 90 dBA, with an hourly average of approximately 45 to 55 dBA. The CTG site is located in a predominately rural area. The closest residence is approximately 1700 feet north of the CTG site. The next closest two residences are approximately 4400 feet northwest and 5700 feet southeast of the CTG site. The noise levels associated with the CTG when operating are expected to be 65 dBA at a distance of 400 feet from the CTG and associated equipment to be installed in connection with this Project application of standard noise calculations and formulas indicate that, because noise levels decrease over distance, the noise level is expected to be approximately 54 dBA at the nearest residence. Attached hereto as Exhibit "B" is a chart for use as a reference to benchmark common noise levels.

Construction and operation of the East Side Peaking Project will comply with all applicable National Electric Safety Code (**NESC**) standards, and construction of the gas pipeline will comply with all federal, state and local laws, rules and regulations applicable thereto. Although there has from time-to-time been considerable public concern about potential adverse impacts to human health attributable to so-called electric and magnetic fields (**EMFs**) associated with electric generation and transmission facilities, the Project facilities will be located in a rural area. Applicant has found no basis to believe that the

Project will present any significant threat to health or safety of humans, livestock or wildlife.

12.5 **Forecast of Transportation Impacts.** No significant direct, indirect or cumulative impacts are expected to the transportation systems of cities, counties or the state. No airports are located in the immediate vicinity of Project facilities.

12.6 **Forecast of Cultural Resource Impacts.** Applicant has conducted a records search and an on-site cultural resources inventory of the Project area. The results of the cultural resources study are discussed in Section 5.4 of the Environmental Report located in Appendix A of Applicant's PUC Permit Application. The Project is expected to have no significant direct, indirect or cumulative impact on the cultural resources.

13. EMPLOYMENT ESTIMATES

It is anticipated that operation of the completed Project will utilize two full-time permanent employees. It is anticipated that a construction workforce, comprised primarily of skilled laborers, will be drawn in part from the local workforce in Brown and Spink Counties. Local hires for all disciplines and workers are estimated at 40 to 60 percent of the total construction work force. It is anticipated that the construction workforce relating to all phases of the Project will be as set forth on Exhibit "C" attached hereto. It is anticipated that there will not be significant impact upon demand for local services (e.g. police, medical facilities, fire, educational services); that there will be no detrimental impact on local communities and that there will be no significant cumulative impacts on existing local infrastructure relating or attributable to construction and/or operation of the Project.

14. FUTURE ADDITIONS AND MODIFICATIONS

Applicant does not request approval of any future additions or modifications under this permit Application. It is possible that Applicant will identify a need and seek approval to add

another CTG to the CTG site at some point in the future; however, the timing, cost and other details of such addition are unknown at this time.

15. NATURE OF PROPOSED ENERGY CONVERSION FACILITY

15.1 Estimated On-line Life and Operating Capacity. The life of this facility is estimated at 33 or more years. Its intended use is as a peaking facility with running plant factors between 5 and 15 percent. However, the CTG could be operated at considerably higher running plant factors if demand and/or energy prices make it beneficial to do so. Also, the facility might be operated from time to time to provide reactive power to the electric transmission grid to enhance stability and reliability.

15.2 General Description. The CTG will be a General Electric Aero LMS 100 dual-fuel capable gas turbine designed for outdoor installation. The CTG will be capable of generating a nominal net 95 MW of electric power and energy, with a heat rate of approximately 9300 British Thermal Units (**Btu**) per net kilowatt-hour. The CTG facility will require an exhaust stack approximately 86 feet in height. CTG site equipment will include the turbine, generator, generator breaker, site station service transformer, motor control centers equipment and battery systems; and a cooling tower.

With modifications and subject to permitting requirements, the CTG will be capable of dual-fuel (natural gas and low sulfur #2 fuel oil) operation. However, natural gas will be used as the sole fuel unless and until such modifications are made and the air quality permit is modified. The CTG will be suitable for either on-site or remote start-up, operation and/or shutdown. The CTG will be located within an enclosure provided by the manufacturer. Air compressors, water forwarding pumps, a control room and an electrical equipment room will be housed in a 70' x 140' building. A foundation for the CTG, building and associated equipment will be built on-site, and the CTG site will be surrounded by a chain-link fence with locking gate.

18. FUEL SOURCES AND TRANSPORTATION

In addition to the CTG, the Project will include the construction of a natural gas pipeline. The proposed pipeline will be constructed in accordance with the guidelines set forth jointly by the U.S. Departments of Interior, Transportation and Agriculture, and in the National Safety Code. The pipeline will supply the gas turbine with natural gas from the existing NBPL facilities. The gas pipeline will be constructed underground, and surface reclamation will occur concurrently with construction and site development.

The CTG will be capable of dual-fuel (natural gas and low-sulfur #2 fuel oil) operation. However, only the on-skid equipment required for firing the #2 fuel will be included as part of this Project. The design of the site will provide for the addition of the off-skid equipment to accommodate secondary fuel sources if desired later.

Water treatment will be by semi-trailer-mounted demineralizing vessels. The vessels will be regenerated off site. The control building will include a truck bay for the trailer. The site will include two water storage tanks (approximately 200,000 gallons and 115,000 gallons) to handle surge demands. No additional transportation facilities are needed to deliver raw materials or to remove wastes.

19. ALTERNATIVE ENERGY RESOURCES

Alternatives for generation resources were considered and addressed. The following alternative renewable energy technologies were evaluated: (A) solar electric; (B) wind; (C) geothermal; (D) small hydroelectric. Solar electric energy was eliminated because a solar generation resource is not sufficiently consistent to meet load demand because it is available only when the sun shines. Thus, this potential alternative does not reliably meet the peaking power supply needs of the Applicant's members.

Wind energy similarly was eliminated from further consideration because this resource has an availability of less than 50 percent, which does not meet the reliable power supply needs

of the Applicant's members.

Geothermal energy was eliminated from further consideration because there are no significant geothermal resources available in the service area.

Similarly, small hydroelectric resources were considered and rejected because they depend on stream flows and are thus unreliable resources.

Construction of the East Side Peaking Project is required to meet the growing needs for power of the Applicant's membership in its service territory. The East Side Peaking Project is the resource that best meets the needs of the Applicant's members.

20. WASTE

The environmental factors considered in the process design, in addition to air quality, include waste management.

Waste management associated with the gas turbine will be minimal. No hazardous wastes will be generated by process operations. Industrial wastes will consist of waste fluids and detergents from turbine maintenance and miscellaneous other materials. All industrial wastes will be removed from the site and held for disposal in a licensed and permitted commercial waste disposal facility.

Operations associated with the CTG will not involve off-site water discharge. Site run-off water will be directed to an on-site pond. A Storm Water Management and Control Permit will be obtained from the South Dakota Department of Natural Resources in connection with the construction of the CTG facility.

21. ESTIMATE OF EXPECTED EFFICIENCY

Expected efficiency is based on the manufacturer's (General Electric) specifications for the CTG. Data used to calculate efficiency included the lower heating value (LHV) for the natural gas supply that will be used to fuel the CTG, the power output capability of the generator

set, and the fuel feed rate. In addition, an efficiency calculation of percent (%) heat recovery was made using the manufacturer's guaranteed heat consumption rate for the combination system. Based on these calculations, the CTG should achieve efficiencies presented below:

	Calculated Maximum	Manufacturer's Guarantee
% Heat Recovery (Power/output/Heat input)	43.49%	42.18%
Heat Consumption (Btu/hr per KW-hr)	7,841	8,084

The slight differences between the calculated maximum efficiencies and the manufacturer's guaranteed levels arise from conservative assumptions made by the manufacturer related to mechanical and thermal losses during the energy conversion process. The efficiency in either case is higher than that for similar power generating facilities of current design.

22. DECOMMISSIONING

At decommissioning, all equipment and buildings will be removed from the CTG site and disposed of appropriately. Concrete will be buried on the CTG site as approved, and the ground surface will be returned to its pre-Project contour quality and usage. The CTG facility will not produce any hazardous material that will be stored or disposed of on site, requiring no hazardous removal at decommissioning. The underground gas and water pipelines will be capped below grade and abandoned in place. The estimated cost of decommissioning is \$1.7 million.

23. ADDITIONAL INFORMATION

The Application contains all information necessary for the local review committees to assess the effects of the proposed facilities pursuant to SDCL 49-41B-7 and 49-41B-11. The Application also contains all information necessary to meet the burden of proof specified in SDCL 49-41B-22. Attached hereto as Exhibit "D" is the letter from the local review committee

chairman summarizing the committee's findings and recommendations.

24. STATEMENT DESCRIBING GAS PIPELINE STANDARDS

The U.S. Department of Transportation Safety Regulations, Title 49 CFR Part 192 prescribes federal safety standards for construction, operation and maintenance of natural gas pipelines. Applicant will comply with 49 CFR Part 192 in constructing, operating and maintaining the proposed line. Pipeline safety matters for the CTG facility are under the jurisdiction of the South Dakota Office of Pipeline Safety (**OPS**).

25. DESCRIPTION OF GAS PIPELINE

The underground gas pipeline, for most of its length, will be located in the existing public ROW. Where it does not follow the public ROW, it will be located on private land via easements obtained from five landowners and will parallel an existing gas pipeline in agricultural areas. Accordingly, no extensive tree clearing or removal will be needed during construction of the pipeline. Vegetation will be cleared as needed in a few areas of the ROW for construction and maintenance of the underground pipeline.

Construction will be sequenced to limit disruption to any area at one time and to reduce the impact of construction on vegetation. Any trenches will be backfilled according to regulations, and the area will be reseeded with native grasses and forage after construction is complete. Any trees removed during construction will be replaced. Impacts from construction of the pipeline will be limited to the vegetation along the path of the pipeline. No significant increase in the potential for erosion is expected as a result of construction of the pipeline. Areas that are disturbed by construction equipment are expected to recover naturally with vegetative reestablishment or will be reseeded with native vegetation after the construction equipment is permanently removed.

25.1 Design Capacity of the Natural Gas Pipeline. The natural gas pipeline will consist of a new pipeline attached to and commencing at the existing 42-inch Northern Border interstate pipeline. The inlet flow capacity of the pipeline will be 52 mmscfd. The pipeline will have a 10.75-inch outside diameter and a design pressure of 1475 pounds per square inch gauge (**psig**). Delivery pressure to the CTG will be approximately 1,100 psig. The minimum line pressure for the pipeline will be 700 psig to keep the gas in a uniform state. The pipeline will traverse approximately 11.5 miles. All pipeline will be constructed of welded steel. No new compressor stations or storage facilities will be required. Pipeline parameters are summarized below:

Parameter	Measurement
Flow Rates	
NBPL inlet capacity	52 mmscfd
Turbine delivery capacity	26 mmscfd
Future capacity	26 mmscfd
Pressure	
Inlet pressure (MAOP at NBPL tap)	1435 psig
Turbine delivery pressure	1100 psig (average)
Maximum operating pressure	882 psig
Minimum operating pressure	700 psig
Temperature	
Minimum	-30°F
Maximum	110°F

25.2 Changes in Flow. The pipeline will be connected to the NBPL natural gas transportation facilities. Flow characteristics of the NBPL system are dynamic and cannot be generally determined with respect to a pipeline interconnection intended to operate on a demand basis. The proposed pipeline is a normal use associated with the NBPL system so no adverse affect on the flow should occur.

25.3 Technical Specifications. The American Petroleum Institute (**API**) provides a published specification for high-test line pipe. This specification covers various grades of seamless and welded steel line pipe. Process of manufacture, chemical and physical

requirements, methods of test, dimensions and other parameters are specified. Grade designates pipe manufactured according to API specifications according to API specification 5L with specified minimum yield strength (**SMYS**) designated in pounds per square inch. ERW has one longitudinal seam, which is formed by electric resistance welding during the manufacturing process. The technical specifications for the pipe that will be used in this Project are set forth below:

Technical Specifications	Measurement
Outside diameter	10.75 inches
Nominal wall thickness	0.260 inches
Pipe type	API 5L, PSL-2, ERW
Pipe design factor	0.50
Longitudinal or seam joint factor	1.0
Specified minimum yield strength	60,000 pounds per square inch
Tensile strength	75,000 pounds per square inch

25.4 **Operating Pressure (psig).** The maximum actual operating pressure of the pipeline will be approximately 1,300 psig at the start of the line and is dependent on the NBPL and the volume throughout the pipeline. The maximum allowable operating pressure design point will be 1,451 psig. The design pressure for steel pipe is determined in accordance with the following formula:

$$P = (2St/D) * E * F * T$$

Where P=design pressure in pounds per square inch gauge

S=yield strength in pounds per square inch

D=nominal outside diameter of pipe in inches

t=nominal wall thickness of the pipe in inches

F=design factor

E=longitudinal joint factor

T=temperature derating factor

25.5 **Compressor Stations.** No compressor stations will be constructed for or in connection with this Project.

25.6 **Storage Facilities.** No storage facilities associated with the Project are anticipated.

CONCLUSIONS OF LAW

1.

The Commission has jurisdiction over the subject matter and parties to this proceeding pursuant to SDCL Chapter 49-41B and ARSD 20:10:22. Subject to the findings made on the four elements of proof under SDCL 49-41B-22, the Commission has authority to grant, deny or grant upon such terms and conditions as it may deem appropriate, a permit to construct, operate and maintain the Project and the various components thereof.

2.

The Project constitutes an "Energy Conversion Facility" as described in SDCL 49-41B-2(4).

3.

The Applicant's Permit Application complies with the applicable requirement of SDCL Chapter 49-41B and ARSD 20:10:22.

4.

The East Side Peaking Project, as defined herein, will comply with all applicable laws and rules, including all requirements of SDCL Chapters 49-34B; 49-41B and ARSD 20:10:22.

5.

The East Side Peaking Project, if constructed in accordance with the terms and conditions of this permit, will not pose a threat of serious injury to the environment or to the social and economic conditions of inhabitants or expected inhabitants in the siting area.

6.

The East Side Peaking Project, if constructed in accordance with the terms and conditions of this permit, will not substantially impair the health, safety or welfare of the inhabitants of the siting area.

7.

The East Side Peaking Project, if constructed in accordance with the terms and conditions of this permit, will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

8.

The Commission has the authority to revoke or suspend any permit granted under the South Dakota Energy Facility Permit Act for failure to comply with the terms and conditions of the permit pursuant to SDCL 49-41B-33.

9.

The Applicant has met its burden of proof pursuant to SDCL 49-41B-22 and is entitled to a permit as provided in SDCL 49-41B-25, subject to the following:

STIPULATE TO THE FOLLOWING TERMS AND CONDITIONS:

1.

The Applicant will obtain all governmental permits which reasonably may be required by any township, county, state or federal agency or any other governmental unit for construction activity prior to engaging in the particular activity covered by that permit. Copies of any permits obtained by the Applicant shall be sent to the Commission.

2.

In order to ensure compliance with the terms and conditions of this permit pursuant to SDCL 49-41B-33, it is necessary for the enforcement of this Order that all employees, contractors and agents of the Applicant, involved in this Project be made aware of the terms and conditions of this permit.

The Applicant shall ensure that its employees, contractors and agents involved in right-of-way negotiations and acquisitions, right-of-way clearing, construction and right-of-way and pipeline maintenance understand fully and comply with the terms and conditions of this permit.

3.

If, during construction, the Applicant or its agents discover what may be an archaeological resource, the Applicant or its agents shall immediately cease work at that portion of the site and notify the Commission and the State Archaeologist. If such an archaeological resource is discovered, the Applicant shall develop a plan which is acceptable to the State Archaeologist to salvage, avoid or protect the archaeological resource. If such a plan would require a different route than that approved by the Commission, the Applicant must seek Commission approval for the new route before proceeding with any further construction.

4.

In order to mitigate interference with agricultural and ranching operations during and after construction, the Applicant shall locate all structures, to the extent feasible and prudent, to minimize adverse impact and interferences with agricultural operations, shelter belts and other land uses or activities. The Applicant shall take appropriate precautions to protect livestock and crops during construction. The Applicant shall repair all fences and gates removed or damaged during construction or maintenance unless negotiated with the landowner or designee. The Applicant shall be responsible for the repair of private roads and lanes damaged when moving equipment or when obtaining access to the right-of-way.

5.

The Applicant shall provide each landowner across whose property the facility is to be constructed with the following information:

A copy of the Commission's Order.

Detailed safety information describing (a) reasonable safety precautions for existing activities on or near the right-of-way; (b) known activities or uses that are presently prohibited within the right-of-way; (c) other potential dangers or limitations within the right-of-way.

Construction/maintenance damage compensation policies and procedures.

The Commission's address and phone number.

The Applicant shall also comply with all other terms and conditions as set forth in the Findings of Fact.

6.

The terms and conditions of the permit shall be made a uniform condition of construction, subject only to an affirmative written request for an exemption addressed to the

Commission. A request for an exemption shall clearly state which particular condition should not be applied to the property in question and the reason for the requested exemption. The Commission shall evaluate such requests on a case-by-case basis.

7.

Before commencing construction, the Applicant shall furnish an indemnity bond in the amount of Ten Thousand Dollars (\$10,000.00) to comply with the requirements of SDCL 49-41B-38.

8.

If radio or television interference is caused by the presence or operation of the CTG or associated transmission facilities, the Applicant shall take all appropriate action to restore or provide reception equivalent to reception levels in the immediate areas just prior to construction of the facility. This mitigation requirement shall apply to homes or other structures in place at the time of construction but shall not apply to any dwellings or other structures built after construction of the Project Facilities approved in this Permit has been completed.

9.

The noise levels associated with the General Electric (**GE**) scope of supply equipment when operating will not exceed the following standards at the nearest occupied, existing residence not owned by Basin Electric Power Cooperative: Daytime: $L_{10}=60\text{dbA}$; Nighttime: $L_{10}=55\text{dbA}$.

The point of measurement will be within 100 feet of the residence in the direction of the generation facility. This noise limit is associated with only the scope of this project. A post-construction operational noise assessment will be completed by an independent third-party noise consultant, approved by the SDPUC, to show compliance with the noise level. The noise

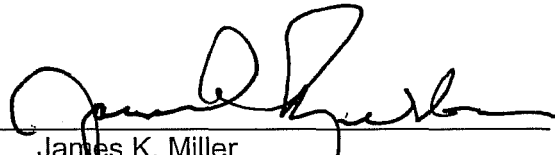
assessment will be performed in accordance with American National Standards Institute (ANSI) B133.8 – Gas Turbine Installation Sound Emissions.

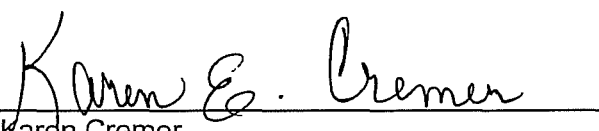
10.

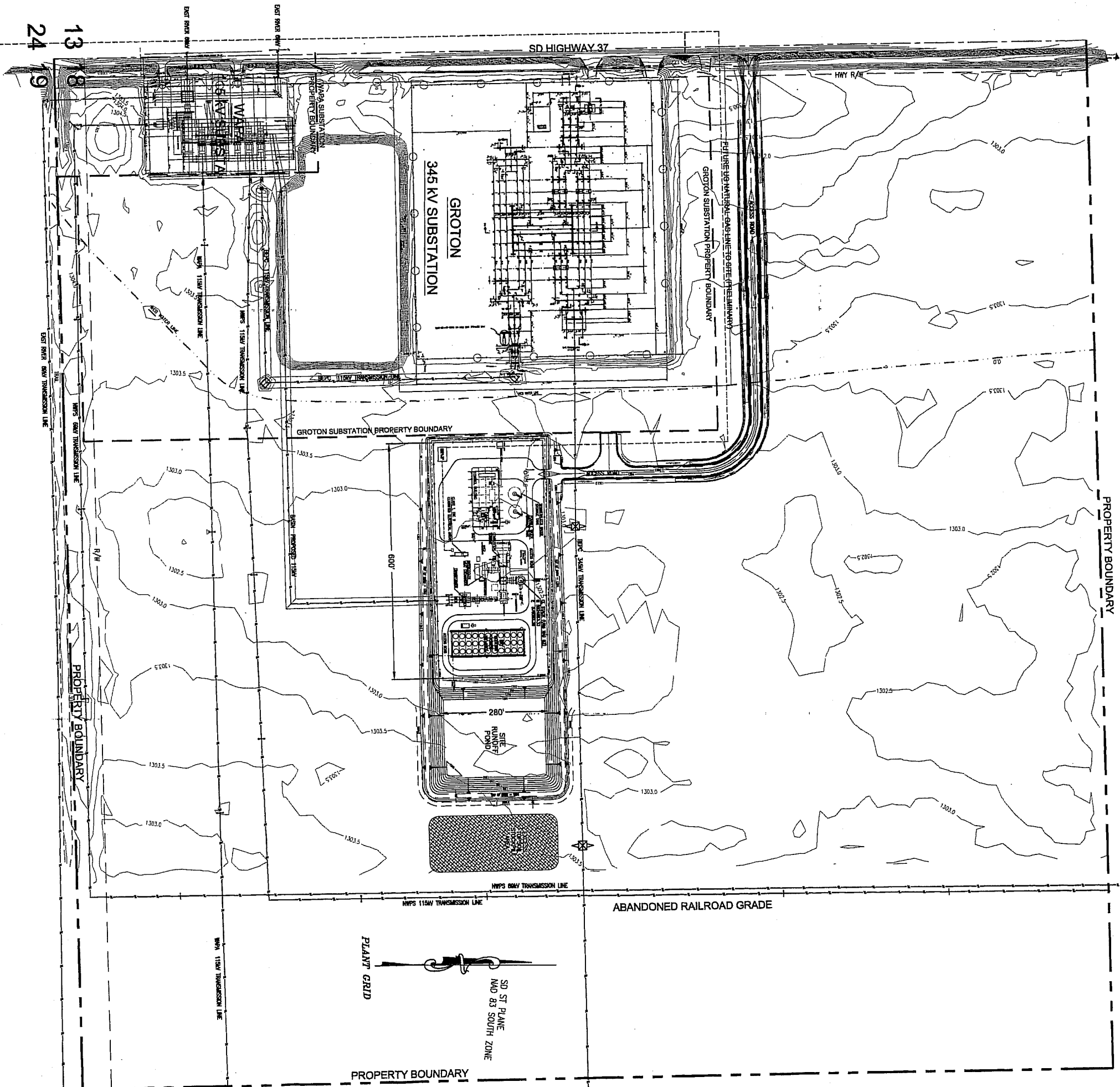
At decommissioning, all equipment and buildings will be removed from the CTG site and disposed of appropriately. Concrete will be buried on the CTG site as approved, and the ground surface will be returned to its pre-project contour, quality and usage. The CTG facility will not produce any hazardous material that will be stored or disposed of on site, thus no removal of hazardous materials will be required at decommissioning. The underground gas and water pipelines will be capped below grade and abandoned in place.

Dated 5-12, 2005.

BASIN ELECTRIC POWER COOPERATIVE

By: 
James K. Miller
Manager, Environmental Services


Karen Cremer
Staff Attorney
South Dakota Public Utilities Commission



REFERENCE DRAWINGS		1GP-0001 EXHIBIT 9 PLANT SITE LAYOUT		1GP-0001		R. THOMPSON		1. STICKLER (AW/R)	
PROJECT		GROTON GENERATION STATION		1 2 3		EXHIBIT A		1	
CONTRACT/ISSUANCE		1 2 3		EXHIBIT A		1		1	
PROPERTY SITE LAYOUT		BASIN ELECTRIC POWER COOPERATIVE		1		1		1	
PROJECT NO.		1GP-0001		0		0		0	
DESIGNER/ENGINEER		BASIN ELECTRIC POWER COOPERATIVE		1		1		1	
CHECKED/REVIEWED		BASIN ELECTRIC POWER COOPERATIVE		1		1		1	
DATE		1GP-0001		0		0		0	

EXHIBIT B

TYPICAL NOISE LEVELS

<u>Typical Noise Source</u>	<u>Noise Level (dBA)</u>
Ambulance siren at 100 feet	100
Motorcycle at 25 feet	90
Typical construction site	85
Single truck at 25 feet	80
Urban shopping center	70
Single car at 25 feet	65
Typical highway at 100 feet	60
Residential area during the day	50
Residential area at night	40
Rural area during the day	40
Rural area at night	35
Quiet whisper	30
Threshold of hearing	20

EXHIBIT C

CONSTRUCTION WORKFORCE ESTIMATE

Plant Site Construction Employment Estimates

The estimated number of jobs for the construction phase of the Project follows:

Civil discipline – with carpenters, apprentices and laborers, about 35 to 45 employees for a duration of three to five months

Structural discipline – with iron workers, welders, apprentices and laborers, about 15 to 20 employees for a duration of three to four months

Mechanical discipline – with millwrights, mechanics, apprentices and laborers, about 15 to 25 employees for a duration of three to five months

Pipe discipline – with pipe fitters, welders, instrument fitters, apprentices and laborers, about 15 to 20 employees for a duration of three to five months

Electric discipline – with electricians, apprentices and laborers, about 25 to 35 employees for a duration of six to eight months

The general contractor will also require 15 to 20 people as indirect support for the company's work, along with local support for clerical and material management (expected to involve four to five people).

Subcontractors from local firms will provide various services and laborers, expected to include civil testing, quality assurance/quality control for pipe and, painters, sheet rockers, and steel erection for building services and services relating to communications and data.

Pipeline Construction Employment Estimates

Estimated number of employees employed during construction: 75

Estimated residents: 50

Estimated non-residents: 15

Transmission Interconnection and Substation Modifications Employment Estimate

Civil discipline: 6 employees for one month

Ironworkers: six employees for one month

Pipe discipline with pipe fitters, welders: six employees for one month

Electrical discipline with electricians, apprentices and laborers: 10 employees for two months

EXHIBIT D

REVIEW ASSESSMENT OF SOCIAL AND ECONOMIC EFFECTS ON LOCAL AFFECTED AREA FOR A PROPOSED ENERGY CONVERSION FACILITY BY BASIN ELECTRIC POWER COOPERATIVE.

Reported by the Local Review Committee comprised of Gerald L. Rix, Tim Van Hatten, Allen Walter, James Berg, Dennis Feickert, and Hjalmer Tschetter.

- 1) Housing supplies - During construction the manpower needed to build the facility would be able to find housing in rentals in Groton. Two employees would be permanently employed and there would be ample housing available for the employees to choose from.
- 2) Educational facilities and manpower - There will be no negative impacts on the schools or their staff. Both Conde and Groton have school districts able to grow and meet the needs of the permanent families for the facility. Additional tax revenues from the plant will be welcomed.
- 3) Water supply and distribution - Water needs for the plant will be minimal and would be supplied by WEB Water which has a main line three miles south of the facility and has two service lines for the City of Groton and James Valley Ethanol bordering the property. WEB Water assures the plant of a fully supplied contract from their plant on the Missouri River.
- 4) Waste water treatment and collection - There would be no run off (release) from plant. A "No Discharge Permit" from SD Dept of Environment and Natural Resources will be investigated. An evaporation pond will be constructed for excess water.
- 5) Solid Waste disposal and collection - No cumulative amounts of solid waste are expected. Anything waste generated will be collected in sealed containers and hauled to the appropriate land fill sites.
- 6) Law enforcement - The plant could increase homeland security issues for protection, but Groton City Police and Brown County Sheriff would be equipped to handle this. The Groton Police Department will make addition rounds to monitor the site.
- 7) Transportation - The location provides convenient and direct access to SD Highway 37 and the electric grid. The water and gas pipelines are along the property boundaries.
- 8) Fire Protection - The plant would be in the Groton Community Fire Dept., Inc. district. It is believed that no additional special equipment would be needed to protect the plant. A tour of the facility upon completion was recommended for the firemen to help them familiarize themselves with the lay out and internal fire prevention equipment. A fire hydrant at the water pipeline/service line connection will be requested.

9) Health - Health care for employees is easily met with area services. With monitored emissions and previous existing transmission lines, health concerns by area residents will not change. Noise levels have been questioned especially for the nearby farm. A shelter belt of trees was discussed as a possible buffer if the noise levels remained high during the peaking operations.

10) Recreation - There is no impact expected to any recreation. Although the area of the plant will no longer be available for hunting, other sites are plentiful. The snowmobile trail passing the site will not be disturbed.

11) Government - The facility would have no impact on local governments, except for possible increases in tax revenues.

12) Energy - Natural gas is readily available from main pipeline eleven and one half miles south and two service lines for the City of Groton and James Valley Ethanol border the property. The plant is conveniently located for electricity. The conversion will increase availability for the area with a positive impact.

The conclusion of the committee was that the proposed energy conversion facility would have little or no impact on the area and should be approved.