DESERET POWER
ELECTRIC COOPERATIVE

10714 South Jordan Gateway
South Jordan, Utah 84095
(801) 619-6500 Fax: (801) 6196599

November 2, 2015

Federal Minor NSR Permit Coordinator
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129
R8airpermitting@epa.gov

Re: *Tribal Minor New Source Permit Application; Bonanza Unit LNB/OFA Project*

Region 8 MNSR Coordinator:

Please find attached the application for Minor New Source Review ("MNSR") Permit for installation of a low NOx burner and overfired air ("LNB/OFA") system at the Bonanza Power Plant located in Uintah County, Utah. This project was contemplated, and this application is submitted pursuant to a Settlement Agreement entered into among Deseret Generation & Transmission Co-operative ("Deseret" or "Deseret Power"), EPA Region 8, and certain other parties thereto (the "Settlement").

This Application is submitted in a number of parts and includes Attachments and emissions calculations. Please address any questions concerning the permit application either to the undersigned or to those individuals identified in Part 5.0 of the Application below.

Thank you for your attention to this matter.

Respectfully submitted,

/s/
David F. Crabtree
Vice President, General Counsel

# Part II
# APPLICATION

# 1.0 INTRODUCTION AND EXECUTIVE SUMMARY

This application is for a permit for minor modification to the Deseret Generation & Transmission Co-operative Bonanza Power Plant generation facility in accordance with the requirements of the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR Part 49.

Deseret plans to replace the existing boiler burner system with a low NOx and overfired air (LNB/OFA) burner system. The project will also involve boiler tube inspections/repairs and work. The MNSR permit will allow Deseret to proceed with the boiler burner replacement and other work described herein.

Pursuant to the terms of a provisional settlement agreement between the EPA and various environmental groups (the "Settlement"), Deseret has agreed to make this permit application to install the new LNB/OFA. A copy of the Settlement is available as part of the official public docket for the proposed action of EPA with respect to the settlement agreement (identified by Docket ID No. EPA-HQ-OGC-2015-0678) which contains a copy of the proposed settlement agreement. The official public docket is available for public viewing at the Office of Environmental Information (OEI) Docket in the EPA Docket Center, EPA West, Room 3334, 1301 Constitution Ave. NW., Washington, DC. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the OEI Docket is (202) 566-1752. An electronic version of the public docket is available through *www.regulations.gov*.

The primary effect of this project will be to reduce NOx emissions from the facility. As contemplated pursuant to the Settlement, provided this permit is approved prior to December 31, 2015, Deseret is required to complete installation of the LNB/OFA system no later than June 30, 2016. Any delay in approving the permit could delay final completion of the LNB/OFA system by up to two additional years, until mid-2018. Deseret therefore requests the timely processing of this permitting application. Provided this permit is issued in timely fashion as contemplated pursuant to the Settlement, the LNB/OFA system is expected to begin manufacturing in late November and be delivered to the site sometime by the end of March, 2016.

The following sections of this permit application provide the overall Project Description (Section 2.0) and the Proposed Scope of Work/Project Approach (Section 3.0), as well as requested revised air construction permit language as outlined in the Settlement (Section 4.0). Various attachments have also been included to provide more information and details related to the project.

## 2.0 PROJECT DESCRIPTION AND BACKGROUND

The Bonanza Power Plant is a single unit coal fired generating station located 35 miles southeast of Vernal, Utah. The site is accessed via U.S. Highway 40 and State Route 45. The nominal elevation at the site is 5028 feet above M.S.L. The power plant was constructed in the early 1980's and started commercial operation in 1985.

The provisions of the Federal PSD permit issued February 2, 2001 sets forth conditions which currently apply to the main boiler at the Bonanza facility (PSD-UO-0001-2001:00). Additional legally and practically enforceable limitations and requirements that will also be established and which will apply as requested pursuant to this permit application are set forth in Section 4.0 below. Additional Facility Information and Emission Unit Identification for the Bonanza facility is included in the Part 71 Air Pollution Control Permit ("Title V Permit") No. V-UO-000004-00.01 Issued October 19, 2015, a copy of which is available on EPA Region 8 CAA Permits website as follows: http://www2.epa.gov/caa-permitting/caa-permits-issued-epa-region-8#P71.
Except as otherwise set forth in this application, the term "Bonanza Unit 1" means the existing Bonanza Power Plant Unit 1 as identified in the Title V Permit.

Deseret has agreed to install a LNB/OFA boiler combustion system in the Bonanza Unit 1-1 Boiler to reduce NOx emissions. The Bonanza Facility is scheduled for a major outage in the spring of 2016 and again in the spring of 2018. It is proposed during one of these planned outages, depending on issuance of the requested permit prior to completion of the project, to replace the existing burners with the LNB/OFA system. Provided the requested permit is issued sufficiently in advance of the 2016 outage, Deseret expects it will have adequate time necessary to complete the installation of this type of system during the 2016 planned outage; otherwise, the project could be delayed until the 2018 planned outage.

# 3.0 PROPOSED SCOPE OF WORK/ PROJECT APPROACH

As outlined in the Project Description, the proposed construction work to be completed during the May 2016 outage is to replace the existing boiler burners with new low-NOx burners, modify and install the boiler to incorporate an overfire boiler air ("OFA") combustion system, perform additional boiler repairs, modifications, boiler tube Inspections, repairs and replacements. Taken together, and as a whole, the proposed scope of work is referred to as the "LNB/OFA Project." A description and scope of work for each element of the construction work is outlined below:

## 1. LOW NOX BURNER/OVER-FIRE AIR SYSTEM INSTALLATION

This part of the overall outage project consists of removing the existing Advanced Burner Technology burners (total 20) previously installed in the unit and installing the LNB/OFA system. The new burners and over fire air system components are expected to be supplied from one of a selected number of vendors that Deseret has approached for the project. The removal of the existing burners and installation of the new LNB/OFA system will be completed with assistance of boiler contractors and supervised by Deseret personnel. The removal will consist of taking the old burners out along with the coal feed elbow to the first Victaulic coupling (see examples of illustrative drawings included in Attachment A). New burners will be installed, with necessary modifications to boiler configuration/equipment to fully integrate the new burner design. The new low NOx burners along with a new elbow will be designed to be installed using the existing penetrations in the boiler, with some modification(s) as determined during field work and inspection.

Design change and modifications are expected to include and may also incorporate additions and/or changes to all portions of the burner/ignitors systems, including but not limited to: burner barrels, air registers, burner throat, air flow measurement devices, electronic controls and monitoring, spin vanes, coal pipes, coal distribution elbows, start-up ignitors (for use with either #2 fuel oil, natural gas or propane as a start-up fuel), among other components.

Design and manufacturing is proposed to commence sometime in November 2015 and could be completed in March 2016 and the system ready to be delivered to the Bonanza Facility sometime in April of 2016.

*OVERFIRE AIR SYSTEM DESIGN (OFA)*

The purpose of an OFA system is to reduce NOx emissions from the boiler by staging the combustion process. A portion of the secondary air is diverted from the burner front to a series of OFA ports that are located above the burners.

The new OFA system is expected to include a number of air flow elements, comprising and serving a number of OFA "ports" or openings in the boiler. Each OFA port is provided with a system to regulate OFA port airflow into the boiler. The ports incorporate systems of dampers, controllers, or other equipment to monitor and control air flow.

The proposed design will include approximately twelve (12) new OFA ports to be constructed and installed into the boiler, requiring modification to existing boiler configuration. Additional OFA ductwork will be installed consisting of individual ducts that take air from the top of the existing burner wind box or another air source and feed one or more registers at each of the OFA ports. Ports will be equipped with automated and/or manual systems to damper, control, monitor, and manipulate air input. Exact placement, number, design and configuration of ORA ports will be finalized during engineering design and may depend on conditions encountered during field installation.

Existing under-fire air (UFA) ports in the boiler are not expected to be needed after the installation of the new OFA system. UFA air ports may be replaced with straight tubes as part of the overall LNB/OFA project, in which case the new design may include panels and associated modifications to UFA port and port locations. New OFA design is also expected to include provisions for sealing boundary slot air.

## 2. BOILER TUBE INSPECTIONS, REPAIRS AND REPLACEMENT

The boiler auxiliaries; air heater, FD and ID fans and ductwork shields, dampers, ash handling system, and feed water pumps will be inspected and repaired as necessary as part of the overall LNB/OFA air project to ensure that boiler operations match design criteria established as engineering basis for the LNB/OFA project performance. The additional boiler work is required as part of the project to maintain boiler efficiencies for purpose of project performance acceptance and completion testing, and to avoid posing a safety risk to personnel during the install, startup, testing, and post-startup phases.

The major boiler scope of work expected as part of or in conjunction with the LNB/OFA project in the 2016 outage will including the following[1]:

- Perform an overall inspection of the entire boiler/furnace to identify tubes and sections in need of repair and replacement.
- Perform high pressure system piping inspections (NDE)
- Perform high pressure system hanger inspection (hot and cold)
- Perform an interior wash down of the economizer and reheater area of the boiler
- Replace tubes that have previously been temporarily repaired by pad welds
- Repair damaged sections of the duct work, shields, dampers and expansion joints of the flue gas path identified during the inspection
- Repair and replace PA and SA expansion joints
- Replace or repair tube shields through the platens and super heater area identified during the inspection
- Replace or repair tube shields through the economizer and reheater area identified during the inspection
- Replace or repair the furnace water walls identified during the inspection
- Replace or repair the platens and super heater areas identified during the inspection

[1] Much of the work to be performed on the boiler in conjunction with installing and testing the LNB/OFA project is routine repair and replacement maintenance that would be expected to be performed in any event at the Bonanza facility. It is included in the scope of the project set forth in this permit application as it also will impact the overall LNB/OFA project completion (including performance testing).

- From previous inspections, replace 80 economizer bundle assemblies and shields
- From previous inspections, replace 92 reheater bundle assemblies and shields
- Replace the bottom ash submerged flight conveyor chain and idlers
- Replace two air heater seals; hot and cold
- Replace absorber inlet damper seals
- Repair the scrubber outlet ductwork
- Replace or repair refractory throughout the boiler
- Repair internal leak in low pressure heater 1-3
- Perform an inspection on boiler safety valves; repair as necessary
- Clean/wash the air heater basket
- Perform chimney stack liner repairs as identified during inspection
- Inspect the major fans (FD, PA and ID); repair as necessary
- Overhaul the motors to the FD fan, PA fan, ID fan, cold-water pump, condensate pumps and feed water booster pumps

# 4.0 REQUESTED LIMITATIONS ON EXISTING FACILITY

As set forth pursuant to the Settlement, Applicant hereby requests the following additional enforceable conditions and limitations as condition to permit the installation of the LNB/OFA Project. Notwithstanding any other provision of this Application, the limitations set forth in this Section 4.0 to the Application are not intended and shall not apply to generation of electricity from any emission source(s) which may result from modifications to Bonanza Unit 1 (a "Modified Unit") if such Modified Unit is permitted under New Source Review requirements of the Clean Air Act and meets standards of performance for New Stationary Sources (NSPS) applicable to new sources or modified/ reconstructed sources which commence construction after the effective date of the Settlement:

a. NOx Control Requirements and Emissions Limits:

   i. Deseret shall install and operate the LNB/OFA Project at the Plant no later than June 30, 2016, if EPA Region 8 issues a final Minor NSR Permit for the Plant on or before December 31, 2015, or no later than June 30, 2018, if EPA Region 8 issues a final Minor NSR Permit for the Plant on or after January 1, 2016.
   ii. Beginning no later than 425 boiler operating days after installation of the LNB/OFA Project, Bonanza Unit 1 shall not discharge into the atmosphere $NO_x$ in excess of 0.28 lbs/MMBtu heat input, based on a 365-day rolling average. Compliance shall be determined as follows: first, sum the pounds of NOx emitted from Bonanza Unit 1 during the most recent boiler operating day and the previous 364 boiler operating days; second, sum the total heat input to Bonanza Unit 1 in MMBtu during the most recent boiler operating day and the previous 364 boiler operating days; and third, divide the total number of pounds of NOx emitted during the 365 boiler operating days by the total heat input during the 365 boiler operating days. A new 365-Day Rolling Average Emission Rate shall be calculated for each new boiler operating day.
   iii. Total NOx emissions from Bonanza Unit 1 shall not exceed 5,700 tons per year on a rolling 12 calendar month basis, to begin in the third calendar month that permitted operations of LNB/OFA commence. Deseret shall provide written notification to EPA Region 8 of the date that operation of the LNB/OFA commences.
   iv. For the period from January 1, 2030 until the permanent cessation of operations to generate electricity at Bonanza Unit 1 (as further explained below, the "End of Service"), total NOx emissions from the Plant shall not exceed 3,000 tons per year on a rolling 12 calendar month basis.
   v. In determining NOx emissions under this Section 4.0(a) from the period beginning no later than 60 days after installation of LNB/OFA until the End of Service, Deseret shall use data from Continuous Emission Monitoring Systems ("CEMS") as defined in 40 C.F.R. § 72.2 and installed and operated in accordance with 40 C.F.R. Part 75 and shall include all periods of startup, shutdown, and malfunction; however, the NOx data need not be bias adjusted and the missing data substitution procedures of 40 C.F.R. Part 75 shall not

apply to such determinations. Diluent capping (i.e., 5% $CO_2$) will be applied to the NOx emission rate for any hours where the measured $CO_2$ concentration is less than 5% following the procedures in 40 C.F.R. Part 75, Appendix F, Section 3.3.4.1.

b. Coal Consumption Cap:

i. Subject to the provision of Section 4.0(b)(iii) below, for the period from January 1, 2020 through End of Service of Bonanza Unit 1, (but excluding and excepting any operation of a Modified Unit as set forth above), coal consumption at Bonanza Unit 1 shall not exceed 20,000,000 short tons of coal.

ii. Coal consumption under this Section 4.0(b) will be determined by weight avoirdupois, regardless of coal source or quality. Quantity of coal consumed will be measured by the Bonanza Unit 1 coal pulverizer feeder belt scales, calculated monthly, and reported with the Plant's compliance report for the relevant reporting period (currently submitted at least semi-annually under 40 C.F.R. § 60.51Da). The pulverizer feeder belts scales will be calibrated per manufacturer's calibration procedures no less than twice per calendar year and in at least two (2) different calendar quarters during the year. A pulverizer feeder belt scale calibration will also be conducted when a pulverizer feeder belt is replaced. A copy of the calibration procedure and, for each calibration, a record of the pulverizer number, calibration date and reason for calibration will be kept on site.

iii. *Contingent Releases from Coal Consumption Cap*: The coal consumption cap in this Section 4.0(b) shall not apply after the date that any of the following events occur:

(1) Deseret applies for and receives approval to construct from EPA Region 8 (to the extent required), and installs and operates selective catalytic reduction technology for NOx reduction ("SCR") at Bonanza Unit 1 prior to December 31, 2029, and Bonanza Unit 1 achieves and continuously complies with a NOx emission limit of 0.05 lb/MMBtu 12-month rolling average, measured with CEMS (with permit terms that establish monitoring, recordkeeping and reporting requirements specific to the SCR system) as defined and required in Section 4.0(a)(v), beginning no later than 180 days after the SCR installation is complete; or

(2) Due to petitions or other actions commenced by unaffiliated third parties or governmental authorities (including EPA), and without Deseret's consent, Deseret is required to and does install and operate an SCR at Bonanza Unit 1 prior to December 31, 2030, and achieves and continuously complies with a NOx emission limit of 0.05 lb/MMBtu 12-month rolling average, measured with CEMS (with permit terms that establish monitoring, recordkeeping and reporting requirements specific to the SCR system) as defined and required in Section 4.0(a)(v) beginning no later than 180 days after the SCR installation is complete.

iv. Deseret must notify all parties signatory to the Settlement other than EPA (the "Petitioning Parties") of its decision to install and operate an SCR at Bonanza Unit 1 at least 24 months in advance of its intended date for commencing SCR

operation; and must apply to EPA at least 12 months in advance of its intended date for commencing construction, and receive a permit before commencing construction of SCR, for a revision to the permit issued pursuant to this application, to incorporate requirements for SCR as contemplated herein. If Deseret does not notify Petitioning Parties of its choice to install SCR prior to December 31, 2027 (in the event of voluntary SCR installation under Section 4.0(b)(iii)(1)) or December 31, 2028 (in the event of SCR installation under Section 4.0(b)(iii)(2)) then the release in Section 4.0(b)(iii) will not apply and the coal consumption cap in Section 4.0(b)(i) will continue in effect until the End of Service of Bonanza Unit 1 (excluding an excepting operation(s) of any Modified Unit as set forth hereinabove).

# 5.0 COMPLETE PERMIT APPLICATION

This permit application is being submitted under the tribal lands Minor New Source Review Program, 40 CFR §49.151, *et seq*. Pursuant to 40 CFR §49.154(a)(2), complete applications are required to contain certain specified information. As per 40 CFR §49.154(b), the Agency is required to make a completeness determination and then act on the application. In order to make it easier for the Agency to make a completeness determination, this section lists and references the information required by §49.154(a)(2) and either includes the necessary information or identifies where that information is included in this application package.

1. Applicant.
   A. Applicant Name and Address:
      Deseret Power Electric Cooperative
      10714 South Jordan Gateway
      South Jordan, Utah 84095
      Phone: 801-619-6500

   B. Plant Name and Address:
      Bonanza Power Plant
      12500 East 25500 South
      Vernal, Utah 84078-8525

   C. Plant Manager/Contact and Telephone Number:
      Gene Grindle, Manager – 435-781-5701
      Eric Olsen, Contact – 435-781-5706

2. Description of Source Processes and Products
   This information is contained in Sections 1.0 and 2.0 of this application.

3. List of all affected emission units
   This information is contained in Sections 1.0 and 2.0 of this application. More detailed emissions unit information is contained in the Part 71 operating permit for Bonanza which can be accessed at http://www2.epa.gov/caa-permitting/caa-permits-issued-epa-region-8#P71. The Part 71 permit is hereby incorporated by reference into this application.

4. Allowable Emissions/PTE for Modified Emission Unit
   Information on existing Potential to Emit is contained in the Appendix entitled "Potential-to-Emit" along with projected actual emissions in tons per year ("tpy"). In addition, NOx baseline data in tpy is contained in the "Emissions Data/Baseline Data" Appendix. Before and after modification potential controlled NOx emissions in tpy are contained in "Process Data/Estimated Emissions" Appendix.

5. Information Needed to Determine Emissions

   Information on hours of operation, heat input, Megawatt production, and coal and fuel oil consumption is contained in the Emissions Data/Baseline Data Appendix.

6. Description of Existing Controls and Monitoring Equipment

   Information on existing controls and compliance monitoring is contained in the Part 71 operating permit. Information on the proposed LNB/OFA controls and project are contained in Section 3.0 of this application along with vendor information in the Appendices.

7. Existing Limitations Affecting Emissions

   Information on all existing emission limitations, including work practices and source operations are contained in the Part 71 operating permit.

8. Stack and Vent Information

   Information on existing stacks, vents, and emissions points is contained in the Part 71 operating permit in Section I.B. entitled, "Facility Emission Points and Activities."

9. Proposed Emission Limitations and Pollution Control Devices.

   As per 40 CFR 49.154(a)(3), information on proposed emission limitations is contained in Section 4.0 of this application. These proposed limitations, of course, track the limitations set forth in the October 5, 2015 settlement agreement among U.S. EPA, WildEarth Guardians, Sierra Club, and Deseret Power. In addition, a description of the proposed air pollution control devices is contained in Section 3.0 of this application along with vendor information in the Appendices and reference drawings in Attachment B.

# ATTACHMENT "A"
# LNB/OFA EQUIPMENT
# DESCRIPTION

**(attached)**

# ATTACHMENT "B"

**Projected Effect of Project**
**On PTE Criteria Pollutants and/or Projected Future Emissions**

## (attached)

# ATTACHMENT "C"

## Certificate of Truth, Accuracy and Completeness

## (attached)