



# STATE OF NEBRASKA

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Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY  
**Jim Macy**

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July 1, 2016

Rebecca Weber  
Division Director  
Air & Waste Management Division  
EPA Region 7  
11201 Renner Blvd.  
Lenexa, KS 66219

Dear Ms. Weber:

In accordance with 40 CFR Part 51 Subpart BB – Data Requirements for Characterizing Air Quality for the Primary SO<sub>2</sub> NAAQS, the Nebraska Department of Environmental Quality (NDEQ) submits the following information regarding characterization of ambient sulfur dioxide levels for three Nebraska sources, which are: North Omaha Station (Douglas County, NE), Gerald T. Whelan Energy Center (Adams County, NE), and Sheldon Station (Lancaster County, NE).

The method of characterization to be used for each source is described below.

1. North Omaha Station (Omaha Public Power District; OPPD)

Ambient air monitoring has been selected as the method of characterization for sulfur dioxide emissions from this facility. The monitor to be used is currently part of the 2016 Air Monitoring Network Plan (included), and is known as the Whitmore monitor. This monitor has been in operation since July 1, 1999. A study (included) conducted by the University of Nebraska in July 1997 evaluated OPPD's North Omaha's emissions and the meteorological patterns to determine whether the monitor correlated well with the model. Eitan Tsabari, under the supervision of Dr. Stansbury, concluded the following:

- The ISCST3 air dispersion model used in this study was effective at locating points where maximum concentrations of SO<sub>2</sub> were predicted.
- The results of the study showed a good correlation between model projections and monitoring results from all emissions sources.
- The use of the ISCST3 air dispersion model to determine the location of the monitoring site was effective to ensure the monitor would capture

maximum concentrations of SO<sub>2</sub> emitted from identified sources, which included North Omaha Station.

NDEQ conducted AERMOD modeling in June 2016 in support of considering monitor placement for North Omaha Station for DRR purposes, and this more recent modeling also indicates that the Whitmore monitor is appropriately placed to read the highest 1-hour SO<sub>2</sub> concentrations impacting a socioeconomically disadvantaged area.

The North Omaha Station (Unit 1) began operation in 1954. Unit 2 was added in 1957 and, as rapid growth in the area continued, three additional units (Units 3, 4, and 5) were added and operational by 1968.

In March of 2016, OPPD modified three of the five coal-fired units (Units 1, 2, and 3) to render them physically unable to operate using coal. The remaining two units (Units 4 and 5) currently utilize low-sulfur coal and have been fitted with a dry sorbent injection (DSI) system to control emissions and comply with the Mercury and Air Toxics Rule.

2. Gerald T. Whelan Energy Center (Public Power Generating Agency, Hastings Utilities)

Dispersion modeling has been selected as the method of characterization for sulfur dioxide emissions from this facility. The modeling protocol is included for EPA review.

This facility consists of two units, Units 1 and 2, which began operating in 1981 and 2010, respectively.

Unit 1 uses low-sulfur coal from the Powder River Basin to comply with a prescribed emissions limit of 1.1 lb/MMBtu. Unit 2 is equipped with a flue gas desulfurization (FGD) component that captures at least 90% of the sulfur dioxide emissions from the generator. This unit also uses low-sulfur coal.

3. Sheldon Power Station (Nebraska Public Power District; NPPD)

Ambient air monitoring has been selected as the method of characterization for sulfur dioxide emissions from this facility. This will be accomplished using a new monitor that has been added to the 2016 Annual Air Monitoring Network Plan.

The original Sheldon Station began as a combined experimental nuclear-powered and conventional natural gas fired facility. Electricity was produced for the Nebraska grid beginning in 1961 from a conventional coal and gas-fired boiler (Unit 1). During deactivation of the nuclear facility, NPPD installed a second generator and conventional boiler, which began operation in 1968. In 1974, major modifications were made allowing the plant to switch from using natural gas to low-sulfur coal as

its primary fuel source. The Sheldon Station utilizes baghouses to control emissions, achieving a removal rate of approximately 99%.

In April 2015, NPPD announced a partnership with Monolith Materials. The plan is to replace or modify one of their existing coal-fired boilers with one that burns clean-burning hydrogen fuel. The hydrogen would be supplied by Monolith Materials as a by-product of carbon black production from natural gas feedstock. They are expected to break ground on the project in 2016 and become operational in 2019. Once operational, one unit at Sheldon will have almost zero sulfur dioxide emissions.

In the meantime, in April 2016, construction began on both units at this facility to raise the stack heights to facilitate compliance with the 2010 SO<sub>2</sub> NAAQS. Dispersion modeling was conducted to determine the stack height necessary to be in full attainment with the required emission limits set forth in the NAAQS. Documentation regarding the stack height modification project, to include the modeling report and copies of construction permits, were sent to EPA Region 7 on April 18, 2016.

Any questions regarding this submission may be directed to me at (402) 471-4299 or to Carrie Wiese, Grants, Planning, and Outreach Supervisor, at (402) 471-6624.

Sincerely,



Shelley Schneider  
Administrator, Air Quality Division  
Nebraska Department of Environmental Quality

**CC:** Scott Holmes, Lincoln Lancaster County Health Department  
Russ Haden, Douglas County Health Department  
Tim Burns, Omaha Air Quality Control  
Marty Stange, Hastings Utilities  
Joe Citta, NPPD  
Russ Baker, OPPD  
Mike Jay, EPA Region 7

**Attachments:**

1. Nebraska 2016 Air Monitoring Network Plan
2. Sulfur Dioxide 1-hour NAAQS – Data Requirements Rule, Dispersion Modeling Protocol; Public Power Generation Agency/Hastings Utilities, Whelan Energy Center
3. *Examination of SO<sub>2</sub> Ambient Air Monitoring Location Using Air Dispersion Modeling*, Eitan Tsubari