

STATE OF KANSAS

BEFORE THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

RECEIVED
DEC 22 2011
BUREAU OF AIR

In the Matter of the
Proposed Air Emissions Source Construction Permit and Modification to an Existing Air
Emissions Source Construction Permit to Sunflower Electric Power Corporation – Holcomb Unit
1, Source ID # 0550023

REPORT OF THE HEARING OFFICER

This matter comes before Dan Wells, hearing officer appointed by the Secretary of the Kansas Department of Health and Environment (KDHE) to receive the comments of the public regarding the proposed permits.

INTRODUCTION

Pursuant to K.S.A. 65-3008a, notice of the public comment period was published in the Kansas Register on November 10, 2011 with a comment period ending on December 12, 2011. The Notice of Hearing was published in the Kansas Register and the Garden City Telegram on November 10, 2011. Copies of the public notices are included in this report as Attachment 1. The public hearing was conducted at 5:00 pm on December 14, 2011 in Joyce Auditorium on the campus of Garden City Community College, 801 Campus Drive, Garden City, KS. The Secretary is authorized by statutes K.S.A. 65-3005 and 65-3008 to administer statutes and develop regulations controlling air quality and issue Air Emission Source Construction Permits.

The following were in attendance from KDHE:

Dan Wells, Bureau of Environmental Field Services, serving as hearing officer
Larry Lowry, Bureau of Air
Gerald McIntyre, Bureau of Air
Ethel Evans, Bureau of Environmental Field Services

A total of 13 people outside of KDHE staff attended the hearing (3 of the attendees were GCCC students/staff). A list of those persons present at the public hearing on December 14, 2011 is included in this report as Attachment 2.

SUMMARY OF THE RECORD

The hearing officer opened the public hearing with introductory remarks and called upon Bureau of Air staff member, Larry Lowry, to briefly review and discuss the proposed permits. A copy of his testimony is included with this report as Attachment 3. Following these remarks the hearing officer invited public comment. Two people provided oral testimony during the hearing.

Summary of the oral comments:

- Mr. Harold Starr represented himself and he is concerned about emissions coming from the stacks at the existing plant. He believes there is a cloud of pollution over Garden City and believes people are getting sick. Mr. Starr asked about the proper disposal of the coal ash after combustion. He is concerned about mercury contamination entering our soil and groundwater.
- Mr. Paul Reynolds gave testimony on behalf of Sunflower Electric. He stated the necessity of replacing the emissions control equipment and emphasized that NOx and CO2e emissions would be reduced from what they currently are now. A written copy of his testimony is included with the written comments.

During the public comment period two written comments were submitted. One written comment letter including the request for hearing was submitted by Mr. Harold Starr who opposes the proposed permits. This comment letter was signed by five (5) individuals in addition to Mr. Starr. The second written comment letter was from Mr. Wayne Penrod, a Sunflower Electric Power Corp. staff person in support of the proposed permits. These comments are included as Attachment 4.

POST-HEARING ACTIVITIES

Following the close of the public comment period, all comments were fully considered and a responsiveness summary was developed. No changes to the proposed permits were made. The responsiveness summary is included as Attachment 5.

RECOMMENDATIONS

On the basis of the administrative record developed in this matter, the hearing officer finds and concludes that agency staff has met the public participation requirements for issuing the proposed permits.

FINDINGS OF FACT

1. K.S.A. 65-3005 and 65-3008 authorize the Secretary of Health and Environment to administer statutes and develop regulations controlling air quality and issue Air Emissions Source Construction Permits.
2. The public notice regarding the public comment period was first published in the Kansas Register on November 10, 2011. The Notice of Hearing was published in the Kansas Register on November 10, 2011. KDHE accepted comments through December 12, 2011.
3. The public comment period that was established for receiving comments on the proposed permits has concluded and the public hearing was held on December 14, 2011 at 5:00 PM.
4. Two oral presentations were made at the hearing and two written comments were

received during the public comment period. A responsiveness summary was developed and all comments received did not warrant any changes in the proposed permits.

CONCLUSIONS

The hearing officer concludes that the Secretary of the Kansas Department of Health and Environment has the authority to issue the proposed Air Emission Source Construction Permits under K.S.A. 65-3005 and 65-3008 and has met the requirements for public notification and receipt of public comments.

Dated this 21 day of December, 2011.



Daniel Wells
Hearing Officer

ATTACHMENT 1

Copies of Public Notices

State of Kansas

Department of Health
and Environment

Request for Comments

The Kansas Department of Health and Environment is soliciting comments regarding a proposed new air quality construction permit and modification to an existing air quality construction permit. Sunflower Electric Power Corporation (Sunflower) has applied for an air quality construction permit in accordance with the provisions of K.A.R. 28-19-300 to initiate installation of a low NO_x combustion system comprised of low NO_x burners (LNB) and overfire air (OFA) combustion controls at the existing Holcomb Generating Station Unit 1 (H1). Carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter (PM), PM with a diameter less than 10 microns (PM₁₀), PM with a diameter less than 2.5 microns (PM_{2.5}), sulfur dioxide (SO₂), volatile organic compounds (VOC), lead, sulfuric acid mist (H₂SO₄), fluorides, hydrogen sulfide (H₂S), total reduced sulfur and CO₂e were evaluated during the permit review process.

The proposed permit is to be issued in accordance with the provisions of K.A.R. 28-19-350, prevention of significant deterioration (PSD), which adopt the federal standards, procedures and requirements of 40 CFR 52.21 by reference. These air quality regulations apply to major stationary emission sources located in areas designated as "attainment" under the federal Clean Air Act (CAA). Attainment areas are areas where the air quality meets or exceeds the national ambient air quality standards (NAAQS).

In addition to the new proposed PSD construction permit, KDHE has determined that a permit modification to the original PSD construction permit for Holcomb Generating Station Unit 1, issued by the U.S. Environmental Protection Agency May 19, 1980, is needed to reflect a change to the CO emission limit. This proposed modification is due to Sunflower requesting approval to construct the new low NO_x combustion system on H1 and the resulting change to the air emission limit for CO.

The PSD regulations require evaluation of emission reduction techniques to identify the best available control technology (BACT) for each pollutant for which the emission rate exceeds the PSD significant level. The purpose of BACT is to affect the maximum degree of reduction achievable, taking into account energy, environmental and economic impacts for each pollutant under review. Evaluation of the estimated emissions for the proposed Holcomb Generating Station Unit 1 project indicates that the emission rate of carbon monoxide exceeds the significance level. Sunflower conducted the required BACT analysis for CO. The department has reviewed Sunflower's BACT analysis and concurs with its finding that good combustion practices are BACT for CO.

An ambient impact analysis was performed on the potential air emissions of CO from the proposed low NO_x combustion system on H1. The CO screening modeling analysis demonstrated no significant impact on the 1-hour or 8-hour ambient air quality and that the emissions would not cause or contribute to any violation of ambient

air standards. The EPA has not established Class II maximum allowable increments for CO. Accordingly, no calculation of the potential consumption of increment is possible. No Class I areas are located within 100 km of the facility. Any federal land manager who has reason to believe a Class I area may be adversely impacted by the emissions from the expansion project has the opportunity to present KDHE with analysis of the adverse impact on the air quality-related values of that Class I area during the comment period. No adverse impacts on soils and vegetation in the area are expected.

A public comment period has been established until December 12 to allow citizens the opportunity to express any concerns they may have about these proposed permitting actions. All comments should be submitted in writing to Larry D. Lowry, KDHE, Bureau of Air, 1000 S.W. Jackson, Suite 310, Topeka, 66612-1366, or may be presented at the public hearing.

Any member of the public may request a public hearing be conducted to receive comments on the proposed issuance of these draft air quality construction permits. Written requests to hold a public hearing should be sent to the attention of Sharon Burrell at the address listed above or by fax to (785) 291-3953 and must be received by noon December 1.

If a request is received, a public hearing is tentatively scheduled from 5 to 7 p.m. December 14 at the Garden City Community College, Joyce Auditorium, 801 Campus Drive, Garden City.

If no requests to hold the public hearing are received by noon December 12, the public hearing will be cancelled. A notice of the cancellation will be posted at the KDHE website at http://www.kdheks.gov/bar/public_notice.html.

If a hearing is conducted, all interested parties will be given a reasonable opportunity to present their views orally or by submission of written materials during the hearing. In order to give all parties an opportunity to present their views, it may be necessary to request that each participant limit oral presentations to a specific time limit.

Any individual with a disability may request accommodation in order to participate in the public hearing and may request the proposed materials in an accessible format. Requests for accommodation must be made not later than December 12.

Copies of the proposed permits, permit applications, all supporting documentation and all information relied upon during the permit application review process are available for public review for a period of 30 days from the date of publication during normal business hours, 8 a.m. to 5 p.m., at the KDHE, Bureau of Air, 1000 S.W. Jackson, Suite 310, Topeka; and copy of the proposed permits and all supporting documentation can be reviewed at the KDHE Southwest District Office, 302 W. McArtor Road, Dodge City. To obtain or review the proposed permits and all supporting documentation, contact Larry D. Lowry, (785) 296-6281, at the KDHE central office, or Ethel Evans, air quality district representative in the KDHE Southwest District Office, at (620) 356-1075. The standard departmental cost will be assessed for any copies requested.

State of Kansas

Kansas Department of Health and Environment
Notice Concerning Proposed Kansas Air Quality
Construction Permit and Public Hearing

Notice is hereby given that the Kansas Department of Health and Environment (KDHE) is soliciting comments regarding a proposed new air quality construction permit and modification to an existing air quality construction permit. Sunflower Electric Power Corporation (Sunflower) has applied for an air quality construction permit in accordance with the provisions of K.A.R. 28-19-300 to initiate installation of a low NO_x combustion system comprised of low NO_x burners (LNB) and overfire air (OFA) combustion controls at the existing Holcomb Generating Station Unit 1 (H1). Carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter (PM), PM with a diameter less than 10 microns (PM₁₀), PM with a diameter less than 2.5 microns (PM_{2.5}), sulfur dioxide (SO₂), volatile organic compounds (VOC), lead, sulfuric acid mist (H₂SO₄), fluorides, hydrogen sulfide (H₂S), total reduced sulfur, and CO_{2e}, were evaluated during the permit review process.

The proposed permit is to be issued in accordance with the provisions of K.A.R. 28-19-350, *Prevention of Significant Deterioration* (PSD), which adopt the federal standards, procedures and requirements of 40 CFR 52.21 by reference. These air quality regulations apply to major stationary emission sources located in areas designated as “attainment” under the federal Clean Air Act (CAA). Attainment areas are areas where the air quality meets or is better than the national ambient air quality standards (NAAQS).

In addition to the new proposed PSD construction permit, KDHE has determined that a permit modification to the original PSD construction permit for Holcomb

Generating Station Unit 1, issued by the U.S. Environmental Protection Agency (EPA) on May 19, 1980, to reflect a change to the CO Emission limit. This proposed modification is due to Sunflower requesting approval to construct the new low NO_x combustion system on H1, and the resulting change to the air emission limit for CO.

The PSD regulations require evaluation of emission reduction techniques to identify the best available control technology (BACT) for each pollutant for which the emission rate exceeds the PSD significant level. The purpose of BACT is to affect the maximum degree of reduction achievable, taking into account energy, environmental and economic impacts for each pollutant under review. Evaluation of the estimated emissions for the proposed Holcomb Generating Station Unit 1 project indicates that the emission rate of carbon monoxide exceeds the significance level. Sunflower conducted the required BACT analysis for CO. The department has reviewed Sunflower's BACT analysis and concurs with its finding that good combustion practices are BACT for CO.

An ambient impact analysis was performed on the potential air emissions of CO from the proposed low NO_x combustion system on H1. The CO screening modeling analysis demonstrated no significant impact on the 1-hour or 8-hour ambient air quality and that the emissions would not cause or contribute to any violation of ambient air standards. EPA has not established Class II maximum allowable increments for CO. Accordingly, no calculation of the potential consumption of increment is possible. No Class I areas are located within 100 km of the facility. Any federal land manager who has reason to believe he/she may have a Class I area adversely impacted by the emissions from the expansion project has the opportunity to present KDHE with analysis of the

adverse impact on the air quality-related values of that Class I area during the comment period. No adverse impacts on soils and vegetation in the area are expected.

A public comment period has been established to allow citizens the opportunity to express any concerns they may have about these proposed permitting actions. The public comment period is to begin on November 10, 2011 and end on December 12, 2011. All comments should be submitted in writing to Larry D. Lowry, Bureau of Air, 1000 SW Jackson, Suite 310, Topeka, KS 66612-1366, or, presented at the public hearing.

Any member of the public may request to hold a public hearing to receive comments on the proposed issuance of these draft air quality construction permits. Written request to hold a public hearing should be sent to the attention of Ms. Sharon Burrell at the address listed above or by FAX to (785) 291-3953 and must be received by noon on December 1, 2011.

If no requests to hold the public hearing are received by noon December 1, 2011, the public hearing will be cancelled. A notice of the cancellation will be posted at the KDHE website at http://www.kdheks.gov/bar/public_notice.html.

If a request is received, a public hearing is tentatively scheduled at Garden City Community College, Joyce Auditorium, 801 Campus Drive, Garden City, KS, on December 14, 2011, from 5:00 p.m. to 7:00 p.m.

If a hearing is conducted, all interested parties will be given a reasonable opportunity to present their views orally or by submission of written materials during the hearing. In order to give all parties an opportunity to present their views, it may be necessary to request that each participant limit oral presentations to a specific time limit.

Any individual with a disability may request accommodation in order to participate in the public hearing and may request the proposed materials in an accessible format. Requests for accommodations must be made no later than December 12, 2011.

Copies of the proposed permits, permit applications, all supporting documentation, and all information relied upon during the permit application review process are available for public review for a period of 30 days from the date of publication during normal business hours (8:00 AM to 5:00 PM) at the KDHE, Bureau of Air (BOA), 1000 SW Jackson, Suite 310, Topeka, KS 66612-1366. Also, a copy of the proposed permits and all supporting documentation, can be reviewed at the KDHE Southwest District Office, 302 West McArtor Road, Dodge City, KS 67801. To obtain or review the proposed permits and all supporting documentation, contact Larry D. Lowry, (785) 296-6281, at the central office of the KDHE, or contact the Air Quality District Representative, Ethel Evans, at (620) 356-1075, in the KDHE Southwest District Office. The standard departmental cost will be assessed for any copies requested.

The same materials are available free of charge, at the KDHE Bureau of Air website, <http://www.kdheks.gov/bar/index.html>.

Robert Moser, MD, Secretary

Kansas Department of Health and Environment

ATTACHMENT 2

Copies of Sign-In Sheets

Holcomb 1 Public Hearing - December 14, 2011

Time: 5:00 to 7:00 PM
 Location: Garden City, KS - Garden City Community College - Joyce Auditorium

Thank you for coming. Please sign in.

Name (Please Print)	Organization	E-mail (Preferred) OR Address (if no e-mail)	Check the box if you are submitting a public comment at this hearing.
Abby McGreevy	Sunflower Electric	amcgreevy@sunflower.net	<input type="checkbox"/>
Paul Reynolds	Sunflower Electric	preynolds@sunflower.net	<input checked="" type="checkbox"/> oral
Andy Hartzel	Sunflower Electric	chertel@sunflower.net	<input type="checkbox"/>
MARK ROUNDHEAD	WATTUS GRAMA Sunflower Electric	mroundhead@wsgf.com	<input type="checkbox"/>
Kyle Nelson	Sunflower Electric	knelson@sunflower.net	<input type="checkbox"/>
Del Kaps	Sunflower Electric	dkaps@sunflower.net	<input type="checkbox"/>
Harold Starr	himself	1313N. 13th Garden City KS	<input checked="" type="checkbox"/> oral
			<input type="checkbox"/>
			<input type="checkbox"/>

left copy
of oral pres

Holcomb 1 Public Hearing - December 14, 2011

Time: 5:00 to 7:00 PM

Location: Garden City, KS - Garden City Community College - Joyce Auditorium

Thank you for coming. Please sign in.

Name (Please Print)	Organization	E-mail (Preferred) OR Address (if no e-mail)	Check the box if you are submitting a public comment at this hearing
Wade Peters	Sunflower River	wdepeters@Sunflower.net	<input checked="" type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

Holcomb 1 Public Hearing - December 14, 2011

Time: 5:00 to 7:00 PM

Location: Garden City, KS – Garden City Community College – Joyce Auditorium

Thank you for coming. Please sign in.

Name (Please Print)	Organization	E-mail (Preferred) OR Address (if no e-mail)	Check the box if you are submitting a public comment at this hearing.
Sharon Kansas		skansas@yahoo.com	<input type="checkbox"/>
Bernard T Strasser		b1str@shoglob.net	<input type="checkbox"/>
			<input type="checkbox"/>

ATTACHMENT 3

KDHE Testimony

Sunflower Holcomb 1 Public Hearing
Low NO_x Burners
Garden City, KS

Construction Permit Testimony

Good evening, I am Larry Lowry, Environmental Engineer with the Bureau of Air in the Kansas Department of Health and Environment. I am here to summarize the draft construction permit for the existing Holcomb Generating Station (Holcomb) located in Finney County, Holcomb, Kansas and the permit modification to the existing air quality construction permit issued by EPA on May 19, 1980 for this facility.

The Sunflower Electric Power Corporation (Sunflower) is proposing to install emission control technologies at its existing Holcomb Generating Station. These changes will reduce Nitrogen Oxides (NO_x) emissions on Holcomb Unit 1 (H1) through the use of a new Low NO_x combustion system comprised of low NO_x burners (LNB) and overfire air combustion control methods. This project requires the issuance of a construction permit in accordance with the provisions of K.A.R. 28-19-350, *Prevention of Significant Deterioration (PSD)*.

In addition, the PSD Construction Permit, dated May 19, 1980, for the construction of Holcomb Unit 1 is being modified to revise the Carbon Monoxide (CO) air emission limit.

The project will not result in any increase in fuel consumption, heat input, or steam generation. However, due to the inverse relationship between NO_x and Carbon Monoxide (CO) emissions, the new equipment will result in an increase in CO emissions, and thus subject the proposed modification to the requirements of 40 CFR 52.21, *Prevention of Significant Deterioration (PSD)*, as adopted under K.A.R. 28-19-350, as a result of being a major modification of a major stationary source for at least one regulated pollutant emitted in excess of the PSD significant emission levels. Holcomb 1 is an affected source subject to Title IV of the Federal Clean Air Act, Acid Deposition Control. The proposed project does not constitute a modification or reconstruction for the purpose of determining applicability of New Source Performance Standard (NSPS) requirements. This project is subject to the provision of K.A.R. 28-19-300 (Construction permits and approvals; applicability) because the potential-to emit of CO exceeds 100 tons per year.

None of the following emissions will increase as a result of this project: particulate matter (PM), PM with a diameter less than 10 microns (PM₁₀), PM with a diameter less than 2.5 microns (PM_{2.5}), sulfur dioxide (SO₂), volatile organic compounds (VOC), lead, sulfuric acid mist, fluorides, hydrogen sulfide (H₂S), total reduced sulfur, and carbon dioxide equivalent (CO_{2e}).

The initial PSD construction permit for Holcomb 1, dated May 19, 1980, contained a CO limit of 0.064 lb/mmBTU. However, Condition No. 1 of that permit indicates that "if the CO and NO_x BACT emission limits cannot be achieved simultaneously, the NO_x emission limit shall take precedence and a new CO/BACT emission limit shall be established by the EPA (or its delegated representative)..." Condition No. 1 of the permit also states: "As part of any readjustment of the CO/BACT emission limit under this permit condition, the owner/operator of Unit No. 1 must make a determination through the use of agency-approved dispersion models

ATTACHMENT 4

Comments Received by KDHE

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BUREAU OF AIR

Holcomb Plant Expansion.

With the economy the way it is, this is the worst possible time for Sunflower Electric and their partners to be spending \$3 billion in a huge Coal plant. While Sunflower continues spending the money, the bill is becoming more and more expensive and somebody is going to have to pay.

We need a population vote of the area serviced by Sunflower Electric, and that vote needs to include a user vote on this plant expansion project, plus the inclusion area for pollutants of the exhaust area surrounding the Plant for over 50 mile, that would include all Pollutants discharged from the plant. I have never seen any test results on this Issue.

The users of electricity from the Sunflower Power plant located in Finney County Ks. Needs to have a group of interested people to request a hearing about the concerns of getting a permit for any Constriction. Air, Water, Pollution or emissions or any other concerns that people may have. You may Write to Larry D. Lowry, Bureau of Air, 1000 South West Jackson, 310, Topeka, Kansas 66612-1366. If you want to fax your hearing request to Fax to 785-291-3953 and we need to notify before November 30th.

If a Hearing is conducted, all interested parties will be given a reasonable opportunity to present their views orally or by submission of written materials during the hearing. In order to give all parties an opportunity to present their views. It may be necessary to request that each participant limit oral presentations to a specific time limit. You have an opportunity to join us or notify Mr. Lowry

Harold Starr

Lee Messenger
Susan Rosas
Christine Ortega
Zuzanne Ortega
Ashley Rosas

weneed a hearing
Harold Starr
1313 N. 13th
Garden City, KS 67846
620-275-6580
Please Call



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A Touchstone Energy® Cooperative 

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Kansas Department of Health and Environment

Statement of Paul Reynolds Public Hearing on the Low-NO_x Burner/OFA Air Permit For Holcomb Unit 1 Sunflower Electric Power Corporation

December 14, 2011

Good evening, Mr. Chairman. My name is Paul Reynolds, Manager of Generation Engineering and Environment at Sunflower Electric Power Corporation.

Sunflower owns and operates the 360-MW coal-fired Holcomb 1 (H1) on which we plan to reduce Nitrogen Oxides (NO_x) emissions by installing a new low-NO_x combustion system comprised of low-NO_x burners and an overfire air (OFA) system. I would like to address the reasons necessitating this project and, therefore, the permit in consideration this evening.

H1, the flagship of Sunflower's generating fleet, came online in 1983. For almost three decades it has operated with some of the lowest emission limits compared to other Kansas EGUs; this is a direct result of the emission control technology employed when it was constructed. In fact, one fourth of the unit's \$400 million construction costs can be attributed to a state-of-the-art emission control system.

The emission control system, which includes low-NO_x burners, has served us well; however, over time mechanical parts—particularly metal equipment subjected to extremely high temperatures—wear out, necessitating replacement. Through scheduled maintenance outages, we have concluded that the unit will be even more efficient if the low-NO_x burners are replaced and an over-fire air system is added. With this system in place, we anticipate NO_x emissions at 0.18 lb/mmBtu, effectively a reduction from the current NO_x emission rate by more than 40%.

Testimony of Paul Reynolds
December 14, 2011

Meeting provisions for the 2009 Settlement Agreement between Sunflower and the State of Kansas was another impetus for upgrading the NO_x emission control system on H1. In addition to other provisions, Sunflower agreed to install equipment to limit NO_x emissions from a permitted level of 0.50 lb/mmBtu to 0.22 lb/mmBtu on a twelve-month rolling average basis by no later than one year following the commercial operation date of H2. As a result, Sunflower began preparing to upgrade the NO_x emission control system with an anticipated 2013 completion date.

However, the Cross State Air Pollution Rule (CSAPR) has expedited the project, which we now plan to commence in January 2012. CSAPR was finalized in July and will become effective Jan. 1, 2012, just six months after the publication of the rule. This rule requires electricity generating units in 27 eastern states, including Kansas, to reduce annual NO_x and sulfur dioxide (SO₂) emissions. These same states, along with five additional ones, must also further reduce NO_x emissions during the ozone season, a five-month period from May through September.

Under CSAPR, Sunflower will be allocated NO_x allowances adequate to generate only about 50 percent of its energy requirements in 2012, and it is, therefore, necessary to upgrade NO_x emission controls on H1 as soon as possible. Although CSAPR has forced us to move the \$21 million project to early 2012, a change in schedule that escalates the cost by \$2.5 million, we believe it is in our Members' best interest that we avoid purchasing as many NO_x allowances as possible and implement this technology next month.

I'd like to focus the remainder of my comments on the CO limit in the original PSD permit and the need to seek relief from that limit in order to reduce NO_x emissions. The PSD construction permit contained CO limit of 0.064 lb/mmBTU. This limit is highly unusual and very unique among coal fired generating units of the same vintage as Holcomb 1. Since there is no technical basis for it, there is no reason for it to be so low, and it's really hard to explain why it is what it is. Furthermore, there is no commensurate environmental benefit.

Testimony of Paul Reynolds
December 14, 2011

Condition No. 1 of that permit indicates that "if the CO and NO_x BACT emission limits cannot be achieved simultaneously, the NO_x emission limit shall take precedence, and a new CO/BACT emission limit shall be established by the EPA (or its delegated representative)...." Condition No. 1 of the permit also states, "As part of any readjustment of the CO-BACT emission limit under this permit condition, the owner/operator of Unit No. 1 must make a determination through the use of agency-approved dispersion models that emissions from Unit No. 1 will not cause or significantly contribute to a violation of the National ambient Air Quality Standards (NAAQS) for CO."

Condition 1 also indicated that the CO/BACT emission limit shall not be adjusted to an emission rate that would cause or contribute to a violation of the CO NAAQS. **The air dispersion modeling analysis submitted with the permit application, reviewed and approved by KDHE and EPA, satisfied these criteria.**

Why is this important? Simply put, in order to optimize the benefit of Sunflower's significant capital expenditure (as previously stated this is estimated at \$21 million) to reduce NO_x emissions, we must have the flexibility to adjust the current the CO emission limit as allowed in the original PSD construction permit. The Best Available Control Technology (BACT) analysis supports raising the CO emission limit to 0.25 lb/mmBTU. By way of a comparison, the CO limit proposed for Holcomb 2 is 0.12 lb/mmBTU, a permit granted more than 30 years after the Holcomb 1 PSD permit was granted.

For these reasons, Sunflower supports KDHE's decision to approve our permit application and issue a PSD construction permit for the Holcomb 1 LNB/OFA system and modify the original PSD construction permit as proposed.

ATTACHMENT 5

KDHE Responsiveness Summary

Responsiveness Summary
Sunflower Electric Power Corporation
Holcomb Unit 1
Low NO_x Burner/Overfire Air Project
Air Quality Construction Permit Application



Kansas Department of Health and Environment
Bureau of Air and Radiation
Air Permitting Section

December 2011

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I. KDHE DECISION

The Kansas Department of Health and Environment (KDHE) Bureau of Air (BOA) has made the decision to issue an Air Quality Construction Permit to Sunflower Electric Power Corporation (Sunflower) for installation of emission control technologies at its existing Holcomb Generating Station (Holcomb) located in Finney County, Holcomb, Kansas. Sunflower will reduce Nitrogen Oxides (NO_x) emissions on Holcomb Unit 1 (H1) through the use of a new Low NO_x combustion system comprised of low NO_x burners (LNB) and overfire air (OFA) combustion control methods. KDHE will also issue a permit modification to the original PSD construction permit for Holcomb Generating Station Unit 1, issued by the U.S. Environmental Protection Agency (EPA) on May 19, 1980, to reflect a change to the CO Emission limit.

The construction permits issued for the project identifies the applicable rules governing emissions from the plant, and establishes enforceable limitations on its emissions. The permit also establishes appropriate compliance procedures, including requirements for emissions testing, continuous emission monitoring, recordkeeping and reporting. Sunflower will be required to carry out these procedures on an ongoing basis to demonstrate that the plant is operating within the limitations established by the permit and that emissions are being properly controlled.

The permit related documents can be found at the BAR website address:

<http://www.kdheks.gov/bar/posthearing.html>
or contact: Marian Massoth at (785) 296-0616.

II. PROJECT DESCRIPTION

On June 6, 2011, the KDHE BOA received an application from Sunflower requesting a permit for the Holcomb expansion project. Sunflower's application included the installation of a Low NO_x combustion system comprised of low NO_x burners (LNB) and overfire air (OFA) combustion control methods.

In addition to the new proposed PSD construction permit, KDHE has determined that a permit modification to the original PSD construction permit for Holcomb Generating Station Unit 1, issued by the U.S. Environmental Protection Agency (EPA) on May 19, 1980, to reflect a change to the CO Emission limit. This proposed modification is due to Sunflower requesting approval to construct the new low NO_x combustion system on H1, and the resulting change to the air emission limit for CO.

III. KDHE PERMIT CONSIDERATIONS

The LNB project proposed by Sunflower is considered a major modification of a major stationary source because one or more of the Prevention of Significant Deterioration (PSD) regulated air pollutants from the proposed activity exceeds the significance level(s). Therefore, KDHE permit considerations must follow the PSD Air Quality Construction Permit requirements.

PSD does not prevent sources from increasing emissions. PSD is designed to:

1. protect public health;
2. preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monument, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value;
3. insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources; and
4. assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decision making process.

PSD applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is in attainment or unclassifiable with the National Ambient Air Quality Standards (NAAQS). It requires the following:

1. installation of the "Best Available Control Technology" (BACT);
2. an air quality analysis;
3. an additional impacts analysis; and
4. public involvement.

A. Best Available Control Technology (BACT)

BACT is an emissions limitation which is based on the maximum degree of control that can be achieved. It is a case-by case decision that considers energy, environmental, and economic impacts. BACT can be add-on control equipment or modification of the production processes or methods. This includes fuel cleaning or treatment and innovative fuel combustion techniques. BACT may be a design, equipment, work practice or operation standard if imposition of an emissions standard is infeasible.

BACT applies to each new or modified affected emissions unit and pollutant emitting activity at the source for each pollutant having a potential to emit, or an increase in potential to emit, above the PSD significance level(s). For the proposed Sunflower project, the increase in potential-to-emit is above the PSD significance level for CO and was reviewed under the PSD regulations.

For the Sunflower pulverized coal fired electric steam generating units, BACT is:

- For carbon monoxide (CO) BACT is good combustion practices.

B. Ambient Air Quality Analysis

The proposed facility is a major source as defined by K.A.R. 28-19-350, Prevention of Significant Deterioration. Therefore, the owner or operator must demonstrate that allowable emission increases from the proposed facility would not cause or contribute to air pollution in violation of:

- 1) any NAAQS in any air quality control region; or
- 2) any applicable maximum allowable increase of PM₁₀, SO₂, or NO₂ over the baseline concentration in any area (increment).

The only emissions to be affected by the proposed project are nitrogen oxides and carbon monoxide. The emissions change for these two pollutants from the proposed project and significant emission thresholds are listed in Table 1 below. New major stationary sources with pollutant emissions exceeding significant emission rates must undergo PSD review.

Table 1. Emissions Change From the Proposed Project and PSD Significant Emission Rates					
Pollutant	Baseline Emissions (tpy)	Proposed Project Potential Emissions (tpy)	Net Emissions Change (tpy)	Significant Emission Rate (tpy)	PSD Review Required
NO _x	4687.2	2671.9	-2015.3	40	No
CO	509.1	3711.0	3201.8	100	Yes

The emissions were modeled using the latest version (11126) of AERSCREEN. AERSCREEN is based on AERMOD, EPA's preferred near-field dispersion model, and replaces SCREEN3 as the recommended screening model based on the *Guideline on Air Quality Models*. Similar to SCREEN3, AERSCREEN allows for user entry of emission inputs, source coordinates, building information (for downwash), receptor information, and meteorological information in a quick and easy fashion, either through an input file, or interactive prompts. However, AERSCREEN incorporates several enhancements relative to the SCREEN3 model. For example, AERSCREEN generates application-specific worst-case meteorology, via MAKEMET, that takes full advantage of the boundary layer scaling algorithms implemented in the AERMET meteorological processor using representative minimum and maximum ambient air temperatures, and site-specific surface characteristics (albedo, Bowen ratio, and surface roughness). AERSCREEN incorporates the PRIME downwash algorithms that are part of the AERMOD refined model and utilizes the BPIPPRIM tool to provide a detailed analysis of downwash influences on a direction-specific basis. AERSCREEN also incorporates

AERMOD's complex terrain algorithms and utilizes the AERMAP terrain processor to account for the actual terrain in the vicinity of the source on a direction-specific basis¹.

AERSCREEN was produced to give the user two options for modeling: either by using the command prompt interface to give a more automated process for the user or by using the MAKEMET program which gives the user more flexibility for defining receptors. Sunflower used the command-prompt interface of the AERSCREEN model for this air quality impact analysis because the MAKEMET approach is more appropriate for an area with a more complex terrain than Holcomb. All "regulatory default" options in the AERSCREEN model were used for this air quality impact analysis.

Based on the proposed facility emissions, carbon monoxide (CO) was evaluated as part of the AQIA. AERSCREEN was used by Sunflower to evaluate the impacts of CO that will result from the LNB/OFA project at H1 for 1-hour CO and 8-hour CO. Sunflower's evaluation was reviewed by KDHE using AERSCREEN version 11126.

A facility that proposes to emit any pollutant above the PSD significant emission rate thresholds must submit an ambient air quality impact analysis. In order to determine if a full impact model analysis and/or ambient air monitoring is necessary, a facility must complete a preliminary modeling analysis. The preliminary analysis includes only the proposed source or modification so it can be determined if a significant modeled impact will take place. For each pollutant that the model predicts the high first high concentration to be below the significant impact level (SIL) threshold, no further analysis is necessary for that pollutant.

For the 1-hour and 8-hour CO averaging periods the modeled impacts for the proposed facility fall below the modeling SIL so no refined modeling is required. The modeling results are also well below the pre-application monitoring threshold of 575 µg/m³ for the 8-hour averaging period. There is no pre-application threshold established for the 1-hour averaging period. Therefore, pre-construction monitoring is not required for CO.

The Ambient Air Quality Analysis concluded the following:

- Evaluation of the facility potential emissions indicated that emissions of CO above current levels are expected.
- The AERSCREEN model (version 11126) was used to determine predicted maximum ground level concentrations.
- The analysis indicated that concentration levels of CO resulting from the proposed project would not significantly cause or contribute to an exceedance of the NAAQS.
- The modeled impacts for the proposed facility fall below the pre-application monitoring threshold and the modeling SIL for the 8-hour and 1-hour averaging periods.

¹ *AERSCREEN Released as the EPA Recommended Screening Model* Memorandum by Tyler Fox issued on April 11, 2011 (http://www.epa.gov/ttn/scram/20110411_AERSCREEN_Release_Memo.pdf).

- The analysis indicated that concentration levels of all pollutants resulting from the proposed project would comply with PSD Class II increments.

C. Additional Impact Analysis

1. Commercial, Residential, and Industrial Growth

The growth analysis considers predicted air quality impacts due to emissions resulting from the commercial, industrial and residential growth associated with the LNB/OFA project. Only permanent growth is considered and impacts from emissions from temporary and mobile sources are not included in the analysis.

There will be no associated growth due to the LNB/OFA project. Project construction will be limited and no commercial or residential growth is projected to occur because of this project. Given the temporary nature of the construction and the lack of other source growth in the area, the Project is not expected to cause any adverse construction or growth related air quality impacts

2. Visibility Impairment

An additional visibility impact analysis may be used to determine if the air emission increases associated with a proposed PSD project will have an impact on Class II sensitive areas such as state parks, wilderness areas, or scenic sites and overlooks. Visibility impairment is a function of the emissions of primary particulate matter, NO_x (including NO₂), elemental carbon (soot), and primary sulfate (SO₄). This project will substantially decrease the emissions of NO_x, thereby improving visibility over current conditions. As CO, not a visibility impairing pollutant, is the only pollutant with an emission increase, the project is not predicted to negatively impact visibility.

Federally designated Class I areas are afforded special protection in the air permitting process. Generally, Class I area visibility analyses are only conducted for projects located within 100 km of a Class I area. The nearest Federal Class I Area is the Great Sand Dunes National Monument, nearly 400 km west of the proposed facility. Wichita Mountains National Wildlife Refuge is slightly more than 400 km southeast of the proposed facility. A visibility analysis was not required since the proposed project results in a substantial decrease in NO_x emissions and there is no increase in any other visibility-impairing pollutants.

3. Vegetation

In accordance with 40 CFR 52.21(o)(1), the owner shall provide an analysis of the impairment to visibility, soils and vegetation that would occur as a result of the

modification to the source. Sunflower determined that the proposed project and the associated increase in CO are not expected to have significant effects on vegetation.

Air pollutants can affect vegetation through direct absorption through the foliage, or uptake from the soil of trace elements deposited in the soil. The effects of air pollution on vegetation can include visible damage to foliage and fruit, changes in metabolic function, adverse changes in plant activity, and crop yield reduction. The effects of air pollutants on vegetation fall into three categories: acute (short exposure to high concentration), chronic (lower concentration over months or years), and long-term (abnormal changes to ecosystems and physiological alterations in organisms that occur gradually over very long time periods).

The United States Department of Interior (USDOI) has published a document called Impacts of Coal Fired Power Plants on Fish, Wildlife, and their Habitats. This document was used to consider the effects of CO on vegetation. Sunflower Electric Power Corporation conducted a survey of the vegetation located in the vicinity of the modification, which indicated the predominant types of vegetation are pasture and crop land. Switchgrass, little bluestem, big bluestem, Indian grass, and Canada wild rye are found in pastures and meadows. Wheat, corn, soybeans, and alfalfa are the predominant row crops. Trees occur in hedgerows, creek beds, and along the Arkansas River. While adequate information is available to make generalizations regarding air pollution impacts on various types of vegetation, concrete conclusions as to site-specific vegetation exposure impacts cannot be presently concluded from available research study data. At the Sunflower facility vegetation is composed of disturbance-tolerant weedy species including lamb's-quarters (*Chenopodium album*), pigweed (*Amaranthus sp.*), and Russian thistle (*Salsola kali*). Turf grasses, such as western wheatgrass (*Agropyron smithii*) and tall fescue (*Festuca arundinacea*) are planted in lawn areas.

Concentrations of CO, even in polluted atmospheres, are not typically detrimental to vegetation. CO has not been found to produce detrimental effects on plant growth at concentrations below 1,800,000 $\mu\text{g}/\text{m}^3$ for a one week exposure.² NAAQS are set for 1-hour and 8-hour averaging periods, at rates more stringent than the literature exposure threshold. Therefore, the NAAQS were utilized for comparison with modeled concentrations to predict any CO effects on vegetation. Additionally, the USEPA has stated that "*for most types of soils and vegetation, ambient concentrations of criteria pollutants below the secondary national ambient air quality standards (NAAQS) will not result in harmful effects.*"³ Since the maximum model-predicted 1-hour and 8-hour CO impacts are significantly lower than the NAAQS, no adverse impacts to vegetation due to the proposed project are expected from CO emissions.

4. Soils

² Smith, A.E. and J.B. Levenson. *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals*. Argonne National Laboratory, USEPA Publication EPA-450/2-81-078. December 12, 1980.

³ *New Source Review Workshop Manual*. Environmental Protection Agency, Office of Air Quality Planning and Standards, October 1990, Draft. (NSR Manual).

Two soil types are mapped at or near the project site (Harner *et al.* 1965). They include:

- Tivoli fine sand
- Tivoli-Vona loamy fine sands

Both soil types are deep, noncalcareous, very sandy soils in steep, dunny (numerous sand-dunes) terrain. The soils are low in fertility and drain very easily. Water is absorbed quickly, and consequently, runoff is very low. Blowout of the soil is prevalent where vegetation is lacking. Erosion often is a problem.

Sulfates and nitrates caused by SO₂ and NO_x deposition on soil can be beneficial and detrimental to soils depending on its composition. However, the modification on H1 will not affect SO₂ emissions from the unit, and NO_x emissions will be decreasing as a result of the project, so no adverse effects are anticipated.

D. Public Involvement

Following its initial review of Sunflower Electric Power Corporation's application, the KDHE BOR made a preliminary determination that the application met the standards for issuance of a construction permit and prepared a draft permit for public review and comment. KDHE also prepared a draft a permit modification to the original PSD construction permit for Holcomb Generating Station Unit 1, issued by the U.S. Environmental Protection Agency (EPA) on May 19, 1980, to reflect a change to the CO Emission limit

The draft permits were available for public review from November 10, 2006 through December 12, 2011. The public hearing was held in Garden City, Kansas on Wednesday, December 14, 2011. The hearing was conducted in order to obtain oral and written comments concerning the proposed permits.

The total number of verbal comments submitted at public hearings was two (2). In addition to the verbal comments received during the public hearings, there were two (2) written comments submitted to the Department during the public notice period. Comments were submitted by one (1) individual and by Sunflower. The total number of oral and written comments submitted was five (4).

Section IV of this document includes the KDHE response to public comments and Section V includes the KDHE response to comments from Sunflower.

IV. RESPONSE TO PUBLIC COMMENTS

A. Public Comment: Commenter was concerned about emissions from the stacks at Holcomb 1 and believes there is a cloud of pollution over Garden City and believes people are getting sick. Commenter asked about the proper disposal of fly ash and clinker from coal combustion and was concerned about mercury contamination entering the soil and groundwater.

KDHE Response:

A critical element of the air permitting process and the Kansas' State Implementation Plan (SIP) of the federal clean air laws and regulations, in general, is protection of the ambient air quality. The EPA has established primary and secondary national ambient air quality standards (NAAQS) for six criteria pollutants, which include ozone, particulate matter (PM), sulfur dioxide (SO₂), oxides of nitrogen (NO_x), carbon monoxide (CO), and lead. The primary standards protect human health and the secondary standards protect public welfare. In setting the standards, EPA considers sensitive populations (e.g., asthmatics, children, elderly) and the type of effect (chronic versus acute). EPA periodically receives new health-based scientific studies, and using the standard administrative rulemaking process, revises appropriately those NAAQS standards. The ambient air quality in Kansas meets all the current NAAQS, which is why the PSD permitting process is applicable to this project. As part of its application, Sunflower provided information demonstrating that air emissions from Holcomb 1 would not cause or contribute to an exceedance of any NAAQS.

Disposal of fly ash and clinker from coal combustion at the plant is in accordance with KDHE regulations, (Bureau of Air and Bureau of Waste).

V. RESPONSE TO COMMENTS FROM SUNFLOWER

A. Sunflower Comment: Commenter stated the necessity of replacing the emissions control equipment and emphasized the NO_x and CO₂e emissions would be reduced.

KDHE Response: *KDHE concurs with this comment.*