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Public Service Commission of Wisconsin
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PUBLIC SERVICE COMMISSION OF WISCONSIN

Joint Application of Wisconsin Power and Light Company, Wisconsin Public Service Corporation, and Madison Gas and Electric Company for a Certificate of Authority to Install a Selective Catalytic Reduction System at Columbia Energy Center Unit 2

5-CE-143

FINAL DECISION

On July 2, 2014, pursuant to Wis. Stat. § 196.49 and Wis. Admin. Code ch. PSC 112, Wisconsin Power and Light Company (WP&L), Wisconsin Public Service Corporation (WPSC), and Madison Gas and Electric Company (MGE) (collectively, applicants) filed an application with the Commission for authority to install a Selective Catalytic Reduction (SCR) system at Columbia Unit 2, located in Columbia County, Wisconsin.

The applicants propose to construct the facilities to reduce oxides of nitrogen (NO_x) air emissions and to comply with the NO_x emissions requirements included in a Consent Decree submitted to the U.S. District Court for the Western District of Wisconsin in April 2013 (Consent Decree). The estimated cost of the project is \$150,000,000, excluding Allowance for Funds Used During Construction (AFUDC).

The application is GRANTED, subject to conditions.

Introduction

On July 8, 2014, the Citizens Utility Board (CUB) filed a request to intervene in the docket. A Notice of Proceeding was issued in this docket on September 11, 2014.

The parties stipulated to allow written comments to be filed by CUB without technical or public hearings. As it was stipulated that no hearing would be held, pursuant to Wis. Stat. § 196.49(5r)(b), the Commission is required take final action on the application within 90 days after the Commission issues a notice opening the docket unless an extension of time is granted.

On November 5, 2014, Chairperson Montgomery granted the request for an extension of time for an additional 90 days. On November 21, 2014, CUB submitted comments regarding the joint application. On December 10, 2014, the applicants filed their responses to CUB's comments.

Findings of Fact

1. WP&L, WPSC, and MGE are electric public utilities engaged in the generation and distribution of electricity in the state of Wisconsin. The applicants' proposed project consists of the installation of an SCR system at Columbia Unit 2 at an estimated total cost of \$150,000,000, excluding AFUDC.
2. Completion of this project will not substantially impair the efficiency of the service the applicants provide.
3. Completion of this project will not provide facilities unreasonably in excess of the applicants' probable future requirements.
4. Neither energy conservation, renewable resources, nor other energy priorities listed in Wis. Stat. §§ 1.12 and 196.025 would be a cost-effective alternative to this project.
5. When this project is placed in operation, the addition to the applicants' cost of service associated with the project will be proportionate to the increase in value or available quantity of the applicants' service.
6. No unusual circumstances suggesting the likelihood of significant environmental consequences are associated with the project.
7. Authorization of the project is in the general public interest.
8. Alternatives to the proposed project have been considered, but no other reasonable alternatives to the proposed project exist that could provide adequate service in a more reliable, timely, cost-effective, and environmentally responsible manner.

9. The only practical location for the proposed project is at the existing Columbia Energy Center (Columbia).

Conclusions of Law

1. The applicants are public utilities as defined in Wis. Stat. § 196.01(5)(a).
2. The Commission has jurisdiction under Wis. Stat. §§ 1.11, 1.12, 196.02, 196.025, 196.395, and 196.49, and Wis. Admin. Code chs. PSC 4 and 112, to issue a Certificate and Order authorizing the applicants, as electric public utilities, to construct and place in operation the facilities described in this Final Decision, subject to the conditions stated in this Final Decision.
3. The estimated gross cost of this project exceeds the minimum threshold of utility projects requiring Commission review and approval under Wis. Admin. Code § PSC 112.05.
4. The application is a Type III action under Wis. Admin. Code § PSC 4.10(3) and requires neither an environmental impact statement (EIS) nor an environmental assessment (EA).

Opinion

Project Description, Purpose, and Cost

The Columbia Energy Center is located south of Portage, Wisconsin, along the Wisconsin River. The facility consists of two coal-fired electric generating units, designated as Units 1 and 2. These generating units began operation in 1975 and 1978, and have nameplate generation capacities of 512 and 511 megawatts (MW), respectively. The applicants jointly own both units, with WP&L holding a 46.2 percent share, WPSC holding a 31.8 percent share, and MGE owning the remaining 22 percent. WP&L operates both units. Both units currently utilize sub-bituminous Powder River Basin coal obtained by the applicants from various mines.

The technology proposed for NO_x reduction at Columbia Unit 2 is a conventional SCR system. This technology removes NO_x from the flue gas via a catalyzed reaction with an

ammonia-based reagent. The preliminary design for the SCR consists of the following major components: one reactor with multiple layers of catalyst; an ammonia storage and delivery system; an ammonia injection system; steam soot blowers or sonic horns, or both; instrumentation; and ductwork modifications.

The applicants are proposing the project to comply with existing and anticipated NO_x emission requirements and regulations, and to comply with the NO_x emission requirements of the Consent Decree. The applicants deem the proposed project is needed to ensure long-term emission compliance for Columbia Unit 2, and to help ensure continued operation of this historically cost-effective and reliable generating facility.

The impact of the U.S. Environmental Protection Agency's (EPA) proposed Clean Power Plan (CPP), also referred to as 111(d), on the proposed project was also considered by the applicants. At this time, it is too early to understand the exact impacts of the CPP. The EPA is expected to publish the final CPP in June 2015, after which the state would be required to submit its State Implementation Plan to EPA by June 2016. The applicants anticipate that newer, larger, and more-efficient units, such as those at Columbia, will remain an important part of the generation fleet.

The proposed project will reduce NO_x from Columbia Unit 2 by approximately 50 percent. A 50 percent reduction in NO_x emissions translates into the removal of over 30,000 tons of NO_x emissions over a 30-year period, compared to continued operation without the SCR. Because NO_x is a precursor to PM_{2.5} and ozone formation, emissions of both pollutants will also be reduced.

The estimated cost of the proposed project is approximately \$150,000,000, excluding AFUDC, detailed as follows:

Description	Amount	Amount
Engineer, Procure, and Construct Contract		
Engineering	\$17,830,000	
Materials and Equipment	37,370,000	
Construction Labor	34,820,000	
Escalation	11,810,000	
Subtotal		\$101,830,000
Owner's Cost and Contingency	\$48,170,000	
Total Project Cost		\$150,000,000

The applicants intend to award a limited contract to start engineering for the SCR system during the first quarter of 2015 and a final notice to proceed during the third quarter of 2015. Site mobilization is anticipated to begin in the second quarter of 2016, with the project anticipated to be placed in service during the third quarter of 2018.

Project Need

In December 2009, the EPA issued a notice of violation (NOV) to the owners of Columbia, which are also the applicants in this docket. The NOV alleged violations of prevention of significant deterioration (PSD) permitting requirements, Clean Air Act Title V operating permit requirements, and the Wisconsin State Implementation Plan for past construction projects at Columbia. In September 2010, the Sierra Club filed a complaint against WP&L in the U.S. District Court for the Western District of Wisconsin, which included similar PSD claims. In 2013, the EPA filed a similar complaint against the applicants.

If PSD permits were required for the past projects, the permits could have required the applicants to install appropriate emission control equipment as determined by a best available control technology analysis performed as part of the permit review process for the past construction projects.

The applicants deny the alleged violations contained in the NOV and the complaints. The applicants contend that the projects did not trigger PSD requirements because the projects were

routine, the projects did not increase emissions above any applicable threshold, and that the projects were appropriately reviewed and permitted by the Wisconsin Department of Natural Resources.

To resolve the NOV and complaints, the applicants entered into the Consent Decree with the EPA and Sierra Club. Columbia Unit 2 currently has an NO_x emission rate of approximately 0.12 pounds per million British thermal units (lb/MMBtu). This rate complies with the currently-applicable NO_x emission rate. The Consent Decree requires that an SCR system be installed on Unit 2 before December 31, 2018, and that Unit 2 achieve NO_x emission rates at or below 0.080 lb/MMBtu on a 30-day rolling average basis and 0.070 lb/MMBtu on a 12-month rolling average basis.

When completed, the proposed project will enable the applicants to comply with the NO_x emission requirements of the Consent Decree. The project may also assist in complying with the Clean Air Visibility Rule and potential reductions associated with a future, more stringent ozone national ambient air quality standard. No intervener contested the need for the proposed project or presented evidence that the proposed project would impair the efficiency of service provided by the applicants.

CUB's Position on the Proposed Project

CUB provided written comments in this docket. In its comments, CUB states that the costs of the SCR system, including a return earned by the applicants and their shareholders, will be paid by electric utility customers. CUB states the need for the proposed project is the result of the applicants agreeing to install the SCR system as part of the Consent Decree. The SCR system costs include financial benefits for the applicants and their shareholders because the SCR system is capital equipment that will be added to the applicants' rate bases. CUB suggests that the incentive to spend customer money should be reduced for such installations. CUB states

that even though settlements help avoid protracted litigation and may very well be prudent outcomes, settlements such as the Consent Decree are reached using ratepayer money.

The Commission finds that the emissions controls proposed in this docket are necessary to meet the terms of the Consent Decree and probable future air pollution regulations. The Commission recognizes that such agreements are reached between multiple parties balancing a variety of considerations. The Commission shares CUB's concern that Consent Decrees can possibly include outcomes that are not in the ratepayers' financial interest. Regulated public utilities should not presume that the Commission will approve capital improvements to utility plant simply because they are included in a Consent Decree. The Commission retains the authority to issue or decline to issue Certificates of Authority and Certificates of Public Convenience and Necessity for large utility investments in generation. The Commission has and will continue to critically evaluate proposed investments regardless of whether utilities have committed to those projects in other proceedings. However, in this case, no party presented evidence that this project is unreasonable, unnecessary, or imprudent. CUB did not argue that this project should be rejected for any other reason.

The Commission is concerned, however, with the cost of the project. In order to ensure that the project's cost remains reasonable, applicants shall notify the Commission as soon as they discover or identify that the project cost may exceed the estimated cost by more than 5 percent. The Commission's typical practice is to require such notification only if costs are expected to exceed 10 percent of the estimated cost. However, lowering that threshold is appropriate here given the substantial proportion of the costs that are overhead and the total dollar amount of the project.

The Commission also finds that completion of this project will not substantially impair the efficiency of the service that the applicants provide, and that completion of this project will not provide facilities unreasonably in excess of the applicants' probable future requirements.

Alternatives

The applicants evaluated three alternative plans to the project as proposed. These alternatives were developed to study the value of the proposed project relative to other capacity and energy resources. In each alternative, Columbia Unit 2 is assumed to be retired at the end of 2018. Since Unit 2 serves an important role as a base load energy resource in Wisconsin, its retirement would create an immediate need for the energy and capacity. As such, each alternative assumes that replacement resources are obtained that could meet the capacity and energy gap created by retiring Unit 2. The three alternatives evaluated include:

- Install a natural gas-fired combined-cycle (NGCC) unit with two combustion turbines and one steam turbine. The capacity factor of the NGCC plant was adjusted to match the projected annual energy output of Unit 2 for the project as proposed.
- Operate a generic NGCC plant. The capacity factor of the NGCC plant was adjusted to reflect operation of the plant during on-peak hours only. Any additional energy was assumed to be provided by market purchases during off-peak hours at off-peak prices.
- Operate wind capacity located in Wisconsin, assuming a capacity factor of approximately 35 percent and a production tax credit for the first ten years of operation. Approximately 500 MW of additional peaking capacity resources would also be required in addition to the wind resources in order to provide the same amount of reserve planning capacity as the proposed project.

The proposed project and alternatives were evaluated using a production cost analysis that calculates the present value revenue requirement (PVRR) of total production costs for each alternative. This analysis was done using combinations of five futures and ten sensitivities. The applicants' analysis demonstrates that the proposed project is the most cost-effective alternative for meeting their future capacity and energy needs. The applicants state that the proposed project

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is lower in cost than the three alternatives by between \$562 million and \$579 million, on a PVRR basis.

In previous dockets, EGEAS¹ analyses were performed to evaluate proposed projects and their alternatives. For example, EGEAS analyses were performed by these same applicants in docket 5-CE-138, regarding the flue gas desulfurization (FGD) and baghouse installations at Columbia. In that docket, the applicants provided alternatives analyses where SCRs were installed on both units in addition to FGD. For this application, the applicants did not provide such an EGEAS analysis. While no party contested whether the applicants' assumptions used in the analysis were reasonable, the Commission encourages the applicants to provide more robust EGEAS-based alternatives analyses as part of future applications.

Conservation and Energy Efficiency

The applicants state that they will continue to fund Focus on Energy (Focus), Wisconsin's statewide energy efficiency and renewable resource program. The applicants also state that they will continue their own Demand Side Management programs at current levels. Savings from Focus and the applicants' programs, based on continued funding, are included in the energy and demand forecasts used in the alternatives analysis for the proposed project. In order to be a viable alternative, approximately 540 MW of capacity and 3,800 gigawatt-hours of energy annually would be needed from energy efficiency programs to replace that from Columbia Unit 2.

The Commission finds that conservation and energy efficiency are not a viable alternative to the proposed project.

¹ EGEAS is a complex "modular production-costing, generation-expansion software tool that is used to find least-cost generation system expansion plans by comparing all combinations of multiple generation options to meet forecasted system load."

Energy Priorities Statute

The applicants' alternatives analysis considered various generation alternatives, including wind and natural gas-fired alternatives. The analysis results show that neither renewable nor natural gas-fired generation alternatives are cost effective alternatives to the proposed project. As such, the Commission finds that the proposed project meets the requirements of Wis. Stat. §§ 1.12(4) and 196.025.

Control Technology Alternatives

The Consent Decree requires SCR emissions control technology to be installed and operated at Columbia Unit 2. An SCR is "a pollution control device for reducing NO_x emissions through the use of selective catalytic reduction technology."² As such, all emissions control technologies evaluated include an SCR catalyst. This limits control technology options to three variations of the basic SCR concept: a conventional SCR, an in-duct SCR, and a hybrid SCR.

The applicants' chose a conventional SCR to accomplish the goal of reduction of NO_x emissions at Columbia Unit 2 after considering the following:

- Ability to meet Consent Decree requirements;
- Commercial availability of the technologies;
- Reliable, long-term NO_x removal capabilities;
- Specific costs for each technology at Columbia Unit 2;
- Implementation timeframes;
- Lead times and availability of critical components;
- Plant-specific considerations, such as space and current plant equipment constraints.

The applicants state that they selected a conventional SCR because it allows for significantly higher NO_x removal rates, has the lowest combined capital and operation and maintenance life cycle cost, has the highest level of technology maturity, and has the greatest level of supplier availability with multiple qualified and experienced suppliers. In addition,

² Consent Decree at ¶ 60.

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conventional SCR technology has been used for NO_x emissions reduction for over 30 years with successful commercial operating experience at dozens of power plants similar in size and type to Columbia Unit 2, including eight installations already in the state of Wisconsin.

Environmental Review and Compliance with the Wisconsin Environmental Policy Act (WEPA)

The Commission performed its environmental review of this project as required by Wis. Admin. Code § PSC 4.10(3). The Commission determines that this is a Type III action under Wis. Admin. Code § PSC 4.10(3). No unusual circumstances suggesting the likelihood of significant environmental effects on the human environment have come to the Commission's attention. Neither an EIS under Wis. Stat. § 1.11 nor an EA is required. The Commission also determines that its environmental review of the project complies with WEPA, pursuant to Wis. Stat. § 1.11 and Wis. Admin. Code ch. PSC 4.

Brownfield Sites

Wisconsin Stat. § 196.49(4) requires the Commission to determine that brownfields, as defined in Wis. Stat. § 560.13(I)(a), are used to the extent practicable for the construction of electric generating equipment and associated facilities. No party questioned the application of this requirement because the only practicable location for the proposed pollution control equipment is on an existing coal-fired plant site. A separate brownfield site for the proposed project is not practicable. Therefore, the proposed project complies with Wis. Stat. § 196.49(4).

Certificate

The applicants are granted a Certificate authorizing construction of an SCR at Columbia Unit 2, as described in their application and as modified by this Final Decision, at an estimated total cost of \$150,000,000, excluding AFUDC, subject to conditions stated in this Final Decision.

Order

1. The applicants are granted authority to construct an SCR at Columbia Unit 2, subject to the conditions stated in this Final Decision.
2. The estimated cost of the approved project is \$150,000,000, excluding AFUDC.
3. Should the scope, design, or location of the project change significantly, or if it is discovered or identified that the project cost, including *force majeure* costs, may exceed the estimated cost by more than 5 percent, the applicants shall promptly notify the Commission as soon as they become aware of the possible change or cost increase.
4. Beginning with the quarter ending March 31, 2015, and within 30 days of the end of each quarter thereafter and continuing until the facilities are fully operational, the applicants shall submit quarterly progress reports to the Commission that include all of the following:
 - a. The date that construction commences;
 - b. Summaries of the status of construction, the anticipated in-service date, and the overall percent of physical completion;
 - c. Actual project costs segregated by line item as reflected in the cost breakdown listed in this Final Decision, or in a cost breakdown otherwise agreed upon by Commission staff;
 - d. The date that the facilities are placed in service.
5. The applicants shall submit to the Commission the final actual costs, segregated by major accounts, within one year after the in-service date. For those accounts or categories where actual costs deviate significantly from that authorized, the applicants shall itemize and explain the reasons for such deviations in the final cost report.

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6. If future changes in air emissions requirements occur that apply or are likely to apply to Columbia Unit 2, and which occur before the initial operation of the authorized facilities, the applicants shall promptly notify the Commission as soon as they become aware of the changes.

7. This authorization is valid only if construction commences no later than one year after the date this Final Decision is served.

8. This Final Decision is effective one day after the date of service.

9. Jurisdiction is retained.

Dated at Madison, Wisconsin, this 30th day of January, 2015.

By the Commission:

A handwritten signature in black ink that reads "Sandra J. Paske". The signature is written in a cursive, flowing style.

Sandra J. Paske
Secretary to the Commission

SJP:KJD;jlt:DL: 00951356

See attached Notice of Rights

PUBLIC SERVICE COMMISSION OF WISCONSIN
610 North Whitney Way
P.O. Box 7854
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**NOTICE OF RIGHTS FOR REHEARING OR JUDICIAL REVIEW, THE
TIMES ALLOWED FOR EACH, AND THE IDENTIFICATION OF THE
PARTY TO BE NAMED AS RESPONDENT**

The following notice is served on you as part of the Commission's written decision. This general notice is for the purpose of ensuring compliance with Wis. Stat. § 227.48(2), and does not constitute a conclusion or admission that any particular party or person is necessarily aggrieved or that any particular decision or order is final or judicially reviewable.

PETITION FOR REHEARING

If this decision is an order following a contested case proceeding as defined in Wis. Stat. § 227.01(3), a person aggrieved by the decision has a right to petition the Commission for rehearing within 20 days of the date of service of this decision, as provided in Wis. Stat. § 227.49. The date of service is shown on the first page. If there is no date on the first page, the date of service is shown immediately above the signature line. The petition for rehearing must be filed with the Public Service Commission of Wisconsin and served on the parties. An appeal of this decision may also be taken directly to circuit court through the filing of a petition for judicial review. It is not necessary to first petition for rehearing.

PETITION FOR JUDICIAL REVIEW

A person aggrieved by this decision has a right to petition for judicial review as provided in Wis. Stat. § 227.53. In a contested case, the petition must be filed in circuit court and served upon the Public Service Commission of Wisconsin within 30 days of the date of service of this decision if there has been no petition for rehearing. If a timely petition for rehearing has been filed, the petition for judicial review must be filed within 30 days of the date of service of the order finally disposing of the petition for rehearing, or within 30 days after the final disposition of the petition for rehearing by operation of law pursuant to Wis. Stat. § 227.49(5), whichever is sooner. If an *untimely* petition for rehearing is filed, the 30-day period to petition for judicial review commences the date the Commission serves its original decision.³ The Public Service Commission of Wisconsin must be named as respondent in the petition for judicial review.

If this decision is an order denying rehearing, a person aggrieved who wishes to appeal must seek judicial review rather than rehearing. A second petition for rehearing is not permitted.

Revised: March 27, 2013

³ See *State v. Currier*, 2006 WI App 12, 288 Wis. 2d 693, 709 N.W.2d 520.