

**SERVICE DATE**  
**Jun 14, 2016**

PSC REF#: 287184

Public Service Commission of Wisconsin  
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**PUBLIC SERVICE COMMISSION OF WISCONSIN**

Application of Wisconsin Power and Light Company, for a Certificate of Authority to Install a New Bottom Ash Handling System at the Existing Edgewater Generating Station Unit 5, Located in Sheboygan County, Wisconsin

6680-CE-178

**FINAL DECISION**

On March 11, 2016, pursuant to Wis. Stat. § 196.49 and Wis. Admin. Code ch. PSC 112, Wisconsin Power and Light Company (WP&L) filed an application with the Commission for authority to replace the bottom ash handling system at the Edgewater Generating Station Unit 5 (Edgewater Unit 5), located in Sheboygan County, Wisconsin. ([PSC REF#: 283050.](#)) WP&L proposes to replace the existing 30-year old bottom ash handling system to address both operational and maintenance issues associated with the existing wet bottom ash handling system and to comply with more stringent environmental regulations. The estimated cost of the project is \$24.4 million, excluding allowance for funds used during construction (AFUDC).

The application is GRANTED, subject to conditions.

**Introduction**

On April 13, 2016, the Commission issued a Notice of Investigation in this docket. ([PSC REF#: 284654.](#)) On April 26, 2016, the Citizens Utility Board (CUB) filed a motion to intervene. ([PSC REF#: 285241.](#)) On April 27, 2016, the Wisconsin Industrial Energy Group (WEIG) filed a motion to intervene. ([PSC REF#: 285359.](#)) On May 19, 2016, both requests to intervene were granted. ([PSC REF#: 286166.](#)) The Commission's Notice of Investigation opening this docket stated that the Commission intended to conduct this investigation without a hearing. No hearing

Docket 6680-CE-178

was requested, required, or held. Because of interest in the proposed project on the part of CUB and WEIG, the Commission on June 1, 2016, provided a draft Final Decision to the parties for comment. No substantive comments on the draft Final Decision were received. Pursuant to Wis. Stat. § 196.49(5r)(b), the Commission is required to 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.

### **Findings of Fact**

1. WP&L is a public utility, as defined in Wis. Stat. § 196.01(5)(a), engaged in rendering electric service in Wisconsin. WP&L's proposed project consists of replacing the existing bottom ash handling system at Edgewater Unit 5 located in Sheboygan County, Wisconsin, at an estimated cost of \$24.4 million.
2. No unusual circumstances suggesting the likelihood of significant environmental consequences are associated with the proposed project.
3. Alternatives to the proposed project have been considered, but no other reasonable alternatives to the project exist that could provide adequate service in a more reliable, timely, cost-effective, and environmentally responsible manner.
4. Energy conservation, renewable resources, or other energy priorities listed in Wis. Stat. §§ 1.12 and 196.025, or their combination, are not cost-effective, technically feasible, or environmentally sound alternatives to the proposed project.
5. The general public interest and public convenience and necessity require completion of the proposed project.

6. Completion of the proposed project at the estimated cost will not substantially impair the efficiency of the applicant's service, will not provide facilities unreasonably in excess of probable future requirements, and when placed in operation, will not add to the cost of service without proportionately increasing the value or available quantity thereof. Wis. Stat. § 196.49(3)(b).

7. The only practicable location for the proposed project is the existing Edgewater Unit 5. A separate brownfield site is not practicable.

8. Critical proposed facilities that could be damaged by flooding are not located in the 100-year flood plain. Consequently, there is no flood risk to the project per 1985 Wisconsin Executive Order 73.

### **Conclusions of Law**

1. WP&L is a public utility 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 WP&L, as an electric public utility, to construct and place in operation the facilities described in this Final Decision, subject to the conditions stated in this Final Decision.
3. The Commission has authority under Wis. Stat. § 15.02(4) to delegate to the Administrator of the Division of Energy Regulation those functions vested by law as enumerated above. It has delegated the authority to the Administrator of the Division of Energy Regulation to issue a Certificate of Authority for the proposed project.

4. The estimated gross cost of this project exceeds the minimum threshold of utility projects requiring Commission review and approval under Wis. Stat. § 196.49 and Wis. Admin. Code § PSC 112.05.

5. The Commission may impose any term, condition, or requirement necessary to protect the public interest pursuant to Wis. Stat. §§ 196.02, 196.395, and 196.49.

6. This is a Type III action under Wis. Admin. Code § PSC 4.10(3), and requires neither an environmental impact statement (EIS) under Wis. Stat. § 1.11 nor an environmental assessment (EA).

## **Opinion**

### **Project Description and Purpose**

WP&L is a public utility, as defined in Wis. Stat. § 196.01(5)(a), engaged in rendering electric service in Wisconsin. Edgewater Unit 5 is located along the shoreline of Lake Michigan in Sheboygan, Wisconsin. The plant was placed into service in 1985 and has a nameplate capacity of 380 megawatts (MW). The unit is the newest and most operationally flexible coal-fired unit in WP&L's generation fleet.

WP&L proposes to replace the existing bottom ash handling system at Edgewater Unit 5 to address both operational and maintenance issues associated with the existing wet bottom ash handling system and to comply with more stringent wastewater effluent limits for arsenic. WP&L's estimated cost of the proposed project is \$24.4 million. The cost estimate includes escalation, contingency, and loadings, but does not include AFUDC.

WP&L is required to obtain from the Commission a Certificate of Authority for the proposed project under Wis. Stat. § 196.49 and Wis. Admin Code ch. PSC 112, as the cost of the

Docket 6680-CE-178

project exceeds the construction cost filing threshold listed in Wis. Stat. § 196.49(5g) and Wis. Admin. Code § PSC 112.05(3).

### **Project Need**

WP&L states that two key factors are driving the decision to replace the original wet bottom ash handling system. First, the existing system is at the end of its normal service life and is in need of significant repairs or replacement. Second, WP&L needs to comply with more stringent environmental regulations and effluent limits in the wastewater permit for the facility, including an upcoming restriction on the discharge of bottom ash transport water and a more stringent numeric arsenic permit limit.

#### **Existing Bottom Ash Handling System**

The existing wet bottom ash handling system was installed when the plant was placed in service in 1985, and the normal service life of an ash handling system is approximately 30 years. If WP&L were to extend the service life of the existing system, and more specifically the hydrobin within the system, WP&L would be required to make repairs, and replace and re-configure various components of the system. Because the current system uses water to handle the ash, WP&L would have to remove the arsenic from the process wastewater in order to comply with upcoming environmental regulations. Compliance may require WP&L to build a wastewater treatment facility to remove arsenic before discharging the water, which would increase the overall cost of compliance.

#### **Environmental Regulations**

In 2013, Wisconsin Department of Natural Resources (DNR) re-issued the Wisconsin Pollutant Discharge Elimination System (WPDES) permit for the Edgewater facility. The

Docket 6680-CE-178

re-issued WPDES permit contains, for the first time, an arsenic discharge limit of 0.2 micrograms per liter ( $\mu\text{g/l}$ ). A major complicating factor regarding compliance with the arsenic limit is that both sources of water for the facility, Lake Michigan and the city of Sheboygan municipal water system, contain arsenic at concentrations above the 0.2  $\mu\text{g/l}$  discharge limit. Source water from Lake Michigan is used for most plant operations. WP&L periodically tested the arsenic levels of both sources between October 2012 and February 2016 and found the average arsenic levels from Lake Michigan and from the city of Sheboygan were 0.97  $\mu\text{g/l}$  and 0.38  $\mu\text{g/l}$ , respectively. Both sources exceed the 0.2  $\mu\text{g/l}$  discharge limit. Recent analysis indicates that the current level of arsenic discharged through WPDES Outfall 004, which includes discharge from the existing Edgewater Unit 5 wet bottom ash handling system, is between 2.0 and 4.0  $\mu\text{g/l}$ .

In August, 2013, WP&L submitted a request to DNR for a variance from the 0.2  $\mu\text{g/l}$  limit, but to-date DNR has not issued a decision on the variance request. Even if DNR grants a variance, it would apply only for the current permit term which ends on June 30, 2018. WP&L indicated that it would consider applying for a variance for the next permit term when it applies for the permit to be re-issued in October 2017. Regardless of any variance, DNR's effluent limit guidelines (ELG) would require WP&L to cease discharging bottom ash transport water no later than December 31, 2023. Therefore, it is necessary for WP&L to undertake actions to meet WPDES permit requirements.

WP&L's approach to compliance with the 0.2  $\mu\text{g/l}$  limit is to first eliminate discharge of any water that contacts ash, then reduce or eliminate other discharges of water. The second part of the approach is necessary because the incoming source waters from Lake Michigan and the city of Sheboygan contain arsenic concentrations in excess of the 0.2  $\mu\text{g/l}$  limit. If WP&L is unsuccessful

in complying with the discharge limit using this approach, additional water treatment facilities may be required in the future, but installation of the proposed dry ash handling system would reduce the amount of wastewater that would need treatment, and thereby reduce the size of any future water treatment facility.

Because WP&L plans to operate Edgewater Unit 5 through 2045, WP&L considers the possible impacts of future water regulations on overall operations of the facility. While a retrofitted hydrobin system and a wet bottom ash system still have ash contact water, a dry system does not. The proposed dry ash handling system would remove compliance uncertainty because it eliminates the process wastewater from the sluicing of bottom ash entirely and, therefore, significantly reduces compliance uncertainty if additional regulations regarding process wastewater are promulgated.

### **Alternatives**

WP&L considered three alternatives to the proposed project: retrofitting the existing hydrobin system; installing a new wet bottom ash handling system; and installing a dry bottom ash handling system. WP&L estimated the 30-year present value revenue requirement (PVRR) for the three alternatives to be \$29.8 million, \$33.0 million, and \$31.3 million, respectively. These estimates included present value operation and maintenance (O&M) expenses for the three alternatives of \$13.5 million, \$9.8 million, and \$4.7 million, respectively. Though the PVRR value of retrofitting the existing hydrobin alternative is less than the dry bottom ash alternative, it would require WP&L to build a wastewater treatment facility large enough to handle all the process wastewater. The life cycle cost of such wastewater treatment facility for the three alternatives is estimated to be \$30.9 million, \$32.7 million, and \$23.5 million, respectively. Thus, when

Docket 6680-CE-178

considering the total PVRR of the alternatives, including the wastewater treatment facility needed to achieve compliance and O&M expenses, the dry bottom ash handling system is the least-cost alternative.

All three technologies can comply with ELG requirements; however, retrofitting the existing wet ash handling system and the wet system alternative creates some compliance uncertainty due to additional process wastewater. If WP&L were to retrofit the existing hydrobin system or install the wet system alternative, either option could develop contact water leaks and associated compliance issues even though containment measures would be integrated into the design. Contact water leaks may end up in sumps that pump to the WPDES tank, and thereby discharge arsenic into Lake Michigan. A dry alternative removes compliance uncertainty because it eliminates the process wastewater from the sluicing of bottom ash entirely and, therefore, significantly reduces compliance uncertainty and uncertainties related to future regulations regarding process wastewater. Conversion to a dry system would eliminate process water from the bottom ash handling process, thereby ensuring compliance with the more stringent arsenic effluent limitations.

After thoroughly analyzing all the alternatives, WP&L concluded that the dry bottom ash handling system is the best system alternative for ensuring compliance with current and potential future requirements, and is comparable in costs to the other alternatives.

### **No-Build Alternative**

The Edgewater Unit 5 was placed into service in 1985. It is the newest and most flexible coal-fired unit in WP&L's generation fleet with a nameplate capacity of 380 MW. In 2015,

Docket 6680-CE-178

Edgewater Unit 5 produced over 2.6 million megawatt-hours, which represents 17.8 percent of WP&L's total generation. As such, Edgewater Unit 5 is a significant asset within WP&L's fleet.

In the past five years, WP&L has received Commission approval to make important improvements to Edgewater Unit 5. The value of the plant has also been reinforced by approved investments in environmental technologies—including a selective catalytic reduction equipment investment of \$134.6 million and a forecasted investment of \$264.9 million for the installation of a scrubber/baghouse. If WP&L does not pursue the proposed project and instead shuts down the Edgewater Unit 5, it would need to obtain additional energy from either purchases or by constructing a new generating facility which would expose WP&L and its customers to greater risk. Retirement of Edgewater Unit 5 would also result in stranded costs, including the costs associated with the authorized improvement projects and costs associated initial construction of the unit.

### **Energy Priorities Law**

When reviewing any Certificate of Authority application, the Commission considers Wis. Stat. §§ 1.12 and 196.025(1), known as the Energy Priorities Law, which establishes the preferred means of meeting Wisconsin's energy demands. The Energy Priorities Law creates the following priorities:

**1.12 State energy policy. (4) PRIORITIES.** In meeting energy demands, the policy of the state is that, to the extent cost-effective and technically feasible, options be considered based on the following priorities, in the order listed:

- (a) Energy conservation and efficiency.
- (b) Noncombustible renewable energy resources.
- (c) Combustible renewable energy resources.
- (d) Nonrenewable combustible energy resources, in the order listed:
  1. Natural gas.
  2. Oil or coal with a sulphur content of less than 1%.
  3. All other carbon-based fuels.

In addition, Wis. Stat. § 196.025(1) declares, “[t]o the extent cost-effective, technically feasible and environmentally sound, the commission shall implement the priorities under s. 1.12(4) in making all energy-related decisions . . . .”

As discussed previously, 2015 energy produced at Edgewater Unit 5 represented 17.8 percent of WP&L’s total generation. Energy conservation and efficiency is unlikely to replace this significant portion of WP&L’s energy needs. As such, neither energy conservation, renewable resources, nor other energy priorities listed above would be cost-effective alternatives to this project.

### **Brownfield Sites**

Wisconsin Stat. § 196.49(4) requires the Commission to determine that brownfields, as defined in Wis. Stat. §§ 238.13(1)(a) or 560.13(1)(a) are used to the extent practicable for the construction of electric generating equipment and associated facilities. The proposed project includes modifications to an existing electric generating unit at an existing electric generating site. As such, a separated brownfield site is not a practical alternative to the site of the proposed project. Therefore, the Commission finds that the proposed project complies with Wis. Stat. § 196.49(4).

### **Environmental Review**

Commission staff reviewed the potential environmental impacts associated with the proposed project. The review included independent verification of facts and findings contained within the application. Specifically, the project was reviewed for potential adverse impacts to archeological and historic resources, endangered and sensitive species, flood hazards, and wetlands and waterways.

### **Archeological and Historic Resource Review**

A search of the Wisconsin Historical Society's Wisconsin Historic Preservation database revealed that the Edgewater Power Plant Building is listed in the Wisconsin Architecture and History Inventory as an example of an Astylistic Utilitarian Building. However, the proposed modifications are not expected to adversely impact the historical character of the overall building. Although Holy Cross Cemetery and the Sewage Disposal Site (also associated with the plant) are within the vicinity of the project site, they are not within the proposed construction footprint for the project; thus, no impacts are anticipated. No other sites of historical or cultural significance were found within the immediate vicinity of the proposed project site.

### **Endangered and Sensitive Species**

Commission staff reviewed the project area for the presence of endangered and threatened species, and species of special concern. Historical species surveys conducted at the site were compared against the most current version of DNR's Natural Heritage Inventory database. Results indicate that several state listed or otherwise rare species have historically occurred within the vicinity of the power plant building, primarily within with the sand dunes habitat along Lake Michigan. However, because construction would be contained entirely within the existing plant, no impacts to species are anticipated under Wis. Stat. § 29.604(6r).

If the proposed project is modified to include construction outside of the existing building, WP&L must consult with the Commission and DNR to determine the appropriate steps for avoiding impacts.

### **Flood Hazard Review**

The proposed project was reviewed for potential flood hazard exposure per 1985 Wisconsin Executive Order 73. As no flood-sensitive facilities are to be located in or near any designated floodplain or flood prone areas, there is no significant flood risk to the proposed project.

### **Wetlands and Waterways**

Commission staff reviewed the proposed project area for the presence of wetlands or waterways. Although wetlands and waterways were found in the vicinity of the project area, no impacts are anticipated because construction would be confined within the existing power plant building.

If the design of the proposed project is modified in a way that would include construction outside of the existing plant building, WP&L must first consult with DNR to obtain the required permits before the start of any external construction.

### **Federal, State, and Local Permits**

WP&L states that it will obtain all necessary federal, state, and local permits prior to commencing construction of the proposed project.

### **Compliance with the Wisconsin Environmental Policy Act**

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. This action requires neither an EIS under Wis. Stat. § 1.11 nor an EA.

### Project Cost and Construction Schedule

Construction of the proposed project is estimated to cost \$24.4 million as shown below.

The estimated cost includes escalation, contingency, and labor loadings, and does not include AFUDC.

	<b>Estimated Project Cost</b>	
<b>Cost item</b>		
Engineering	\$2,400,000	
Procurement, Materials	1,500,000	
Procurement, Equipment	4,400,000	
Major Equipment	11,000,000	
<b>Subtotal</b>		<b>\$19,300,000</b>
<b>Cost item</b>		
Owner's Cost	\$5,100,000	
<b>Subtotal</b>		<b>\$5,100,000</b>
<b>Total Gross Project Cost</b>		<b>\$24,400,000</b>

Construction is expected to begin by the third quarter of 2017, with completion by the second quarter of 2018.

### Certificate

WP&L is granted a Certificate of Authority authorizing WP&L to replace the existing bottom ash handling system at Edgewater Unit 5, as described in its application and as modified by this Final Decision, at an estimated total cost of \$24.4 million.

### Order

1. WP&L is granted authority to replace existing bottom ash handling system at Edgewater Unit 5 as described in the application and as modified by this Final Decision.
2. The estimated cost of the approved project is \$24.4 million.
3. Should the scope or design 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 10 percent, WP&L shall promptly notify the Commission as soon as it becomes aware of the possible change or cost increase.

4. WP&L shall obtain all necessary federal, state, and local permits prior to commencement of construction.

5. The Commission conducted the environmental review for the proposed project with the understanding that all construction would take place within the existing power plant building. If the proposed project is modified in a way that would introduce external construction or ground disturbing activities, WP&L shall notify the Commission, and seek the appropriate environmental review, including obtaining any required permits before initiating construction activities.

6. WP&L 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 those authorized, WP&L shall itemize and explain the reasons for such deviations in the final cost report.

7. Beginning with the quarter ending September 30, 2016, and within 30 days of the end of each quarter thereafter and continuing until the authorized facilities are fully operational, WP&L shall submit quarterly progress reports to the Commission that include all of the following:

- a. The date that construction commences.
- b. Major construction and environmental milestones, including permits obtained, by agency, subject, and date.
- c. Summaries of the status of construction, the anticipated in service date, and the overall percent of physical completion.

- d. Actual project costs to-date segregated by line item as reflected in the cost breakdown listed in this Final Decision.
  - e. Once each year, a revised total cost estimate for the project.
  - f. The date that the facilities are placed in service.
8. If WP&L does not begin on-site physical construction of the authorized project within one year of the effective date of this Final Decision, the Certificate authorizing the approved project for which construction has not commenced shall become void unless WP&L:
- a. Files a written request for an extension of time with the Commission before the effective date on which the Certificate becomes void; and
  - b. Is granted an extension by the Commission.
9. If WP&L has not begun on-site physical construction of the authorized project and has not filed a written request for an extension before the date that this Certificate becomes void, it shall inform the Commission of those facts within 20 days after the date on which the Certificate becomes void.
10. This Final Decision takes effect one day after the date of service.
11. Jurisdiction is retained.

Dated at Madison, Wisconsin, June 13, 2016.

For the Commission:



for JJR

Jeffrey J. Ripp  
Administrator  
Division of Energy Regulation

JJR:AR:jlt:DL: 01404760

PUBLIC SERVICE COMMISSION OF WISCONSIN  
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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.<sup>1</sup> 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

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<sup>1</sup> See *Currier v. Wisconsin Dep't of Revenue*, 2006 WI App 12, 288 Wis. 2d 693, 709 N.W.2d 520.