

**SERVICE DATE**  
**May 13, 2013**

PSC REF#: 184717

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

Application of Wisconsin Electric Power Company, as an Electric Public Utility, for Authority to Construct a New Hydroelectric Generating Facility at the Site of its Existing Twin Falls Hydroelectric Project in the Town of Florence, Florence County, Wisconsin and the Town of Breitung, Dickinson County, Michigan

6630-CE-308

**FINAL DECISION**

**Introduction**

On November 7, 2012, the Commission received an application from Wisconsin Electric Power Company (WEPCO), as an electric public utility, pursuant to Wis. Stat. § 196.49 and Wis. Admin. Code ch. PSC 112. ([PSC REF#: 176077](#)) The application seeks authority to construct a new hydroelectric generating facility at the site of its existing Twin Falls Hydroelectric Facility (Twin Falls), located on the Menominee River, four miles northwest of Iron Mountain, Michigan at a total estimated cost of \$72.3 million. A Notice of Investigation was issued February 14, 2013. ([PSC REF#: 180951](#)) No person filed to intervene and no hearing was held.

The application is GRANTED subject to conditions.

**Background**

The Twin Falls Hydroelectric Facility, including the dam and powerhouse, was constructed and placed in service in December 1912 by Peninsular Power Company, initially with three generating units. Two more units were added during the winter of 1915-1916. An auxiliary spillway was added to the right embankment in 1960, and a portion of the dam including the spillway section was reconstructed in 1975. The Peninsular Power Company merged with the Wisconsin Traction, Light, Heat and Power Company in Appleton to form Wisconsin Michigan

Power Company in 1927. The Wisconsin Michigan Power Company was acquired by WEPCO in 1941 and merged into WEPCO in 1978.

The Twin Falls dam and the main spillway straddle the river, which also forms the state line separating Wisconsin and Michigan. The existing powerhouse is located on the Michigan side of the river in the town of Breitung, Dickinson County, Michigan. The right gravity wall and auxiliary spillway are located in the town of Florence, Florence County, Wisconsin. The maximum total output from the existing five turbines and generators is about 6.1 megawatts (MW). The dam creates the 960 acre impoundment known locally as Badwater Lake, at a normal maximum pool level elevation of 1,112.7 feet above mean sea level. The river mean flow at the dam is approximately 1,705 cubic feet per second (cfs).

#### **Findings of Fact**

1. WEPCO is an electric public utility, as defined in Wis. Stat. § 196.01(5)(a), providing electric service to approximately 1.1 million customers in eastern Wisconsin. WEPCO's project consists of constructing a new hydroelectric generating facility at the existing Twin Falls site, at a total estimated cost of \$72.3 million.
2. Completion of this project will not substantially impair the efficiency of the service that WEPCO provides.
3. Completion of this project will not provide facilities unreasonably in excess of WEPCO's probable future requirements.
4. Energy conservation, other forms of renewable resources, and other energy priorities listed in Wis. Stat. §§ 1.12 and 196.025 would not be cost-effective alternatives to this project.

5. When this project is placed in operation, the addition to WEPCO's cost of service associated with the project will be proportionate to the increase in value or available quantity of WEPCO's service.

6. No significant environmental consequences are associated with the project.

7. The general public interest and public convenience and necessity require completion of the project.

### **Conclusions of Law**

1. WEPCO is a public utility as defined in Wis. Stat. § 196.01(5)(a).

2. The Commission has authority 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 WEPCO to construct a new hydroelectric generating facility at the site of its existing Twin Falls Hydroelectric Facility on the Menominee River, at a total estimated cost of \$72.3 million.

3. The Commission has delegated the authority to issue a Certificate and Order in this docket to the administrator of the Gas and Energy Division pursuant to Wis. Stat. § 15.02(4).

4. The Commission may impose any term, condition, or requirement necessary to protect the public interest.

### **Discussion**

WEPCO owns and operates eight hydroelectric power plants<sup>1</sup> located in the Upper Menominee River basin in Wisconsin and Michigan. The hydroelectric power plants have a combined output capacity of 61.1 MW. The basin is forested and sparsely populated.

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<sup>1</sup> The eight power plants are Way Dam and Michigamme Reservoir, Hemlock Falls, Lower Paint Dam and Diversion Canal, Peavy Falls and Peavy Pond, Michigamme Falls, Twin Falls, Kingsford, and Big Quinnesec Falls.

A landmark settlement agreement, called the Wilderness Shores Settlement Agreement (WSSA), was reached between WEPCO, the Michigan Department of Natural Resources (MDNR), Wisconsin Department of Natural Resources (WDNR), National Park Service, U.S. Fish and Wildlife Service, River Alliance of Wisconsin, Michigan Hydro Relicensing Coalition, Michigan Department of Environmental Quality, Michigan Department of Attorney General, and Wisconsin Department of Administration in 1997. The agreement separates lands owned by WEPCO into “project lands” and “non-project lands.” The stipulations contained in the WSSA for project lands have been included in the Federal Energy Regulatory Commission (FERC) license conditions and are enforceable by FERC. The stipulations for non-project lands are enforceable by a court of appropriate jurisdiction as agreed to in the WSSA.

FERC issued new licenses on January 12, 2001, covering WEPCO’s hydroelectric plants that incorporate relevant sections of the WSSA. Twin Falls was relicensed as part of the WSSA and its license will expire on July 31, 2040. A FERC safety inspection identified needed repairs for the existing forebay, intake structure, and penstocks. The FERC license requires WEPCO to address the deteriorating structural conditions associated with the existing 100-year-old powerhouse at Twin Falls.

The existing powerhouse was constructed in two phases. The original powerhouse and generating units 1-3 were constructed in 1912. In 1915, a powerhouse addition was completed when generating units 4 and 5 were constructed. The original equipment consisted of five double Francis horizontal turbines that contain ten runners and five generators. This equipment continues to generate electric energy at the site. The existing powerhouse has an installed capacity of

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6.1 MW, with an average annual generation of 33,800 megawatt hours (MWh). These units have been providing reliable, low-cost electric power to WEPCO's electric system for about 100 years.

### **Need for the Project**

The Twin Falls dam and spillway are in fair to good condition. Several major repairs and reconstruction projects over the years have been completed for continued safe operation. However, the existing powerhouse as well as the forebay, rock wall, penstocks, and intake structure are in poor condition. Most of the powerhouse equipment, including the turbines, governing systems, excitation systems, switchgears, and circuit breakers were installed between 1912 and 1915, and are in relatively poor physical condition due to age and deterioration. The safety inspection report of 2010 identified conditions at the existing forebay, intake structure, and penstocks that require repairs. On June 3, 2011, FERC requested that WEPCO provide a definitive plan and schedule to address these issues.

After evaluating several alternatives, WEPCO determined that the most cost-effective approach to address these issues is to construct a new powerhouse and remove, rather than repair, the existing powerhouse. The need for additional spillway capacity was also a factor in WEPCO's decision to relocate the powerhouse to the Wisconsin side of the Menominee River, as this improvement would be more efficiently undertaken in conjunction with the construction of the new powerhouse.

The proposed project is driven entirely by the FERC requirement to address deteriorating structural conditions associated with the existing powerhouse. Added benefits of the project would include increased capacity and energy output through the use of new, more efficient powerhouse generating technology.

This project would continue to provide hydroelectric generation to meet part of WEPCO's future power, resource diversity, and capacity needs. The proposed project is expected to generate approximately 43,600 MWh per year.

Energy conservation, other forms of renewable resources, and other energy priorities listed in Wis. Stat. §§ 1.12 and 196.025 would not be cost-effective alternatives to this project.

### **Description of the Proposed Facility**

WEPCO proposes to: (1) construct a new power house on the Wisconsin side of the Menominee River in Florence County, increasing the installed capacity from 6.1 MW to approximately 9.0 MW; (2) add spillway capacity of about 17,800 cfs; and (3) remove the existing powerhouse in Michigan.

Specifically, WEPCO proposes to decommission, demolish, and remove the existing Twin Falls powerhouse on the Michigan side of the river, and replace it with a new powerhouse consisting of two 4.5 MW identical Kaplan vertical-type turbines, for a total installed capacity of 9.0 MW on the opposite side of the river from the existing Twin Falls powerhouse site.

### **Possible Alternatives**

WEPCO hired a consulting engineering firm to study and perform an assessment of alternatives for the Twin Falls hydro project. The applicant considered a total of five alternatives to its proposed project, including the following:

- Alternative 1: Do nothing
- Alternative 2: Remove the powerhouse and obtain a non-power license
- Alternative 3: Remove the powerhouse, dam and all associated civil works
- Alternative 4: Construct a new power house in its current location
- Alternative 5: Sell the facilities to another owner

Alternatives 4 and 5 were rejected in the early stages of the study because the WSSA agreement prohibits the sale of an individual project, and the construction of a new powerhouse in its current location would cause the loss of generation income for two or more years during the demolition and reconstruction of the existing powerhouse. This alternative also requires a higher revenue requirement than the proposed plan.

In addition to the recommended construction of a new powerhouse on the Wisconsin side of the river, WEPCO evaluated Alternatives 1, 2, and 3 in more detail and reached the following conclusions:

Alternative 1: This do-nothing alternative would still require WEPCO to bring the existing facilities into compliance with the FERC order and would involve repair/rehab of the existing powerhouse and associated civil works to provide more reliable and safe service until 2040. The revenue requirement for this alternative is estimated to be \$77 million.

Alternative 2: Remove the powerhouse and obtain a non-power license. Under this alternative, WEPCO would apply to FERC for a non-power license and, if approved, install a closure dam, a water control valve, and new spillway capacity, as well as remove the existing powerhouse. Removing the powerhouse and maintaining and operating the dam with a new spillway and control valve have an estimated revenue requirement of approximately \$67 million.

Alternative 3: Remove the powerhouse, dam, and all associated civil works. This decommissioning alternative would require WEPCO to surrender its license and ultimately remove the powerhouse, dam, and all associated civil works and dikes. Full decommissioning is estimated to cost \$181 million and have an estimated revenue requirement of approximately \$105 million.

Based on its analysis, WEPCO decided to proceed with the plan to retire the existing powerhouse and construct a new powerhouse. The other alternatives were rejected as being more expensive and not in the best interest of ratepayers.

The proposed reconstruction project is necessary to continue to provide adequate and reliable electrical energy to the existing and future customers in WEPCO’s service area.

**Estimated Cost**

The estimated cost of the proposed project is \$72,300,000, distributed as follows:

<b>Project Construction Cost</b>	
Access Road	\$ 741,600
Excavation and Rock Bolting	2,808,500
Site Restoration	64,900
Cofferdams	4,346,200
Wisconsin Spillway and Gravity Dam	2,399,900
Wisconsin Powerhouse (Structural, Elect. and Mech.)	11,502,200
Michigan Powerhouse Demo (Removal Cost)	1,867,800
Michigan dam Decommissioning/Closure	601,600
Indirect Costs, Construction Mgmt. and Fees	8,939,800
<b>Subtotal</b>	<b>\$33,272,500</b>
AE Design and Procurement	9,609,600
WEPCO Labor and expenses	6,376,900
PSCW Estimated Review Costs (O&M)	48,800
Miscellaneous Contracts, Equip., Start-up and Comm.	3,096,400
Licensing, Permitting, Legal and Environmental	1,338,800
T/G Supply Contract	10,257,000
<b>Subtotal</b>	<b>\$64,000,000</b>
AFUDC (100%)	<b>8,300,000</b>
<b>Total Estimated Cost</b>	<b>\$72,300,000</b>

WEPCO proposes to finance this project by cash generated from current operation and issuance and sale of securities.

WEPCO would begin construction of the proposed project immediately after Commission approval of the project, with completion expected by the end of September 2016.



### **Rate Impact**

The estimated \$72.3 million gross cost of the proposed project is about 1.8 percent of WEPCO's existing net investment rate base. The estimated revenue requirement attributable to the proposed project is less than one percent of WEPCO's existing annual revenue requirement. Thus, the proposed project is not expected to have a significant effect on WEPCO's rates.

Completion of this project at the estimated cost will not provide facilities unreasonably in excess of probable future requirements; will not impair the efficiency of WEPCO's service; and, when placed in operation, will not add to the costs of service without proportionately increasing the value or available quantity of WEPCO's service. Accordingly, the general public interest and public convenience and necessity require completion of this project.

### **Environmental Review**

The proposed hydropower project was reviewed by the Commission for environmental impacts. An environmental assessment (EA) was prepared to determine if an environmental impact statement (EIS) would be necessary under Wis. Stat. § 1.11. Most of the temporary and permanent environmental and social effects of the proposed project would be relatively minor. The Commission finds that no significant impact to the human environment is likely. Therefore, an EIS is not required.

No changes to the impoundment area, elevations, or reservoir fluctuation would occur as a result of the proposed project. No changes to minimum flows are proposed. All flows and other requirements of the FERC license would be maintained. The new powerhouse would provide fish protection enhancements, such as reduced trash rack spacing, reduced water inflow velocities, and fish-friendly turbines; however, some fish entrainment and mortality may still occur. A new

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minimum flow through the auxiliary spillway would improve aquatic habitat below that spillway. Temporary and permanent fill would be placed in the waterway for construction of the powerhouse, spillway, coffer dams, and closure dam. The tailwater fluctuation would increase slightly with the increase in hydraulic capacity and the annual average tailwater height has been calculated to increase 0.36 inch. This fluctuation would have little to no fisheries impact downstream of the dam. WDNR is uncertain at this time of the impact on mussels due to relocating the dam's tailrace and the change in water discharge velocity. Minor amounts of sediment may enter the Twin Falls impoundment during construction, even with implementation of erosion control measures, resulting in the potential for short-term impacts on fish.

WEPCO would develop and implement a dewatering plan to avoid the stranding of fish, herptiles, and mussels during construction dewatering associated with the installation of upstream and downstream coffer dams. Dewatering the forebay would not result in a significant loss of flowage habitat and would be offset by the installation of armoring rip rap and removing the tailwater of the existing powerhouse, providing new environments for fish.

Approximately 6.2 acres of forest would be permanently lost if the project is constructed. Some trees would be cleared to widen the existing road for access to the new powerhouse site and for constructing laydown areas. The balance would be for construction of the powerhouse itself.

Some proposed recreational facilities would be located where the existing powerhouse is now, and would not require any vegetation removal. Clearing for a proposed Michigan walking trail along the east side of the impoundment would be minimal and would require little, if any, clearing of forest. Some limited vegetation clearing would be required to construct a portion of a

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proposed Wisconsin walking trail located along an existing distribution line right of way. No additional clearing would be required for the portion of the trail located along the access road.

Two Wisconsin state-listed herptile species (a threatened and a special concern species) may be present in the project area or may have habitat on the project site. WEPCO would consult with WDNR and MDNR to determine measures to minimize impacts during construction, including the use of exclusionary fencing to keep the species from entering the construction area, as well as protecting existing nesting areas. These measures would be part of a protection plan implemented during construction. The short-term impact that could result from construction is the temporary exclusion of these species from suitable habitat within the proposed construction areas. Long-term effects include a potential for improving herptile nesting habitat and nest protection through management and collaboration with WDNR.

The proposed powerhouse site is approximately 800 to 900 feet from a bald eagle (a Wisconsin special concern species) nest; the existing powerhouse is approximately 1,000 feet from the nest. A bald eagle disturbance permit would be obtained to authorize construction and demolition activities which may occur during the bald eagle nesting period, March 1 to July 15. To offer further protection of nests, a Bald Eagle Protection Plan would be developed and implemented.

The existing canoe put-in, take-out, and portage trail would be relocated from the Wisconsin to the Michigan side of the river. Existing tailwater fishing, including an accessible fishing platform, parking and accessible trail from parking, and accessible privies may be modified. A new pedestrian trail would be developed on the Michigan side of the impoundment, and a new rustic walking trail would be developed on the Wisconsin side. New signage would also

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be installed on both sides of the impoundments describing the recreational features and historic nature of the site. To assure worker safety, hunting would not be permitted on the project lands during construction. Use of the recreation areas on the Michigan shoreline within 100 feet of the powerhouse would be prohibited during powerhouse demolition in 2016 and 2017.

The proposed powerhouse would be designed to fit into the landscape and would cause only a slight visual impact when seen from the impoundment, as it would be lower in elevation than the existing powerhouse and would blend in with the topography. The existing Michigan powerhouse would be demolished and the site would be restored by removing all existing structures. Additional spillway capacity would be installed adjacent to the proposed powerhouse and would cause little visual impact.

Removal of rock and forested areas to allow the construction of the new powerhouse and laydown areas would effectively reduce the height of the rock outcropping. The existing canoe portage trail in Wisconsin follows a wooded trail between the impoundment and the river below the dam. The relocated canoe portage in Michigan would be less aesthetic than the existing portage trail, because it would pass by the existing dam substation and through open, more developed areas near the existing powerhouse.

A new 69 kilovolt tie line from the Wisconsin powerhouse to the existing electric transmission substation on the Michigan side of the river would be installed, and an existing electric distribution line located across the spillway and south of the impoundment would be rerouted to run along U.S. Highway (USH) 2/141. The relocated line would no longer be visible from the impoundment, and the current right-of-way could reforest over time. The new line

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would be visible to the motorists on USH 2/141, but little tree clearing would be required along the highway.

Removal of the current powerhouse, an eligible historic structure, would be mitigated through appropriate documentation (photographs and plan drawings) of the existing powerhouse, including its original machinery and the building interior and exterior.

Most of the adverse direct and indirect environmental effects of the proposed project would be temporary and relatively minor if the proposed mitigation strategies are implemented. Properties near and recreational users of the worksite would experience temporary impacts from construction and some minor longer-term aesthetic changes. A beneficial effect of the project is that the proposed new plant would generate approximately 9.8 million more kilowatt hours of renewable electricity each year than the existing dam.

### **Certificate**

WEPCO is authorized to construct a new hydroelectric generating facility at the site of its existing Twin Falls Hydroelectric Facility on the Menominee River in the town of Florence, Florence County, Wisconsin and the town of Breitung, Dickinson County, Michigan at a total estimated cost of \$72.3 million, as described in its application, subject to the conditions in this Final Decision.

### **Order**

1. WEPCO's application for authority to construct a new hydroelectric generating facility at the site of its existing Twin Falls Hydroelectric Facility on the Menominee River in the town of Florence, Florence County, Wisconsin and the town of Breitung, Dickinson County, Michigan, at an estimated total cost of \$72.3 million, is granted.

2. This authorization is for the specific purpose described in the application at the stated cost of \$72.3 million. 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 10 percent, WEPCO shall promptly notify the Commission as soon as it becomes aware of the possible change or cost increase.

3. WEPCO shall secure all required permits prior to beginning construction.

4. WEPCO shall consult with WDNR to determine appropriate measures to protect rare species.

5. WEPCO shall submit to the Commission quarterly progress reports and the date that the facilities are placed in service.

6. Final actual costs of the project segregated by major plant accounts shall be submitted to the Commission within one year after the in-service date. For those accounts or categories where actual costs deviate significantly from those authorized, the final cost report shall itemize and explain the reasons for such deviations.

7. If WEPCO does not begin on-site physical construction within one year of the effective date of this Certificate and Order, the Certificate authorizing the approved project shall become void unless WEPCO: (a) files a written request for an extension of time with the Commission before the date on which the Certificate becomes void, and (b) is granted an extension by the Commission.

8. If WEPCO has not begun on-site physical construction and has not filed a written request for an extension before the date the Certificate becomes void, WEPCO shall inform the

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Commission of those facts in writing within 20 working days after the date on which the Certificate becomes void.

9. This Final Decision shall be effective one day after the date of mailing.

10. Jurisdiction is retained.

Dated at Madison, Wisconsin, May 13, 2013

For the Commission:

A handwritten signature in cursive script that reads "Robert Norcross".

Robert Norcross  
Administrator  
Gas and Energy Division

RDN:MMM:cmk:DL:00647315

See attached Notice of Rights

PUBLIC SERVICE COMMISSION OF WISCONSIN  
610 North Whitney Way  
P.O. Box 7854  
Madison, Wisconsin 53707-7854

**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>2</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  
DL:00698858

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