Public Service Commission of Wisconsin

Rebecca Cameron Valcq, Chairperson
Ellen Nowak, Commissioner
Tyler Huebner, Commissioner

4822 Madison Yards Way
P.O. Box 7854
Madison, WI 53707-7854

February 23, 2023

Re: Joint Application of Wisconsin Electric Power Company, Wisconsin Public Service Corporation, and Madison Gas and Electric Company for Approval to Acquire Ownership Interests in the Koshkonong Solar Electric Generation Facility in the Town of Christiana and the Town of Deerfield, Dane County, Wisconsin

5-BS-258

Comments Due:	Address Comments To:
Tuesday, March 7, 2023 – 1:30 P.M.	**Cru Stubley** Public Service Commission P.O. Box 7854 Madison, WI 53707-7854
This docket uses the Electronic Records Filing system (ERF).	

To the Parties:

The Commission memorandum concerning the joint application of Wisconsin Electric Power Company, Wisconsin Public Service Corporation, and Madison Gas and Electric Company for approval to acquire ownership of the Koshkonong Solar Electric Generation Facility and Battery Energy Storage System is being provided to the parties for comment. Comments must be received by 1:30 P.M. on Tuesday, March 7, 2023. Party comments must be filed using the Commission's ERF system. The ERF system can be accessed through the Public Service Commission's web site at http://psc.wi.gov. Members of the public may file comments using the ERF system or may file an original in person or by mail at the Public Service Commission, 4822 Madison Yards Way, P.O. Box 7854, Madison, WI 53707-7854.

Please direct questions about this docket or requests for additional accommodations for persons with a disability to the Commission's docket coordinator, Jeff Kitsembel at (608) 266-9658 or Jeff.Kitsembel@wisconsin.gov.

Sincerely,

Cru Stubley
Secretary to the Commission

CS:JAK:dsa:DL: 01926346

Attachments

PUBLIC SERVICE COMMISSION OF WISCONSIN

Memorandum

February 23, 2023

FOR COMMISSION AGENDA

TO: The Commission[1]

FROM: Kristy Nieto, Administrator
Tara N. Bachman, Deputy Administrator
Akanksha Craft, Engineering Supervisor
Dan Grant, Public Service Engineer

RE: Joint Application of Wisconsin Electric Power Company, Wisconsin Public Service Corporation, and Madison Gas and Electric Company for Approval to Acquire Ownership Interests in the Koshkonong Solar Electric Generation Facility in the Town of Christiana and the Town of Deerfield, Dane County, Wisconsin — 5-BS-258

Suggested Minute: The Commission (approves/approves with conditions/does not approve) the proposed acquisition of the Koshkonong Solar Electric Generation Facility by Wisconsin Electric Power Company, Wisconsin Public Service Corporation, and Madison Gas and Electric Company from Koshkonong Solar Energy Center LLC.

Introduction

On April 30, 2021, Wisconsin Electric Power Company (WEPCO), Wisconsin Public Service Corporation (WPSC) (together, WEC), and Madison Gas and Electric Company (MGE) (all together, applicants) filed a joint application under Wis. Stat. § 196.49 for approval to acquire and construct the Koshkonong Solar Electric Generation facility, a utility-scale solar powered electric generating facility consisting of 300 megawatts (MW) of solar generating nameplate capacity and 165 MW of battery energy storage system (BESS) nameplate capacity (the solar facilities and BESS will be referred to collectively as the Koshkonong Project). The

[1] Commissioner Tyler Huebner has recused himself from participation. (PSC REF#: 441608.)

applicants would hold joint ownership of the plant, with ownership shares of the facility's solar and BESS capacity being distributed among the applicants as listed in Table 1 below.

Table 1: Proposed Ownership Interests per Applicant

	Solar Capacity (MW)	BESS Capacity (MW)	Percent Ownership
WEPCO	225.00	123.75	75 percent
WPSC	45.00	24.75	15 percent
MGE	30.00	16.50	10 percent

The transaction would be at a total cost of approximately $649 million, excluding allowance for funds used during construction (AFUDC), which is comprised of approximately $412 million for the solar facilities and $237 million for the BESS. The applicants estimate the total AFUDC for the Koshkonong Project will be $27.5 million for WEPCO, $4.8 million for WPSC, and $2.9 million for MGE, for a total AFUDC of $35.2 million. (PSC REF#: 410708 confidential, PSC REF#: 410709 public.)[2] The cost of acquisition for the solar and BESS facilities for each applicant, calculated on a pro rata basis based on percent ownership as stated in the application, are listed in Table 2.

Table 2: Acquisition Costs of Solar and BESS Facilities per Applicant (excluding AFUDC)

	Solar Cost ($)	BESS Cost ($)	Total Cost (Excluding AFUDC)	Total Cost (Including AFUDC)
WEPCO	$309,000,000	$177,750,000	$486,750,000	$514,250,000
WPSC	$61,800,0000	$35,550,000	$97,350,000	$102,150,000
MGE	$41,200,000	$23,700,000	$64,900,000	$67,800,000
Total	$412,000,000	$237,000,000	$649,000,000	$684,200,000

The Koshkonong Project is located in the Towns of Christiana and Deerfield in Dane County. Koshkonong Solar Energy Center, LLC, as a wholly owned subsidiary of Invenergy Solar Development North America LLC and an affiliate of Invenergy LLC (Invenergy), is an independent power producer (IPP) and the majority owner and operator of the facility, which

[2] See Ex.-PSC-Key Background Documents for a list of all linked documents

was granted a Certificate of Public Convenience and Necessity (CPCN) to begin construction in docket 9811-CE-100.[3]

Background

WEPCO, WPSC, and MGE are public utilities as defined in Wis. Stat. § 196.01(5)(a) and provide electric service to customers in Wisconsin.

The Koshkonong Project has a total nameplate capacity of 300 MW for its solar facilities and 165 MW for its BESS, of which WEPCO would acquire a 75 percent ownership share, WPSC would acquire a 15 percent share, and MGE would acquire a 10 percent share. Under the proposed transaction, the applicants would acquire the project development rights for 300 MW of solar generating capacity and 165 MW of BESS capacity. The acquired assets would include:

- transmission interconnection rights;
- the real property rights necessary to site the Koshkonong Project;
- all permits including the CPCN—as issued to Invenergy—and other federal, state, and local permits;
- contracts relating to the ownership, leasing, licensing, construction, and Operations and Maintenance (O&M) of the Koshkonong Project;
- books and records; and
- any causes of action relating to the Koshkonong Project.

Each applicant's acquired interest in the Koshkonong Project's common facilities and other assets would be proportional to its share of the project's total generating capacity.

[3] Final Decision, docket 9811-CE-100, *Application for a Certificate of Public Convenience and Necessity of Koshkonong Solar Energy Center LLC to Construct a Solar Electric Generation Facility in the Towns of Christiana and Deerfield, Dane County, Wisconsin*, (PSC REF#: 437761 original, PSC REF#: 439245 corrected) (Wis. PSC May 5, 2022).

The applicants stated that they "anticipate that the Final Order in docket 9811-CE-100 will contain conditions, requirements, and reporting obligations that are materially similar to conditions ordered in other recent utility-scale CPCN dockets. Subject to confirming that the conditions are similar, Joint Applicants anticipate accepting them. Among the closing conditions to be included in the agreements under which the Joint Applicants will acquire the Koshkonong project are provisions allowing the Joint Applicants to decline to close if the terms contained in the CPCN are unacceptable." The applicants also agreed to adopt, in this docket, the reporting and disclosure requirements set forth in Order Conditions 1 through 6 and Condition 8 of the Commission's Final Decision in docket 5-BS-228. (PSC REF#: 410709 at 8 and 12)[4]

Standard for Approval

The applicants seek approval under Wis. Stat. § 196.49 for a Certificate of Authority (CA).[5] Wisconsin Stat. § 196.49(2) states:

> [n]o public utility may begin the construction, installation or operation of any new plant, equipment, property or facility, nor the construction or installation of any extension, improvement or addition to its existing plant, equipment, property, apparatus or facilities unless the public utility has complied with any applicable rule or order of the commission[…]

The Commission may require by rule or special order that no addition to a plant "may proceed until the Commission has certified that public convenience and necessity require the project." Wisconsin Stat. § 196.49(3)(b). The Commission may refuse to certify the acquisition if it appears that it will do any of the following:

1. Substantially impair the efficiency of the service of the public utility.
2. Provide facilities unreasonably in excess of the probable future requirements.

[4] Final Decision, docket 5-BS-228, *Joint Application of Madison Gas and Electric Company and Wisconsin Public Service Corporation for Approval to Acquire Ownership Interest in Solar Electric Generating Facilities* (PSC REF#: 364436) (Wis. PSC Apr. 18, 2019).

[5] As the Koshkonong Project is not an operating unit or system and applicants seek authority to acquire and construct, Wis. Stat. § 196.49 is the governing standard.

3. When placed in operation, add to the cost of service without proportionately increasing the value or available quantity of service unless the public utility waives consideration by the commission, in the fixation of rates, of such consequent increase of cost of service.

Wis. Stat. § 196.49(3)(b).

Electric utilities must obtain Commission authorization to place in service a generating plant or unit whose costs exceed the threshold established in Wis. Admin. Code § PSC 112.05(3), such as the Koshkonong Project. Wis. Admin. Code § PSC 112.05(1)(a).

The record in this matter involves the purchase of the Koshkonong Project. The record in this matter does not indicate that the proposed acquisitions would substantially impair the efficiency of the service of either WEPCO, WPSC, or MGE. The record indicates that there is need for additional generation capacity for WEPCO, WPSC, and MGE. WEPCO and WPSC have capacity needs due to the broader WEC Energy Group (WEC) Generation Reshaping Plan (GRP) fleet transition, establishing carbon dioxide emissions reduction goals that will require the retirement of legacy coal-fired generating facilities. Similarly, MGE has a capacity need, and due to its own goals of achieving carbon reduction goals, is seeking to retire approximately 250 MW of legacy generation assets by the year 2024, though the timeframe may be extended by the delayed retirement of the Columbia coal electric generating units. MGE cites a commitment to deep carbon reductions and a need to transition to cleaner energy sources, which includes projects such as the Koshkonong Project. If approved, the Koshkonong Project acquisition would be one of a number of investments that MGE would seek to be making in cost-effective, clean energy projects.

The remaining issue for the Commission to address is whether the acquisitions will add to the cost of service without proportionally increasing the value or quantity of service. The question of quantity has been addressed as all applicants show a capacity need in the future. The remaining question of value revolves around the economics of the acquisitions and whether the

acquisitions will increase the cost of service, and, if so, whether the potential cost increase is proportional to the increased value of service.

WEC Energy Group

WEC Energy Group, as a holding company, owns and operates WEPCO and WPSC, setting overarching goals for the two utilities. In the application, WEPCO and WPSC described the broader WEC GRP fleet transition. The entirety of WEC has established goals for a 60 percent carbon dioxide emissions reduction target by 2025, as compared to 2005 levels, with further goals of an 80 percent reduction by 2030 and carbon neutrality by 2050. The GRP will require the retirement of approximately 1,600 MW of generation, including approximately 1,385 MW of coal-fired electric generating facilities (WPSC's ownership shares of Columbia Units 1 and 2 and the WEPCO South Oak Creek Units 5 through 8). With these intended retirements, WPSC and WEPCO will have energy and capacity needs that will be partially offset by ownership shares of the Koshkonong Project.

WEPCO and WPSC indicate that a combination of solar photovoltaic (PV), wind, BESS, and natural gas fired electric generating units will be utilized as the basis for replacement of the retiring generation. WEPCO and WPSC note that the Koshkonong Project is an example of the collective commitment of WEC to construct non-emitting generation resources against the carbon reduction goals while maintaining high levels of reliability and customer savings.

WEPCO's Modeling Efforts

At the request of Commission staff, WEPCO modeled a number of sensitivities in addition to its base model. (PSC REF#: 444402.) Included in the sensitivities requested was an explicit modeling of demand side response, energy efficiency, an unconstrained model where the solar PV and BESS were able to be selected separately by the model, and full availability of all generic

alternatives. Additionally, Commission staff requested a sensitivity that changed the effective load carrying capability (ELCC) for all solar PV and BESS units to the values under consideration by the Midcontinent Independent System Operator, Inc. (MISO) Resource Adequacy Subcommittee, and another sensitivity that removed the Koshkonong Project from the model and added an alternative generator or generator/storage combination in the Koshkonong Project's place. The latter sensitivity was performed to provide a valuation of the individual contribution of the Koshkonong Project acquisition to the GRP portfolio. These models were all updated to include the extension of the operational lives of the South Oak Creek units. Additionally, in some sensitivities the Koshkonong solar and BESS facilities were allowed to be picked separately from each other rather than as a combination, to check if the model would pick both or just one. Lastly, Commission staff requested updated modeling pertaining to how the sub-annual construct that is being implemented by MISO would affect the selection of the Koshkonong Project and WEPCO's capacity position under the sub-annual construct with and without the Koshkonong Project. (PSC REF#: 454433.)

Commission Review of WEPCO's Modeling Efforts

WEPCO's modeling contains three scenarios. The three scenarios are: Status Quo, in which the generating units that were operating at the time of the original modeling continued to run for the modeling period; Scenario A, which allows an unconstrained choice of new generating units in the 2023 through 2026, regardless of whether those units could realistically be constructed and placed into service in that timeframe; and Scenario B, which allows an unconstrained choice of new generating units in the 2023 through 2026, but includes only those units that could realistically be constructed and placed into service in that timeframe. For each scenario, WEPCO modeled additional sensitivities.

In review of the PLEXOS modeling submitted by WEPCO, Commission staff was able to replicate the Total Revenue Requirement Net Present Value (NPV) supplied by WEPCO for select modeling sensitivities. (PSC REF#: 445284 confidential, PSC REF#: 445285 public.) Commission staff also calculated NPVs for modeling sensitivities beyond those supplied by WEPCO. In total, Commission staff verified or calculated NPVs for approximately 24 WEPCO modeling runs. The Koshkonong Solar and BESS generating unit and storage combination was chosen, in differing years, in all of the PLEXOS runs modeled by WEPCO except those in which it was intentionally excluded or otherwise unavailable (e.g. the "status quo" runs which only analyzed legacy generation units). WEPCO also performed a sensitivity in which the MISO capacity accreditation for solar PV projects was assumed to be based on ELCC methodology and reduced from 25 to 70 percent accreditation value. The Koshkonong Project was chosen as a part of WEPCO's portfolio for all six of these sensitivity runs, including across a range of carbon costs and timeframes in which generic alternatives are available for the model to pick. While Commission staff could replicate the Total Revenue Requirement NPV, it could not independently validate the output results of the PLEXOS model runs because the Commission does not have a license to use the software.

For the WEPCO portion of the acquisition, the total GRP suite of projects demonstrates lower NPV valuations when the Koshkonong Project is included, indicating higher value to ratepayers, as compared to when other resources take its place. This outcome was true for all six comparative runs in Scenarios A and B, as tabulated in Table 3. (PSC REF#: 445284 confidential, PSC REF#: 445285 public.)

Table 3: NPV Benefits for the Koshkonong Project

NPV benefits for the Koshkonong Project in GRP	Scenario A – all alternatives available from beginning (thousands of dollars)	Scenario B – alternatives available after 2026 (thousands of dollars)
$10 per ton CO_2 cost offset	128,437	203,348
$20 per ton CO_2 cost offset	141,451	265,211
$30 per ton CO_2 cost offset	150,150	244,892

In addition to calculating the NPV for the PLEXOS modeling output scenarios, Commission staff also reviewed the load forecast used by WEPCO in its PLEXOS model. (PSC REF#: 433791 confidential, PSC REF#: 433792 public.) Commission staff compared the WEPCO load forecast to those filed in WEPCO's Annual Reports for the years 2016 through 2021 and did not identify any particular concerns with the provided load forecast. Commission staff does take note of the load forecast beginning in 2030 where it is assumed WEPCO's load will remain flat, which could be a conservative estimate.

As part of its review, Commission staff requested that WEPCO provide the results of a sensitivity analysis where the Koshkonong Project is under a purchase power agreement (PPA) instead of utility ownership. (PSC REF#: 444402.) In its response, WEPCO stated that "for the reasons outlined in the application, WEC and MGE did not pursue a solar and/or BESS PPA." (PSC REF#: 445511 confidential, PSC REF#: 445512 public.) WEPCO also stated that it believes ownership provides benefits that a PPA does not. Specifically, WEPCO outlined the following benefits:

- The ability to repower or replace the generation at the end of the useful life of the Koshkonong solar and BESS generating and storage facility; the ability to continue to operate the Koshkonong Project after it has been fully depreciated.
- The ability to derive additional value through incorporation of technological advancements and cost reductions during the life of the Koshkonong Project, the

avoidance of additional costs to utility customers due to the effect of debt-like PPAs on utility balance sheets and capital structures.

- The ability to amend generator interconnection agreements to allow additional facilities to use the same point of interconnection to the transmission system without the need for significant additional transmission investment, and ownership of the interconnection agreement would allow the point of interconnection to be repurposed for a new source of supply when the Koshkonong Project is retired.

In a subsequent data request, Commission staff requested modeling to investigate the effect of having the Koshkonong Project as a PPA instead of being partially owned by WEPCO as part of a sub-annual construct with summer and winter seasonal sensitivities. (PSC REF#: 454433.) WEPCO's response referred back to the previous answer pertaining to PPAs and additional modeling was not provided. (PSC REF#: 455254.) Although a sensitivity analysis where the Koshkonong Project is under a PPA instead of utility ownership was not provided as requested by Commission staff, for the reasons identified above, the Commission could find the record with respect to the PPA to be complete.

Commission staff also requested that WEPCO provide the results of a sensitivity analysis to show the impacts a higher rate of Energy Efficiency deployment would have on the Koshkonong Project purchase.[6] The sensitivity analysis was to include scenarios that increase WEPCO's energy efficiency spending by 50 and 100 percent relative to their existing Focus on Energy contributions. (PSC REF#: 444402.) In producing this sensitivity, WEPCO analyzed the

[6] Although not included in the analysis, in Response-Data Response-PSC-JAK-1.18, WEPCO reported that it currently has 126 MW of interruptible load. Customer's enrolled in an interruptible offering are paid credits that are based on CONE.

Focus on Energy's Potential Study as well as energy efficiency and demand response data from EIA and worked with the Commission's Focus on Energy staff.

Commission staff reviewed the 50 and 100 percent increased energy efficiency funding scenario calculation supplied by WEPCO (PSC REF#: 445243) and confirmed that the WEPCO percentage share of annual peak demand reduction used in the calculation could be replicated using sales data reported in the 2021 filed Annual Report and total state sales as filed. (PSC REF#: 456624.) Commission staff also verified that the numbers in the calculation were derived from the supplied EIA data. In its review of the PLEXOS output files supplied by WEPCO, Commission staff notes that, while the year in which it was chosen varied by sensitivity, the 100 percent increased energy efficiency funding option was chosen in every sensitivity.

Commission staff also reviewed WEPCO's estimated cost of a demand response-derived megawatt of peak demand calculation and, based on the EIA data supplied, Commission staff did not identify any concerns with the estimated annual cost per actual peak demand savings.

Commission staff also reviewed the capital costs expected to be incurred due to the operating extension of the South Oak Creek coal units. (PSC REF#: 447143 confidential; PSC REF#: 447144 public) The provided analysis suggests that a substantial portion of the savings that were expected to occur due to the early retirement the South Oak Creek coal units will be retained even with the recently announced extension of the operating life of those units.

Commission staff also reviewed the WEPCO response to the request for additional modeling as it pertained to the sub-annual construct being implemented by MISO. (PSC REF#: 455254.) WEPCO indicated that the previously supplied modeling, which was performed on an annual construct basis, would be substantially similar or identical to the results for a sub-annual construct model. WEPCO stated that its need for additional capacity and energy is controlled by

the summer season and that additional PLEXOS modeling would only proffer a different result if there was a capacity deficiency in one of the other seasons. The annual construct modeling that has been put into the record for this docket is already based on the annual peak planning reserve margin, which for WEPCO occurs in the summer, as well as summer accreditations. Thus, in WEPCO's view, any additional modeling to incorporate the sub-annual construct with different peaks and accreditations in other seasons would lead to the same capacity expansion plan results, rendering the additional modeling redundant. The seasonal capacity positions of WEPCO were also provided to substantiate this claim. (PSC REF#: 455257 confidential narrative response and graphs, PSC REF#: 455258 public narrative response and graphs, PSC REF#: 456466 confidential Excel spreadsheets, PSC REF#: 456467 public Excel spreadsheets.) Commission staff could not independently validate the conclusions reached by WEPCO pertaining to the sub-annual construct because the Commission does not have a license to use the software.

Based on the entirety of the analysis presented, including the proportion of the projected cost to the value of the additional capacity, the Commission may find the acquisition by WEPCO to be reasonable and in the public interest.

WPSC's Modeling Efforts

At the request of Commission staff, WPSC modeled a number of sensitivities in addition to its base model. (PSC REF#: 444402.) Included in the sensitivities requested was an explicit modeling of demand side response, energy efficiency, an unconstrained model where the solar PV and BESS were able to be selected separately by the model, and full availability of all generic alternatives. Additionally, Commission staff requested a sensitivity that changed the ELCC for all solar PV and BESS units to the values under consideration by the MISO Resource Adequacy Subcommittee, and another sensitivity that removed the Koshkonong Project from the model and

added an alternative generator or generator/storage combination in the Koshkonong Project's place. The latter sensitivity was performed to provide a valuation of the individual contribution of the Koshkonong Project acquisition to the GRP portfolio. These models were all updated to include the extension of the operational lives of the Columbia units. Additionally, in some sensitivities the Koshkonong solar and BESS facilities were allowed to be picked separately from each other rather than as a combination, to check if the model would pick both or just one. Lastly, Commission staff requested updated modeling pertaining to how the sub-annual construct that is being implemented by MISO would affect the selection of the Koshkonong Project and WPSC's capacity position under the sub-annual construct with and without the Koshkonong Project. (PSC REF#: 454433.)

Commission Review of WPSC's Modeling Efforts

WPSC's modeling contains three scenarios. The three scenarios are the Status Quo in which the generating units that were operating at the time of the original modeling continued to run for the modeling period, Scenario A which allows an unconstrained choice of new generating units in the 2023 through 2026, regardless of whether those units could realistically be constructed and placed into service in that timeframe, and Scenario B which allows an unconstrained choice of new generating units in the 2023 through 2026, but includes only those units that could realistically be constructed and placed into service in that timeframe. For each scenario, WPSC modeled additional sensitivities.

In review of the PLEXOS modeling submitted by WPSC, Commission staff was able to replicate the Total Revenue Requirement NPV supplied by WPSC for select modeling sensitivities. (PSC REF#: 445284 confidential, PSC REF#: 445285 public.) Commission staff also calculated NPVs for modeling sensitivities beyond those supplied by WPSC. In total,

Commission staff verified or calculated NPVs for approximately 24 WPSC modeling runs. The Koshkonong solar and BESS generating unit and storage combination was chosen, in differing years, in some of the PLEXOS runs modeled by WPSC. Seven exceptions wherein the Koshkonong Project was not picked were when Koshkonong Solar and Koshkonong BESS were split into two options, rather than a single package. In these seven cases, the solar portion was solely selected. These seven runs are specified in Table 4. The only other exceptions in which the Koshkonong Project was not chosen were runs wherein the Koshkonong Project was intentionally excluded or otherwise unavailable (e.g. the "status quo" runs which only analyzed legacy generation units). While Commission staff could replicate the Total Revenue Requirement NPV, it could not independently validate the output results of the PLEXOS model runs because the Commission does not have a license to use the software.

Table 4: Runs in which full Koshkonong Solar and BESS Facility Was Not Selected

Runs in which full Koshkonong Solar and BESS Facility was not selected	**Conditions**	**What was chosen**
101 – Case 1 – Scenario A	All alternatives available immediately \$20 per ton CO_2 cost offset 70 percent capacity accreditation	31.5 MW Koshkonong PV
101 – Case 3 – Scenario A	All alternatives available immediately \$20 per ton CO_2 cost offset 25 percent capacity accreditation	11.3 MW Koshkonong PV
101 – Case 2 – Scenario B	All alternatives available after 2026 \$20 per ton CO_2 cost offset 70 percent capacity accreditation	31.5 MW Koshkonong PV
102 – Case 1 – Scenario A	All alternatives available immediately \$10 per ton CO_2 cost offset 70 percent capacity accreditation	31.5 MW Koshkonong PV
103 – Case 1 – Scenario A	All alternatives available immediately \$30 per ton CO_2 cost offset 70 percent capacity accreditation	31.5 MW Koshkonong PV
103 – Case 3 – Scenario A	All alternatives available immediately \$30 per ton CO_2 cost offset 25 percent capacity accreditation	11.3 MW Koshkonong PV
103 – Case 2 – Scenario B	All alternatives available after 2026 \$30 per ton CO_2 cost offset 70 percent capacity accreditation	31.5 MW Koshkonong PV

Despite the fact that the PLEXOS model did not pick the full Koshkonong solar and BESS facility in all runs for an optimized WPSC portfolio, the model did pick the Koshkonong solar and BESS combination in eleven of eighteen runs in which the facility was available to be chosen, including a subset of five of twelve runs where the solar PV, BESS, and the combination of solar PV and BESS were separately selectable. WPSC performed a sensitivity in which the MISO capacity accreditation for solar PV projects was assumed to be based on ELCC methodology and reduced from 70 percent to 25 percent accreditation. The Koshkonong Project was chosen as a part of WPSC's portfolio for four of the six runs, with the Koshkonong solar PV portion being consistently selected in all six runs, including across a range of carbon costs and timeframes in which generic alternatives are available for the model to pick.

Commission staff requested more analysis from the applicant to explore why the Koshkonong BESS was not selected consistently as part of the WPSC portfolio, as it was for WEPCO. (PSC REF#: 454433.) WPSC's response argued that the selection of the Koshkonong BESS in five of twelve unconstrained modeling runs is indicative of the Koshkonong BESS being close to having economic viability in all instances, as well as incremental NPV savings for plans that include the entirety of the Koshkonong project to alternative plans that do not include the Koshkonong project. WPSC also pointed to other value the Koshkonong BESS may add, including greater reliability to the transmission system as the system transitions towards more intermittent generation resources. (PSC REF#: 455256.)

Since the Koshkonong solar and BESS combination was chosen in a majority of PLEXOS runs, including nearly half of the runs in which the components were separately selectable by the model, the Commission may find the WPSC acquisition of both the solar PV and BESS portions of the Koshkonong facility reasonable and in the public interest.

The total GRP suite of projects demonstrates lower NPV valuations when the Koshkonong Project is included, as compared to when other resources take its place, for the WPSC portion of the acquisition. This outcome was true for all six comparative runs in Scenarios A and B, as tabulated in Table 5. (PSC REF#: 445284 confidential, PSC REF#: 445285 public.)

Table 5: NPV Benefits for Koshkonong Project in Scenarios A and B

NPV benefits for the Koshkonong Project in GRP	Scenario A – all alternatives available from beginning (thousands of dollars)	Scenario B – alternatives available after 2026 (thousands of dollars)
$10 per ton CO_2 cost offset	24,318	58,147
$20 per ton CO_2 cost offset	12,662	52,915
$30 per ton CO_2 cost offset	11,404	10,400

In addition to calculating the NPV for the PLEXOS modeling output scenarios, Commission staff also reviewed the load forecast used by WPSC in its PLEXOS model. (PSC REF#: 433791 confidential, PSC REF#: 433792 public.) Commission staff compared the WPSC load forecast to those filed in WPSC's Annual Reports for the years 2016 through 2021 and did not identify any particular concerns with the provided load forecast. Commission staff does take note of the load forecast beginning in 2030 where it is assumed WPSC's load will remain flat, which could be a conservative estimate.

As part of its review, Commission staff requested that WPSC provide the results of a sensitivity analysis where the Koshkonong Project is under a purchase power agreement (PPA) instead of utility ownership. (PSC REF#: 444402.) In its response, WPSC stated that "for the reasons outlined in the application, WEC and MGE did not pursue a solar and/or BESS PPA." (PSC REF#: 445511 confidential, PSC REF#: 445512 public.) WPSC also stated that it believes ownership provides benefits that a PPA does not. Specifically, WPSC outlined the following benefits:

- The ability to repower or replace the generation at the end of the useful life of the Koshkonong Project, the ability to continue to operate the Koshkonong Project after it has been fully depreciated.
- The ability to derive additional value through incorporation of technological advancements and cost reductions during the life of the Koshkonong Project, the avoidance of additional costs to utility customers due to the effect of debt-like PPAs on utility balance sheets and capital structures.
- The ability to amend generator interconnection agreements to allow additional facilities to use the same point of interconnection to the transmission system without the need for significant additional transmission investment, and ownership of the interconnection agreement would allow the point of interconnection to be repurposed for a new source of supply when the Koshkonong Project is retired.

In a subsequent data request, Commission staff requested modeling to investigate the effect of having the Koshkonong Project as a PPA instead of being partially owned by WPSC as part of a sub-annual construct with summer and winter seasonal sensitivities. (PSC REF#: 454433.) WPSC's response referred back to the previous answer pertaining to PPAs and additional modeling was not provided. (PSC REF#: 455254.) Although a sensitivity analysis where the Koshkonong Project is under a PPA instead of utility ownership was not provided as requested by Commission staff, for the reasons identified above, the Commission could find the record with respect the PPA to be complete.

Commission staff also requested that WPSC provide the results of a sensitivity analysis to show the impacts a higher rate of Energy Efficiency deployment would have on the

Koshkonong Project purchase.[7] The sensitivity analysis was to include scenarios that increase WPSC's energy efficiency spending by 50 and 100 percent relative to their existing Focus on Energy contributions. (PSC REF#: 444402.) In producing this sensitivity, WPSC analyzed the Focus on Energy's Potential Study as well as energy efficiency and demand response data from EIA and worked with the Commission's Focus on Energy staff.

Commission staff reviewed the 50 and 100 percent increased energy efficiency funding scenario calculation supplied by WPSC (PSC REF#: 445243) and confirmed that the WPSC percentage share of annual peak demand reduction used in the calculation could be replicated using sales data reported in the 2021 filed Annual Report and total state sales as filed. (PSC REF#: 456624.) Commission staff also verified that the numbers in the calculation were derived from the supplied EIA data. In its review of the PLEXOS output files supplied by WPSC, Commission staff notes that, while the year in which it was chosen varied by sensitivity, the 100 percent increased energy efficiency funding option was chosen in every sensitivity.

Commission staff also reviewed WPSC's estimated cost of a demand response-derived megawatt of peak demand calculation and, based on the EIA data supplied, Commission staff did not identify any concerns with the estimated annual cost per actual peak demand savings.

Commission staff also reviewed the capital costs expected to be incurred due to the operating extension of the Columbia coal units. (PSC REF#: 447138.) WPSC's response indicated that, as a minority owner of the facility, it was not able to respond to some aspects of how a reported 350-million-dollar expenditure would be required to extend the Columbia units past a 2026 retirement date. However, WPSC did point to an additional $42 million dollars associated with the delayed retirement that was incorporated in the GRP modeling to reflect the

[7] Although not included in the analysis, in Response-Data Response-PSC-JAK-1.18, WPSC reported that it currently has 185 MW of interruptible load. Customer's enrolled in an interruptible offering are paid credits that are based on CONE.

extension of the Columbia units. This information suggests that a substantial portion of the savings that were expected to occur due to the early retirement the Columbia coal units is retained even with the recently announced extension of the operating life of those units.

Commission staff also reviewed the WPSC response to the request for additional modeling as it pertained to the sub-annual construct being implemented by MISO. (PSC REF#: 455255.) WPSC indicated that the previously supplied modeling, which was performed on an annual construct basis, would be substantially similar or identical to the results for a sub-annual construct model. WPSC stated that its need for additional capacity and energy is controlled by the summer season and that additional PLEXOS modeling would only proffer a different result if there was a capacity deficiency in one of the other seasons. The annual construct modeling that has been put into the record for this docket is already based on the annual peak planning reserve margin, which for WPSC occurs in the summer, as well as summer accreditations. Thus, in WPSC's view, any additional modeling to incorporate the sub-annual construct with different peaks and accreditations in other seasons would lead to the same capacity expansion plan results, rendering the additional modeling redundant. The seasonal capacity positions of WPSC were also provided to substantiate this claim. (PSC REF#: 455257 confidential narrative response and graphs, PSC REF#: 455258 public narrative response and graphs, PSC REF#: 455261 confidential Excel spreadsheets, PSC REF#: 455262 public Excel spreadsheets.) Commission staff could not independently validate the conclusions reached by WPSC pertaining to the sub-annual construct because the Commission does not have a license to use the software.

Based on the entirety of the analysis presented, including the proportion of the projected cost to the value of the additional capacity, the Commission may find the acquisition by WPSC to be reasonable and in the public interest.

MGE

In the application, MGE stated the main drivers for the proposed partial ownership acquisition are a forecasted capacity need, cost-effectiveness, and risk mitigation from potential future environmental standards. Specifically, MGE cited a need for 250 MW in capacity by 2024 to offset the expected retirement of coal-fired electric generating units and the expiration of various purchase power agreements, though the operational use of the Columbia units was subsequently extended through part of 2026. In preparing its application, MGE used Electric Generation Expansion Analysis System (EGEAS) modeling to evaluate the acquisition of a partial ownership share in Koshkonong Project over a range of possible sensitivities. Additionally, MGE used the PROMOD model to forecast annual locational marginal price (LMP) differentials and then used those results as inputs into its EGEAS modeling. In response to Commission staff's data requests, MGE confirmed that previously submitted EGEAS and PROMOD data provided in August 2021 represented an accurate depiction of the modeling for the purposes of the docket analysis. (PSC REF#: 434498 and PSC REF#: 434499).

MGE's Modeling Efforts

MGE developed three different futures for its EGEAS analysis – the business as usual or reference future, carbon constrained future, and a carbon constrained future with higher gas and LMP prices. MGE's EGEAS scenarios analyzed its least-cost plan as optimized by EGEAS in the three future scenarios. In addition to the scenario analysis, MGE studied eight sensitivities in EGEAS. These sensitivities include screening of a new coal-based planning alternative, screening of a new nuclear based planning alternative, screening of a new biomass-based planning alternative, and screening of the West Riverside ownership share option. For all the above stated scenarios and sensitivities, MGE assumed solar resources receiving a capacity accreditation of 50

percent in the MISO market. MGE also performed other EGEAS sensitivities assuming solar resources receiving 20, 30, 40, and 70 percent capacity accreditation in the MISO market.

MGE also performed PROMOD analysis for the years 2022, 2023, 2024, 2025, and 2029 to obtain LMP differentials between the Koshkonong Project site and the MGE load zone. These differentials obtained from PROMOD were then extrapolated for the intermediate years and used as an input to MGE's EGEAS analysis.

When the retirement dates of Columbia Units 1 and 2 were revised, Commission staff requested MGE to submit updated EGEAS modeling to reflect the updated retirement dates. (PSC REF#: 454433.)

Commission Review of MGE's Modeling Efforts

Commission staff reviewed the modeling analysis provided by MGE and was able to validate the results of MGE'S PROMOD and EGEAS modeling analysis. Additionally, staff was able to validate that EGEAS selected the Koshkonong Project in each sensitivity provided by the applicant even with delaying the retirements of Columbia Units 1 and 2 from 2023 and 2024 to 2026.

The results of the EGEAS analysis show that the Koshkonong Project is part of the least-cost plan for meeting MGE's future electric power supply needs as optimized by EGEAS. In addition to verifying each of the provided futures and sensitivities, staff requested and verified several more runs from the applicant, as well as independently performed a number of sensitivities, for a total of approximately 50 runs. These runs involved raising the cost of the Koshkonong Project for each sensitivity provided by the applicant, delaying the retirement date of the Columbia units to 2026 in each sensitivity, doubling the demand response from what it currently is for the MGE footprint, increasing Focus on Energy Funding by 50 and 100 percent,

increasing the forced outage rate of the Koshkonong Project, and lowering the projected natural gas prices. Of these, the Koshkonong Project was selected by EGEAS for the MGE portfolio in a majority of the cases.

The first category of runs in which the Koshkonong Project was not selected were those in which the Koshkonong Project's cost was increased above a certain level. In the runs where the Columbia units were scheduled to retire in 2023 and 2024, the Koshkonong Project was selected by EGEAS until project costs were increased by 18 percent. In the runs where the Columbia unit retirements were delayed to 2026, the Koshkonong Project was selected by EGEAS until project costs were increased by four percent.

The second category of runs in which the Koshkonong Project was not selected were those in which the Koshkonong Project's forced outage rate was increased above a certain level. A forced outage rate is the percentage of time a generating resource is unavailable, outside of planned shutdowns to perform maintenance or repairs. Generally, adjusting the mature forced outage rate up is a proxy for reducing the capacity factor, which in turn is a proxy for how much energy the unit produces. In the runs where the Columbia units were scheduled to retire in 2023 and 2024, the capacity factor of the Koshkonong Project was able to be lowered to 19 percent and still be selected by EGEAS. In the runs where the Columbia unit retirements were delayed to 2026, the capacity factor of the Koshkonong Project was able to be lowered to 23 percent and still be selected by EGEAS.

The third category of runs in which the Koshkonong Project was not selected were those in which projected natural gas prices were lowered below a certain level. In the runs where the Columbia units were scheduled to retire in 2023 and 2024, the Koshkonong Project was selected by EGEAS until natural gas prices were decreased by 28 percent. In the runs where the

Columbia unit retirements were delayed to 2026, the Koshkonong Project was selected by EGEAS until natural gas prices were decreased by 18 percent.

The last category of runs in which the Koshkonong Project was not selected were those in which the EGEAS model was not allowed to select it as a generation resource. Commission staff verified that in these runs, the present value of revenue requirements was higher than in the scenarios where the Koshkonong Project was allowed as an available planning alternative. Notwithstanding the model runs referenced above, in the remaining EGEAS runs validated or performed by staff, the Koshkonong Project was chosen as part of the low-cost plan for MGE.

As part of its review, Commission staff requested that MGE provide the results of a sensitivity analysis where the Koshkonong Project is under a purchase power agreement (PPA) instead of utility ownership. (PSC REF#: 444402.) In its response, MGE stated that "for the reasons outlined in the application, WEC and MGE did not pursue a solar and/or BESS PPA." (PSC REF#: 445511 confidential, PSC REF#: 445512 public.) MGE also stated that it believes ownership provides benefits that a PPA does not. Specifically, MGE outlined the following benefits:

- The ability to repower or replace the generation at the end of the useful life of the Koshkonong solar and BESS generating and storage facility; the ability to continue to operate the Koshkonong Project after it has been fully depreciated.
- The ability to derive additional value through incorporation of technological advancements and cost reductions during the life of the Koshkonong Project, the avoidance of additional costs to utility customers due to the effect of debt-like PPAs on utility balance sheets and capital structures.

- The ability to amend generator interconnection agreements to allow additional facilities to use the same point of interconnection to the transmission system without the need for significant additional transmission investment, and ownership of the interconnection agreement would allow the point of interconnection to be repurposed for a new source of supply when the Koshkonong Project is retired.

In a subsequent data request, Commission staff requested modeling to investigate the effect of having the Koshkonong Project as a PPA instead of being partially owned by MGE as part of a sub-annual construct with summer and winter seasonal sensitivities. (PSC REF#: 454433.) In its responses, MGE stated that "because MGE was not offered a PPA option by the seller that would define the terms and conditions of such an offer, MGE has not attempted to model a PPA option for this resource in its EGEAS modeling" and additional modeling was not provided. (PSC REF#: 455371 and PSC REF#: 455372.) Although a sensitivity analysis where the Koshkonong Project is under a PPA instead of utility ownership was not provided as requested by Commission staff, for the reasons identified above, the Commission could find the record with respect to the PPA to be complete.

In its review of the PROMOD modeling submitted by MGE, Commission staff was able to replicate the MGE PROMOD model runs using the supplied database. Additionally, Commission staff reproduced, and was able to replicate, MGE's LMP cost differential between the Koshkonong Project and MGE system nodes. Commission staff then modified the PROMOD model to incorporate the delayed retirement dates recently announced for the Columbia coal-fired generating units and reran the PROMOD model, as well as other changes to the electrical system topology. The LMP cost differential between the Koshkonong facility and

MGE system nodes was recalculated using the output from the Commission staff modified PROMOD run. The change in the LMP cost differential between the Koshkonong Project and MGE system nodes from the MGE modeling and the staff modified PROMOD model run was approximately 5 percent.

Based on the entirety of the analysis presented, including the proportion of the projected cost to the value of the additional capacity, the Commission may find the acquisition by MGE to be reasonable and in the public interest.

Applicants' Needs, Alternatives, and Economic Analysis

All three applicants will be facing capacity needs in the near future. WEPCO has proposed the retirement of the South Oak Creek units, with unit 5 and 6 expecting to retire in May 2024 and units 7 and 8 expecting to retire in late 2025. WPSC will also need capacity, with the expected closure of Weston Units 2, 31, and 32 in 2023 and the retirement of the Columbia Generating Station, expected in 2026. In total, WEPCO and WPSC will need to replace approximately 1,600 MW of capacity with other resources. MGE is in a similar position, expecting the closure of legacy coal assets and the expiration of PPAs. In total, MGE is expecting to have to replace 250 MW of capacity in the near future.

The Koshkonong Project was selected to be a part of all three applicants' future generation portfolios across a range of different assumptions about key metrics, including future electricity demand, alternative generation resources, different solar capacity accreditation values, capital cost increases to the project, the availability of energy efficiency and demand response resources, and the extension of legacy coal-fired electric generating units. In most or all model runs provided by the applicants and reviewed by Commission staff, the Koshkonong Project was routinely selected as part of the optimal generation resource plan for each of the applicant utilities. Based on this

overall analysis, the Commission may find that it is reasonable for each utility to acquire the requested ownership shares in the Koshkonong Project for each of the applicant utilities.

Koshkonong Solar and BESS Cost Analysis

The applicants stated that their upfront capital cost for the solar portion of the project is projected to be $1,373 per kilowatt (kW). (PSC REF#: 410708 confidential, PSC REF#: 410709 public.) Commission staff utilized the Standard and Poor's (S&P) Capital IQ Pro platform to generate lists of solar projects announced, under construction, or recently completed and placed into service throughout the United States and Canada. The range of projects recently completed and placed into service have capital costs ranging from $1,300 to $2,800 per kW with a mean of $1,935 per kW. This range encompasses approximately 27 projects completed in 2022. For the comparison, announced or currently under-construction solar projects within the MISO interconnection queue range from $1,202 to $3,250 per kW with a mean of $1,677 per kW. This range encompasses approximately 132 projects planned to be completed in 2023 and beyond. The $1,373 per kW figure that the applicants included in the Koshkonong project application are at the lower end of the ranges identified in Commission staff's cost analysis. There is less available data on the relative cost of BESS facilities due to how new the technology is and how few BESS facilities there are when compared to solar.

Commission staff compared the cost differences of the Koshkonong solar facilities on a dollar per kW basis with the Darien and Paris solar facilities (5-BS-255 and 5-BS-254), which are also owned by the same applicants. The results indicate the Koshkonong solar facility will cost about $17 per kW, or 1.2 percent more than the Paris solar facility and $7 per kw, or .5 percent less than the Darien Solar facility. Regarding the cost of the BESS, the application lists a BESS cost of $1,436 per kW for Koshkonong. The BESS facility cost is $25 per kW, or 1.7

percent more than Darien and $13 per kW, or 0.9 percent less than Paris. In applying the stated nameplate capacity of each resource (300 MW solar and 165 MW BESS), the Koshkonong Project, at $1,395 per kW, would represent a slight overall cost per kW increase in comparison to both Paris, at $1,389 per kW (0.4 percent), and Darien, at $1,387 per kW (0.6 percent). In response to a Commission staff data request asking for an explanation of the cost differences between the three projects, the applicants stated the differences in cost for the solar facilities are primarily attributed to variations in terrain at the sites that affect the amount of earthwork required. The applicants primarily attribute differences in BESS costs to variations in the predicted technology costs at the time pricing was negotiated. (PSC REF#: 456780.)

Discount Rates

Appendix B of the application included discount rates reflective of each applicant's weighted average cost of capital (WACC), (7.49 percent for WEPCO, 7.22 percent for WPSC, and 7.21 percent for MGE). (PSC REF#: 410712 confidential, PSC REF#: 410713 public.) The applicants have previously claimed that when the investment is being made jointly on a pro rata basis, the applicants used the three discount rates because the investments by each applicant need to be justified based on the specific economic impact for each applicant's specific customers.

The applicants maintain that the Koshkonong Project will provide cost savings. Appendix B of the application specifically identified a cumulative GRP nominal savings of $1,049 million over the first 20 years and a combined NPV savings of $880 million for WEC customers compared to maintaining WEC's existing generation fleet. To complete the record, the Commission should be aware of how varying the discount rate impacts that present value.

In response to a Commission staff data request, WEC provided the discount rate at which the GRP produce a NPV breakeven for customers. The conclusion of the analysis shows that, for

the GRP to break even on a NPV basis to the Status Quo Alternative, the discount rate would need to increase to 23 percent for the WEC utilities. (PSC REF#: 445247.) Although this figure applies to the entire GRP, and not specifically for the Koshkonong Project, the analysis provided by the applicants demonstrates a large degree of latitude between the discount rates being used by all three applicants (in the range of 7.2 to 7.5 percent) and the discount rate where the GRP becomes uneconomic.

Economic life of the Koshkonong facility

The applicants maintain that the assumed book life of the Koshkonong solar facility is 30 years, and the book life of the BESS facility is 20 years. (PSC REF#: 410712 confidential, PSC REF#: 410713 pubic.) In the event that there are future advantages associated with new components the applicants will evaluate the cost and benefits of replacing components and will pursue the required regulatory approval. As mentioned in the prior Paris and Darien dockets 5-BS-254 and 5-BS-255, a PPA could potentially mitigate the risk of technological obsolescence by shifting component replacement costs away from the utility; however, as was discussed in earlier sections of the memorandum, the applicants did not consider pursuing a PPA arrangement.

Acquisition Price

The Commission, consistent with its past practice, may find it reasonable to review in a future rate case the recoverability of costs associated with the acquisition, O&M costs, and revenues associated with the applicants' purchase of the Koshkonong Project. Each of the applicants stated it would reflect its portion of the acquisition price in its rate base. As discussed above, the applicants requested approval to purchase the Koshkonong Project for $649 million excluding AFUDC, with WEPCO being responsible for 75 percent, WPSC being responsible for 15 percent, and MGE being responsible for 10 percent. The applicants' request was inclusive of

the capital cost of the solar facilities, BESS, transmission interconnection costs, owners' costs, and Wisconsin state sales taxes on the BESS components and associated labor to install those components, but exclude Affected System costs that may be assessed by MISO or PJM. The applicants' request included earning AFUDC on 100 percent of the construction work in progress (CWIP) balance during the construction of the Koshkonong Project, estimating that AFUDC would be $26.7 million. (PSC REF#: 410709 at n. 5.) The acquisition cost to each applicant, including and excluding AFUDC, is listed in Table 6.

Table 6: Acquisition Costs including and excluding estimated AFUDC

	Acquisition Cost	AFUDC	Total Cost (Including AFUDC)
WEPCO	$486,750,000	$27,500,000	$514,250,000
WPSC	$97,350,000	$4,800,000	$102,150,000
MGE	$64,900,000	$2,900,000	$67,800,000
Total	$649,000,000	$35,200,000	$684,200,000

The applicants also sought approval to acquire the Koshkonong Project at a cost up to 110 percent of the acquisition cost, up to $752.6 million, proposing that they be required to promptly notify the Commission and seek further Commission review and approval should the cost of the Koshkonong Project exceed the 110 percent threshold. The Commission chose not to grant a similar request made by applicants in docket 5-BS-254.

In docket 5-BS-254[8] the Commission found it reasonable to "impose reporting conditions so that cost overruns can be closely monitored and reviewed by the Commission in future rate case proceedings." (PSC REF#: 438529 at 13.) The proposed transaction in this docket is of the same nature as that proposed in docket 5-BS-254. Accordingly, the Commission may find it reasonable to include similar conditions, such as a condition requiring the applicants, after completion of the proposed acquisition, to submit to the Commission their respective proposed

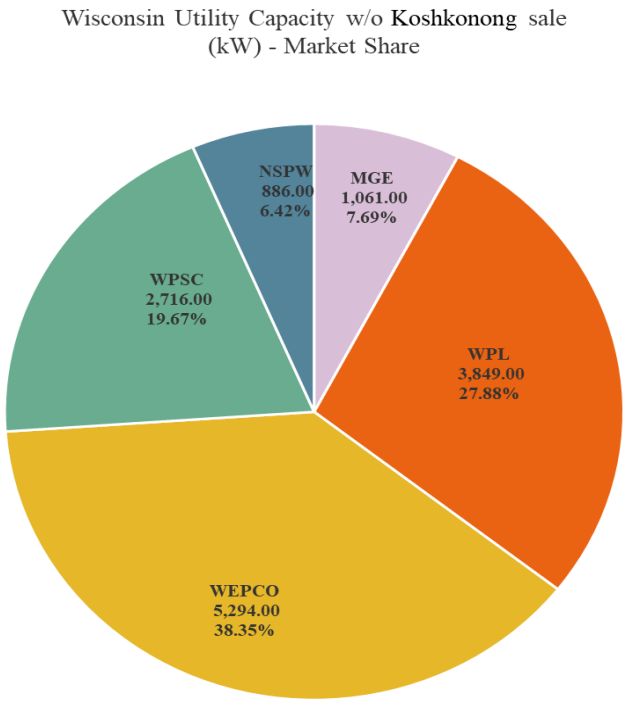
[8] Joint Application of Wisconsin Electric Power Company, Wisconsin Public Service Corporation, and Madison Gas and Electric Company for Approval to Acquire Ownership Interests in the Paris Solar Generating and Battery Energy Storage System

accounting entries to record the acquisition of the project and a condition allowing the applicants to record 100 percent AFUDC on CWIP for this acquisition. Further, the Commission may require that if it is discovered that the total project cost, including force majeure costs, may exceed the current estimate ($649,000,000, excluding AFUDC), the applicants shall promptly notify the Commission as soon as they become aware of the possible change or cost increase.

Market concentration

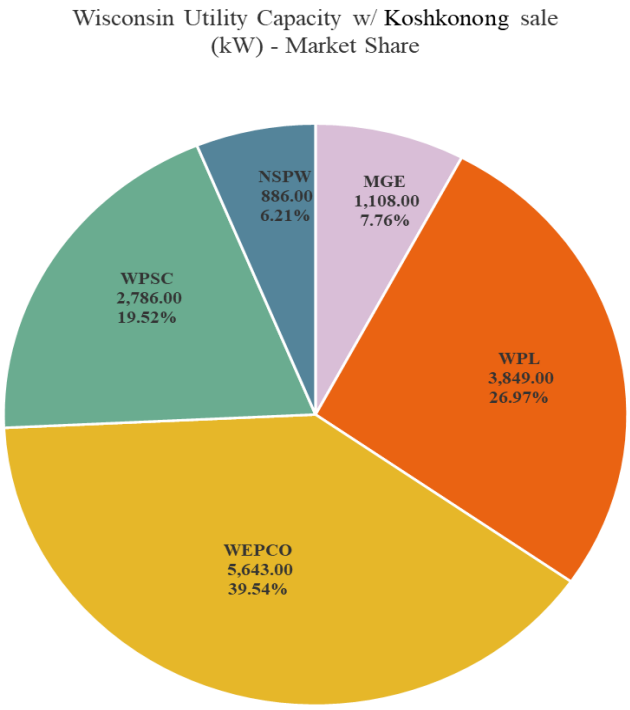
The Koshkonong Project represents a new generation facility and has not been included in past market concentration analyses. The capacity sale proposed in this docket necessitates a refreshed look at capacity market concentration for large Wisconsin investor-owned utilities. Commission staff first provided a baseline market concentration without the sale of the Koshkonong facility's proposed capacity in this docket. Capacity values for this analysis are taken from each utility's 2021 form 10-K filings.

Wisconsin Utility Capacity w/o Koshkonong Sale							
Generation Type	***MGE***	***WPL***	***WEPCO***	***WPSC***	***NSPW***	**Total**	**%**
Gas Capacity	468.00	2,247.00	2,400.00	1,247.00	214.00	**6,576.00**	**47.63%**
Wind Capacity	123.00	476.00	337.00	157.00		1,093.00	7.92%
Solar Capacity	142.00	57.00		200.00		399.00	2.89%
Biomass Capacity			58.00		30.00	88.00	0.64%
Hydro Capacity		60.00	90.00	82.00	258.00	490.00	3.55%
Coal Capacity	328.00	1,009.00	2,409.00	1,030.00	384.00	5,160.00	37.38%
Battery Storage						-	0.00%
Total Capacity	1,061.00	3,849.00	5,294.00	2,716.00	886.00	13,806.00	100.00%
Market Share	7.69%	27.88%	38.35%	19.67%	6.42%	100.00%	
HHI	59.1	777.2	1470.4	387.0	41.2	2734.9	



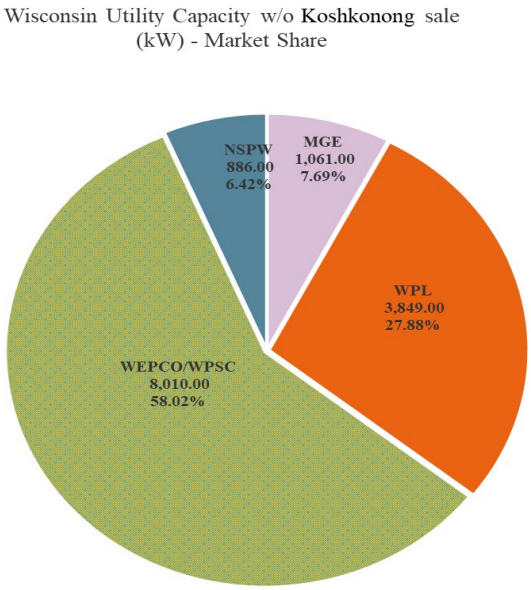
The total market Herfindahl–Hirschman Index (HHI) prior to the proposed Koshkonong sale is 2734.9, which would be considered a highly concentrated market by the Department of Justice (DOJ) criteria. The executed sale of the Koshkonong Project would result in an HHI of 2770.5 which is a slight increase of 35.6.

Wisconsin Utility Capacity w/ Koshkonong sale							
Generation Type	***MGE***	***WPL***	***WEPCO***	***WPSC***	***NSPW***	**Total**	**%**
Gas Capacity	468.00	2,247.00	2,400.00	1,247.00	214.00	**6,576.00**	**46.08%**
Wind Capacity	123.00	476.00	337.00	157.00		1,093.00	7.66%
Solar Capacity	172.00	57.00	225.00	245.00		699.00	4.90%
Biomass Capacity			58.00		30.00	88.00	0.62%
Hydro Capacity		60.00	90.00	82.00	258.00	490.00	3.43%
Coal Capacity	328.00	1,009.00	2,409.00	1,030.00	384.00	5,160.00	36.15%
Battery Storage	17.00		124.00	25.00		166.00	1.16%
Total Capacity	1,108.00	3,849.00	5,643.00	2,786.00	886.00	14,272.00	100.00%
Market Share	7.76%	26.97%	39.54%	19.52%	6.21%	100.00%	
HHI	60.3	727.3	1563.3	381.1	38.5	2770.5	



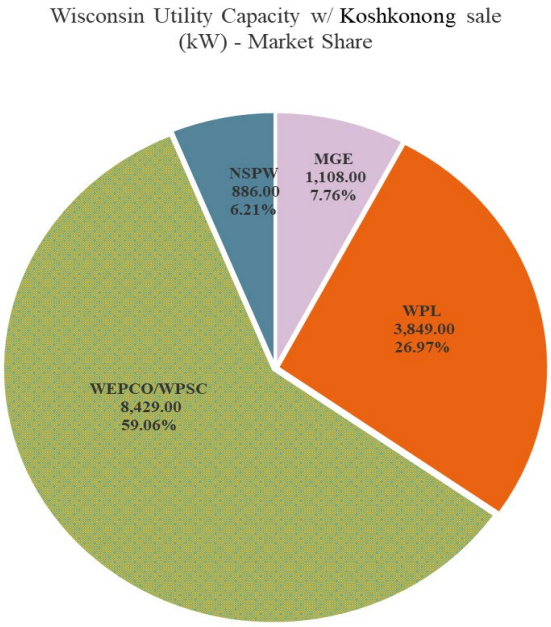
Combining the WEC group entities into a single entity, the HHI shows a slightly larger increase.

Wisconsin Utility Capacity (Combined WEC utiilties) w/o Koshkonong sale						
Generation Type	***MGE***	***WPL***	***WEPCO/WPSC***	***NSPW***	**Total**	**%**
Gas Capacity	468.00	2,247.00	3,647.00	214.00	6,576.00	47.63%
Wind Capacity	123.00	476.00	494.00		1,093.00	7.92%
Solar Capacity	142.00	57.00	200.00		399.00	2.89%
Biomass Capacity			58.00	30.00	88.00	0.64%
Hydro Capacity		60.00	172.00	258.00	490.00	3.55%
Coal Capacity	328.00	1,009.00	3,439.00	384.00	5,160.00	37.38%
Battery Storage					-	0.00%
Total	1,061.00	3,849.00	8,010.00	886.00	13,806.00	100.00%
Market Share	7.69%	27.88%	58.02%	6.42%	100.00%	
HHI	59.1	777.2	3366.1	41.2	4243.6	



The total market HHI prior to the proposed sale of the Koshkonong facility is 4243.6, which would be considered a highly concentrated market by the Department of Justice (DOJ) criteria. The executed sale of the proposed Koshkonong facility would result in an HHI of 4314.2 which is a slight increase of 70.6.

Wisconsin Utility Capacity (Combined WEC utiilties) w/ Koshkonong sale						
Generation Type	***MGE***	***WPL***	***WEPCO/WPSC***	***NSPW***	**Total**	**%**
Gas Capacity	468.00	2,247.00	3,647.00	214.00	6,576.00	46.08%
Wind Capacity	123.00	476.00	494.00		1,093.00	7.66%
Solar Capacity	172.00	57.00	470.00		699.00	4.90%
Biomass Capacity			58.00	30.00	88.00	0.62%
Hydro Capacity		60.00	172.00	258.00	490.00	3.43%
Coal Capacity	328.00	1,009.00	3,439.00	384.00	5,160.00	36.15%
Battery Storage	17.00		149.00		166.00	1.16%
Total	1,108.00	3,849.00	8,429.00	886.00	14,272.00	100.00%
Market Share	7.76%	26.97%	59.06%	6.21%	100.00%	
HHI	60.3	727.3	3488.0	38.5	4314.2	



This increase in HHI with the sale of the proposed Koshkonong facility is considered a small decrease in competition in a highly concentrated market. Under this scenario, the sale of the proposed Koshkonong facility and its subsequent change in the applicants' market share should not adversely affect wholesale competition, as evidenced by the small increase in the HHI.

Transfer of the CPCN

In this docket, similar to docket 5-BS-228, 5-BS-234, and 5-BS-254, the Commission is being asked to consider the transfer of CPCNs issued to wholesale merchants to regulated utilities. The applicants have stated that the acquisition of the Koshkonong Project includes the transfer of the CPCN rights from the wholesale merchant developers to the applicants. The Commission, relying on *Application of Power Ventures Group, LLC, for a Certificate of Public Convenience and Necessity to Construct a Large Electric Generating Facility in Sheboygan County*, docket 5-CE-131 (Wis. PSC 2004), included conditions in dockets 5-BS-228, 5-BS-234, and 5-BS-254 binding the applicants to the commitments made by the developers in their applications, and to limit the authority transferred to the applicants to only those rights afforded to the developers at the

time of the Commission's issuance of each CPCN, including limits on use of eminent domain. The Commission also prohibited the applicants from proceeding with any substantial change in scope, design, size, or location of the projects except as provided in the CPCNs. (PSC REF#: 364436, Order Conditions 9-11, PSC REF#: 385279, Order Conditions 7-9, PSC REF#: 438529, Order Conditions 10-12.) In support, the Commission stated that the conditions would ensure that the applicants, who were regulated utilities that may possess rights and authority beyond that available to a non-regulated wholesale merchant, would only be able to exercise those rights the Commission authorized the wholesale merchants to exercise in the CPCNs.

Review of Statutory Criteria

The Commission staff's review of expansion plan modeling indicates that there is a need for replacement generation capacity for WEPCO, WPSC, and MGE. The applicants' acquisition of the Koshkonong Project will increase or maintain the quantity of service, by acquiring direct ownership of approximately 225, 45, and 30 MW of solar and 123.75, 24.75, and 16.5 of BESS generating capacity, respectively (total 300 MW of solar and 165 MW of BESS). The PLEXOS and EGEAS models routinely picked the Koshkonong Project in modeling runs across a range of input values of key parameters, demonstrating that the Koshkonong Project is a robust part of the optimal expansion plan for each of the applicant utilities.

Based upon the economic analysis demonstrating the customer benefits of the transaction and the other considerations discussed above, the Commission may find that the public convenience and necessity require the acquisition. Wis. Stat. § 196.49(3)(b). Commission staff review of the modeling found that the proposed transaction was part of the optimal expansion plan in most of the sensitivities requested by Commission staff. The optimal expansion plan represents the highest customer benefit while meeting the modeling constraints that represent providing

reliable service to customers. Hence, the Commission may find that the applicants have demonstrated that the purchase of the Koshkonong Project will not add to the applicants' cost of service without proportionately increasing the value or available quantity of service. Wisconsin Stat. § 196.49(3)(b)(3). In addition, the Commission may find it reasonable to conclude that the purchase of the Koshkonong Project would neither substantially impair the efficiency of the applicants' service (Wis. Stat. § 196.49(3)(b)(1)), nor provide facilities unreasonably in excess of the applicants' probable future requirements (Wis. Stat. § 196.49(3)(b)(2)). As such, it is Commission staff's view that the Commission could reasonably find that the public convenience and necessity require the acquisition. Wis. Stat. § 196.49(3)(b).

Energy Priorities Law

Wisconsin Stat. § 196.025 provides that "[t]o the extent cost-effective, technically feasible and environmental sound, the Commission shall implement the priorities under Wis. Stat. § 1.12(4) in making all energy-related decisions." The proposed transaction is the acquisition of the Koshkonong Project by WEPCO, WPSC, and MGE. No circumstances exist in which any of the higher energy priorities listed in Wis. Stat. §§ 1.12 and 196.025 would be applicable, or provide a cost-effective, technically feasible alternative to the proposed acquisition. Commission staff found support for the applicants' assertion that the applicants need additional capacity, nor did Commission staff find any evidence in the record that shows energy conservation or efficiency would meet the applicants' stated capacity needs.

Environmental Impacts

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. Preparation of an environmental impact

statement under Wis. Stat. § 1.11 is not required. The proposed ownership transfer is not expected to affect any historic properties under Wis. Stat. § 44.40, or any threatened or endangered species under Wis. Stat. § 29.604. As the environmental impacts of the proposed Koshkonong Project were contemporaneously evaluated in the CPCN docket through its respective environmental assessment (EA) and the findings incorporated into this docket, the Commission may find it reasonable that the proposed acquisitions comply with Wis. Stat. § 1.11 and Wis. Admin. Code ch. PSC 4.

Use of Brownfields

When considering issuing a CA for the construction of electric generating equipment and associated facilities, the Commission may only grant a CA if it determines that brownfields were used to the extent practicable. Wis. Stat. § 196.49(4). The underlying CPCN docket authorizing the Koshkonong Project included such an analysis as part of the EA. No party introduced any evidence contrary to this finding. The Commission may find it reasonable that the use of brownfields was not practicable.

Summary of Proposed Conditions

For purposes of clarity for both the Commission and the applicants, the proposed language of the conditions identified for the Commission's consideration in this memorandum is as follows:

1. After completion of the proposed acquisition, the applicants shall submit to the Commission their respective proposed accounting entries to record the acquisition of the facilities within 30 days.

2. The applicants shall provide copies of agreements between the applicants and the developers as they become available for informational purposes.

3. If the applicants do not proceed to closing or enter into any arrangement with another party regarding ownership or operation of the projected project, applicants shall provide prior notice to the Commission.

4. To the extent the applicants proceed to closing prior to completion of construction of the projects, the applicants shall file with the Commission quarterly progress reports that include the following: the date that construction commences; major construction and environmental milestones, including permits obtained, by agency, subject, and date, summaries of the status of construction; the anticipated in-service date; the overall percent of physical completion; and the actual project costs to-date. Annually, the applicants shall file with the Commission a revised total cost estimate for the project. Additionally, the applicants shall file with the Commission the date that the projects are placed in service and the final, as-built cost of the project.

5. The Commission, consistent with its past practice, shall review in a future rate proceeding the recoverability of costs associated with the acquisition, O&M costs, and revenues associated with the project; provided, however, that in no event shall the recoverability of the acquisition costs exceed the estimated cost for each applicant specified in the application. If it is discovered or identified that the acquisition cost may exceed the estimated cost of $649 million, the applicants shall notify the Commission within 30 days of when it becomes aware of the possible cost increase.

6. The applicants shall record 100 percent AFUDC on CWIP at their respective weighted average costs of capital.

7. The applicants shall notify the Commission of the effective date of the purchase of the project within 30 days of the effective date of the transfer.

8. The applicants shall be bound by all commitments made by the developer in its application, subsequent filings, and the provisions of the Commission's Final Decision, as modified by the Correction Order, in docket 9811-CE-100. The assignment of the CPCN for the project does not confer additional rights to the applicants than what was afforded to the developer at the time of the application and as specified in the Final Decision in docket 9811-CE-100. Notwithstanding Wis. Stat. §§ 32.02 and 32.03(5)(a), such transfer shall not confer any right to use eminent domain.

9. All commitments made by the applicants in their application, subsequent filings, and the provisions of the Final Decision shall apply to the applicants, any agents, contractors, successors, assigns, corporate affiliates and any future owners or operators of the project. To the extent the applicants transfer any ownership or operational interest in the project, in whole or in part, to a third-party, such transfer does not confer either additional rights or obligations upon that third party than what is afforded to the original developers of the project specified in the Final Decision in docket 9811-CE-100. If the successor, assign, or future owner or operator of the project is a public utility, and notwithstanding Wis. Stat. §§ 32.02 and 32.03(5)(a), such transfer shall not confer any right to use eminent domain.

10. The applicants may not proceed with any substantial changes in scope, design, size, or location of the approved project except as provided for in the Final Decision in docket 9811-CE-100.

Commission Alternatives

Alternative One: Approve the transaction as proposed in the application.

Alternative Two: Approve the proposed transaction with any or all of the conditions identified by Commission staff in this memorandum.

Alternative Three: Do not approve the proposed transaction.

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Ex.-PSC-Key Background Documents
5-BS-258
February 23, 2023
Cover Page

Public Service Commission of Wisconsin

CONFIDENTIAL Koshkonong Solar with Storage CA Application - PSC REF#: 410708

CONFIDENTIAL Koshkonong Solar with Storage CA Application (REDACTED COPY) - PSC REF#: 410709

Final Decision Signed and Served 5/5/2022 - PSC REF#: 437761

Correction Order Signed and Served 6/1/2022 - PSC REF#: 439245

Order and Final Decision Signed and Served 04-18-19 - PSC REF#: 364436

Data Request-PSC-Kitsembel-2 - PSC REF#: 444402

Data Request-PSC-Kitsembel-4 - PSC REF#: 454433

JAK-1.04_CONFIDENTIAL - PSC REF#: 445284

JAK-1.04_CONFIDENTIAL (REDACTED COPY) - PSC REF#: 445285

APPENDIX B CONFIDENTIAL - REVISED - PSC REF#: 433791

APPENDIX B CONFIDENTIAL - REVISED (REDACTED COPY) - PSC REF#: 433792

Response-Data Request-JAK-1.09_CONFIDENTIAL - PSC REF#: 445511

Response-Data Request-JAK-1.09_CONFIDENTIAL (REDACTED COPY) - PSC REF#: 445512

Response-Data Request-PSC-DG-4.01 - PSC REF#: 455254

Response-Data Request-JAK-1.06 Attach - PSC REF#: 445243

MGE-Response-Data Request-PSC-JAK-1.06 - PSC REF#: 456624

Response-Data Request-PSC-JAK-3.05 CONFIDENTIAL - PSC REF#: 447143

Response-Data Request-PSC-JAK-3.05 CONFIDENTIAL (REDACTED COPY) - PSC REF#: 447144

Response-Data Request-PSC-DG-4.04_CONFIDENTIAL - PSC REF#: 455257

Response-Data Request-PSC-DG-4.04_CONFIDENTIAL (REDACTED COPY) - PSC REF#: 455258

Response-Data Request-PSC-DG-4.04 Attach 1_CONFIDENTIAL_REVISED - PSC REF#: 456466

Response-Data Request-PSC-DG-4.04 Attach 1_CONFIDENTIAL_REVISED (REDACTED COPY) - PSC REF#: 456467

Response-Data Request-PSC-DG-4.05 - PSC REF#: 455256

Response-Data Request-PSC-JAK-3.04 - PSC REF#: 447138

Response-Data Request-PSC-DG-4.02 - PSC REF#: 455255

Response-Data Request-PSC-DG-4.04 Attach 2_CONFIDENTIAL - PSC REF#: 455261

Response-Data Request-PSC-DG-4.04 Attach 2_CONFIDENTIAL (REDACTED COPY) - PSC REF#: 455262

MGE-Response-Data Request-PSC-JLH-1.02 - PSC REF#: 434498

MGE-Response-Data Request-PSC-JLH-1.03 - PSC REF#: 434499

Response-Data Request-PSC-RMT-1.01 - PSC REF#: 456780

Appendix B-CONFIDENTIAL Generation Reshaping Economic Evaluation -WEC Utilities_Koshkonong - PSC REF#: 410712

Appendix B-CONFIDENTIAL Generation Reshaping Economic Evaluation -WEC Utilities_Koshkonong (REDACTED COPY) - PSC REF#: 410713

Response-Data Request-JAK-1.14 - PSC REF#: 445247

Final Decision Signed and Served 3/6/2020 - PSC REF#: 385279

Final Decision Signed and Served 05/25/2022 - PSC REF#: 438529

MGE-Response-Data Request-PSC-JAK-1.07 - PSC REF#: 456625

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