

**BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN**

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

Docket No. 5-BS-254

INITIAL BRIEF OF THE CITIZENS UTILITY BOARD

INTRODUCTION

This proceeding considers the application that Wisconsin Electric Power Company (WEPCO), Wisconsin Public Service Corporation (WPSC), and Madison Gas and Electric Company (MGE) (together, “Applicants”) filed on February 16, 2021, under Wis. Stat. § 196.49, for a Certificate of Authority (CA) to acquire the Paris Solar Farm (“Paris” or “the Project”), a 200 megawatt (MW) utility-scale solar-powered electric generating facility with a 110 MW Battery Energy Storage System (BESS) proposed to be built by Invenergy, LLC. (Ex.-WEPCO WPSC MGE-Application-Application-Revised-1).¹

Applicants’ proposed total cost of Paris is approximately \$426 million, comprising \$272 million for the solar facilities and \$154 million for the BESS. (*Id.* at 3). Cost and ownership would be proportioned among Applicants 75% WEPCO, 15% WPSC, and 10% MGE. (*Id.* at 1).

¹ This issue presented in this proceeding is:

Should the Commission grant in whole or in part the application, under Wis. Stat. § 196.49, and if so, under what terms and conditions? 1. Would acquisition of the proposed project substantially impair the efficiency of the service of a public utility? 2. Would acquisition of the proposed project provide facilities unreasonably in excess of the probable future requirements? 3. Would acquisition of the proposed project, when placed in operation, add to the cost of service without proportionately increasing the value or available quantity of service?

Prehearing Conference Memo § II.A. (PSC Ref. #423263).

The Citizens Utility Board (CUB) intervened in the proceeding and was made a party to it on September 24, 2021.

As set forth below, and based on the record of evidence, Applicants have not met statutory requirements for CA approval because they have not provided the analyses necessary for the Commission to make a determination as to whether or not the proposed Paris project is cost-effective and consistent with the public interest. In short, the Application is analytically deficient. Accordingly, CUB respectfully recommends that the Commission require Applicants provide additional information in support of the Project, such that the Commission has an accurate and complete record on which to base a decision in this proceeding.

ARGUMENT

I. The Record is Insufficient to Grant Approval of the Paris Project

A. There is Arguably No Record Evidence Evaluating the Proposed Paris Project and Alternatives

Under Wis. Stat. § 196.49(3), the PSC may refuse to grant approval of an application “if it appears that the completion of *the project*” will (1) substantially impair the efficiency of the public utility; (2) provide facilities unreasonably in excess of future needs; or (3) add to the cost of service without proportionately increasing the value or quantity of service (emphasis added). When the Commission considers construction or acquisition of a resource, an alternatives analysis is fundamental to evaluating the proposed project. Wis. Stat. § 1.12(4), Wisconsin’s Energy Priorities Law, guides this alternatives analysis. Energy efficiency tops the list of generation options that should be considered when determining how to best meet customer demand. Wis. Stat. § 1.12(4)(a).

WEPCO and WPSC present no evidence, through their PLEXOS modeling or otherwise, that they considered energy conservation as an alternative to the Paris project. WEPCO and WPSC also did not consider generation resources of different types or locations from the Paris project. Nor did WEPCO and WPSC consider solar and BESS units smaller (or larger) than the proposed Paris units, even though both solar and BESS are readily scalable, unlike conventional generation resources, and therefore able to be sized as needed for cost-effectiveness. In fact, WEPCO and WPSC have provided no customer need or economic cost of service information specific to the Paris project at all.² (Direct-CUB-Singletary-r-3, Direct-WIEG-Maini-p-4).

WEPCO and WPSC witness Mr. Gerlikowski concedes this fact:

the utilities did not compare the Paris Project to another individual solar farm or BESS project, or to another generation resource per se. Instead, the utilities devised the entire GRP as a comprehensive strategy to retire and replace generation sources. . . . Thus, WEPCO and WPSC compared the GRP—which includes the Paris Project—to the status quo. (Direct-WEPCO WPSC-Gerlikowski-pr-12).

Nothing in the law precludes an applicant from presenting modeling of a comprehensive, long-term, multi-facility generation plan, what might be called an integrated resource plan (IRP), as *part of* a project proposal.³ Indeed, CUB acknowledges the benefits of combined modeling along the lines of what WEPCO and WPSC have performed in preparing their GRP, since this sort of analysis provides the Commission with a more informative map of how a proposed project fits

² CUB acknowledges that the Paris application presents some information about the project’s engineering, operations, performance, and environmental impacts (Direct-CUB-Singletary-r-3), but this does not fulfill the statutory requirements regarding project need and cost.

³ By legislative repeal (1997 AB 940) of Wisconsin’s IRP statute, utilities are no longer required to submit biennial advance plans to the Commission as part of an IRP process. The IRP statute’s replacement, Wis. Stat. § 196.491(2), requires the Commission to “prepare a biennial strategic energy assessment that evaluates the adequacy and reliability of the state’s current and future electrical supply.” Wis. Stat. § 196.491(2) imposes duties on the Commission and in no way speaks to what an applicant may or may not present to bolster its case that a proposal is cost-effective and consistent with the public interest,

within an overall resource plan.⁴ (Surrebuttal-CUB-Singletonary-2). However, this *alone* does not provide the Paris-specific analysis required to grant CA approval of Paris. (*Id.*) CUB has similar “project-as-an-IRP” concerns with MGE’s modeling in that MGE’s Electric Supply Needs & Analysis Report does not adequately demonstrate the need for Paris per se. (Direct-CUB-Singletonary-r-18). The question before the Commission in this proceeding is whether the Applicants should be allowed to construct Paris, not whether their IRPs are reasonable. (Surrebuttal-CUB-Singletonary-3). To that end, just as nothing in the law precludes an applicant from presenting its IRP as evidence in this proceeding, nothing in the law precludes the Commission from evaluating and making determinations regarding the sufficiency of the IRP vis-à-vis the question of whether Paris is in the public interest.

WEPCO and WPSC did present one facility-specific snapshot in the docket, but it is not for the Paris project. (Surrebuttal-CUB-Singletonary-2). In testimony filed December 10, it was revealed that WEPCO and WPSC now propose to buy the Whitewater natural gas combined-cycle generating facility (Whitewater) rather than let the Whitewater PPA expire. (Rebuttal-WEPCO WPSC-Eidukas-r-6). WEPCO and WPSC provided the results of a “refreshed” GRP economic analysis, along with updated sensitivities, reflecting the addition of Whitewater along with the removal of the Badger Hollow and Blue Sky Green Field (BSGF) BESS facilities from the GRP (Rebuttal-WEPCO/WPSC-Gerlikowski-pr-17-20), i.e. the apparent substitution of Whitewater for the two BESS facilities. (Surrebuttal-CUB-Singletonary-2). WEPCO and WPSC’s Whitewater snapshot in no way demonstrates why purchasing Whitewater obviates the need for the Badger

⁴ In Docket 6680-CE-181, Wisconsin Power and Light (WPL) presented its Blueprint to stakeholders out of a litigated setting. (Direct-CUB-Singletonary-r-14). WPL developed the Blueprint using a more robust analytical process than WEPCO and WPSC use here, including a reasonably wide-ranging scenario analysis and stochastic modeling through Aurora to produce probabilistic, rather than point estimate, results. (*Id.*) While not a best-practice model for stakeholder engagement, WPL’s approach is easily distinguished from, and preferable to, WEPCO and WPSC’s approach in the docket before us. (*Id.*)

Hollow and BSGF BESS facilities and not some other BESS facility, such as the Paris BESS.⁵ (Surrebuttal-CUB-Singletary-4). Again, WEPCO and WPSC's analysis of resource-specific alternatives is lacking.

Whether or not, as Mr. Gerlikowski says "conducting combined modeling in support of the entire GRP is superior to the piecemeal, project-by-project modeling that Mr. Singletary now advocate[s] in this proceeding" (Rebuttal-WEPCO/WPSC-Gerlikowski-5), where the current record in this proceeding is concerned, the GRP modeling does not support the conclusion that the Paris project is cost-effective and in the public interest, and the "project-by-project" economic modeling is, in fact, absent.

WEPCO and WPSC's insistent use of their GRP as the evidentiary basis for this application also raises due process concerns. (Direct-CUB-Singletary-r-10). The proceeding is titled and was noticed as "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." Despite this, and as described above, WEPCO and WPSC focus their analysis on the need for the GRP and Whitewater, not on the cost-effectiveness of Paris and alternatives to Paris. (*Id.*). When a proceeding entitled one thing (Paris) is actually about another thing (the GRP and Whitewater), then it has not been publicly noticed, and stakeholders are denied an opportunity to comment on and otherwise participate in issues before the Commission.

⁵ The results of WEPCO and WPSC's Whitewater analysis raise the question of whether it would be preferable to acquire Whitewater and the Badger Hollow and BSGF BESS facilities rather than construct the Weston RICE facility currently under review in Docket 5-CE-153. (Surrebuttal-CUB-Singletary-4).

B. The Technical Evidence that is Presented in this Docket is Insufficient to Meet CA Requirements

Setting aside the lack of analysis in support of Paris in particular, the record clearly demonstrates that the evidence WEPCO and WPSC *have* presented—information on the GRP—is deficient or lacking in analytical rigor. WEPCO and WPSC base their economic modeling of the GRP on a sensitivity analysis that tests an inadequate number of independent variables (Direct-CUB-Singletary-r-8-9) in artificially narrow ranges (Direct-CUB-Kihm-15-16). Evaluating the economics of an application requires analyzing a range of futures, including and extending beyond those that applicants believe are most probable. (Direct-CUB-Singletary-r-9). WEPCO and WPSC have not undertaken such an analysis in this docket. The analytical framework used to evaluate the GRP is flimsy at best.

WEPCO and WPSC’s insistence that their PLEXOS modeling presents an adequate and relevant scenario analysis (*see* Rebuttal-WEPCO/WPSC-Gerlikowski-pr-2-5) further emphasizes the gap between the record in this docket and what is needed to demonstrate cost-effectiveness of a proposed project. A scenario analysis would involve modeling a range of future possibilities, considering a combination of factors that could change (Direct-CUB-Singletary-r-6), for example natural gas prices, discount rates, future load, reserve requirement, generation capital costs, supply chain effects, in-service date disruptions, and future public policies. (*Id.* at 9). Scenario analysis considers a more complex, realistic world and complements sensitivity analysis, which investigates the effect of changing one variable. (*Id.* at 6-7). WEPCO and WPSC’s comparison of the existing WEC fleet, on the one hand, to the WEC supply portfolio as envisioned under a GRP that includes all of WEC’s proposed asset retirements and new

investments, on the other hand, is a presentation of *alternative* IRPs; it is not a meaningful scenario analysis. (*Id.* at 5).

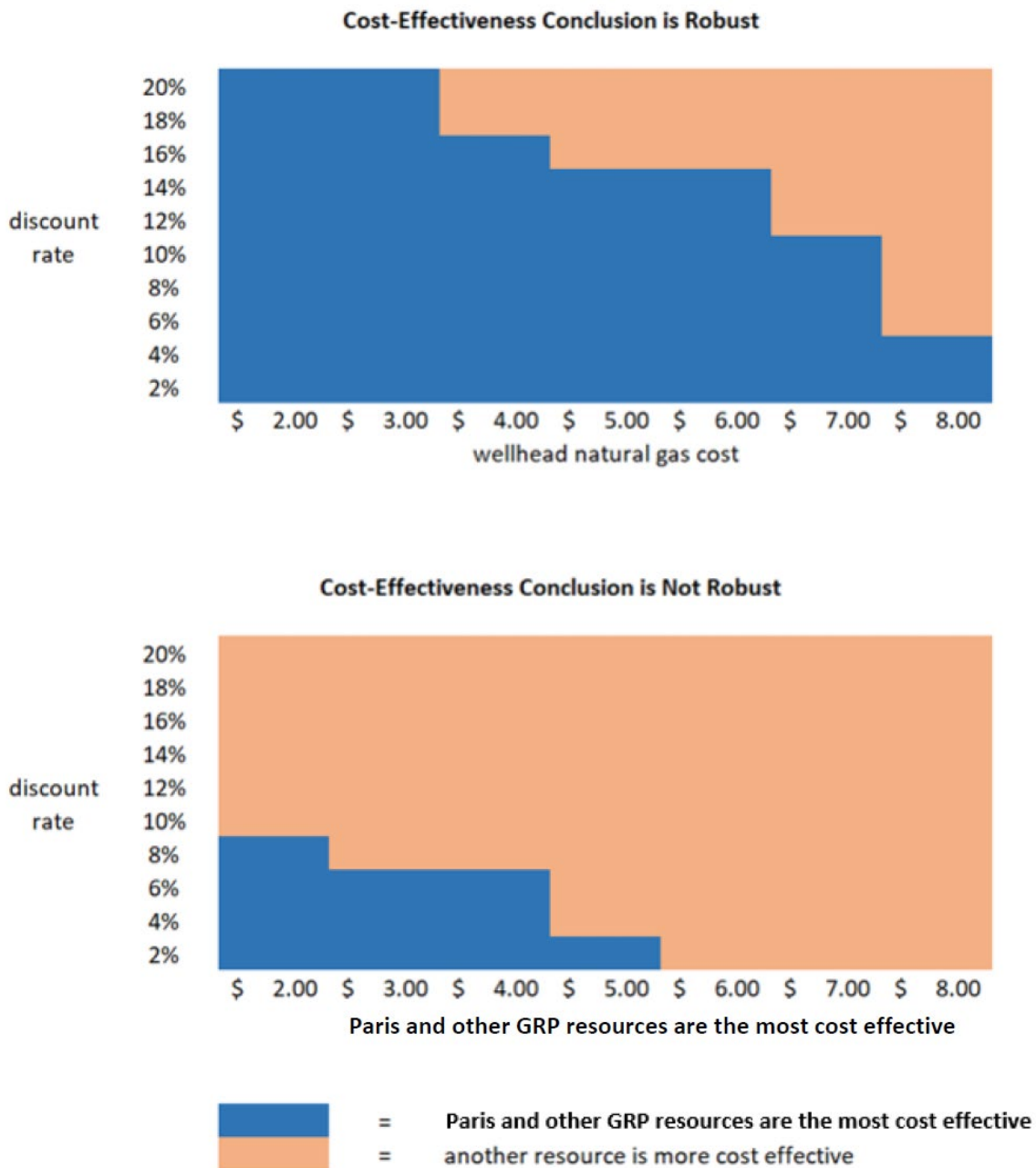
Dr. Kihm explains why a reasonable range of input assumptions is important in evaluating the cost-effectiveness of the Paris project:

Since Wisconsin Electric and Wisconsin Public Service Corporation evaluate all of their individual resources as part of their Generation Reshaping Plan (GRP) rather than as stand-alone facilities, issues such as natural gas prices need to be addressed in a proceeding ostensibly about the purchase of solar and storage facilities because the price of natural gas has significant influence on the cost-effectiveness of the GRP. I reiterate the need to conduct sensitivity about future levels of natural gas prices and to apply a wide range of consumer discount rates rather than individual investor discount rates. (Direct-CUB-Kihm-2-3)

Ten-percent owner MGE's modeling is more appropriate than what is presented in the GRP: MGE presents two resource planning approaches across three discrete futures (i.e. a scenario analysis) and conducts a sensitivity analysis that further refines this scenario analysis rather than substitutes for it. (Direct-CUB-Singleton-r-18). However, it would be valuable if the number of modeled scenarios were greater and considered a wider range of input variables. (*Id.*) Greater robustness testing, particularly in light of the first-in-the-state nature of the Paris BESS, is necessary to provide sufficient evidence to allow the Commission to approve the project, were it so inclined. (*Id.*)

The diagrams below illustrate what a robust conclusion of cost-effectiveness might look like when considering two critical sensitivities: discount rates and natural gas prices. It is rarely, if ever, the case that a particular resource is cost-effective over the range of input assumptions. If it is, then the sensitivity analysis was likely too narrow. Holding other factors constant, if Applicants' proposed facilities are the most cost-effective over a wide range of discount rates and natural gas prices, the Commission can be reasonably confident, though not certain, that the resource will create net economic value for customers relative to that associated with resource

alternatives. If, on the other hand, the facilities in question are cost-effective only over a narrow range, then more thought, and analysis, is required: Are there other resources that are slightly less cost-effective over the range over which the resources in question are cost-effective but which are generally more cost-effective over a much broader range of input assumptions? Such a resource might then be preferred from a risk-based perspective. (Direct-CUB-Kihm-20).



The following technical discussion describes key analytical components that are missing from the record in the Paris docket. If Applicants provided this needed information, the Commission could evaluate the costs and benefits associated with the GRP and the Electric Supply & Needs Analysis Report and make an informed decision that considers cost-effectiveness for different customers across a range of futures. (Direct-CUB-Singleton-r-9). While this still does not address the Paris project per se, it would be one critical step toward a robust analysis of the presented IRPs.

1. The analysis should test various customer discount rates to measure economic value to customers

One discount rate cannot represent the range of preferences of Applicants' residential and business customers. Nor does CUB suggest Applicants or the Commission pick one discount rate. For the reasons discussed below, CUB recommends that a range of discount rates be modeled to test robustness of Paris across this range of customer preferences. (Direct-CUB-Kihm-13).

"Discount rate" in the context of this discussion represents the present-versus-future time preferences of a customer's expense decision or a business customer's risk-adjusted required return on its capital. (Direct-CUB-Kihm-5). The discount rate provides the weighting that customers would apply to present and future utility costs and benefits, reflecting these time preferences. (*Id.* at 5-6). When purchasing non-utility items, the customer uses this discount rate to convert all future expenditures to present value equivalents. (*Id.* at 11-12). For example, if a customer has a 5% discount rate, a \$100 cash benefit that will occur in 10 years is equivalent to \$61 today. If the product that produced the \$100 future savings cost \$50 today, this customer would find it to be cost-

effective to purchase it (\$50 today is less than the \$61 benefit). On the other hand, if the customer's discount rate is 15%, that same \$100 cash benefit is worth only \$25 today. This customer would not purchase the product at \$50 because this would exceed the present-day equivalent savings (\$50 is more than the \$25 benefit).

In nonregulated markets this all unfolds seamlessly. In the context of a utility proceeding, however, the Commission makes the resource decision for the customer and therefore must attempt to consider how customers weigh present versus future consumption. (*Id.* at 11-12). The Commission is presented, conceptually, with an equation with utility revenue requirements (the cost of the resource) forming the numerator and customer discount rates (customer preferences for present and future consumption)⁶ forming the denominator. (*Id.* at 5). If we are trying to determine what customers prefer, the question must be framed this way. (*Id.* at 6).

WEPCO and WPSC wrongly suggest that the utilities' weighted average cost of capital (WACC), which is the investors' discount rate, is the appropriate discount rate to use in calculating the present value of revenue requirements. (*Id.* at 3). The idea that discounting revenue requirements at the WACC is appropriate is widespread in regulation but nevertheless fundamentally incorrect. (*Id.*). In a regulatory proceeding such as this one, the discount rate does not depend on the *utilities'* cost of capital. (*Id.* at 5-6). Instead, the Commission is seeking to determine which resource path has the lowest present value of revenue requirements for the *customers*. (*Id.*). The investors are fully compensated through the rate of return included as a component in the revenue requirement, which is in the numerator of the present value analysis. (*Id.* at 6). Once the revenue requirement is

⁶ The Commission may also consider non-economic factors in reaching its determinations, for example when addressing issues related to public economics, such as environmental externalities. It then may find it reasonable to apply social discount rates rather than the private discount rates discussed here. (Direct-CUB-Kihm-5).

determined, the consideration becomes how to account for customer preferences for present versus future expenditures, as described in more detail below. (*Id.*).

In addition to the WACC representing the wrong party, it has shortcomings as a discount rate. First, it does not reflect most of the risks of the project, as it represents diversified institutional investors' sensitivities to only a few macroeconomic risk factors (e.g., threat of a recession). Second, it does not represent the incremental rate of change in revenue requirements; that is reflected in the economic cost of capital (*id.* at 5-6), which is about 200 basis points higher than the WACC.⁷ In sum, not only is the WACC an unrepresentative discount rate, but also there is no basis of support for quantifying discount rates as the WACC.

WEPCO and WPSC appropriately prioritize customer economic value in their described goals. Mr. Gerlikowski states:

To address their substantial capacity needs, WEPCO and WPSC developed a diverse portfolio of new generation to meet the interrelated goals of: (1) *providing economic value to customers*; (2) significantly reducing carbon emissions; (3) ensuring system reliability; (4) providing resiliency; and (5) hedging against market risks. (Emphasis added.) (Direct-WEPCO WPSC-Gerlikowski-pr-6).

However, this qualitative focus on customer value is thwarted when WEPCO and WPSC wrongly quantify discount rates as the utility's WACC, which relates to investors, not customers. (Direct-CUB-Kihm-3).

In strong language, a federal court affirmed the Federal Energy Regulatory Commission's (FERC) use of customer discount rates to calculate present value (Direct-CUB-Kihm-4):

The Commission chose to apply a uniform discount rate to represent the rate applicable to the customers rather than the applicants...The premise of the cities' position is that the relevant "discount rate" and the applicants' "cost of capital" are synonymous. They are not. Consumer and utility discount rates are "quite different in concept"...It was therefore entirely proper for the Commission to calculate the present value of the net benefits of the

⁷ *Final Decision*, Joint Application of Wisconsin Electric Power Company and Wisconsin Gas LLC for Authority to Adjust Electric, Natural Gas, and Steam Rates, Docket 5-UR-109 (Dec. 19, 2019) (PSC REF#: 381305) at 69.

projects using a discount rate that focused on the *consumers'* value of money. (Emphasis in original.) *Northern California Power Agency v. F.E.R.C.*, 37 F.3d 1517, 1522-1523 (D.C. Cir. 1994).

Furthermore, the Wisconsin Commission explicitly addressed this issue in an advance plan docket.⁸

(Ex.-CUB-Kihm-1). The Commission's Order in Docket 5-EP-5 states:

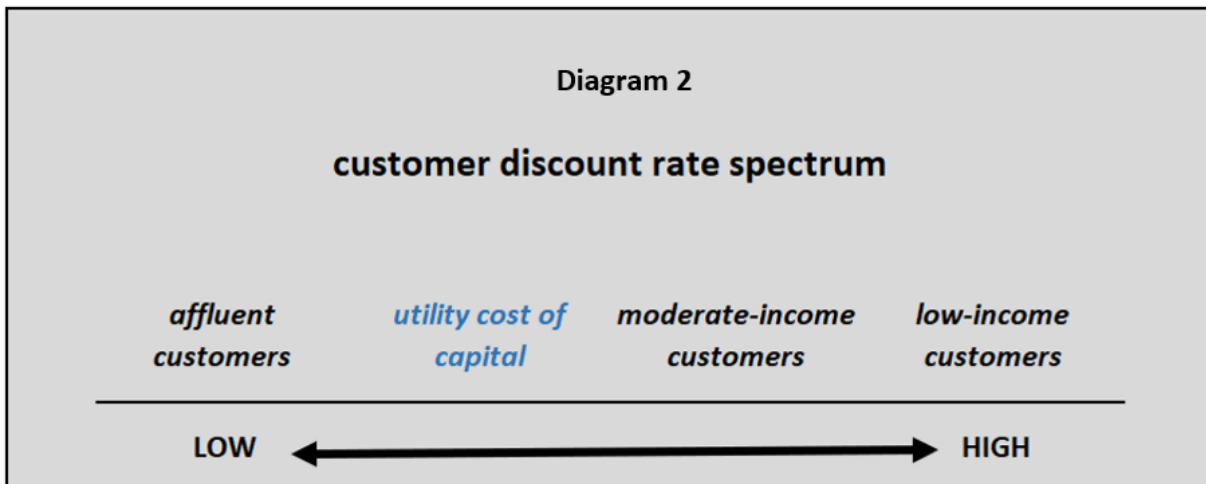
In the Advance Plan process, the commission determines which resource options are the most cost effective for present and future ratepayers. Therefore, the ratepayers' discount rate, not the utilities' cost of capital, should be used to discount revenue requirements associated with all demand- and supply-side resource option.

In the ultimate Findings of Fact it concludes:

The ratepayers' discount rate is appropriate to calculate the present value of revenue requirements for all demand- and supply-side options. It is reasonable and just for the ratepayers' discount rate to reflect both existing and future ratepayers' interests.

Since the customers who will be paying for the Paris project have different preferences for present versus future spending, no one discount rate represents all of them. (Direct-CUB-Kihm-9-12). At one end of the spectrum, wealthy residential customers with disposable income or savings might opt for expensive transactions today if this is likely to save them money later, so these customers have low discount rates close to the general inflation rate, which today's bond market suggests is roughly 2% over 30 years; at the other end of the spectrum, low-income customers who have little or no cash or who are in debt prefer to defer costs until the future, so these customers could have high discount rates nearing 20%. (*Id.*). A diagram illustrates these ranges and where the utility's WACC might fall:

⁸ Docket 5-EP-5, *Re: Advance Plans for Construction of Facilities*, 102 P.U.R.4th 245 (1989), 1989 WL 418616.



Where business customers are concerned, whether they are publicly-owned or privately-owned, their discount rate will be substantially higher than the utility’s weighed cost of capital. (Direct-CUB-Kihm-7-9). This is especially true of privately-owned businesses, given that their owners are rarely diversified and that they have among the highest costs of capital of any firms. (Direct-CUB-Kihm-9-10).

One discount rate cannot represent each and every residential and business customer, and CUB does not suggest the Commission pick one discount rate. Rather, we recommend that a range of discount rates, such as 2% to 18%, be modeled to test robustness of Paris across this range of customer preferences. (Direct-CUB-Kihm-13). Such an analysis would give the Commission insight necessary to determine the cost-effectiveness of the resource or resources in question. (*Id.*). As noted in the discussion of gas price sensitivities below, we would not expect a single resource to be the most cost-effective resource over all input assumptions. (*Id.* at 5-6).

2. The analysis should test a range of gas prices to protect customers

As one discount rate cannot represent the range of preferences of Applicants' residential and business customers, testing a narrow range of gas prices⁹ cannot measure the impact of future gas prices on a project's cost-effectiveness. For the reasons discussed below, CUB recommends that a reasonable range of gas price sensitivities be modeled to test robustness of Paris across a range of possible futures. Such an analysis is necessary to understand how the proposed project would withstand gas price unpredictability and, ultimately, to protect customers.

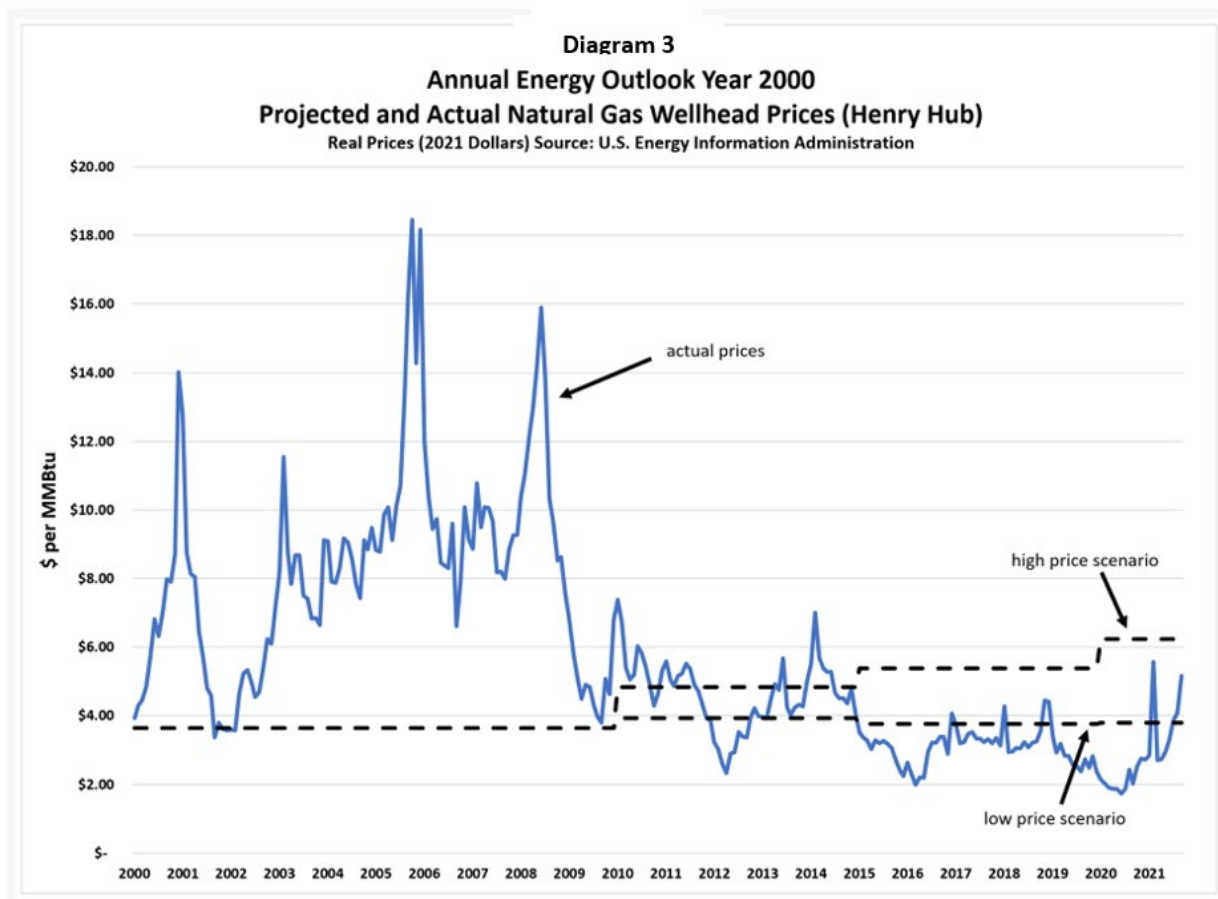
Overwhelming evidence suggests that natural gas prices are impossible to predict accurately. (Direct-CUB-Kihm-13-19, Surrebuttal-CUB-Kihm-1-6, Sur-sur-surrebuttal-CUB-Kihm-1). For example, a study of 20 years of U.S. Energy Information Administration (EIA) gas price forecasts showed a 61% annual error in forecasting,¹⁰ and the unpredictability of gas prices has only increased in recent years.¹¹ (Direct-CUB-Kihm-13).

The diagram below compares the high and low natural gas price projections (dashed lines) from the 2000 Annual Energy Outlook to the actual prices (solid line) that occurred over the twenty years following that forecast release. (Direct-CUB-Kihm-15-16).

⁹ WEPCO and WPSC evaluate Paris as part of a GRP that includes a significantly increased proportion of natural gas, so natural gas prices are especially critical to the discussion in this docket. (Direct-CUB-Kihm-2).

¹⁰ NGI Staff Report, *EIA forecasters pull their hair out when it comes to natural gas*, Natural Gas Intelligence. (November 20, 2003).

¹¹ Sherwin, E. D., Henrion, M. & Azevedo, I. M. L., *Estimation of the year-on-year volatility and the unpredictability of the United States energy system*, Nature Energy, 3, 341-346 (2018).



The EIA itself warns against using its natural gas price projections as forecasts of future prices (Direct-CUB-Kihm-14):

Projections in the Annual Energy Outlook 2021 (AEO2021) are not predictions of what will happen, but rather, they are modeled projections of what may happen given certain assumptions and methodologies.¹²

¹² U.S. Energy Information Administration, *Annual Energy Outlook 2021 with Projections to 2051: Narrative*, 1 (2021).

David Daniels, EIA’s chief forecaster, goes further in a 2019 Forbes interview when speaking about its International Energy Outlook (IEO), indicating that the IEO also cannot and does not predict future natural gas prices (Surrebuttal-CUB-Kihm-2):¹³

EIA is really sure that what we project in here is not going to happen. . . It is wrong. We know it's wrong. It's biased. We know where the bias is. . . Please don't make any investment decisions based on this. It will be wrong.

Nevertheless, WEPCO and WPSC use the EIA’s 2020 Annual Energy Outlook (AEO) as their base natural gas price forecast, and they double down on the assertion that “[t]his forecast is widely accepted in the industry as being the best available non-biased public source of future natural gas prices.” (Rebuttal-WEPCO WPSC-Gerlikowski-pr-10).

While the urge to rely on EIA’s predictions is powerful, we must fight it. (Direct-CUB-Kihm-16). Some might argue that the Commission needs to rely on *some* forecast, but this is incorrect. What the Commission needs is a map of future possibilities—a reasonable picture of an uncertain future—on which to make an informed decision on behalf of customers. (Direct-CUB-Kihm-14). If the natural gas price analysis used by Applicants to support the Paris units and the GRP is based solely on one inaccurate forecast, the customers will bear the consequences. (Surrebuttal-CUB-Kihm-3).

Rather than turn a blind eye to the unpredictability of gas prices, as WEPCO and WPSC’s analysis in this docket appears to do, the Commission can use this knowledge of gas price unpredictability to facilitate better decision-making. As the EIA states:

The primary goal of forecasting is to identify *the full range of possibilities*, not a limited set of illusory certainties. Whether a specific forecast actually turns out to be accurate is only part of the picture—even a broken clock is right twice a day. Above all, *the forecaster’s task is to map uncertainty*, for in a world where our actions in

¹³ McMahon, J. October 22, 2019. Why you shouldn’t believe those headlines about energy and emissions in 2050. *Forbes*.

the present influence the future, uncertainty is opportunity.¹⁴ (Emphasis added.)
(Direct-CUB-Kihm-14)

The Commission needs data to evaluate cost-effectiveness of Paris over a wide range of natural gas prices. (Direct-CUB-Kihm-17). To accomplish this, the Commission should require Applicants provide the net present value analysis for all resources under consideration in this docket, including known alternatives such as extending the LS Power purchase option, over a reasonable range of natural gas prices. (*Id.* at 18). CUB suggests a range of real prices, in dollars per MMBtu for every year of the expected life of the units, from \$2.00 to \$8.00.¹⁵ (*Id.* at 17-18). If the Paris and other GRP resources are cost effective over some narrower range of natural gas prices than \$2.00-\$8.00 per MMBtu, but not cost-effective outside that range, Applicants should provide that information. (*Id.* at 18).

In a world in which numerous demand- and supply-side technologies compete to provide service to customers in a cost-effective way, it is unreasonable to expect that a single technology would be the most cost-effective resource over all plausible input assumptions. (Surrebutal-CUB-Kihm-5-6). If the range of prices over which the resources are found to be cost-effective is wide, holding other assumptions and policy objectives constant, Applicants' case is strengthened; if the range over which they are cost effective is narrow, a closer look at alternatives would be in order. (*Id.*).

This approach, which might appear to decrease certainty in the analysis, would in fact *increase* certainty in the Commission's qualitative conclusion as to the proposed project's cost-effectiveness. (Direct-CUB-Kihm-17). For example, hypothetically, finding that the GRP resources were the most cost-effective resource choice whether the real (inflation-adjusted) price of natural

¹⁴ Saffo, P. (2007.) Six rules for effective forecasting. *Harvard Business Review*.

¹⁵ If Applicants prefer to work in nominal dollars, a 2% annual inflation rate should be applied.

gas averages \$2.00 per MMBtu or \$8.00 per MMBtu over the lives of the projects would be a powerful demonstration of their cost-effectiveness. (*Id.*). If, on the other hand, the Commission found that the units were the most cost-effective resource only if the real price of natural gas averages \$4.00 per MMBtu or less over the lives of the projects, then considering that the latest wellhead natural gas price observed is \$5.16 per MMBtu,¹⁶ further investigation would then be warranted. (*Id.* at 17-18). Either way, the Commission will have a record of complete information and a robust analysis on which to base its decision of whether or not Paris is likely to be cost-effective and consistent with the public interest.

Nor has MGE presented adequate quantitative evidence of cost-effectiveness within a reasonable range of gas price sensitivities. (Surrebuttal-CUB-Singleton-8-9). MGE argues that it is not necessary to model higher gas prices than MGE has already considered because it can be inferred, given Paris's cost-effectiveness at the high end of the existing range of natural gas prices, that "scenarios with even higher natural gas prices would make the project more competitive and cost-effective as compared to other alternatives. (Rebuttal-MGE-Block-3). However, inferences cannot form the basis of a decision. Furthermore, MGE altogether neglects an analysis of lower gas prices, where the cost-effectiveness of Paris is most in question. A record of quantitative evidence, not assumptions, is a necessary basis for decisions, and it is Applicants' responsibility to prove material assertions true by presenting quantitative evidence in the record. (Surrebuttal-CUB-Singleton-9).

¹⁶ Source: U.S. Energy Administration data as of September 2021.

3. The analysis should further consider costs associated with BESS

Another area where the record lacks an adequate analysis is related to BESS, a novel technology. First, there should be sensitivity testing around battery degradation rates and different modes of BESS operation. (Surrebuttal-CUB-Singleton-6). Second, the risk of obsolescence should be quantified appropriately. (Rebuttal-CUB-Kihm-r-1-6; Direct-WIEG-Maini-p-16-18). This risk affects estimates of revenue requirement in that a requirement to purchase a new asset to replace the obsolescent one makes the project more expensive for customers. (Rebuttal-CUB-Kihm-r-3). Thus the impact of the novelty of BESS should be expressed as an explicit reduction in the net benefits of lithium-ion battery storage, not buried in an opaque discount rate.¹⁷ (Rebuttal-CUB-Kihm-r-6).

As PSC staff notes, “the novelty of BESS as a technology used for utility-scale applications makes accurate cost estimation difficult from the outset. Two assumptions about the funding structure that is proposed for the project should be assessed by the Commission through the lens of that novelty.” (Direct-PSC-Adams 5-6). Specifically, investments in new technology like battery storage are likely riskier due to possible technological obsolescence. (*Id.*) “As such, additional scrutiny should be given to assessing whether the WACC truly is the best estimation for the cost of capital incurred for the project.” (*Id.*) .

The technical record lacks the necessary analysis of battery degradation rates, different modes of BESS operation, and risk of obsolescence.

¹⁷ While CUB agrees with Mr. Bacalao’s acknowledgement of customer risk around BESS, CUB disagrees with his assertion that this risk should be factored into discount rates. (*See* Direct-PSC-Bacalao-4; Rebuttal-CUB-Kihm).

II. **Additional Information Could Mitigate the Analytical Deficiencies of this Docket**

CUB believes that critical questions remain unanswered in this docket. First, the record is devoid of a facility-specific analysis of the proposed Paris project that is the subject of this proceeding. Second, what does exist in the record is a flimsy, albeit voluminous, GRP analysis with gaping insufficiencies where customer discount rates, natural gas prices, and BESS, among other areas, are concerned.

To address this, CUB recommends that the Commission take the maximum amount of time allowable under Wisconsin statute to open a separate proceeding to take in additional evidence regarding the GRP, and now the Refreshed GRP, and determine the reasonableness of the GRP itself before proceeding with its decision regarding any of the facility-specific applications related to the GRP, including Paris. (Surrebuttal-CUB-Singleton-6).

Alternatively, if the Commission opts to evaluate the Paris project using the IRP evidence presented as a starting point, CUB recommends that the Commission require WEPCO and WPSC to run a scenario analysis of the GRP evaluating the economic performance and customer costs and benefits over a wide range of futures. (Direct-CUB-Singleton-r-9). These scenarios should be based on a reasonable range of input variables, including but not limited to:

- Customer discount rates from 2% to 18%;
- Gas prices from \$2.00 to \$8.00 per MMBtu, in real dollars, for every year of the expected life of the units (or, if Applicants prefer to work in nominal dollars, from \$2.00 to \$8.00 with a 2% inflation for every year of the expected life of the units);
- Battery degradation rates and different modes of BESS operation; and
- Risk of obsolescence.

Further analyses could also consider future load, reserve requirements, generation capital costs, supply chain effects, in-service date disruptions, and future public policies to ensure the robustness of the analysis. (Direct-CUB-Singletary-r-8).

As a part of this, in order to evaluate Paris, the subject of this proceeding, CUB recommends that Applicants present a facility-specific analysis that looks at alternatives to the proposed Paris solar and BESS project, including energy efficiency, smaller units, different generation, and the base case of no additional investment.

Finally, should the Commission approve the Paris project, CUB recommends that the Commission adopt these two conditions: first, if it is discovered that the total project cost, including force majeure costs, may exceed the current estimate (\$433 million), Applicants shall promptly notify the Commission as soon as they become aware of the possible change or cost increase; second, Applicants must seek Commission approval prior to the recovery of any costs in excess of \$433 million excluding AFUDC, which represents the total project cost estimated by Applicants. (Rebuttal-CUB-Singletary-2).

CONCLUSION

As set forth above, and based on the record of evidence, Applicants have not met statutory requirements for CA approval. This is not because the record demonstrates alternatives to Paris that are more cost-effective and consistent with the public interest. Rather, it is because the information Applicants have provided is analytically deficient and does support any conclusion at all regarding the project that is the subject of this docket. Accordingly, CUB respectfully recommends that the Commission require Applicants provide additional information in support of the Project, as described above, such that the Commission has an accurate and

complete record on which to base a decision of whether or not the proposed Paris project is cost-effective and consistent with the public interest.

Dated this day, January 19, 2022.

Respectfully Submitted,

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By: /s/ Cara Coburn Faris
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