BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN

Joint Application of Madison Gas and Electric Company and Wisconsin Public Service Corporation for Approval to Acquire Ownership Interests in Solar Electric Generating Facilities

Docket No. 05-BS-228

REBUTTAL TESTIMONY OF COREY S.J. SINGLETARY ON BEHALF OF CITIZENS UTILITY BOARD

Q. Please state your name, business address, and occupation.

A. My name is Corey S. J. Singletary and my business address is the Citizens Utility Board (CUB), 6401 Odana Road, Suite 24, Madison, Wisconsin 53719. I am employed by CUB as a Utility Analyst.

Q. Have you previously submitted testimony in this proceeding?

A. Yes.

Q. What is the purpose of your rebuttal testimony

A. My rebuttal testimony will address the direct testimony of Public Service Commission (Commission) staff witnesses Alexander Vedvik and Ajinkya Rohankar.

Q. Have you reviewed Mr. Vedvik and Mr. Rohankar's analysis of the economics associated with the proposed solar acquisition by Madison Gas and Electric Company and Wisconsin Public Service Corporation (the Applicants)?

A. Yes.

Q. After reviewing Mr. Vedvik and Mr. Rohankar's direct testimony have you changed your assessment of the economics of the solar acquisition for the applicants and their customers?

A. Yes. In their direct testimony, Messrs. Vedvik and Rohankar present the results of additional sensitivities that consider the impacts of different assumptions regarding capacity accreditation by the Midcontinent Independent System Operator (MISO), capacity factor, avoided capacity cost, and MISO locational marginal price over the life of the Badger Hollow and Two Creeks solar facilities (Solar Facilities). After reviewing the results of these additional sensitivity analyses, I believe there is material risk that the proposed acquisition of Two Creeks and a portion of Badger Hollow (Solar Acquisition) will result in a net cost to the Applicants' ratepayers, rather than a net benefit as is shown in the application.

Q. In your direct testimony, you stated that you believed "generally speaking, the proposed Solar Acquisition appears to not be an unreasonable means by which the Applicants may be able to meet their stated long-term capacity needs." (Direct-CUB-Singletary-5) What has caused you to change your assessment of the Solar Acquisition?

A. As described in my direct testimony, in forming my initial assessment, I examined the effect that changes to different input assumptions would have on the results of the spreadsheet financial analysis used by the Applicants. As noted in my direct testimony, I found that it was possible to "flip" the results of the financial analysis, that is to cause the net present value revenue requirement impact to go from negative (beneficial) to positive (harmful) if multiple input assumptions were changed in combination by a large enough magnitude. At the time that I performed my analysis, I had assumed that large changes to the MISO capacity accreditation ratio from what was assumed by the applicant were unlikely, based on my understanding of the current MISO Resource Adequacy BPM (Ex.-PSC-Vedvik-3).

However, when I filed my direct testimony, I was not aware that MISO has been contemplating through the MTEP19 process that solar photovoltaic (PV) generating facilities may receive a lower capacity accreditation in the future as solar PV penetration increases within the MISO footprint. (Ex-PSC-Vedvik-1) After examining Mr. Vedvik's testimony and exhibits, it appears that capacity accreditation ratios that I had initially considered as highly unlikely, are in fact probable, if not highly probable, over the anticipated life of the Solar Facilities.

Q. Could you please elaborate on how this has affected your assessment of the risk associated with the solar acquisition?

A. Yes. However, in order to simplify the following discussion, I would like to make the following observation. In reviewing Mr. Vedvik's sensitivity analysis, I noted that the Net Present Value Revenue Requirement (NPVRR) impact of the Solar Acquisition on WPSC when the capacity credit in MISO is adjusted using the MTEP19 assumptions, is roughly the same as if a 40% capacity credit is used.[1] As neither Mr. Vedvik nor Mr. Rohankar evaluated the MTEP 19 capacity credit assumptions across all their various sensitivity analyses, for comparison purposes I believe it would be reasonable to consider modeling scenarios that evaluated a 40% capacity credit as a reasonable proxy for the use of the MTEP19 capacity credit assumptions, and vice versa.

Q. Please continue.

A. A significant portion of the value of the Solar Acquisition to the Applicants is derived from the contribution the facilities will make to the Applicants' capacity reserve. Indeed, the

[1] Mr. Vedvik's single scenario sensitivity analysis indicates that use of the MTEP19 capacity credit assumptions produces a net revenue requirement of -$42.6 million including AFUDC, a change of $72.9 million from the Applicants' base case, whereas the use of a 40% capacity credit produces a net revenue requirement of -$43.1 million including AFUDC, a change of $72.4 million from the Applicants' base case. (Ex.-PSC-Vedvik-7)

Applicants have applied for authorization to acquire the Solar Facilities precisely because they have claimed a future capacity need. If MISO changes its capacity accreditation methodology for solar PV facilities such that the actual accreditation ratio for the Solar Facilities is significantly lower over the life of the facilities than the 73.4% assumed in the Applicants' base case, the net value to the Applicants and their customers is significantly diminished. Based on a review of Mr. Vedvik's testimony and exhibits, there is a significant quantity of solar PV in the MISO interconnection queue. (Direct-PSC-Vedvik-9) As such it appears likely that MISO will adjust its capacity credit methodology for solar PV in the future, in response to the increase in solar PV penetration in the near-term.[2] As a consequence, I believe it would also be reasonable to assume that the actual capacity value of the Solar Facilities will be significantly lower over the life of the facilities than what has been assumed by the Applicants.

Q: Are you suggesting that if the capacity credit reductions contemplated in MTEP 19 are realized, that the Solar Acquisition is not in ratepayers' best interest?

A. Not necessarily. Based on Messrs. Vedvik and Rohankar's testimony, it does not appear that this one change in isolation would *necessarily* flip the economics of the Solar Acquisition. For example, according to Mr. Vedvik's analysis, adjusting the Applicants' base case using the MTEP 19 capacity accreditation assumptions still produces a $42.6 million revenue requirement decrease for WPSC customers, over the life of the facilities, when considered on a Net Present Value (NPV) basis. Similarly, when the base case is adjusted for a 40%

[2] A solar PV penetration of 1.3GW in the MISO footprint is expected to drop the ELCC of solar resources to roughly 30 percent. (Direct-PSC-Vedvik-9) If the Badger Hollow and Two creeks facilities are constructed as planned (450 MW), then approximately 850 MW or 2.5 percent of the remaining 34.1 GW of solar capacity in the MISO queue would need to be constructed to reach the 1.3 GW threshold. In fact MISO presently reports that approximately 1.25 GW of solar generation is currently under construction, including 99 MW in Wisconsin. (https://www.misoenergy.org/planning/generator-interconnection/GI_Queue/, accessed January 11, 2019)

effective load carrying capability (ELCC), the EGEAS results presented by Mr. Rohankar still suggests that the full capacity proposed to be acquired by MGE would remain as part of a least cost plan for MGE. (Direct-MGE-Block-7, Ex.-PSC-Rohankar-1)

That being said, when evaluating the risk associated with this or any utility proposal, it is critical to evaluate the proposal's sensitivity to changes in more than one modeling assumption. For example, as part of his sensitivity analysis, Mr. Vedvik evaluated the impact of adjusting downward the Applicant's base case avoided energy cost to reflect weighted average Locational Marginal Prices (LMP) derived from WPSC's authorized 2019 fuel cost plan, both in isolation and in combination with other scenarios (Ex.-PSC-Vedvik-7). In isolation this adjustment to the financial model produced a lower NPV Revenue Requirement (NPVRR) benefit (decrease or negative value) compared to the base case, but still some benefit. However, when combined with a 40% ELCC, the NPVRR impact of the Solar Acquisition flips such that it would be expected to produce an $11.7 million increase in rates on a NPV basis, rather than a decrease.

It appears that the two changes of input assumptions (LMPs and capacity credit levels) that produce this reversal in the economics for WPSC could very well come to pass. MISO is, as shown in its own presentation materials, actively considering a reduction in the capacity credit for solar PV generation in the future, and it appears from those materials that some consensus is building around a significantly lower capacity credit than the number used in Applicants' base cases. With respect to LMPs, the lower weighted average LMP assumption is a direct input from WPSC's 2019 approved fuel cost plan, vetted through a contested case proceeding and approved by this Commission.

Q: What do you conclude from your review of staff's direct testimony and exhibits?

A: When considering this information in totality, I must conclude that the proposed Solar Acquisition carries with it significantly greater risk of ratepayer harm than I had initially believed there to be. To be sure, Mr. Vedvik considered a number of other sensitivities that also produced a similar flip in the economics or significant reduction in the NPVRR impact for WPSC, many of which again do not require one to strain the imagination or consider particularly improbable scenarios. However, I wanted to emphasize this particular sensitivity analysis result, as the scenarios considered appear to have a high probability of coming to pass.

Q. Do you have any comments with respect to the sensitivity analysis performed by Mr. Rohankar on the MGE acquisition?

A. Yes. Based on my review of Mr. Rohankar's supplemental direct testimony and exhibits, it appears that the proposed acquisition remains part of MGE's least cost generation expansion plan, across a wide range of capacity credit scenarios, even when MGE's RECE purchase option is considered.

On the other hand, Mr. Rohankar did not perform an analysis for MGE that considers both a lower capacity credit *and* a lower avoided energy cost, in a way that could be directly comparable to the sensitivity examined by Mr. Vedvik for WPSC: combining a 40% ELCC (again, considered generally comparable to MTEP19 capacity credit assumptions), with avoided energy costs based on MGE's 2019 fuel cost plan. However, Mr. Rohankar's analysis does present EGEAS results using a 40% capacity credit. As noted by Mr. Rohankar, under this scenario the PVRR cost to MGE would increase by $82.3 million compared to the base case. I would note that Mr. Rohankar did evaluate the impact of combining a 40% ELCC with decreased production capacity factors for the Solar

Facilities. Decreasing the capacity factor for the Solar Facilities effectively reduces the avoided energy cost benefit to MGE. While this is not directly comparable to the approach used by Mr. Vedvik, I believe that when considered in combination with the results of Mr. Vedvik's sensitivity analysis for WPSC, the EGEAS results presented by Mr. Rohankar are, at a minimum, illustrative, and possibly indicative of more ratepayer risk associated with MGE's acquisition than is shown in the application.

Q. Is it necessary that an acquisition proposal such as this one produce a decrease in NPVRR in order for the Commission to approve it?

A. No. However, in the application the Applicants have made a point of emphasizing how the Solar Acquisition would produce a decrease in rates for both utilities. I believe that Commission staff's testimony casts doubt on that claim. Secondly, Mr. Vedvik's testimony and accompanying exhibits suggest that alternatives such as executing an ownership share option for RECE, may be a more cost-effective alternative for WPSC. (Ex.-PSC-Vedvik-8)

Q. What specifically would you recommend the Commission consider when deciding whether to approve the proposed Solar Acquisition?

A. I would suggest that the commission consider the following questions:

1. Is the actual capacity accreditation for the Solar Facilities more likely to resemble the MTEP19 assumptions, rather than the 73.4% assumed by the applicants over the entire life of the two facilities?
2. Is the avoided energy cost attributable to the Solar facilities more likely to resemble the average weighted LMP from the utilities 2019 fuel costs plans, rather than the base case assumptions?

If the Commission believes the answer to both is yes, then I believe that approval of the Solar Acquisition as proposed, is not in the best interest of ratepayers.

Q. What alternatives would the Commission have if it were disinclined to approve the Solar Acquisition as currently proposed?

A. The most obvious alternative would be to reject the application entirely. However, if the Commission were inclined to approve the Solar Acquisition but is concerned that the risk to utility customers is too high as the acquisition is currently proposed, the Commission may wish to consider some kind of risk sharing mechanism that would place a limit on the rate impact to utility customers that would arise from the Solar Acquisition.

Q. Why do you think a risk sharing mechanism would be appropriate should the Commission decide to approve the Solar Acquisition?

A. The costs associated with renewable resources such as solar are driven almost entirely by capital expenses. There is no fuel cost, and operation and maintenance expenses are typically relatively limited and generally fixed over the life of the facility. Given the nature of regulated utility ratemaking, utility customers bear all the risk of this capital investment. Absent extraordinary circumstances, customers will be on the hook for the return of and on the utility's capital investment in the solar facility, for the entire depreciable life of that facility regardless of how economics might change due to unforeseen circumstances.

Typically, events that cause the economics of a facility to significantly deviate from what was initially anticipated, are generally unknowable *and* beyond the utility's control. As such, utilities tend to still be granted full recovery of costs, even if the facts might change from those which served as the basis for the Commission's approval.

Q: How is this situation different?

A: In this case, the uncertainty posed by a future change to the MISO capacity credit methodology for solar is still beyond the utility's control, but the best information presently available suggests that the change is more likely than not to happen. The *exact* magnitude of the impact that changes to the MISO solar capacity credit would cause is not known, but Commission staff has presented evidence that suggests that the range of possible outcomes is fairly limited.[3] As such, should the Commission approve the Solar Acquisition, significant risk would be assumed by customers from day one. Should the Commission approve the Solar Acquisition it would effectively be doing so in spite of the risk presented by a change to the capacity credit. As previously noted, this change alone does not completely flip the economics of the Solar Acquisition and its impact on the Applicants' customers. However, it does significantly erode the benefits of the project, leaving little "headroom" below the crossover point where the impact to customers would switch from a net decrease to a net increase, on a NPVRR basis.

Q. Do you have a specific proposal for the Commission to consider?

A. The Commission should add an order condition that the net revenue requirement impact to utility customers shall be no greater than that which is modeled under a scenario where the MTEP19 capacity credit assumptions are applied.

Q. Does that conclude your Rebuttal Testimony?

A. Yes.

[3] MISO has suggested a future solar capacity accreditation ratio of 20-30% (Ex.-PSC-Vedvik-1, p. 16)