

STATE OF MICHIGAN
DEPARTMENT OF ATTORNEY GENERAL



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ATTORNEY GENERAL

March 16, 2023

Ms. Lisa Felice
Executive Secretary
Michigan Public Service Commission
7109 West Saginaw Highway
Lansing, MI 48917

Dear Ms. Felice:

Re: MPSC Case No. U-21265

Enclosed find the *Attorney General and Citizens Utility Board of Michigan's Testimony and Exhibits of Matthew Bandyk*, and related Proof of Service.

Sincerely,

Michael E. Moody
Assistant Attorney General

cc: All Parties

PROOF OF SERVICE - U-21265

The undersigned certifies that a copy of the *Attorney General and Citizens Utility Board of Michigan's Testimony and Exhibits of Matthew Bandyk* was served upon the parties listed below by e-mailing the same to them at their respective e-mail addresses on the 16th day of March 2023.

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STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

MPSC Case No. U-21265

In the matter of the application of)
UPPER MICHIGAN ENERGY RESOURCES)
CORPORATION for approval to implement a)
Power supply cost recovery plan for the twelve)
Months ending December 31, 2023.)

Direct Testimony
And Exhibits
of
Matthew J. Bandyk

On behalf of
Attorney General Dana Nessel
&
Citizens Utility Board of Michigan

March 16, 2023

1 **Q: Please state for the record your name, position, and business address.**

2 **A:** My name is Matthew Bandyk. I am a consultant at 5 Lakes Energy LLC, a Michigan limited
3 liability corporation, located at Suite 218, 220 MAC Avenue, East Lansing, Michigan 48823.

4 **Q: Have you previously testified before the Michigan Public Service Commission?**

5 **A:** Yes, I previously testified on behalf of the Citizens Utility Board of Michigan in the
6 proceeding regarding Consumers Energy Company’s application for approval to implement a
7 power supply cost recovery plan for the 12 months ending Dec. 31, 2022 (U-21048).

8 **Q: Please summarize your experience in the field of utility regulation.**

9 **A:** My experience is summarized in my resume, provided as Exhibit MB-1.

10 **Q: Is the Company’s five-year forecast presented in its Application just, reasonable and in**
11 **the public interest, in your opinion?**

12 **A:** No. For it to be reasonably considered “in the public interest,” a five-year forecast must show
13 the company is working to identify the mix of power supply resources that will be most
14 economical for customers. As my testimony will show, the most economical power supply
15 resource mix for UMERC customers is likely to include power purchase agreements (PPAs) with
16 renewable energy resources — in particular, with wind energy projects. By not including
17 additional renewable PPAs in their forecast and, instead, relying for a majority of its power
18 supply on purchases in the MISO market where customers are exposed to price volatility, the
19 Company is not evaluating all the options that would produce the most value for their customers.

20 **Q: What are the main benefits to customers from long-term PPAs signed with renewable**
21 **energy resources such as wind projects?**

22 **A:** Specifically, renewable PPAs would not only provide energy at costs comparable to what
23 UMERC expects to pay for the fuel costs for its Mihm and Kuester units, but would provide
24 UMERC customers greater insulation from the risk of natural gas price volatility. This protection
25 from volatility has a measurable value that makes the price of renewable PPAs even more
26 attractive and competitive.

27 **Q: Are the power supply costs in the five-year forecast proposed by UMERC heavily**
28 **exposed to natural gas price volatility?**

29 **A:** Yes. As Witness Beyer notes, in 2022 there has been a “significant increase in natural gas
30 prices,” a phenomenon that in turn has led to significantly higher actual and forecasted power
31 supply costs, both for the natural gas-burning units owned by UMERC and the power it
32 purchases on the MISO market. The costs of operating the Mihm and Kuester units are clearly
33 dependent on the price of natural gas. But the market purchases are also inextricably tied to

1 natural gas prices because gas-fired power plants are primarily the marginal source of supply in
2 the MISO system, meaning they set the price of electricity supply across the region.¹

3 **Q: Do purchases of renewable energy like wind and solar act as hedges against gas price**
4 **spikes?**

5 **A:** Yes. One of the most commonly cited benefits of renewable energy are the non-existent fuel
6 costs, and, among other reasons, utilities frequently add renewable energy to their portfolios for
7 the purposes of reducing exposure to fossil fuel price volatility.² Furthermore, when signing a
8 PPA, a counterparty typically locks in a specified price for dollars per MWh of electricity for a
9 term of several years.

10 **Q: Without considering the value of hedging, how do the market prices for renewable**
11 **PPAs compare to UMEREC’s power supply costs in its five-year forecast?**

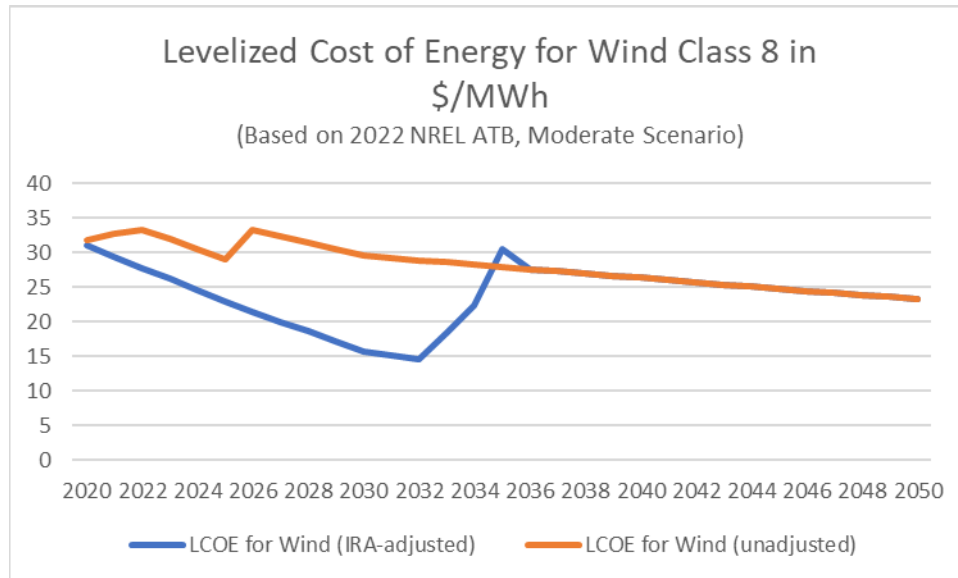
12 **A:** The market price for renewable PPAs is quite competitive with UMEREC’s forecasts. The
13 Company could sign a PPA with a renewable energy facility at a price very close to or less than
14 the \$48.91 per MWh it is forecasting for its MISO market purchases cost in 2023. For example,
15 Consumers Energy recently placed its Crescent Wind project into operations with levelized cost
16 of energy (“LCOE”) of approximately \$48 per megawatt-hour.³

17 Although there has been some inflation since that project began, the Inflation Reduction Act
18 (“IRA”) provides significant new tax credits for new wind generation. The National Renewable
19 Energy Laboratory’s 2022 Annual Technology Baseline (“ATB”) is a prime industry resource
20 used to project the LCOE for renewable energy, but it does not take into account the recent
21 changes from the IRA. I previously modified the ATB to project the LCOE in various future
22 years in wind class 8, which is the wind speed in Michigan for most wind projects. That forecast
23 is shown in the following graph, which I reproduce from my own analysis here to show how
24 changes to federal law have made wind even more economical than previous industry estimates
25 suggested.

¹ Potomac Economics (Independent Market Monitor for the Midcontinent ISO), *2021 State of the Market Report for the MISO Electricity Markets*, June 2022, page iii: “Outcomes in the MISO markets continue to show a consistent overall relationship between energy and natural gas prices, which is expected in a well-functioning, competitive market. Natural gas-fired resources are most often the marginal source of supply, and fuel costs constitute the vast majority of most resources’ marginal costs.”
<https://cdn.misoenergy.org/2021%20State%20of%20the%20Market%20Report625295.pdf>.

² Bryne, Jenkin, Diakov, Drury, Bush, Denholm, Milford, Arent, Margolis. *The Use of Solar and Wind as a Physical Hedge against Price Variability Within a Generation Portfolio*, Technical Report from National Renewable Energy Laboratory, August 2013: <https://www.nrel.gov/docs/fy13osti/59065.pdf>.

³ U-15805 Order of October 7, 2019.



1

2 In Case No. U-21193, DTE Electric, in its current Integrated Resource Plan case, estimated
 3 based on the 2021 ATB that wind LCOE prior to IRA credits would have been \$48.50 per MWh
 4 and that with the IRA credits, wind LCOE will be \$39.70.⁴

5 While the UMEREC forecasts the costs from the MISO market purchases decreasing over the rest
 6 of the five-year period, these forecasts are highly dependent on the price of gas not increasing
 7 sharply again as it has in 2022.

8 **Q: Can the advantages that come from hedging natural gas price volatility be quantified in**
 9 **a way to allow them to be compared to the power supply costs in UMEREC’s five-year**
 10 **forecast?**

11 **A:** Yes. One way to quantify the value of hedging volatility is to look at the derivatives market
 12 for natural gas. Futures and forward contracts for natural gas are heavily traded in markets where
 13 participants (including companies trying to increase or reduce their exposure to commodities like
 14 gas) demonstrate how much they are willing to pay to essentially lock-in a fixed price for gas at
 15 various term lengths.

16 A simple example is a forward contract on a natural gas futures contract. Based upon currently
 17 available market data from the Chicago Mercantile Exchange (see Exhibit MB-2), in February
 18 2023 a futures contract for Henry Hub gas to be delivered in December 2024 is quoted at a price
 19 of \$4.19 per MMBtu. A market participant who buys this contract is agreeing to buy gas at this
 20 price and to be delivered in December 2024, regardless of what the market spot price of gas ends
 21 up being at that point in the future.

⁴ U-21193 Direct testimony of Cejas Goyanes, p RCG-21.

1 Next, looking at the forward contract market for this futures contract can now tell us how much
2 market participants are willing to pay to enact hedging strategies based on these futures prices. A
3 forward contract, also known as an option, is essentially a bet on the direction the price of an
4 underlying asset will go. A participant in a forward transaction can buy a “long” position in the
5 underlying asset, meaning that the participant benefits if the market price of the asset rises. The
6 option carries a “strike” price, where, once the market price of the underlying asset reaches that
7 price, the option buyer may exercise the contract and buy the agreed-upon quantity of the asset at
8 that price.

9 The gains for the buyer in the transaction are the difference between the asset’s market price
10 upon exercise and the asset’s price at the time the contract was purchased. If the price rose over
11 this period by an amount greater than the cost of buying the option, the buyer profits.

12 In this example, the futures contract is the underlying asset. In February 2023, the minimum
13 price for a forward contract expiring in December 2024 (where December 2024 Henry Hub gas
14 futures are the underlying assets) was \$4.5 per MMBtu.

15 Say a company was planning to purchase gas for its business at the market price in December
16 2024 but wanted protection against the risk of the price of gas rising above \$4.5 per MMBtu. The
17 company could buy the call option with the \$4.5 strike price and thus have the assurance that if
18 the price rose over \$4.5 per MMBtu or higher, the company could exercise the option and
19 receive a payment that would compensate the company for the difference between the market
20 price and this strike price.

21 Alternatively, a participant could go “short” on the futures contract by entering into a forward
22 contract where the participant would gain if the price went below the strike price of \$4.5 per
23 MMBtu. It is a common option strategy, in fact, for participants to enter into offsetting contracts
24 where both the long and short positions are covered.

25 The difference between that strike price and the \$4.19 per MMBtu price of the underlying futures
26 contract is about \$0.31 per MMBtu. The quoted market prices I used in this example are
27 available in Exhibit MB-2.

28 **Q: What is the significance of this \$0.31 per MMBtu spread?**

29 **A:** The spread captures the lowest amount of price fluctuations the market is willing to accept to
30 lock in a maximum price for gas through transactions on the forward and futures markets. The
31 spread more fundamentally represents, therefore, the value that the market places on capping gas
32 price volatility.

33 **Q: Why did you select December 2024 as the date for the contracts in this example?**

34 **A:** That date is the furthest-out expiration date for forward contracts on futures contracts on
35 Henry Hub gas that was available as quoted by the Chicago Mercantile Exchange. I selected that

1 date because it best captures the long-term perspective of the market, and thus best approximates
2 the long-term insulation from the effects of gas price increases that would come with a
3 renewable energy PPA, which are typically signed with terms that lock in a certain price per
4 MWh of electricity for years.

5 **Q: How can this value for avoiding gas price volatility be expressed in terms of dollars per**
6 **MWh?**

7 **A:** The amount of electricity in MWh that comes from a certain amount of gas expressed in
8 MMBtu can be determined by looking at data for the heat rate of natural gas-fired plants, which
9 shows their efficiency at converting Btus of gas into electricity. According to the U.S. Energy
10 Information Administration, the average heat rate for natural gas-fired power plants in the U.S.
11 in 2021, the year with the most recent data available, was 7,687 btu per kWh.⁵ I believe this is
12 the appropriate heat rate to use to compare my value for avoiding volatility to UMERC's power
13 supply costs because, as noted earlier, natural gas plants set the marginal price for MISO, where
14 UMERC purchases its power.

15 Converting the \$0.31 per MMBtu spread to dollars per MWh using this heat rate factor results in
16 a value of \$2.38 per MWh.

17 **Q: How should this value of \$2.38 per MWh affect the evaluation between market**
18 **purchases and renewable energy PPAs?**

19 **A:** As I noted above, the price for PPAs with renewable energy facilities is already quite close to
20 the estimated MISO market purchases cost for 2023, even before one accounts for the value of
21 hedging gas volatility. But as my example demonstrates, hedging gas volatility does have value
22 that can be quantified based on market data, and this value would be provided by renewable
23 energy PPAs. Thus, when one adjusts the \$48 per MWh market price for wind PPAs to reflect
24 the benefit of volatility hedging, the result is \$45.62 per MWh, making renewable energy PPAs
25 significantly more economical for UMERC's customers than MISO purchases.

26 It is also important to remember that the \$2.38 per MWh estimate is based on the lowest price
27 that investors are willing to accept to cap gas price volatility. As such, it should be seen as a floor
28 on quantifying the value of a volatility hedge, and not the full value itself.

29 My argument also does not attempt to estimate the environmental benefits of buying more
30 renewable energy, which can be substantial.

31 **Q: What is your recommendation for the MPSC in this case?**

⁵ U.S. Energy Information Administration, Table 8.1. Average Operating Heat Rate for Selected Energy Sources, accessed Feb. 20, 2023. https://www.eia.gov/electricity/annual/html/epa_08_01.html.

1 **A:** My analysis indicates that signing long-term contracts with renewable energy facilities to
2 provide power that would replace some degree of market purchases would likely lower
3 UMERC’s net power supply costs and deliver value to customers. The Commission should find
4 that the five-year forecast is not in the public interest because it does not contemplate these
5 additional PPAs. The Commission should also order the Company to evaluate the cost of
6 acquiring wind or solar generation to reduce their net interchange purchases, and include in that
7 evaluation an estimate for the premium that comes with reducing the risk of natural gas price
8 volatility.

9 **Q: Does that conclude your testimony?**

10 **A:** Yes it does.

Matthew J. Bandyk

Education

- **Master of Business Administration (MBA), University of Michigan Stephen M. Ross School of Business, Ann Arbor, MI, April 2018**
- **Passed CFA Level I exam, June 2015**
- **BA in political science, *cum laude*, Davidson College, Davidson, NC, May 2006**

Experience

Consultant, 5 Lakes Energy, September 2021-present

- Provides public policy recommendations and financial analysis for nonprofit energy advocacy clients
- Analyzes utility justifications of return on equity and other corporate finance issues for testimony in Michigan Public Service Commission rate cases

Clean Energy Consultant, Bandyk Consulting LLC, January 2019-September 2021

- Manages and writes social media, blog posts, op-eds that appear in newspapers like the Detroit Free Press and
- Serves as communications strategist for the Michigan Energy Innovation Business Council, including social media, blog posts on utility regulation and policy issues and enterprise articles in publications like Utility Dive

Financial Services Manager, Atwell LLC, Southfield, MI, May 2018-January 2019

- Purchased long-lived assets to support Atwell's work in environmental and engineering consulting for renewables and oil & gas sectors
- Performed financial analysis to overhaul company's asset leasing policies with goal of saving up to ~100k per year by improving asset life

Climate Corps Fellow, Environmental Defense Fund, Toledo, OH, Summer 2017

- Built financial valuation tool for payback, NPV and IRR of solar arrays planned by client, determining best ROI for about \$300,000 in solar investments
- Designed energy use tracking system for the largest private low-income housing provider in Toledo, Ohio; system saved hundreds of work hours annually

MBA Student Consultant, DTE Energy, Detroit, MI, March-April 2017

- Performed market and regulatory compliance research on original proposal for DTE to enter the corporate renewable energy space; presented to company leadership
- Designed tariff to add wind/solar and cut rates by 20% compared to DTE's green tariff

Reporter, S&P Global Market Intelligence/SNL Financial, Arlington, VA, June 2010-August 2016

- Used Excel analysis of power plant output and commodity price databases to create actionable intelligence about new trends in the energy industry for clients
- Wrote articles on utilities, power plants, energy efficiency and regulation for subscription website read daily by thousands of energy and investment professionals

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DEC 2024 NGZ4 ▾		4.192	+0.005 (+0.12%)	4.187	4.192	4.192	1	17:00:10 CT 20 Feb 2023

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16:00:00 CT 19 Feb 2023	0	-	-	0.952	-	-	4.5	-	-	1.256	-	-	
16:00:00 CT 19 Feb 2023	0	-	-	0.734	-	-	5.25	-	-	1.788	-	-	
16:00:00 CT 19 Feb 2023	0	-	-	0.674	-	-	5.5	-	-	1.978	-	-	
16:00:00 CT 19 Feb 2023	0	-	-	0.570	-	-	6.0	-	-	2.374	-	-	
16:00:00 CT 19 Feb 2023	0	-	-	0.483	-	-	6.5	-	-	2.787	-	-	

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