BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY CROCKER WIND FARM, LLC FOR A PERMIT FOR A WIND ENERGY FACILITY AND A 345 KV TRANSMISSION LINE IN CLARK COUNTY, SOUTH DAKOTA, FOR CROCKER WIND FARM

SD PUC DOCKET EL-17-055

REBUTTAL TESTIMONY OF MICHAEL MAROUS
ON BEHALF OF CROCKER WIND FARM, LLC

April 13, 2018

I. INTRODUCTION AND QUALIFICATIONS

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

A. My name is Michael MaRous. I am the owner and president of MaRous & Company. My business address is 300 South Northwest Highway, Suite 204, Park Ridge, Illinois 60068.

Q. Briefly describe your educational and professional background and your current work for MaRous & Company.

A. I graduated from the University of Illinois at Urbana-Champaign with a B.S. in Urban Land Economics and began my career working with a Chicago real estate appraisal and consulting firm. I founded MaRous & Company in 1980. During my career, I have appraised real estate located in more than 25 states and reflecting a total value in excess of $15 billion. Properties include general industrial, commercial, and residential parcels, as well as vacant land and also specialized properties and interests, including air/development rights, billboards, cemeteries, easements, golf courses, gambling facilities, schools, streets, tank farms, waste transfer stations, and utility and railroad rights-of-way and energy-related projects.

Energy-related projects include a number of proposed natural gas-fired electric plants in various locations, and also have experience with analyzing the impacts of high voltage transmission lines on agricultural land, residential properties and commercial development. My wind-related projects include the Grand Ridge V and Otter Creek wind farms in LaSalle County, the Pleasant Ridge Wind Farm in Livingston County, the Walnut Ridge Wind Farm in Bureau County, the McLean County Wind Farm in McLean County, the Twin Forks Wind Farm in Macon County, all in Illinois; the Freeborn County Wind Farm in Freeborn County, Minnesota; the Ida II Wind Farm in Ida County, and the Palo Alto County Wind Farm in Palo Alto County, both in Iowa; the Orangeville Wind Farm in Wyoming County, New York; the Dorchester County Solar Farms in Dorchester County, Maryland; and the Badger Hollow Solar Farm in Iowa County, Wisconsin. With respect to South Dakota, I

conducted a market impact study for the Dakota Range Wind Farm in Grant and Codington Counties, in South Dakota, and am in the process of completing a market impact study for another wind project in South Dakota.

My statement of qualifications is included at the end of the April 13, 2018 Market Impact Analysis ("Market Analysis") for the Crocker Wind Farm ("Project") attached as Exhibit 1.

Q. Do you maintain an appraiser license in the State of South Dakota?

A. I obtained a temporary license from South Dakota that is valid through August 2018 (South Dakota Certified General Real Estate Appraiser, Temporary License Number 1639-T-2018). I applied for a permanent license on April 3, 2018 and that application is pending. I also maintain active general real estate appraiser licenses in Illinois, Indiana, Wisconsin, Minnesota, Pennsylvania, and Iowa.

Q. What is your role with respect to the Project?

A. I was retained by Crocker Wind Farm, LLC ("Crocker" or "Applicant") to prepare an independent market analysis of the potential impact, if any, the Project would have on the value of the properties in the general area of the Project. Specifically, the analysis addressed the question of whether market data indicates that the Project will have an effect on the value of residential uses and/or agricultural land in proximity to the proposed wind turbines. When I use the phrase "proximity to wind turbines," I generally mean turbines within three to five times the hub height of a wind turbine.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is two-fold: (1) to provide information specific to South Dakota and the Project area in rural Clark County with respect to the potential impact of wind turbines on rural residential and agricultural property; and (2) to respond to the Direct Testimony of David Lawrence. For the former, I discuss the results of the Market Analysis conducted for the Project. With respect to the latter, I

provide specific rebuttal to some of the assertions Mr. Lawrence made in his direct testimony with respect to assessing the Project's potential impact on property values. In responding to Mr. Lawrence's testimony, I also address South Dakota Public Utilities Commission ("SDPUC") Staff Analyst Darren Kearney's testimony regarding property values, as Mr. Kearney relies upon the testimony of Mr. Lawrence in forming his opinion with respect to Crocker's information regarding ARSD 20:10:22:23(1) – "A forecast of the impact on ... land values..." (Kearney, p. 8).

Q. Please identify the sections of the Application that your testimony supports.

A. My testimony supports and I am sponsoring the following sections of the Application:

- Section 9.7.1.2: Impacts to Communities (Property Values – Wind Farms; Property Values – Transmission Lines)
- Appendix I: *The Impact of Wind Power Projects on Residential Property Values in the United States: An Overview of Research Findings.*

Q. What exhibits are you sponsoring?

A. In addition to Exhibit 1, I am sponsoring the following exhibits:

- Exhibit 2: B. Hoen, R. Wiser, P. Cappers, M. Thayer, and G. Sethi (2009). *The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis*. Lawrence Berkeley National Laboratory.
- Exhibit 3: B. Hoen, J.P. Brown, T. Jackson, R. Wiser, M. Thayer, and P. Cappers (2013). *A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States. Lawrence Berkeley National Laboratory.*
- Exhibit 4: Brian Guerin, Jason Moore, Jamie Stata, and Scott Bradfield (2012). *Impact of Industrial Wind Turbines on Residential Property Assessment in Ontario: 2012 Assessment Base Year Study*. Municipal Property Assessment Corporation.

- Exhibit 5: Jason Moore, Jamie Stata, and Scott Bradfield (2016). *Impact of Industrial Wind Turbines on Residential Property Assessment in Ontario: 2016 Assessment Base Year Study*. Municipal Property Assessment Corporation.
- Exhibit 6: Corey Lang and James Opaluch (2013). *Effects of Wind Turbines on Property Values in Rhode Island*. Environmental and Natural Resource Economics, University of Rhode Island.
- Exhibit 7: Richard J. Vyn and Ryan M. McCullough (2013). *The Effects of Wind Turbines on Property Values in Ontario: Does Public Perception Match Empirical Evidence?* University of Guelph, Canada.
- Exhibit 8: Carol Atkinson-Palombo and Ben Hoen (2014). *Relationship between Wind Turbines and Residential Property Values in Massachusetts*. University of Connecticut and Lawrence Berkeley National Laboratory.

II. MARKET ANALYSIS

Q. How did you familiarize yourself with the Project?

A. I visited the Project area in Clark County on April 4 and 5, 2018. I also analyzed the Project-related information in the county and state applications for the Project, including the turbine layout, to familiarize myself with the Project and regulatory requirements.

Q. What data did you evaluate in conducting your market value analysis?

A. As detailed further in the Market Analysis, I evaluated the footprint of the Project, as well as the surrounding area, and reviewed rural residential and agricultural property sales data. I also researched agricultural land values in Clark County and in other counties in South Dakota in which wind farms are located, and looked at market trends for both agricultural and residential land for the past five years. I also considered the economic impact on the larger community by the approval of the use as proposed. In addition, I considered the opinions of assessors in six South Dakota

counties with active wind projects. In addition to analyzing South Dakota-specific information, I considered my prior analyses for wind projects in similar counties in Minnesota, Iowa, and Illinois, including paired sales and discussions with assessors in counties with active wind farms. Finally, I reviewed relevant literature on wind farm property value impact analyses conducted.

Q. Could you discuss in more detail the matched paired sales analysis you conducted?

A. Yes. I reviewed sales transactions in seven east-river counties in South Dakota with operating wind farms[1] to try to identify matched paired sales to use for comparison, meaning sales of similar rural residential properties where one property was near a wind farm and one property was not. However, of the sales reviewed, only one rural residential property sale was near a wind farm, and that property, located in Brookings County, South Dakota, was nearly four miles away from a turbine. As a result, the sale was not close enough to a wind turbine to use in a proximate/not proximate paired sales comparison.

Given a lack of proximate/not proximate paired sales data for eastern South Dakota, I reviewed matched paired sales data in rural areas of Minnesota, Iowa, and Illinois. As detailed in the Market Analysis, when adjustments were made to the sales prices of the matched pairs to account for their physical differences and differences in amenities, the per square foot sales prices were essentially the same, indicating that proximity to a wind farm did not impact the price of the proximate sale.

Q. As part of your Market Analysis, your company interviewed assessors in South Dakota, Iowa, Illinois, and Minnesota. Please provide an overview of that survey effort.

[1] Deuel County, Day County, Clark County, Aurora County, Brookings County, Charles Mix County, Hyde County, and Jerauld County.

A. In South Dakota specifically, we surveyed assessors in six South Dakota counties that each had more than 25 operational wind turbines: Aurora County, Brookings County, Charles Mix County, Day County, Hyde County and Jerauld County. We spoke with assessors in each county to gather information on their experience regarding the impact of wind farms upon market values and/or assessed values of surrounding properties. We conducted similar interviews of assessors in 26 counties in Iowa, eight counties in Minnesota, and 18 counties in Illinois. These surveys were intended to allow the assessors to share their experience regarding the impact of a wind farm upon market values and/or assessed values of surrounding properties.

Q. What were the results of your assessor surveys?

A. The South Dakota assessors and all other assessors interviewed reported that there was no market evidence to support a negative impact on residential property values as a result of the development of and proximity to a wind farm:

- There has been only one tax appeal in any county based upon wind farm-related concerns. That one appeal was located in Aurora County, South Dakota, where the 151.5 MW PrairieWinds SD1 Wind Project is located. The appeal was denied based on lack of evidence that proximity to wind turbines affected residential value.
- There had been no reductions in assessed valuations due to proximity to wind turbines.
- Residential assessed values had fluctuated consistently as influenced by market conditions, with no regard for proximity to a wind farm.

The county assessors consistently reported that whatever initial concern there may have been regarding property values during the planning and approval stages of the various wind farms, it dissipated once the wind farm was constructed. Further, county assessors repeatedly stated that county revenues and revenues to individual farms outweighed any initial concerns that residents had about the wind farms joining their communities.

Q. Please explain why you believe that sales and assessor data from Minnesota, Iowa, and Illinois are relevant to the issue of whether the Project may impact property values in South Dakota.

A. The wind farm areas I studied in Minnesota, Iowa, and Illinois are relevant to evaluating the potential impact of wind farms on property values in the Project area for several reasons. First, the areas are all in high wind areas and have similar agricultural economies (corn, soybeans, and livestock, including cattle, hogs, and poultry), similar demographics, and similarly low density (small acreage) rural residential properties. In these areas, rural land values are largely driven by productivity and many farmers are economically struggling. Second, the market participants (buyers) for agricultural land are similar in these areas, primarily local farmers and national investors. Third, the local economies are driven by the positive or negative impacts of climate and economy for agricultural products. Fourth, the infrastructure is generally aged and school districts in particular are struggling to fund existing infrastructure, add quality teachers, and add new technology, which makes the areas less desirable to new residents. Fifth, there is low economic job potential in these areas and the best and brightest are not returning after high school, because of lack of infrastructure, area amenities, and limited job possibilities.

Q. Based on your analysis, what conclusions did you reach?

A. As detailed in my Market Analysis, I concluded that there was no market data indicating the Project would have a negative impact on either rural residential or agricultural property values in the area surrounding the Project. Further, although I did not identify proximate/not proximate paired residential property sales in eastern South Dakota, the South Dakota assessor survey results, as well as the matched paired sales data and assessor survey results for Minnesota, Iowa, and Illinois, all support the conclusion that the Project would not have a negative impact on rural residential or agricultural property values in the surrounding area. In addition, for agricultural properties that host turbines, the additional income from the wind lease may increase the value and marketability of those properties. These conclusions

are further supported by the relevant literature reviewed, which I describe below, and by my decades of appraisal experience.

III. DR. THAYER'S TESTIMONY AND RESPONSE TO MR. LAWRENCE

Q. Do you agree with Dr. Thayer's conclusion that "the planned wind projects in South Dakota will not significantly reduce the sales prices of properties in the neighborhood of the wind facilities" (Thayer Direct at pp. 15-16)?

A. Based on my analysis, I agree with Dr. Thayer's conclusion. I have not identified any market evidence in South Dakota, Iowa, Minnesota, or Illinois that would support a finding that the Project would have a negative impact on rural residential or agricultural property values in the area surrounding the Project.

Q. Dr. Thayer's pre-filed testimony includes a discussion of peer reviewed studies, including the Lawrence Berkeley National Laboratory ("LBNL") studies. Can you please provide additional details regarding the LBNL studies?

A. I have reviewed and agree with the discussion of those studies (see Exhibits 2 and 3 to my testimony) provided in Dr. Thayer's Direct Testimony. In my field, the research conducted by LBNL is highly regarded. LBNL is a member of the national laboratory system supported by the U.S. Department of Energy through its Office of Science. It is managed by the University of California and is charged with conducting unclassified research across a wide range of scientific disciplines. LBNL conducted regression studies on a nationwide basis in 2009 and 2013 to study the potential effects of the proximity of wind turbines on property values.

Q. What methodologies did the LBNL Studies employ?

A. The 2009 study included an analysis of 7,489 sales within 10 miles of 11 wind farms and 125 post-construction sales within one mile of a wind turbine. The 2009 study used rural settings and wind farms with more than 50 turbines. The 2013 study included 51,276 sales located in nine states and proximate to 67 wind farms, and

376 post-construction sales within one mile of a wind turbine. Like the 2009 study, all were located in rural settings and near wind farms of more than 50 turbines. The 2013 study "used a number of sophisticated techniques to control for other potential impacts on home prices, including collecting data that spanned well before the wind facilities' development was announced after they were constructed and operating. This allowed the researchers to control for any pre-existing differences in home sales prices across their sample and any changes that occurred due to the housing bubble."[2]

Q. Please discuss the conclusions of the LBNL Studies.

A. Neither study found statistical evidence that home values near wind turbines were affected. Specifically, with respect to the 2013 study, LBNL states that "[t]his study, the most comprehensive to-date, builds on both the previous Berkeley Lab study as well as a number of other academic and published United States studies, which also generally find no measureable impacts near operating turbines."[3]

Q. What method did the LBNL use to analyze the potential impact of wind turbines on property values?

A. The LBNL Studies collected raw data and then used a multiple regression analysis to eliminate from their conclusions any other factors that could be impacting value. Such other factors include, but are not limited to, market conditions generally (i.e., the housing recession), proximity to disamenities that might cause changes in value (such as hog farms or waste facilities), and conditions of sale (like bankruptcy, short sales, etc.). Using raw data to draw conclusions assumes that *any* changes in home values were directly caused by proximity to a wind turbine; this is not a reasonable conclusion and, in my opinion, the methodology used by the LBNL Studies was

[2] "No Evidence of Residential Property Value Impacts Near U.S. Wind Turbines, a New Berkeley Lab Study Finds" (August 27, 2013), http://newscenter.lbl.gov/2013/08/27/no-evidence-of-residential-property-value-impacts-near-u-s-wind-turbines-a-new-berkeley-lab-study-finds/.

[3] *Id.*

appropriate and resulted in sound conclusions. In other words, the raw data showed some changes to the value of the homes analyzed, but the study was unable, through statistical testing, to demonstrate that the changes were related to proximity to turbines rather than some other factor.

Q. Mr. Lawrence criticizes the LBNL Studies as not being relevant to South Dakota properties near wind farms because the LBNL Studies only focus on residential property from populated areas in the United States including New York, Texas, Washington, Wisconsin, Illinois, and others (Thayer, pp. 9-10). What is your response?

A. Mr. Lawrence correctly notes that the LBNL Studies looked at residential values in some more populated areas. However, that does not mean the studies are inapplicable to understanding the potential impact of wind turbines on residential and agricultural land in rural South Dakota, particularly Clark County. I am personally familiar with the majority of counties included in the LBNL Studies that are located in Illinois, Iowa, and Minnesota. The majority of these counties' economies are agricultural-based and residential values are generally comparable in the rural locations. Even accepting Mr. Lawrence's comment that these out-of-state counties have higher income and real estate values, based on my considerable experience, an area such as Clark County with lower income and real estate values would be less likely to be negatively impacted.

Q. In discussing the LBNL Studies, Mr. Lawrence states that, although an accepted methodology, the hedonic analysis has its limitations (Lawrence at pp. 8-9). Do you agree?

A. I generally agree that the hedonic analysis has a limitation – it may not identify an individual parcel that may be affected. This is why, as Mr. Lawrence notes on page 9, analysis of market evidence from "specific and surrounding market areas that would be applicable to the impacted property type" is required. That is precisely the analysis I undertook in my Market Analysis.

Q. Mr. Lawrence generally criticizes Dr. Thayer's testimony stating that most of the studies Dr. Thayer attached as exhibits present a statistical analysis of a large, well-defined residential dataset not necessarily applicable to rural South Dakota property values impacted by wind energy projects. (Lawrence at p. 8). Is that criticism warranted?

A. No. I've address the LBNL studies above. With respect to the other studies cited by Dr. Thayer, the studies reflected large amounts of data arriving at similar conclusions of no negative value impact for well-planned wind farm development.

Q. In addition to the studies provided with Dr. Thayer's testimony, are there any other peer-reviewed studies that conclude there is no significant evidence of negative impact on property values from wind turbines?

A. Yes, the following studies reviewed transactions within one mile of operating turbines and also found no evidence of value impact:

- The Municipal Property Assessment Corporation's ("MPAC") studies on the *Impact of Industrial Wind Turbines on Residential Property Assessment in Ontario*. This study originally was conducted in 2008 and updated in 2012 ("MPAC 2012") (Exhibit 2) and 2016 ("MPAC 2016") (Exhibit 3.) The conclusions in all three studies are similar: "there is no statistically significant impact on sale prices of residential properties in these market areas resulting from proximity to an IWT [Industrial Wind Turbine], when analyzing sale prices." (Exhibit 2 at 5.) Using 2,051 properties and generally accepted time adjustment techniques, MPAC "cannot conclude any loss in price due to the proximity of an IWT." (Exhibit 4 at 29.) Further, Appendix G of the MPAC 2012 study "Re-sale Analysis" states in the "Summary of Findings" that "MPAC's own re-sale analysis using a generally accepted methodology for time adjustment factors indicates no loss in price based on proximity to the nearest IWT." (Exhibit 4, Appendix E.)

- Corey Lang and James Opaluch (2013). *Effects of Wind Turbines on Property Values in Rhode Island*. Environmental and Natural Resource Economics, University of Rhode Island. (Exhibit 4.) Structured similarly to the LBNL Studies, this study included 48,554 total sales proximate to 10 wind farms, and 412 post-construction sales within one mile of a turbine. These wind farms were mostly small facilities in urban settings. The study included nuisance and scenic vista stigmas. The report stated, "Both the whole sample analysis and the repeat sales analysis indicate that houses within a half mile had essentially no price change . . ." after the turbines were erected. (Exhibit 6 at 18.)

- Richard J. Vyn and Ryan M. McCullough (2013). *The Effects of Wind Turbines on Property Values in Ontario: Does Public Perception Match Empirical Evidence?* University of Guelph, Canada. (Exhibit 5.) This study analyzed two wind farms in Melancthon Township, Ontario, Canada, using 5,414 total sales and 18 post-construction sales within one kilometer of a wind turbine. The study included nuisance and scenic vista stigmas. The study concluded that "(T)hese results do not corroborate the concerns regarding potential negative impacts of turbines on property values." (Exhibit 7 at 2.)

Q. Dr. Thayer testified that he was aware of anecdotal reports of an association between wind turbines and property values. Do you agree with his assessment of those reports?

A. Yes. I have also reviewed publications from Michael McCann and Kurt Kielisch that claim to support an adverse impact of wind turbines on property values. Neither follows accepted appraisal practice or is persuasive. McCann, for example, contends there is a negative impact for properties within three miles of a wind turbine. His studies are filled with generalities and do not use generally accepted methodologies. I agree with the criticisms of McCann's work set forth in Mr. Thayer's testimony. Mr. Thayer noted:

> Overall, Mr. McCann's studies are cursory investigations using raw averages and paired sales methods. Each of these analyses is beset with the same range of problems, including: small samples; undefined sample selection methods; simple statistical measures; failure to account for obvious confounding factors; and subjective monetary adjustments applied inconsistently. Given these fundamental issues, the conclusions of such work are without foundation and completely lacking in scientific rigor.
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> Moreover, Mr. McCann's results are based on specific locations, specific local influences, and specific adjustment factors. As a result, even if the studies had been done with appropriate scientific rigor, they would not be transferable to any other situation. Further, only one assessment procedure is provided, one that always agrees with his previous work and never explores the impact on his conclusions of different samples, different selection methods, and/or different adjustment factors.

Kielisch's reports are similarly flawed. He attempts to use statistical analyses to support a claim that wind turbines affect property values, but his sample sizes are too small and his study has not been subjected to peer review. *See e.g.* Kielisch, K.C. (2011). *Wind Turbines and Property Value.* Presentation, Appraisal Group One.

Q. Is it on the basis of such anecdotal reports that you have heard arguments for implementing a property value guarantee?

A. Yes. When there are concerns about impacts to property value, I have heard general calls for a guarantee that property values will not be affected. The methods for doing so have never been well developed.

Q. Do you believe that a property value guarantee for properties within the Project area is appropriate?

A. I do not believe any type of property value guarantee is appropriate or necessary for the proposed Project. First and foremost, the Project, as proposed, it not expected to negatively impact property values. Further, even if an impact could reasonably be anticipated, a property value guarantee is a very complex and nebulous concept. It would be difficult, if not impossible, to implement.

Q. Overall, Mr. Lawrence maintains that to assess the impact of the Project on property values, he would have to conduct a market study of all operating wind projects using interviews, sales comparison, and paired sales analysis and that this study would take six months. (Lawrence, pp. 13-16). What is your response?

A. I have several responses. First, the Market Analysis I conducted is an appropriate and generally accepted methodology for assessing whether a proposed new use will impact surrounding property values. I searched the public records in eight eastern South Dakota counties where wind farms are operating to identify any transactions in proximity to a wind farm. While I did not research every county with a wind farm, the counties were sufficiently representative and appropriate to determine whether the proposed Crocker wind farm would affect property values in Clark County.

Second, the research I conducted in these seven eastern counties resulted in no arms' length sale of a property proximate to a wind turbine – the closest one was a sale in Brookings County where the turbine was located approximately four miles away from the residence. Given the lack of relevant sales in South Dakota, the other steps Mr. Lawrence lists on pages 15 and 16 of testimony are not applicable or relevant for the South Dakota analysis. I did undertake, where appropriate and relevant, the steps he listed in completing my paired sales analyses in Minnesota, Iowa, and Illinois, including surveying local real estate professionals and assessors. My methodology is fully described in my Market Analysis.

Third, his recommendation to look at all wind farms in the State of South Dakota is overbroad. While a market analysis requires a review of other properties and areas, those properties and areas have to be similar enough to the proposed Project area to be relevant. As an example, while appraising a residential property in Clark County, it is not relevant or useful to provide data on every residential neighborhood in South Dakota, nor would such an approach be consistent with standard appraisal practice. I believe the counties I selected for study were best suited for an analysis of the Project area because they were very comparable to Clark County. I was careful to exclude properties proximate to large cities, such as Watertown, but the properties and areas have similar economies, populations, and economic characteristics to Clark County.

Q. Based on Mr. Lawrence's review, Mr. Kearney testifies that Crocker did not adequately address ARSD 20:10:22:23(1) – "A forecast of the impact on ... land values..." in its Application. (Kearney, p. 7). Do you believe adequate information has now been provided in this record to evaluate potential land value impacts of the Project?

A. Yes. The SD PUC has adequate information based on the Application, my Market Analysis, and the peer-reviewed research I describe in my testimony. I conducted a thorough evaluation to identify potential sales in proximity to wind farms in South Dakota. No sales were identified that would support a claim that the Project will affect property values. This documentation and my testimony are sufficient for the SD PUC to conclude that the Project would not have a negative impact on rural residential or agricultural property values in the surrounding area.

VI. CONCLUSION

Q. Does this conclude your Rebuttal Testimony?

A. Yes.

Dated this 13th day of April, 2018.

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Michael MaRous