

August 13, 2020

Docket 5-ES-110 Comments Public Service Commission P.O. Box 7854 Madison, WI 53707-7854

To the Commission:

RENEW Wisconsin appreciates the opportunity to provide comments on the draft 2020-2026 Strategic Energy Assessment. Founded in 1991, RENEW Wisconsin is a nonprofit, statebased organization that promotes renewable energy in Wisconsin. We work on policies and programs that expand the use of wind power, solar power, local hydropower, renewable natural gas, geothermal energy, and electric vehicles. RENEW's mission is to lead and accelerate the transformation to Wisconsin's renewable energy future through advocacy, education, and collaboration.

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Introduction

We provide these comments with the full knowledge that the Strategic Energy Assessment is not now, nor has it ever been, a process for planning and evaluating investments in Wisconsin's electric utility industry. Nor has it ever been a forum for investigating regulatory policy that could guide future interactions between electric providers and their customers, based on the interplay of technological advancements, an evolving economic landscape, emerging environmental priorities, and customer expectations. However, it is the closest thing we have in Wisconsin to a public process where electric utilities, regulators and other policymakers, customers, and other stakeholders can take stock of the present-day situation, given present trends and shifting market forces. The final document should offer the public a firm platform for discerning whether the electric industry is where it needs to be, taking into account all the variables in play right now, and whether it is headed in the right direction.

General Comments – What's Missing

The draft Strategic Energy Assessment (SEA) is a frustrating document. As a profile of the state's electricity system, it is distinguished more by what is absent from the discussion presented than by the contents in the draft document. A study of this nature should strive to present a complete picture of the issues and forces shaping utility decisions going forward. A discussion of likely outcomes through 2026 needs to be grounded in a recognition of market realities and environmental considerations that are, today, driving utility procurement decisions quite clearly toward clean energy. Though this shift is quite discernible to the casual observer, it is almost entirely unacknowledged in the draft document. The transition underway has great ramifications for the state's generation base, and is already bringing to bear impacts on electric rates in both downward and upward directions. Yet the draft SEA is completely silent on this matter, as well as others of equal importance.

As a starting point, it might be helpful to list the key issues, concepts, and policy initiatives that receive no mention anywhere in this document.

- Climate change/climate science/Paris Accord
- Governor's Executive Orders 38 and 52, issued in 2019, creating a Climate Change Task Force, referencing climate change and creating the Office of Sustainability and Clean Energy, and committing the state to a 100% carbon-free electricity goal by 2050
- Early retirement of coal plants/stranded generation
- Energy Priorities Law of 1992
- Local government clean energy goals
- Grid decentralization

- Building heat and hot water electrification, and the related trend towards net-zero and/or zero emission new construction
- Third party financing (related to behind-the meter-generation)
- Renewable energy credit markets

It is difficult to discern how avoidance of these issues as discussion topics leads to an assessment that is strategic in intention and forward-oriented to the issues facing the state. Minimally speaking, the SEA should review existing statutes in light of new market trends and new potentially disruptive technologies. For example, the Energy Priorities Law, while broad in language, has historically been monitored mostly with respect to electric utility procurements of efficiency, wind, and solar relative to other resources. Today, however, with significant technological advancement in cold climate heat pumps and significant improvements in pricing, cold climate heat pumps are cost-effective and technically feasible as supplements to or replacements for propane/ delivered fuels heating appliances. Heat pumps are the highest efficiency appliances available (ranking the top tier of the law's formula). In addition, they are powered by an electricity supply that is increasing derived from wind and solar (the law's second highest tier). Because cost-effectiveness and technical feasibility are the two screens applied by the Energy Priorities Law, a thorough analysis and reassessment is appropriate with respect to electric utility heat pump market transformation programs in order to determine whether broad new programs that may not have been appropriate a decade ago are appropriate and indeed statutorily necessary today. Widening the lens beyond heat pumps to include vehicle electrification, and in light of the increasing dominance of wind and solar resources in electric utility procurements, the SEA should help analyze the extent to which Wisconsin already has an electrification law on the books.

The draft is also remarkably incurious about the status of the electric industry in neighboring states. Earlier this year, Great River Energy announced plans to shut down its massive Coal Creek coal-fired power plant in North Dakota by the end of 2022. The Energy Information Administration reported earlier this year that wind power in Iowa accounted for more than 40% of that state's total generation in 2019. This summer, Minnesota regulators approved Xcel Energy's plans to operate two of its coal-fired units, King and Sherco 2, for only six months of the year, which will definitely affect the emissions profile for much of western Wisconsin. These developments bear mentioning in the final SEA, where it can help the public compare the generation transition underway in neighboring states with the modest changes forecasted for 2026 (Figure 1-9, page 18).

Unfortunately, the draft lacks a narrative drive which would be helpful for readers trying to piece together the trends and connect the dots for a clearer understanding of where the state's electric power industry is heading. A relatively simple fix here would be to ask and answer the question: *What has the Commission done since the previous SEA?* Adding this section would aid the reader in appreciating the growing strength behind the utility-scale pivot towards clean energy, as well as providing a glimpse into the growing regionalization of the resource mix

serving Wisconsin utilities. Below is a list of important PSC decisions leading up to the current iteration of the SEA.

- Approval of four solar farms totaling ~700 MW
- Approval of utility ownership of two of those farms totaling 450 MW
- Approved two MGE applications to expand its portfolio of customized solar services (Shared Solar, Renewable Energy Rider)
- Approval of Focus on Energy's 3rd Quad Plan (2019-2022) authorizing \$22 million in RE incentives
- Approval of the Cardinal-Hickory Creek transmission line
- Approval of the Nemadji Trail gas plant
- Approval of a capital recovery settlement triggered by the permanent shutdown of Pleasant Prairie
- Approval of several utility-provided EV charging services

The narrative that emerges from the question above would gain further strength if it were followed up with this question: *What is pending before the Commission today?* Below is our view of a possible response to that question.

- Seven active solar CPCN dockets totaling 1,150 MW
- Alliant Energy's application to acquire 675 MW of solar generation (6680-CE-182)
- MGE application to build 20 MW solar farm for RER program (3270-CE-129)
- Ongoing EV investigation (5-EI-156)
- Parallel generation/PURPA docket (5-EI-157)

The legislation that created the SEA spells out the issues that the Commission must address with each study. However, the SEA-related statutes do not restrict the Commission from delving more deeply into related issues, such as the clean energy transition underway, as well as educating itself and the public on what regulatory issues may arise as a result of this resource shift. The Commission is certainly free to look for insights from the regulatory experiences of other states in this regard. A survey of other states' experiences would likely provide insights into how Wisconsin's regulatory policy may need to adapt to this new reality. On many fronts, state energy policy is lagging behind much of the country. All of the states neighboring Wisconsin, for example, have updated their interconnection codes in the last three years, aligning their standards to reflect advances in distributed generation technology. Wisconsin's interconnection code, established in 2004, predates these advances, leaving the state increasingly ill-equipped to take advantage of improved technology.

Below is a small sample of questions that we believe should inform a strategic assessment of the state's electric power sector. We encourage future iterations of the SEA to display a higher level of curiosity toward the industry's evolution and present framing questions

that lead to a more coherent and less myopic assessment of our energy future. We propose the following as examples of such framing questions:

- What are the most important regulatory issues that arise from the energy resource transition now underway?
- Are there regulatory developments and supply innovations occurring in neighboring states that are likely to be relevant to the Wisconsin electric industry?
- Are there significant customer/local government initiatives that are affecting utility supply decisions?

General Comments – Data Gathering

Much of the information contained in the draft SEA comes from utility responses to data requests. There is little evidence that other sources of information were pursued to obtain a complete picture of Wisconsin's clean energy development landscape. Reliance on utility-provided information can lead to blind spots, especially relating to generation projects under 100 megawatts (MW), which require local approval prior to construction.

For example, the tables below provide information on two types of renewable generation proposals. The first table lists solar farm proposals that have either received approval from the Commission or will require Commission approval before construction can proceed. The second group lists solar and wind farms that either have been approved by local authorities or require local government approval before construction can proceed. The combined capacity of the generation proposals represented in the tables below is 1,583 MW. Without these tables, or something similar created by the Commission, readers will not know the full extent of the renewable development pipeline today, which, it should be noted, includes two wind power projects. When the 699 MW of solar farms already approved by the PSC is added to 1,583 MW of projects summarized in the tables below, the total comes to 2,282 MW.

Tracking renewable energy development activity is a core activity of RENEW Wisconsin. We encourage the Commission to avail itself of our data tables and incorporate them in the final SEA. RENEW Tables 1 and 2 build upon Table 1-4 in the draft SEA on page 16.

Wisconsin Renewable Energy Project Tracker

August 2020

Project name	County	MWAC	Developer	Part of 6680-CE- 182?	Docket No. + Status	
Solar projects under development requiring PSC approval						
Paris Solar	Kenosha	200	Invenergy	No	9801-CE-100 CPCN –	
Wood County	Wood	150	Savion	Yes	9803-CE-100 CPCN	
Solar			Energy		application filed – decision likely 12/2020	
Grant County Solar	Grant	200	NextEra Energy	Yes	9804-CE-100 CPCN application filed	
Onion River Solar	Sheboygan	150	Ranger Power	Yes	9805-CE-100 CPCN application filed	
Darien Solar	Walworth, Rock	250	Invenergy	No	9806-CE-100 CPCN application filed	
Springfield Solar	Dodge (Lomira)	100	Geronimo	No	9807-CE-100 CPCN engineering plan filed	
Apple River Solar	Polk	100	Geronimo	No	9808-CE-100 CPCN engineering plan filed	
O'Brien Solar	Dane (City of	20	MGE/EDF	No	3270-CE-129 CA	
Fields	Fitchburg)		Renewabl es		application filed CUP granted 1/2020	
SWL&P Community Solar	Douglas (Superior)	0.47	SWL&P	No	5820-TE-100 – solar garden under review	
Total MW : 1,170.47 MW						

RENEW Table 2

Solar and wind projects under development requiring local approval					
Project name	County	MWAC	Developer	Part of 6680-CE- 182?	Docket No. + Status
Richland County Solar	Richland	50	Savion Energy	Yes	CUP granted 4/2019

North Rock Solar	Rock	50	Geronimo	Yes	CUP granted 3/2020
	(Fulton		Energy		
Jefferson County	Jefferson	75	Ranger	Yes	No application filed
			Power		
Sugar River Wind	Green	65	EDF	No	CUP granted 9/2019 –
			Renewables		PSC upheld approval
Red Barn Wind	Grant	<99	PRC	No	CUP granted 7/2019
			Resources		
Western	Pierce	74	Ranger	No	Application submitted to
Mustang Solar			Power		Pierce County
Total MW : 413 MW					

Data gathering - maps

Maps are valuable for conveying the complexity and the regional nature of both the generation portfolio and related infrastructure that produce and deliver electricity to Wisconsin customers. RENEW believes that the maps in the electricity supply section of the SEA should fulfill two functions. The first is to indicate the locations of active power plants supplying Wisconsin electric providers as well as power plants anticipated to be online in the 2020-2026 planning period. The second is to convey the increasingly regional nature of the power sources serving Wisconsin customers. The map on page 11 of the SEA draft (Figure 1-3) presents generation sources in Wisconsin serving electric providers today. The minimum size generator on this map appears to be 10 MW. There are several problems with this map.

- Figure 1-3 shows four coal-fired power plants—Alma, Milwaukee County, Pleasant Prairie, and Pulliam—that were permanently shut down in 2018 or earlier. These plants should be removed from this map. The West Riverside Energy Center, which started operating in May of this year, should be added to Figure 1-3.
- By setting the minimum generator size at 10 MW, Figure 1-3 excludes all of the solar facilities built for Wisconsin electric providers to date. These include the utilities' own shared solar arrays, the portfolio of western Wisconsin arrays serving Dairyland Power Cooperative and its member cooperatives, the Butter Solar portfolio built by OneEnergy Renewables for several western Wisconsin municipal utilities and REC purchasers, and others. These arrays total 35 MW of capacity. It might be a challenge to integrate all 33 of these arrays into the Figure 1-3 map. We suggest that these arrays deserve a map of their own (see RENEW Map 1).
- Figure 1-3 excludes out-of-state wind power facilities serving Wisconsin electric providers. In our view, since they constitute the largest source of renewable electricity counted in the state's Renewable Portfolio Standard, the locations of these wind farms, should be expressed visually somewhere in the SEA. RENEW Map 2 depicts the

locations of all the wind energy projects connected to a Wisconsin electric provider, not just those located in Wisconsin.





RENEW Map 2



Wind Farms Supplying WI Electric Providers

RENEW Map 3 depicts the location of renewable generation projects under development. The projects shown include two permitted wind farms, several solar farms under 100 MW, and all of the solar proposals that have received or will require Commission approvals except Madison Gas and Electric's three Renewable Energy Rider arrays.

RENEW Map 3



RENEWABLE ENERGY PROJECTS IN DEVELOPMENT

Sources of Energy Supply (page 15-20)

It is here where the draft SEA acknowledges the declining cost of utility-scale solar and wind power as well as their potential for displacing fossil generators with zero-carbon electricity. While this recognition is welcome, the document misses an opportunity to fully capture the increasingly bleak economics that undercut continued operations for one-time baseload generators such as Edgewater 5 and South Oak Creek, and how that might affect the economics of fleet replacements. These older plants have been pushed to the operating margins by the combination of large-scale gas generation and renewables, which are now routinely dispatched before the older coal plants. A review of utility monthly fuel filing dockets (e.g., 6630-GF-114, 6680-GF-110) reveals a cohort of coal generators that are now operating as de facto seasonal generators nearing the end of their useful lives. As indicated by Wisconsin Power & Light's

application to integrate 675 MW of new solar generation into its supply mix as well as its decision to retire Edgewater 5 by the end of 2022, certain electric providers are warming up to solar energy's potential to replace a significant portion of the existing fossil fuel portfolio. The ramifications here go beyond "a de-emphasis on initiatives to install emissions control equipment." Instead, this development raises the prospect that the pace of early plant retirements will accelerate, which would doubtless trigger a vigorous discussion of alternative pathways for recovering capital already spent on these generators. Considering the amount of unrecovered capital that is potentially at risk here, the draft SEA's silence on this issue is unfortunate.

Table 1-5 on page 17 should be updated to reflect the announced retirement of Edgewater 5 in 2022. And in regards to Figure 1-9 on page 18, we believe that coal's output as a percentage of total in-state generation has already declined to about 40%, due to higher operating costs relative to natural gas and renewables. Therefore, by the time Genoa and Edgewater 5 are retired, coal's output may decline to as little as one-third of statewide generation. Moreover, it is difficult to envision South Oak Creek, with its economic prospects dimming by the day, remaining an active generator through 2026.

Also relating to Figure 1-9, the projected growth in solar and wind generation through 2026 is disappointingly anemic. The draft SEA projects no growth in wind power in this period, notwithstanding the two wind projects referenced in our table above that have already received siting permits. The solar forecast equates to an addition of 1,500 MW of utility-scale capacity above the 140 MW in operation today. This seems unduly conservative, considering the 713 MW already approved by the Commission, the 675 MW sought by Wisconsin Power & Light (WP&L) in 6680-CE-182, and the 670 MW represented in other active dockets before the Commission. A 1,500 MW increase in solar generating capacity translates to a 4.3% slice of last year's electricity sales.

The projected growth analysis raises the question of how utilities would meet their 2030 carbon reduction goals. The Commission does not forecast any expansion of in-state wind power, hydro or bioenergy between 2020 and 2026. If in-state sources of renewable electricity are projected to account for a one percentage point increase in state electricity sales each year through 2026 (~690 million more MWh each year), then Wisconsin's electric providers (with the noted exception of Xcel Energy's Wisconsin affiliate) will need additional sources of clean generation to meet their carbon reduction goals for 2030 and beyond. Under this scenario, much of that new carbon-free generation would originate in the surrounding region. Unfortunately, the draft SEA does not elaborate on how Wisconsin electric providers would gain access to out-of-state clean energy sources to supplement the renewable generating capacity they have already committed to. However, the draft SEA's projection in Figure 1-9 misses a number of the key data points we have referenced earlier. Several smaller-scale projects, or projects not yet reflected in utility-provided data, are unaccounted for. Failure to account for these types of projects in the projections distorts the model, and underrepresents future renewable growth in Wisconsin.

Electric Transmission in Wisconsin (pages 21-27)

While the draft includes a color-coded representation of the MISO region and a map of the transmission backbone in Wisconsin, these images do not clearly convey the regional nature of the sources and corridors of electric supply serving Wisconsin. In looking at Figure 2-2, it is impossible to conjure up a picture of the electric supply infrastructure that exists beyond the Mississippi River or the Illinois state line. The transmission lines in Figure 2-2 simply end at the state's border. While this is not a helpful visual for any resident in Wisconsin, it's particularly unhelpful to Xcel Energy's Wisconsin customers, who are plugged into an interstate electric supply network that extends well to our west. They are receiving a mix of fossil, nuclear, hydro, wind, and solar power from generating stations in Minnesota, Wisconsin, and the Dakotas. It's worth noting that an Xcel customer in Hudson can stand along the St. Croix River and view a prominent coal-fired plant upriver on the Minnesota side. However, that same customer cannot find any reference of the King plant in the draft SEA, even though it is a significant part of the electric resource mix serving western Wisconsin.

In comparison with other investor-owned utilities in Wisconsin, Xcel Energy is much farther along on its transition to a decarbonized future, on course to derive two-thirds of its electric supply from non-carbon sources by 2021. This shift is being accomplished through a combination of (a) coal plant retirements; (b) investments in new utility-scale wind and solar plants, community solar projects, and rooftop solar installations; and (c) a transmission build-out to accommodate the increasing geographical diversity of Xcel's supply mix. The Commission and the public would greatly benefit from the inclusion of maps that display the critical infrastructure needed to supply Xcel's expansive territory with cleaner sources of energy. With maps like those, one can better appreciate the evolution underway from the decades-old coal-centered paradigm to one featuring an expanded transmission backbone connecting renewable generation in rural areas to urban markets.

Reliability and Resilience – New Grid Technologies (pages 31-34)

In this chapter one finds an enumeration of the challenges involved in adding and integrating renewable generation in regional markets. In RENEW's views, these challenges are overstated, given the slow penetration rate of renewable generation in Wisconsin. Right now, only about 8% of Wisconsin's supply mix is derived from in-state renewable energy resources, according to the Energy Information Administration. The supply forecast on page 18 (Figure 1-9) projects negligible growth in wind, hydro and bioenergy resources over the 2020-2026 period. And while electric providers have committed themselves to a significant build-out of solar generation, the pace of in-state generation additions, assumed to be in the 300-400 MW range per year, will be gradual in nature, hardly enough to cause reliability problems in the 2020-2026 period. It is not clear why the draft SEA chose to harp on these purported challenges as they relate to Wisconsin's near-term energy future. There is an undertone in this section that would lead the reader to suspect that wind and solar power are inherently unreliable energy sources.

True, they are variable output sources, and not dispatchable, but whatever problems in system operation may arise from a higher penetration rate, they would be something to contend with in the distant future, if they even materialize at all.

<u>Clean Energy Programs and Policies – Energy Efficiency (pages 56-60)</u>

In general, the discussion on the state's Focus on Energy program is useful. Figure 5-1, which projects program expenditures, is particularly helpful, in that it suggests that annual budgets are likely to remain close to 2020 levels. However, if these projections did not take into account the likelihood of declining electricity sales attributable to the ongoing coronavirus pandemic, it's more likely that Focus on Energy will have less money to spend in the next three years than it has in 2020. Declining expenditures over the 2020-2026 period will likely lead to a reduction in program savings. This is likely to be problematic for any stepped-up effort to lower greenhouse gas emissions through energy efficiency. At a time when local governments, school districts, and other public entities are beginning to take aggressive steps towards reducing their carbon footprints through energy efficiency and onsite renewable energy, a reduction in Focus on Energy funding could delay these efforts. The final SEA should take note of this emerging situation.

Although Focus on Energy has a successful track record in achieving energy savings, this program does not encompass the totality of energy efficiency pathways that can be brought to bear to reduce carbon emissions. There is an emerging interest in designing or retrofitting buildings and communities in ways that would achieve a reduction in carbon emissions that is much greater than that achieved through traditional energy efficiency approaches. One key pathway for accomplishing decarbonization at this scale is building electrification, which substitutes clean electricity for the heating and cooling traditionally supplied with fossil fuels. Nongovernmental organizations such as Rocky Mountain Institute are working to identify and analyze specific scenarios for accomplishing building electrification in a cost-effective manner, and are sharing those results with policymakers and local officials. Coincidentally, the Oregon School District is close to completing the first net zero school in Wisconsin. Located in Fitchburg, the school can serve as a living demonstration of various net-zero energy design concepts and technologies that will enable the school district to reap considerable savings over that school's lifetime. The SEA should include a discussion of building electrification and local net zero energy initiatives in the energy efficiency section.

<u>Clean Energy Programs and Policies – Renewable Energy (pages 64-69)</u>

Wisconsin's statewide renewable portfolio standard (RPS), enacted in 2006, set a goal of increasing renewable energy supplies to equal 10% of the state's electricity sales. As noted in the draft SEA, that goal was achieved in 2013. What the draft does not state is that the quantity of renewable electricity sold in Wisconsin has remained more or less flat from 2013 on, in keeping

with the pattern seen with total electricity sales in Wisconsin. Also remaining relatively constant since 2013 is the ratio of in-state and out-of-state renewable generation relative to total RPS sales (see RENEW Table 3 below).

Year	Total (in MWh)	Amount supplied by renewable energy (includes green pricing programs)	RE %	In-State %	Out-of- State %
2019	69,185,670	7,705,536	11.1	5.3	5.8
2018	70,938,077	7,638,136	10.8	5.0	5.8
2017	68,978,813	8,378,864	12.1	5.3	6.8
2016	69,724,917	7,719,363	11.1	5.1	5.9
2015	68,698,826	7,486,945	10.9	5.2	5.6
2014	69,191,661	7,946,692	11.5	5.5	6.0
2013	68,768,680	7,396,276	10.8	5.1	5.6

RENEW Table 3

On page 65, the draft SEA presents a pie chart from the Commission's 2018 Renewable Portfolio Compliance report (5-RF-2018). Shortly after the issuance of the draft SEA, the Commission released its 2019 report. The pie chart appearing below is taken from the 2019 compliance report. We recommend updating the SEA to incorporate the Commission's most recent data on the state's RPS.



The pie chart shows that wind-generated electricity accounted for nearly two-thirds of the renewable power supplying Wisconsin electric providers in 2019. Of that total, more than two-

thirds of that wind generation originated in neighboring states. Today, the out-of-state wind power serving Wisconsin electricity customers is generated at facilities located in Illinois, Iowa and Minnesota. Later this year, Alliant's 150 MW Kossuth wind power plant will commence operation. In early 2021, a 52 MW wind power plant in South Dakota--Tatanka Ridge--will also begin producing electricity for Dairyland Power Cooperative and its member cooperatives. These generation additions will increase the quantity of renewable electricity sold to Wisconsin customers. However, because they are located in other states, their output is not reflected in the 2026 forecast for wind in Figure 1-9. This is yet another argument for including regional maps that display all of the generating units serving Wisconsin customers.

Finally, we believe that the SEA is a fitting document to present other pertinent findings in the 2019 Renewable Portfolio Standard Report. Of likely interest to readers would be the individual utility compliance results. The reader is not going to be able to discern from the 10.7% average that there is a wide disparity between electric providers in terms of the renewable energy content in their electricity. As indicated in the table below, the renewable electricity percentages vary widely, ranging from nearly 25% (Northern States Power-Wisconsin) at the top to an average of 6% at the bottom (Wisconsin Electric Power Co. and Wisconsin Public Service Corp.). It is evident from this table that renewable energy content increases the further west in Wisconsin one goes, and that the electric providers serving western Wisconsin are significantly further along in their transition to clean energy than those serving eastern Wisconsin. This fact should be expressed to the public.

Renewable Electricity as a Percentage of Electricity Sales ¹ , by Utility - 2019				
Electric Provider	Percentage			
Northern States Power - Wisconsin	24.7%			
Dairyland Power Cooperative	16.1%			
Wisconsin Power & Light	13.5%			
WPPI Energy	13.0%			
Madison Gas & Electric	12.3%			
Wisconsin Public Service Corp.	6.7%			
Wisconsin Electric Power Co.	5.4%			
WISCONSIN TOTAL	10.7%			

¹ RPS-compliant electricity only

Electric Provider Solar Initiatives (pages 65-67)

Regarding Table 5-1, some of the numbers presented should be updated to reflect more current information. For example, the Commission is now in possession of 2019 retail sales totals, and 2019 RPS compliance totals. Also, the in-service dates of some of the projects listed have changed. The first 150 MW increment at Badger Hollow should be completed in 2021, while the second 150 MW increment will be completed in 2022. The Richland County Solar

Farm, which is one of the six projects that WP&L intends to acquire (Docket 6680-CE-182), will likely be energized in 2022.

The topic of community solar is a welcome addition to the SEA, but its presentation here is inadequate. To begin with, this section does not present the value proposition of a community solar program for customers. More than 75% of all households who would like to "go solar" cannot do so, due to their roof condition, orientation, or shading. Additionally, supplying oneself directly with solar energy is often not a viable option for those living in rental housing or condominium developments. Community solar is a service to utility customers who cannot access solar directly. Through this subscription service, customers subscribe to the output from a new, large solar array connected to the local grid.

Beyond that, there are a few salient points about the Wisconsin experience that should appear in this SEA, but do not. The first is that more than half of the state's electric customers cannot access a community solar program, because their electric provider does not offer such a service. The section should identify the electric providers that offer a community solar service that a customer can enroll in today. There aren't many that do. For residents and businesses in, say, Green Bay, Racine, or Kaukauna, this section is strictly an academic one, in that their electric providers do not offer a community solar service. The SEA should strive to avoid conveying the impression that community solar is available to everyone in Wisconsin when the reality is very different.

The strangely rosy depiction of Wisconsin's community solar experience does not stand up to a simple comparison with Minnesota's results in this area. In Wisconsin, community solar is strictly voluntary, and if the electric provider does not wish to offer such a service, its customers are out of luck. By contrast, Minnesota has a fully realized community solar policy that guarantees customers of investor-owned utilities access to a community solar service. As evidenced in the graph on page 16 prepared by the Institute of Local Self-Reliance, Minnesota's community solar policy has leveraged, in Xcel Energy's territory alone, 100 times the capacity that Wisconsin providers have achieved to date.



Notwithstanding its popularity here, Wisconsin's results pale in comparison to what Minnesota has achieved. In RENEW's view, this comparison highlights the importance of measuring Wisconsin's clean energy initiatives against those of neighboring states.

Regarding the topic of "renewable rider" programs on page 67, we believe it is important to discuss actual projects that have moved through the Commission's review process. The mere offer of a renewable rider service does not necessarily translate into action, let alone new generating capacity. To date, only Madison Gas and Electric (MG&E) has taken the concept far enough along to begin adding offsite solar capacity in its service territory. Its Morey Field array in Middleton, which will provide 1.5 MW of solar power to the City of Middleton and the Middleton-Cross Plains Area School District, was energized earlier this month. In addition, construction has commenced on MGE's 9 MW array at Dane County Regional Airport, which, when completed next year, will serve Dane County exclusively through a renewable rider.

Customer-Owned Renewables (pages 67-69)

We believe the aggregation of data relating to customer-owned renewables is an admirable undertaking that can yield interesting results. Certainly, it suffices to document the growth of solar power used for self-generation, especially since 2015. It is also interesting to take account of the waxing and waning of certain energy resources in this category over time.

Unfortunately, this section does not address the salient issues that have restrained growth in customer-owned renewables, which hopefully will lead to new or revised policies and practices to encourage the expansion of distributed energy resources (DERs). What follows below are capsule summaries of the most significant of these barriers.

- Patchwork landscape of parallel generation tariffs governing customer-sited PV: Terms of service vary widely among electric providers. Problems/inconsistencies include: co-op cancellations of net metering, different net metering ceilings (from 20 kW to 300 kW), unreasonable compensation formulas for exported electricity, monthly vs. annual true-ups, and required number of meters. Taken together, this landscape suppresses demand for solar by increasing installation costs, reducing system ROI, shrinking system size, and undermining solar's value proposition to customers.
- <u>Clear, unambiguous access to third-party financing</u>: Uncertainty over the legality of leases and service agreements restricts solar deployment to the customer ownership model. This situation creates challenges to absorbing up-front cost of system installation. Third party financing also heightens vulnerability to interconnection denials.
- <u>Outdated interconnection standards (PSC 119)</u>: Improvements in equipment performance and specifications since 2004 are not reflected in Wisconsin's interconnection requirements and procedures. Failure to align PSC 119 with IEEE and UL certifications adds costs and time to installations. Current provisions do not address storage technologies.
- Leveling the playing field on virtual net metering: Current utility net metering policy does not allow customers with multiple facilities to offset their aggregated load through a single customer-sited PV system, even if those buildings are located on a single campus or property. This policy effectively imposes a property-wide net metering cap that can be as low as 20 kW, irrespective of the aggregated load at that site. Yet several utilities now offer solar power from a single offsite array that can serve all of the customer's facilities at an attractive price. In effect, regulatory policy allows utilities to offer "virtual net metering" using their own generation, but denies the same pricing flexibility to customers who choose to own their solar facility.
- Larger parallel generators are subject to cost-prohibitive distribution study requirements and production limits: Utility review of Class 3 systems (including a storage component) occasionally triggers expensive studies that can kill projects. Some systems have gone forward only after project owners agree to built-in output restrictions.
- <u>Undersizing of systems to serve common area spaces in buildings with multiple meters</u>: Current administrative code prevents building owners from designing solar systems to serve multiple occupants or tenants that have their own electric service. The alternative would be to build small arrays and wire them directly into individual tenant meters, an inefficient and

expensive workaround. For that reason, PV systems serving condos and apartment house are typically sized to supply only common area uses, not tenant or owner usage.

No consideration of the value of batteries, microgrids, and other storage-based technologies anywhere in the regulatory landscape: Energy storage is rapidly approaching a state of market readiness for utilities and their customers. Two microgrids are now operating in Wisconsin, and another is being constructed for a new school in Dane County. Despite their potential, the state of Wisconsin has yet to analyze the costs and benefits from deploying this emerging technology, and identify existing regulatory barriers that can be overcome.

Some of these issues were brought to the Commission's attention in comments filed pursuant to the recently convened investigation into parallel generation tariffs (5-EI-157). The interconnection issue, among others, is addressed in a recently released report from the Midwest Research Energy Consortium and the Great Plains Institute. The Wisconsin Energy Distribution and Technology Initiative report consists of stakeholder recommendations for accelerating the clean energy transition and optimizing the energy system for everyone's benefit. We suggest that this section be revised to acknowledge increasing stakeholder interest in strengthening the policy underpinnings of the DER marketplace.

Electric Vehicles (pages 69-71)

Electric vehicle adoption will increase rapidly. On page 70 of the draft SEA, there is a reference to the uncertain speed and scale of future increases in EV use. Based on market projects, it is likely that EV adoption will increase rather dramatically in the coming years. According to a 2019 Bloomberg analysis, EV sales are expected to increase to 10 million vehicles sold in the U.S. by 2025 and 28 million by 2030. While currently less than 1% of new passenger vehicles sold in Wisconsin are electric, it is conceivable that by 2040, over half of the vehicles sold will be electric.

Medium and heavy-duty vehicles will be electrified as well. The draft SEA provides a great overview of the issues left to be clarified for passenger electric vehicles. Medium and heavy-duty vehicles are largely ignored, however, yet these can have a significant effect on the grid and electricity demand. When we consider that an electric bus or long-haul truck could conceivable charge at speeds of over 1 MW, there are significant grid and distribution impacts that Wisconsin electric providers need to begin planning for. This also leaves room for significant opportunities to provide that power with renewable energy and use-managed charging to cost effectively supply heavy-duty electric vehicles with clean energy. We anticipate that during this SEA period, transit buses and delivery vehicles will be electrified in record-breaking numbers.

Transit buses are already entering Wisconsin; the City of Madison is expecting its first delivery of electric buses any day now, as it works toward its goal of having a carbon-neutral

fleet by 2030. More Wisconsin cities, like Eau Claire, Racine, and Milwaukee, are also anticipating the arrival of their first electric buses.

The industry is already seeing a large increase in the demand for electric parcel delivery vehicles. UPS and Amazon recently placed orders for electric delivery trucks; UPS ordered 10,000 all-electric vans and Amazon is purchasing 100,000 all-electric trucks from EV start-up Rivian. Some of these vehicles will likely be operating in Wisconsin, signaling a larger market shift for medium-to-heavy-duty electric vehicles.

There are numerous climate and renewable energy benefits of the transition to EVs. Electric vehicles are already cleaner and cheaper to operate than internal combustion engine vehicles. There are numerous opportunities to use EVs to protect air quality, save money, and accelerate the transition to renewable energy.

EVs will only continue to get cleaner as more renewable energy is integrated into our electric generation mix. What is more, EVs can be a tremendous source of electricity load that is largely flexible, and can be incentivized to come online at the cheapest and cleanest times of the day. Cars are parked 95% of the time, offering ample opportunity for EVs to charge at opportune times for the grid and its renewable energy sources.

For now, over 80% of charging happens overnight; when there is the most capacity on the grid and when most of our wind generation is also online. Daytime charging can coincide with solar generation with minimal grid impacts, especially when co-location is involved. As we get more renewable energy and electric vehicles online, managing EV load to optimize the grid benefits of these technologies will be a very important function of electric providers.

EVs provide a huge opportunity to leverage and accelerate the transition to carbon-free electricity in Wisconsin so that both the built environment and transportation can be powered with renewable energy. In order to reach that future in a timely manner, Wisconsin regulators and electric providers need to begin planning now for how they will manage and incentivize electric vehicle charging.

Electric System Emissions (pages 72-77)

The addition of this section into the SEA is both commendable and overdue. It is clear that the reduction of greenhouse gas emissions has become a priority for certain electric providers operating in Wisconsin. As noted above, the aggressive and systematic approach that Xcel Energy has taken to accelerate its clean energy transition is already yielding significant environmental and economic benefits to its Upper Midwest customers (see image below). It must be acknowledged, however, that what Xcel has accomplished since 2017, when the photo below was taken, would not have been possible without certain policies being place in Minnesota. The state's solar law enacted in 2013 was instrumental in jump-starting Minnesota's solar energy industry. That law requires Minnesota public utilities to generate or procure sufficient electricity

from solar sources so that by the end of 2020, at least 1.5 percent of the utility's retail electricity sales in the state are produced from solar energy

We reference that state's solar law to underscore the relationship between public policy and private sector outcomes. Unfortunately, this chapter is bereft of any policy discussion that would, among other things, provide needed context for the ongoing transition away from fossil fuels and toward clean energy sources, which is happening in Wisconsin though at a slower pace than in Minnesota. This editorial decision likely stems from the failure to acknowledge humaninduced climate change as a scientific fact, which is especially problematic in this section.

Without any reference to the scientific case for a reduction in global greenhouse gas emissions, one might be excused for thinking that the shift to clean energy resources represents little more than an appealing business opportunity for electric providers. Indeed, one is left with the impression that electric providers are the ones leading the charge to a cleaner energy future, while a disengaged public remains content to stand on the sidelines. The public would seem to have no role here. Of course, this is not even remotely the case.

Even more remarkable is the lack of references in the draft SEA to the current administration's executive orders outlining new initiatives to tackle climate change. In Executive Order 38, issued in August 2019, the Evers administration expressed support for the emissions reduction goals in the 2015 Paris Accord, citing the threat that climate change poses to the state's natural resources, public health, and economy. The order creates a new office in the administration, the Office of Sustainability and Clean Energy, which is charged with developing a plan for Wisconsin to achieve a 100% carbon-free electricity mix by 2050.

There is no reference either to Executive Order 52, which created the Governor's Task Force on Climate Change, chaired by the Lieutenant Governor. This new task force is responsible for identifying new, cost-effective conservation, sustainability, and efficiency strategies for the state.

No mention is made of the State of Wisconsin's intention to reserve 14 MW of capacity in MG&E's O'Brien Solar Fields project, a 20 MW array to be located in Fitchburg. In that proceeding (3270-CE-129), MG&E proposes to provide UW-Madison with 10 MW of that array's output and 4 MW to the Department of Administration. If approved, the O'Brien array will be the largest generator serving institutional and business customers through MGE's Renewable Energy Rider service.

The decision by the State of Wisconsin and various local government customers to acquire renewable electricity directly from MG&E attests to the strength of clean energy and sustainability goals in driving new investment in clean energy. These entities articulate a multitude of reasons for procuring supplies of clean energy for their own operations, chief among them being environmental responsibility. The SEA needs to recognize the great concern over climate change that is propelling local governments, school districts, tribes, affinity groups, nongovernment organizations, and businesses to regard clean energy procurement as one of the most effective actions they can take to reduce their carbon footprints.

The draft SEA is also silent on arguably the most inspiring clean energy initiative to emerge in 2019, namely, the Butter Solar portfolio of solar arrays. Developed by OneEnergy Renewables, Butter Solar's arrays supply low-cost electricity to 10 western Wisconsin municipal utilities affiliated with Upper Midwest Municipal Energy Group while providing renewable energy credits (RECs) for Organic Valley and the City of Madison. With 17 MW of solar capacity, Butter Solar constituted the largest addition to Wisconsin's renewable generation portfolio in 2019.

That project would not have been financeable without the REC purchases from Organic Valley and the City of Madison. The latter's participation in Butter Solar flowed from its own clean energy policy, adopted in 2017, committing the city to meet all of its electricity consumption with zero-carbon resources, either directly or through offsets like the RECs acquired from Butter Solar. A desire to minimize climate change lay at the heart of the City's purchase of RECs, much like the actions specified in the Governor's Executive Orders. This was very much a policy-driven outcome. There will be more examples of these ground-up, policy-based actions during the 2020-2026 period.

It is crucial that the SEA acknowledge the strength and breadth of climate change as a motivating factor behind the clean energy transition, as a number of Wisconsin electric providers seem to have done. Certainly, this concern is animating the clean energy pivot underway at WP&L, for example. We look forward to seeing WP&L's planned retirement of Edgewater 5 and its acquisition of 675 MW of solar capacity incorporated in the SEA's projections of emissions reductions between now and 2026. If WP&L's Clean Energy Blueprint is any guide,

we expect additional actions from the utility that will drive greenhouse gas emissions lower in the latter half of the 2020-2026 period.

Final Thoughts

We present these comments in hopes that a more fully realized energy assessment will emerge, one that has genuine strategic value to the Commission and the public. It is clear from the draft that the template used for this iteration is ill-suited for describing the changing environment in which the electric power sector finds itself. What we have here, instead, is a document that seems frozen in time, projecting an outdated Wisconsin-centric view that is seemingly blind to the increasingly regional nature of today's electric utility industry. Given the degree to which global and regional factors are shaping the plans being developed and acted upon by the state's electric providers, the insularity that defines the draft SEA is a distinct flaw that needs to be dealt with in future iterations.

One approach for accomplishing that would be to widen the scope of research that goes into the preparation of this document. We encourage Commission staff to engage the newly created Office of Sustainability and Clean Energy in a productive way, and find other sources of information beyond the utility responses to data requests. Certainly, RENEW would, if asked, gladly assist Commission staff in the gathering of relevant information prior to the document-drafting process. As noted in the introduction, the Strategic Energy Assessment is the closest thing in the state to a public planning process involving the state's electric providers. It's crucially important that this and future iterations of the SEA weave in policy threads that will illuminate pathways to achieving the clean energy goals and objectives that numerous public and private entities in Wisconsin have adopted. Notwithstanding SEA's built-in limitations, it behooves both the Commission and stakeholder groups like ourselves to figure out ways of buttressing the SEA with information that reflects current reality and of fashioning a study that effectively communicates its findings to the broader public.

Sincerely,

Michael Viekenman

Michael Vickerman Policy Director, RENEW Wisconsin