STATE OF IOWA

BEFORE THE IOWA UTILITIES BOARD

IN RE:  
SOO GREEN HVDC LINK  
PROJECTCO, LLC  

DOCKET NO.  E-22436

DIRECT TESTIMONY

DIRECT TESTIMONY OF  
STEVEN C. GUYER  
ON BEHALF OF  
IOWA ENVIRONMENTAL COUNCIL

MAY 3, 2023
Please state your name, business name and address, and role in this proceeding.

My name is Steven C. Guyer. I am the Energy Policy Manager with the Iowa Environmental Council, located at 505 Fifth Ave, Suite 850, in Des Moines, Iowa. I appear here in my capacity as a witness on behalf of the Iowa Environmental Council.

Please describe your background.

I have an Associate of Arts degree in Electronics Engineering from Hawkeye Institute of Technology in Waterloo, Iowa, a Bachelor of Arts degree in Physics from the University of Northern Iowa in Cedar Falls, Iowa, and a Juris Doctorate from the University of Iowa in Iowa City, Iowa. I was admitted to practice law by examination in Iowa in 1988 and maintain my licensure. Since 1988, I have been working in the energy field. From 1988 through 2007, I worked in legal and environmental positions at Iowa Southern Utilities, IES Industries, Alliant Energy, and MidAmerican Energy. Since 2008, I have designed and built solar energy systems across Iowa as the owner and president of GWA Solar. In addition to my continued work at GWA Solar, I have worked for the Iowa Environmental Council (IEC) since 2019. The Iowa Environmental Council is a 501(c)(3) non-profit, member-based corporation that works to advance public policies that provide a safe, healthy environment and sustainable future for all Iowans. In my capacity at IEC, I work primarily on renewable energy, and energy and climate policy.

Have you testified with the Iowa Utilities Board before?
A: Yes. Most recently I testified in Docket No. RPU-2022-0001, the application for advanced rate making principles submitted by MidAmerican Energy Company, Docket No. RPU-2021-0003, the application for advanced rate making principles submitted by Interstate Power and Light, Docket No. EPB-2020-0150, the emission plan and budget proceeding for Interstate Power and Light, and Docket No. EPB-2020-0156, the emission plan and budget proceeding for MidAmerican Energy.

Q: What is the purpose of your testimony?

A: The purpose of my testimony is to support the approval of the SOO Green VSC HVDC (voltage source converter high voltage direct current) link project.

Q: Why do you support the SOO Green HVDC link project?

A: Not only would the SOO Green transmission line improve reliability, but it is an innovative and environmentally superior way to build transmission infrastructure.

Q: Can you explain how the SOO Green line is innovative and environmentally superior?

A: Yes. The SOO Green HVDC transmission line is an underground high voltage direct current electric transmission line located entirely within either the Canadian Pacific right of way or an approximately 18-mile stretch of U.S. Highway 18 right of way. Because SOO Green is a high voltage direct current line, it will not have the electromagnetic fields (EMF) associated with traditional above ground alternating current lines. In fact, because the cables are insulated and grounded no electric field exists outside the cable, and the magnetic fields in the two cables cancel each other with a residual magnetic field weaker than typical
household appliances. By locating underground in the railroad and Highway 18 right of ways, the line avoids sensitive wildlife habitats and minimizes tree clearing.

**Q:** How would the SOO Green transmission line improve reliability?

**A:** The 2,100 MW transmission line will link energy markets in MISO (Midcontinent Independent System Operator) and PJM. This not only relieves transmission constraints in MISO, enabling Iowa renewable energy to reach PJM consumers, but improves the reliability of PJM. Importantly, SOO Green is bidirectional allowing for PJM produced energy to reach MISO consumers, and to improve the reliability of MISO grid.

**Q:** Is there a need for more interregional transmission to improve reliability in MISO?

**A:** Yes. As pointed out in the National Transmission Needs Study, “the MISO region was unable to import additional capacity during the February 2021 cold weather event, negatively impacting resource adequacy. Increased bi-directional transfer capacities can improve system reliability during extreme weather events.”

**Q:** Why is VSC HVDC technology in particular beneficial?

**A:** As MISO discusses in the Renewable Integration Impact Assessment (RIIA), the need for VSC HVDC technology to successfully solve a myriad of issues (reducing curtailment, ensuring power delivery, solving weak-area instability) demonstrates dynamic stability will become increasingly important for any large or small transmission expansion project in high renewable penetration scenarios, and the transmission design needs to be specifically vetted for dynamic performance. To port power from wind-rich zones located in weak-area, building a VSC-HVDC line into those weak areas may be more economical than incrementally installing a

---

combination of AC transmission lines with many synchronous condensers and mitigating the small signal stability issues created by installing the rotating masses of those synchronous condensers (Figure OR-DS-9). It also re-emphasizes the desire to develop new technology, such as grid-forming inverters and pilot projects, to demonstrate their effectiveness to bring down the cost of grid integration of renewable resources.²

In other words, VSC HVDC provides additional grid stability benefits at a lower cost than an alternating current alternative.

Q: Does this conclude your testimony?

A: Yes.

AFFIDAVIT OF
STEVEN C. GUYER

STATE OF IOWA    )    ss.
COUNTY OF       )
POLK

I, Steven C. Guyer, being first duly sworn on oath, state that I am the same Steven C. Guyer identified in the testimony being filed with this affidavit, that I have caused the testimony to be prepared and am familiar with its contents, and that the testimony is true and correct to the best of my knowledge and belief as of the date of this affidavit.

__________________________
/\                       \\
| / Steven C. Guyer       |
\|_______________________|
                   Steven C. Guyer

Subscribed and sworn before me the __1st__ day of May, 2023.

__________________________
/\                      \\
| / Lisa D. Hein        |
\|_______________________|
                   Lisa D. Hein
Notary Public in and for the State of Iowa
My Commission Expires 3/15/25