



SOO Green HVDC Link

Response to the Illinois Power Agency Electricity and Capacity Procurement for Eligible Retail Customers Request for Stakeholder Comments

Point of Contact

Steve Frenkel, Vice President
SOO Green HVDC Link ProjectCo, LLC
sfrenkel@soogreen.com
(312) 590-8888

1. Introduction

SOO Green HVDC Link (SOO Green) is pleased to submit the enclosed response to the Illinois Power Agency's (IPA) request for stakeholder comments regarding Electricity and Capacity Procurement for Eligible Retail Customers.

SOO Green is a first-of-its-kind high voltage direct current (HVDC) interregional transmission line to be installed underground along existing transportation corridors to accelerate grid decarbonization and enhance power grid reliability and climate resilience. By linking the midwestern (MISO) and eastern power markets (PJM) from Mason City, Iowa to Yorkville, Illinois, the 350-mile, 2,000-megawatt, 525kV SOO Green project will provide northern Illinois customers greater access to abundant, large-scale, affordable renewable energy resources as well as a more resilient and connect grid.

SOO Green is a privately-financed merchant transmission project that is deploying private capital to enable greater access to renewable energy, accelerate grid decarbonization, enhance grid reliability, create good paying jobs, and leverage existing transportation corridors to site climate-resilient transmission infrastructure.

SOO Green can provide a source of clean and zero fuel cost renewable energy to help offset and stabilize rising utility bills driven, in part, by volatile coal and natural gas prices and can offer continued protections for eligible retail customers in northern Illinois. Given these beneficial attributes, the IPA should incorporate an expanded procurement and hedging strategy to supply eligible retail customers with affordable and stably-priced wholesale products delivered via HVDC transmission facilities such as SOO Green. Procuring a portion of wholesale products – energy, capacity, and renewable energy credits (RECs) – required to serve eligible retail customers via a long contract with SOO Green would improve the ability of the IPA to manage price volatility by providing greater optionality, price certainty and stability.

The following sections provide SOO Green's feedback on the IPA's procurement process and hedging strategy, suggest a balanced portfolio and bundled procurement approach via HVDC transmission lines, and provide a detailed overview of the SOO Green project.

2. Response to Selected IPA Questions Seeking Stakeholder Feedback

Procurement Process and Products

- 1. What additional products beyond the block energy products that are currently procured should the IPA consider for inclusion in the procurement plans that would help mitigate the impacts of high and volatile electricity prices on eligible retail customers which would meet the product definitions set by statutory requirements and the ICC?**

In recognizing the myriad benefits that transmission facilities like SOO Green can deliver, Illinois' Climate and Equitable Jobs Act (CEJA) establishes that *"It is the policy of this State to promote cost-effective transmission system development that ensures reliability of the electric transmission system, lowers carbon emissions, **minimizes long-term costs for consumers**, and supports the electric policy goals of this State."* CEJA underscores the ratepayer benefits of interregional transmission lines by declaring that the state *"...desires access to clean energy resources in other states to develop and support its low-carbon economy and **keep electricity prices low in Illinois...**" [emphasis added]*

As an interstate and interregional high-voltage transmission line, SOO Green is consistent with CEJA's policy directives and goals: the project will provide access to affordable, stably-priced clean energy resources from a geographically and technologically diverse portfolio of renewable generators to support Illinois' low-carbon economy while minimizing long-term costs for consumers.

The policy and consumer benefits of interregional transmission were noted in a recent report by [Americans for a Clean Energy Grid](#) (ACEG) profiling ["Transmission Projects Ready To Go"](#) that included SOO Green. The report found that large-scale transmission development is needed to enable grid decarbonization, noting that such development *"...not only delivers low-cost renewable energy to population centers, but is also essential for accessing a diverse mix of wind and solar resources by enabling large interregional flows of power."*¹ In addition to noting grid reliability, extreme weather resilience, and other benefits of interregional transmission projects, the ACEG report highlighted benefits such as *"increasing power market competitiveness, hedging against fuel price volatility and other sources of uncertainty..."*²

To help mitigate the impacts of high and volatile electricity prices on eligible retail customers, CEJA allows the IPA to help the State of Illinois realize broader policy and ratepayer benefits by procuring wholesale energy products via HVDC transmission lines such as SOO Green. In addition to the block energy products currently procured, the IPA should consider procuring transmission capacity (the right to ship energy on the HVDC transmission line), energy and/or bundled energy, capacity, and RECs delivered by HVDC facilities such as SOO Green as authorized by CEJA. The IPA's most recent procurement plan acknowledges this option:

Under Public Act 102-0662, procurements of standard wholesale products may now include energy from high voltage direct current ("HVDC") transmission lines with converter stations located in Illinois. The Agency will consider how products supplied by HVDC transmission lines, **to the extent that these products are commercially available**, can be bid into the competitive

¹ <https://cleanenergygrid.org/portfolio/transmission-projects-ready-to-go/>

² Ibid

procurements for wholesale energy products on a basis that treats this source of supply equally with other sources of supply through workshops and comment processes across the months preceding development of its 2023 Electricity Procurement Plan.³ [emphasis added]

In preparing its 2023 Electricity Procurement Plan and future plans, the IPA plan should consider procuring standard wholesale products – energy, capacity and RECs⁴ – enabled by HVDC transmission lines such as SOO Green whether or not such products are currently available in wholesale markets, as the IPA Act also allows:

220 ILCS 16-111.5(b)(3)(iv)
the proposed mix and selection of standard wholesale products for which contracts will be executed during the next year,...[and] other standardized energy or capacity products designed to provide eligible retail customer benefits from commercially deployed advanced technologies including but not limited to high voltage direct current converter stations, as such term is defined in Section 1-10 of the Illinois Power Agency Act, **whether or not such product is currently available in wholesale markets;** [emphasis added]

With an expected in-service date of 2027, SOO Green is deploying commercially available advanced HVDC technology to deliver a full suite of wholesale products available for IPA procurement. SOO Green’s delivered wholesale products are not currently available for delivery under the IPA’s current 3-year procurement structure. Such products, however, will be available once the project begins commercial operations and can be procured in advance under longer term contract to ensure these resources, when available, can serve the needs of eligible retail customers. SOO Green plans to offer energy and other wholesale products delivered to PJM’s ComEd Zone beginning in mid-2027 that could be contracted by the IPA in advance of delivery.

While SOO Green-enabled wholesale products could theoretically be procured under the IPA’s existing strategy, the benefits to eligible retail customers—specifically the hedging and consumer protection benefits—require longer-term procurements. A long-term procurement for wholesale products delivered by SOO Green would be complementary to the IPA’s current procurement approach and would operate alongside it. The IPA should consider a long-term procurement via HVDC transmission lines that have a converter station located in the Illinois footprint of PJM service territory.

Specifically, the IPA should consider procuring transmission capacity along with wholesale products (energy, capacity, RECs) via SOO Green under a long-term bilateral contract to access resources that can help mitigate the risks and impacts of high and volatile electricity prices. The changes to Section 16-111.5 of the Public Utilities Act via CEJA empower the IPA to consider the mitigating effects of HVDC

3

[https://www2.illinois.gov/sites/ipa/Documents/IPA%20Final%202022%20Electricity%20Procurement%20Plan%207%20FEB%202022\).pdf](https://www2.illinois.gov/sites/ipa/Documents/IPA%20Final%202022%20Electricity%20Procurement%20Plan%207%20FEB%202022).pdf)

⁴ SOO Green understands that the IPA currently procures RECs through the Long-Term Renewable Energy Resources Procurement Plan (“LTRRPP”) and energy and capacity for eligible retail customers through the energy procurement planning process. SOO Green believes the IPA can coordinate across the plans and that the IPA is not prohibited from procuring RECs as part of the energy procurement plan, given multiple references (including those quoted above) to environmental benefits of the supply procured.

converter stations in its procurement plan, by directing that the IPA's annual energy procurement plan include the following:

220 ILCS 5/16-111.5(b) (3) (vi)

...an assessment of the price risk, load uncertainty, and other factors that are associated with the proposed procurement plan; this assessment, to the extent possible, shall include an analysis of the following factors: contract terms, time frames for securing products or services, fuel costs, weather patterns, transmission costs, market conditions, and the governmental regulatory environment; **the proposed procurement plan shall also identify alternatives for those portfolio measures that are identified as having significant price risk and mitigation in the form of additional retail customer and ratepayer price, reliability, and environmental benefits from standardized energy products delivered from commercially deployed advanced technologies, including, but not limited to, high voltage direct current converter stations, as such term is defined in Section 1-10 of the Illinois Power Agency Act, whether or not such product is currently available in wholesale markets.** [emphasis added]

In taking into account the above statutory guidance, the IPA should consider procuring SOO Green's transmission capacity and delivered wholesale products, while available, in advance of the project's expected commercial operation date. Doing so will help ensure that eligible retail customers can immediately derive the project's myriad benefits, including as a hedge to protect consumers from price and other risks, when the project begins operating.

IPA Hedging Strategy

- 5. What changes should the IPA consider making to the energy hedging strategy that would be consistent with the Illinois Power Agency Act, Public Utilities Act, and relevant orders issued by the ICC which would improve the ability to deal with extremely volatile energy prices? The IPA needs to consider a more flexible long term and short term hedging strategy allowing the IPA to procure long term attractively priced energy blocks or other energy products rather than be locked into just a 3 year strategy alone.**

The IPA should consider implementing a balanced portfolio strategy that employs a mix of the current three-year ladder approach (or other shorter-term procurement strategy the IPA deems to be reasonable) layered with a long-term hedge of 15-20 years of transmission capacity and energy (and other wholesale products) to provide price stability, along with other hedging products (such as standard traded option). This approach would allow the IPA to take advantage of a broader suite of products in the marketplace with varying and complementary tenors and pricing able to help mitigate different price-volatility scenarios while maintaining short-term (1-3 year) flexibility.

By enabling a full suite of wholesale products, SOO Green would provide the IPA with a unique menu of hedging options that is materially different from "standard wholesale products" previously commercially available. Due to changes to Section 16-111.5(b) of the Public Utilities Act from CEJA, the IPA can now look beyond relying only on standardized "over-the-counter" products and include more tailored or a specialized set of products made available by an HVDC facility.

The procurement and hedging options available through SOO Green – as a fully and instantaneously dispatchable HVDC transmission line used to transport stably-priced renewable energy – could provide the price protection of Carbon Mitigation Credits (CMC) while also providing the IPA a portion of the supply (or option to secure supply) needed to meet the forecasted load requirements of eligible retail customers.

Under this expanded hedging strategy and pursuant to CEJA’s new enabling provisions, the IPA should consider locking-in on behalf of bundled service customers attractively-priced wholesale products delivered by HVDC transmission lines such as SOO Green under 15–20-year contracts for approximately 1,000 MW of transmission capacity layered with shorter-term wholesale product procurements.

8. Is it reasonable to consider modifications to the hedging strategy, if the recent high and volatile energy prices may be a short-lived phenomenon?

SOO Green recommends that any long-term hedge occur in the near-term to lock-in attractively priced wholesale products via HVDC facilities such as SOO Green for delivery after the CMC sunsets. With the CMC scheduled to expire on May 31, 2027, the IPA should procure a long-term hedge that captures both the financial benefits the CMC provides as a delivery credit during periods of high wholesale prices while also securing energy and/or other wholesale products (capacity, RECs). A procurement from SOO Green would provide consumer price protection while also fulfilling a commensurate portion of the supply needed to serve eligible retail customers.

[Carbon Mitigation Credits](#)

10. What are the implications for the IPA’s hedging strategy for ComEd eligible retail customers given that the procurement of CMCs includes the consumer protection methodology? and

12. Should the hedging benefits of CMCs, if any, be considered in the IPA’s hedging strategy for energy?

Viewing the IPA’s strategy over a long horizon, a long-term procurement of transmission capacity and one or more of a suite of energy, capacity and/or REC products enabled by SOO Green would involve procuring supply (or the option to procure supply) as part of the portfolio used to serve ComEd bundled service customers. A long-term procurement via SOO Green could be structured to incorporate beneficial features of the CMC, such as the contract for differences ratepayer protection mechanism, or other fixed-rate approaches with the intention of beginning delivery in mid-2027 when the CMCs expire.

SOO Green provides additional optionality for the IPA by offering transmission capacity and wholesale products (energy, capacity, RECs) that allow the IPA to protect consumers by directly mitigating wholesale price risk via its procurement function. Wholesale products procured via SOO Green will be part of the bundled service charge and afford all of the attendant insurance benefits to eligible retail customers if wholesale prices rise. As such, a long-term IPA procurement via SOO Green would combine the hedge, supply for eligible retail customers, and other benefits within the IPA’s portfolio rather than each of those components operating independently.

3. A Bundled Procurement via HVDC Transmission Lines

Currently, the IPA implements separate procurements for renewable resources and block energy and capacity products with renewable resources obtained through the Long-Term Renewable Resource Procurement Plan (LTRRPP) and energy and capacity resources (with minor exceptions such as demand response) through the IPA's Electricity Procurement Plan. However, there is no statutory or regulatory impediment to the IPA considering the cross-plan value that a bundled procurement of wholesale products from an HVDC transmission line can offer.

Moreover, in addition to enabling the IPA to procure energy and other wholesale products from HVDC facilities, CEJA also deems renewable energy credits (RECs) associated with energy delivered via an HVDC converter station located in Illinois as eligible to meet RPS procurement goals. As a 525kv-class merchant project constructed under a project labor agreement with a state-of-the-art HVDC converter station to be located in Yorkville, Illinois, SOO Green meets CEJA's REC eligibility criteria:

20 ILCS 3855/1-75(c)(1)(I)

For the purposes of this Section, renewable resources that are delivered via a high voltage direct current converter station located in Illinois shall be deemed generated in Illinois at the time and location the energy is converted to alternating current by the high voltage direct current converter station if the high voltage direct current transmission line: (i) after the effective date of this amendatory Act of the 102nd General Assembly, was constructed with a project labor agreement; (ii) is capable of transmitting electricity at 525kv; (iii) has an Illinois converter station located and interconnected in the region of the PJM Interconnection, LLC; (iv) does not operate as a public utility; and (v) if the high voltage direct current transmission line was energized after June 1, 2023.

SOO Green is capable of delivering large quantities of affordable, reliable renewable energy needed to achieve Illinois' ambitious new 40% by 2030 and 50% by 2040 renewable energy procurement goals under CEJA's Renewable Portfolio Standard. The IPA projected that the state will face a gap of 45,000,000 MWh in 2031 toward meeting these goals. To help close this gap, SOO Green can reliably deliver more than 13,000,000 MWh of renewable energy credits annually.⁵

SOO Green understands that the IPA currently procures RECs through the LTRRPP and energy and capacity for eligible retail customers through the energy procurement planning process. SOO Green believes the IPA can coordinate across the plans and that the IPA is not prohibited from also procuring additional RECs as part of the energy procurement plan, given multiple references (including those quoted above) to environmental benefits of the supply procured.

Beginning in 2027 when the project commences commercial operations, SOO Green can offer the IPA a source of qualifying, affordable in-state RECs. In reviewing its procurement and hedging strategy, the IPA should consider the value of a long-term bundled procurement via SOO Green for transmission capacity plus energy, capacity and renewable energy credits for the length of the procurement (recommended at 15-20 years).

⁵ [https://www2.illinois.gov/sites/ipa/Documents/RPS%20Funding%20and%20Budget%20Update%20\(11%20June%202021\).pdf](https://www2.illinois.gov/sites/ipa/Documents/RPS%20Funding%20and%20Budget%20Update%20(11%20June%202021).pdf)

4. SOO Green HVDC Link Project Background

SOO Green is demonstrating a new model to build HVDC transmission lines underground along railroad corridors to link regional power markets, enhance system reliability and resiliency, and improve market efficiencies, serving as a model for a national clean energy grid. The 350-mile, 2,000 megawatt (MW) HVDC project will be built between Iowa and Illinois, linking the midwestern (MISO) and eastern reliability grid regions (PJM). SOO Green will interconnect at robust points on each grid: at the intersection of 345 kV Multi-Value Project (MVP) transmission systems in MISO, and adjacent to ComEd's Extra-High Voltage (EHV) system in PJM. By connecting these energy markets, the interregional SOO Green line will spur development and delivery of new sources of large-scale affordable renewable energy resources to customers seeking access to low-carbon generation.

As noted above, SOO Green plans to begin construction in 2024 and reach commercial operations in 2027. SOO Green's project schedule is contingent on continued progress toward reaching key milestones related to permitting, engineering, construction, interconnection, and financing.

SOO Green HVDC Link Route Map



Innovative Aspects of the SOO Green HVDC Link Project

SOO Green is demonstrating three key areas of innovation – development, market, and technology innovation – in constructing long-distance high-capacity HVDC transmission lines to deliver clean energy.

Development Innovation

Pernicious routing, siting and permitting issues often impede the deployment of traditional overhead transmission lines. Such projects typically take ten or more years to develop, assuming they can be built at all given landowner opposition, routing and siting considerations, cost allocation challenges, environmental impacts and local, state and federal permitting processes. In contrast, SOO Green's innovative and replicable underground rail co-location model better manages the typical impediments to long distance transmission development.

By siting the project entirely on private land within a railroad right of way SOO Green minimizes impacts to farmland and neighboring properties and avoids use of eminent domain to secure the project route. With its underground installation, SOO Green will avoid construction of large transmission towers and cables,

minimizing environmental and visual impacts, which simplifies and expedites permitting, allowing the project to be built much faster than traditional overhead transmission projects. SOO Green's privately financed merchant model, under which users pay for use of the line's transmission capacity, further expedites the project's schedule by eliminating lengthy interregional cost allocation processes common of rate-based transmission projects.

Market Innovation

SOO Green is a market-based solution to deliver affordable, reliable clean energy to customers in PJM. SOO Green will be the first major transmission project to connect the midwestern energy market (MISO) to the eastern market (PJM). As a 'grid-tied' transmission line (not directly tied to specific generating resources), SOO Green is connected to robust points on both the MISO and PJM grids. This innovative market design allows the project to source renewable energy from a geographically and technologically diverse renewable energy portfolio, enabling wind and solar development where it is most abundant and cost-effective to develop. Interregional transmission lines like SOO Green provide a needed export outlet to relieve grid congestion and increase power transfer capabilities that enable more renewable energy from areas otherwise constrained by lack of access to a transmission to reach load centers. Providing a new path to market can help increase overall renewable energy market penetration by relieving transmission congestion that drives up the cost of interconnecting new wind and solar generation.

By providing a new export path between the MISO and PJM for renewable energy from areas with complementary portfolios of clean energy resources, SOO Green will enable resource sharing arrangements between grid regions and utility service territories to bolster resource adequacy, strengthen grid reliability, and accelerate grid decarbonization. SOO Green's ability to operate bidirectionally allows Iowa (and MISO) and Illinois (and PJM) to share energy reserves and surplus clean energy generation, supporting renewable energy development in both states. Such resource sharing will help accelerate decarbonization goals by importing clean energy to avoid ramping-up fossil generation in periods of low local renewable production and exporting when production of renewable power exceeds local demand.

Technology Innovation

SOO Green will be the highest capacity long-distance underground HVDC transmission line in the U.S. At 2,000 MW in capacity, SOO Green will use advanced HVDC technology that includes state-of-the-art underground 525kV class transmission cables and modern power electronics-based Voltage Sourced Converter (VSC) stations never before deployed at this scale in the U.S.⁶

SOO Green's advanced HVDC technology provides important grid benefits that improve reliability, including: frequency control, reactive power, and black start capabilities that replace ancillary services provided by fossil fuel generators. SOO Green can also strengthen grid reliability by controlling power dispatch, avoiding cascading outages and improving power quality by quickly adjusting voltage, frequency, and reactive power. During system emergencies, SOO Green's controllable and bidirectional VSC converters can bolster the grid with their ability to react instantly to power dispatch instructions as well as 'black start' the grid to restore power after a blackout.

⁶ SOO Green is deploying the highest capacity commercially available cable that will be [manufactured domestically by Prysmian in South Carolina](#).

Enhanced Reliability and Climate Resilience

SOO Green offers enhanced reliability, climate resilience and decarbonization benefits associated with both the project's underground interregional design and use of advanced HVDC technology. The flexible nature of HVDC technology allows the connection between the two regions to meet peak demand and other grid reliability needs to keep the lights on.

Traditional overhead transmission lines remain subject to adverse effects of climate change, including tornadoes, hurricanes, fires, high winds, and flooding, as experienced around the U.S. in recent years. The need for grid resiliency became apparent during the 2021 polar vortex where in a week's period the U.S. experienced significant damage and economic loss, with more than \$195 billion in damages to Texas alone. In addition to economic losses, nearly 250 lives were tragically claimed.

In contrast, SOO Green enhances grid reliability and resilience. The project's underground transmission cable installation along railroad rights-of-way provides a climate-resilient lifeline between Illinois and Iowa, and between MISO and PJM, that stabilizes both grids, ensuring weather-related events have minimal impacts.

Economic Benefits from Investment, Job Creation, Manufacturing & Ratepayer Savings

SOO Green is a privately-financed merchant transmission project that demonstrates how private capital can be deployed to enable greater renewable energy development, accelerate grid decarbonization, enhance grid reliability, create good paying union jobs, and leverage existing transportation corridors to site climate-resilient transmission infrastructure.

The project will install 700 miles of state-of-the-art HVDC transmission cables (two cables installed underground along the project's 350-mile route) to be manufactured in the U.S. at a retooled cable production facility and construct VSC power converter stations at its interconnection points in Iowa (Mason City) and Illinois (Yorkville).

SOO Green will be built under a project labor agreement and will create approximately 1,000 union construction jobs in Illinois during the project's three-year construction period. SOO Green's Competitive Edge apprenticeship program will create approximately 600 jobs for underserved youth during construction. As a result of job creation and direct investment, SOO Green will deliver approximately \$1 billion in economic impact to Illinois. By injecting more than 2,000 megawatts of renewable energy into PJM's ComEd Zone, SOO Green will also save ratepayers an estimated \$2 billion from reductions in wholesale energy prices over twenty years.

Additionally, the project will induce the creation of nearly 2,000 new clean energy manufacturing supply chain jobs in Illinois to support additional renewable energy development spurred by the project. Once operational, SOO Green's bi-directional power flow will offer new export opportunities for Illinois clean energy resources, creating new investment and job creation opportunities within Illinois.

SOO Green's ability to deliver affordable, reliable renewable energy on a large scale is attractive to large commercial and industrial energy users, such as data centers, electric vehicle manufacturers, and other energy-intensive economic development to Illinois. In fact, private real estate developers are already marketing sites adjacent to SOO Green's Yorkville, Illinois converter station as attractive locations for data center development based, in part, on the ability to access affordable, reliable renewable energy via SOO Green.