

**STATE OF SOUTH DAKOTA  
BEFORE THE  
PUBLIC UTILITIES COMMISSION**

<b>In the matter of the Petition of Dakota</b>	)	
<b>Renewable Hydrogen, LLC to have</b>	)	
<b>Kingsbury Electric Cooperative, Inc.</b>	)	<b>Docket No. EL24-___</b>
<b>Assigned as its Electric Provider in the</b>	)	
<b>Service Area of Otter Tail Power Company</b>	)	
	)	

**PETITION FOR ELECTRIC SERVICE**

**I. Introduction.**

Pursuant to SDCL § 49-34A-56, Dakota Renewable Hydrogen, LLC (DRH) respectfully petitions the South Dakota Public Utilities Commission for an order allowing DRH to take electric service from Kingsbury Electric Cooperative, Inc. (KEC) for its proposed hydrogen production facility to be located adjacent to, and as part of, Gevo, Inc.’s proposed ethanol and sustainable aviation fuel (SAF) facility east of Lake Preston, South Dakota and currently within the assigned service area of Otter Tail Power Company.<sup>1</sup> Included as Exhibit 1 is a map depicting the location of Gevo’s proposed ethanol and SAF facility located within Otter Tail’s service area. Combined, the Gevo Net-Zero 1 project is expected to have a capital investment of approximately \$1 billion, making it one of the largest private economic development projects ever in South Dakota. Under SDCL § 49-34A-56, electric service customers with a load greater than two megawatts may take electric service from a utility other than the utility in whose assigned service area the customer is located if, following a hearing in which the Commission has considered a number of factors,

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<sup>1</sup> The Gevo ethanol/SAF plant will be owned and operated by Gevo Inc.’s wholly-owned subsidiary Gevo NZ-1, LLC (NZ-1).

including the customer's preference, the adequacy of the facilities from which service would be provided, the cost of such service, and related economic factors, the Commission so determines. Because an examination of the relevant factors, individually and together, demonstrate that KEC along with its transmission provider East River Electric Cooperative, Inc. (East River) as further explained in this petition, is in the best position to provide service to DRH (and NZ-1), and because DRH prefers that KEC provide such service, DRH respectfully requests that the Commission grant DRH's request.

## **II. The Parties and the Project.**

### **A. Dakota Renewable Hydrogen, LLC.**

DRH is a South Dakota wholly-owned, special purpose subsidiary of Zero6 Energy, Inc., a Minnesota-based renewable energy developer, owner, and operator.<sup>2</sup> DRH will be the on-site provider of hydrogen to the proposed NZ-1 Lake Preston facility. Exhibit 2 (Ex. 2-1 and 2-2) provide architectural renderings of the proposed NZ-1/DRH campus. The DRH hydrogen facility is a crucial element to NZ-1 because of its need for dependable, high-quality hydrogen used in its low carbon intensity production process. Subject to Commission approval, DRH will be a retail, all requirements electric service customer of KEC under the terms and conditions of the Electric Service Agreement by and between DRH and KEC, which agreement is attached as Exhibit 3, marked as trade secret and not subject to public disclosure. DRH will be a separate customer of KEC and separately metered from the NZ-1 plant. Exhibit 2-2 shows the location of the proposed East River/KEC substation that will provide service to the campus from just south of Hwy. 14.

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<sup>2</sup> <https://www.zero6energy.com/>

**Public Version – Contains Information Exempt from Disclosure  
Pursuant to S.D.C.L. § 1-27-30**

Through the unique arrangement between NZ-1, DRH, KEC, East River, Basin Electric Cooperative (Basin Electric), and DRH affiliate Kingsbury County Wind Fuel, LLC (KCWF<sup>3</sup>), as described below, DRH, like the NZ-1 facility, will obtain 100% of its electric energy requirements (on a net basis) from renewable energy resources, and thus will be considered a producer of “green hydrogen” for purposes of applicable federal tax credits and importantly, for NZ-1’s requirement that its fuel be produced on a “net-zero” carbon basis. The renewable energy will originate from two primary resources: (1) the 99 MW wind farm that KWCF intends to construct, own and operate on private property in Kingsbury County and which facility will directly serve the NZ-1 campus through a dedicated 10+-mile, East River 115 kV transmission line, and (2) the purchase of renewable energy credits from East River and which renewable energy credits are tied to regional renewable energy resources.

DRH intends to produce hydrogen gas through the electrolysis of processed water and will become a KEC industrial customer under its applicable large load rate. The core component of the hydrogen production process will be through use of four Proton Exchange Membrane electrolysis cell stacks manufactured by a subsidiary of Cummins Corporation.<sup>4</sup> A summary description of the electrolysis process from a Cummins manual is included as Exhibit 4. Water electrolysis will occur when de-ionized water is circulated through the cell stack and an electric current is applied. The de-ionized water circulation loop includes a heat exchanger, a break tank with automated replenishing and a polishing skid to ensure high water quality as it enters the cell stack. A fraction of the de-ionized water will be converted into pure hydrogen and oxygen. The de-ionized water leaving the cell stack will contain oxygen and hydrogen, with hydrogen

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<sup>3</sup> Kingsbury County Wind Fuel, LLC is also a wholly-owned subsidiary of Zero6 Energy.

<sup>4</sup> <https://www.cummins.com/>

containing some traces of water which will be further separated through additional processes. Hydrogen is then ready for further purification and use by NZ-1 and the oxygen will typically be released to the atmosphere via a vent stack. Once fully operational, DRH expects to have a retail load of approximately 20-25 MW with a 90% load factor.

**B. Gevo’s NZ-1 Project.**

Gevo, through its subsidiary Gevo NZ-1, LLC, proposes to construct, own and operate a 60 million gallon per year sustainable aviation and related renewable fuels plant on property it owns just east of Lake Preston. The NZ-1 facility is expected to cost approximately \$1 billion to construct and is expected to be one of the largest commitments of private capital ever in South Dakota. Once fully operational, the NZ-1 facility will use approximately 40 million bushels of corn sourced from area farmers. Gevo’s primary purpose in building the facility is to create low-carbon transportation fuels, including jet fuel, gasoline, and diesel fuel which have the potential to yield net-zero greenhouse gas emissions when measured across the products’ full life-cycle. Through its use of local corn, it will also create high-value animal and other nutritional products.

The proposed NZ-1 and DRH facilities will generate substantial economic benefits. The combined project is expected to create approximately 1,000 construction jobs over three years and have a positive regional economic impact estimated to be greater than \$250 million annually and more than \$5 billion over the project’s life. The NZ-1 plant will employ 90+ full-time persons with average annual wages of \$102,000 and an annual payroll of more than \$8,000,000. Overall, the project is expected to create an additional 355 full-time regional jobs.

Once fully operational, the NZ-1 plant is expected to have a retail load of approximately 40-45 MW with a 90% load factor. The NZ-1 plant, in combination with the DRH hydrogen facility, will have a coincidence factor of 95%, meaning, on average, 95% of the non-coincident

peak campus load is on at the time of the KEC/East River peak. Like DRH, NZ-1 is requesting under separate cover that the Commission grant it the right to be provided retail electric service from KEC.

**C. Terms of the Electric Service Agreement and Related Agreements.**

Key to NZ-1's and DRH's successes is to ensure its products achieve a net-zero greenhouse gas footprint across its entire life-cycle. For its electric service, that means ensuring the NZ-1 plant and the DRH facility obtain 100% of their respective electric energy service from renewable energy resources (on a net basis). All renewable fuel producers are subject to pressures to lower their low carbon fuel scores and with respect to a producer's electric energy requirements, the lowest scores are obtained when the production plant is connected directly to the renewable energy resource. While scores can be measured using the local utility's overall resource mix, most utilities' mixes continue to include traditional forms of electricity production, including coal and natural gas, which drive up a producer's carbon score. Renewable energy is similarly important to DRH. DRH intends to produce "green" hydrogen for use by NZ-1. In doing so, DRH will qualify for applicable federal tax credits intended to boost clean hydrogen production in the industrial and transportation sectors.

Here, Gevo has partnered with renewable developer Zero6 to help it achieve its low carbon goals. Zero6 subsidiary KCWF has secured land rights, necessary permits, and entered appropriate equipment purchase agreements for its proposed 99 MW wind farm to be located on private property in Kingsbury County. Under a unique arrangement with KEC affiliates Basin Electric and East River, all the wind energy produced will be delivered directly to and consumed by the NZ-1 plant (and the DRH facility) via a 10+ mile 115 kV transmission line to be owned and operated by transmission utility East River. Because KCWF is not a utility, however, and cannot

sell power directly to unrelated retail customers, KCWF and Basin Electric are negotiating the terms of a 20-year *wholesale* power purchase agreement, the point of delivery of which will be at the NZ-1 plant substation. In addition, KCWF and NZ-1 have entered into a renewable energy credit purchase agreement under which KCWF will sell to NZ-1 all the renewable energy credits associated with the wind farm for the same 20-year term.

While all the KCWF wind farm energy will be dedicated to serve the retail loads at the NZ-1 and DRH campus, there will be occasions – e.g., when the plant is down for maintenance, etc. – when the wind farm will continue to produce and will need to sell the energy into the Southwest Power Pool (“SPP”) energy market. For that reason KWCF has made application to SPP to interconnect the facility to the SPP grid under SPP’s normal large generator interconnection procedures and that process is currently underway.

Notwithstanding the wholesale power purchase agreement with Basin Electric and the direct interconnection of the windfarm to the NZ-1 and DRH plants, DRH will be a retail electric service customer of KEC similar in scope and terms to other KEC large commercial/industrial customers, the service of which will be governed by the terms of the Electric Service Agreement, including KEC’s applicable electric service rates.

### **III. The SDCL § 49-34A-56 Factors Weigh in Favor of Granting the Petition.**

SDCL§ 49-34A-56 sets forth several factors which the Commission must evaluate in considering whether a retail electric service customer with a load greater than two megawatts may take service from a utility other than the utility in whose assigned service area the customer is located. No single factor is determinative and instead the Commission must examine each factor to satisfy itself that service will avoid the unnecessary duplication of expensive utility facilities, and that the selected provider can serve the customer in an economic and reliable manner over the

expected life of the customer's load. And while no single factor is determinative, where it appears that either utility could reliably and economically serve, the Commission has rightly given priority to the customer's preference regarding which utility it chooses to provide it with service. *See, e.g., In The Matter of the Petition for Electric Service by Dakota Growers, LLC, Final Decision and Order Determining Right to Receive Service ("Dakota Growers")*, SDPUC, May 23, 2005 (holding that where either utility could provide reliable and efficient electric service, the "customer's preference deserves to be shown significant deference").

As demonstrated below, not only does DRH prefer that KEC, in combination with East River and Basin Electric, serve its new hydrogen production plant, but examination of the statutory factors also demonstrate that KEC is equally if not better suited than Otter Tail to provide DRH with the type of service it needs and desires over the long-term.

**A. The electric service requirements of the load to be served.**

The electrolysis of splitting water into hydrogen and oxygen requires a significant amount of electricity. Where the electric energy is produced by renewable sources, such as wind, the resulting hydrogen will be considered renewable, or green hydrogen, and has numerous benefits over other forms of hydrogen production. As a new customer, DRH is expected to have a full-requirements load of 20-25 MW with a 90% load factor. As explained more fully below, KEC, in combination with East River and Basin Electric, is more than capable of serving the DRH load.

**B. The availability of an adequate power supply.**

Given the size of the new combined load, KEC and East River will need to build additional facilities to serve it. Lake Preston has a population of approximately 580 persons and does not have significant agricultural processing or other nearby industrial load which would have justified significant previous infrastructure buildout. The proposed build-out is described in more detail

below. With respect to power supply, however, the Commission can be safely assured the electric cooperatives, combined with the KCWF wind farm, currently possess and will have in the future adequate supply resources to serve DRH and the NZ-1 campus load. And while the Commission is familiar with the Basin Electric, East River and KEC systems, it is necessary to present a few important highlights.

Basin Electric is a not-for-profit generation and transmission cooperative incorporated in 1961 to provide supplemental power to a consortium of rural electric cooperatives and currently provides power services to its three million electric consumer members throughout a 550,000 square mile area in nine states. It owns a diversified energy portfolio of dispatchable and non-dispatchable generating capacity of more than 7,000 MW and purchases an additional 5,000+ MW of wholesale electric generating resources under contract. Basin Electric owns, operates, and maintains approximately 2,500 miles of high-voltage transmission lines. It also owns and operates several subsidiary companies, including the for-profit Dakota Gasification Company, which owns and operates the Great Plains Synfuels Plant near Beulah, North Dakota.

East River is one of the founding owner-members of Basin Electric and serves as a transmission-only utility. One of its original missions was to deliver hydropower from the Fort Randall Dam to the eastern part of the state. East River currently owns, operates, and maintains 3,300 miles of transmission lines, 237 distribution substations, and 44 transmission substations, providing transmission service to its 25-member distribution systems throughout eastern South Dakota and western Minnesota. The Commission has previously found that both Basin Electric and East River provide “very reliable” service. *Dakota Growers*, at Finding 16.

KEC, a distribution cooperative operating reliably for more than 70+ years, currently serves approximately 1,000 customers in Kingsbury County, and owns and operates more than



600 miles of distribution facilities. KEC will be designated as the service provider for each of DRH and NZ-1 but because the campus will be served at the transmission level, East River is primarily responsible for managing the necessary infrastructure build-out required to serve the NZ-1 campus load.

**C. Development or improvement of the electric system of the utility seeking to provide electric service; proximity of adequate facilities from which service may be delivered.**

East River and KEC expect to invest approximately [*Trade Secret Information Begins*] \$[\*\*] [*Trade Secret Information Ends*] million in new transmission and related infrastructure to reliably serve the new NZ-1 and DRH load, excluding the cost of the 10+ mile 115 kV transmission line and related facilities from the wind farm collector substation and any interconnection facilities identified in the SPP generator interconnect process, costs which will be assigned directly to the KCWF windfarm. This will provide the NZ-1 campus load with full transmission and distribution system redundancy. Illustrations of the proposed East River/KEC full build-out is included in Exhibits 5<sup>5</sup>. East River is coordinating and optimizing the proposed upgrades necessary for the NZ-1 campus with East River's already planned system upgrades. In addition, DRH and NZ-1 will be responsible for sharing (on a load-ratio basis) [*Trade Secret Information Begins*] \$[\*\*] [*Trade Secret Information Ends*] on an up-front, contribution in-aid of construction (CIAC) basis for facilities necessary for the immediate area around the campus to serve load, including a 115 kV ring bus with seven positions, two 45/56/75 MVA transformers, and a capacitor bank. The transformers will be fully capable of backing each other up (i.e., to create redundancy) but given the size of the load, it is necessary they be run in parallel. The KCWF wind farm will likewise be responsible under a contribution in-aid of construction agreement with East River for

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<sup>5</sup> At the request of East River, Exhibit 5-4 is being marked as Trade Secret and not subject to public disclosure.

approximately *[Trade Secret Information Begins]* \$<sup>[\*\*]</sup> *[Trade Secret Information Ends]* for the 10+ miles of 115 kV, double-circuited transmission line and related facilities.

East River and KEC are federal Rural Utility Services (RUS) borrowers, and each intend to fund their respective share of the improvements not covered by the CIAC agreements through long-term RUS loans. East River and KEC also have other sources of financing that can be accessed to fund improvements as necessary, including short term funding through *[Trade Secret Information Begins]* \$<sup>[\*\*]</sup> *[Trade Secret Information Ends]* million existing lines of credit and access to long-term capital funding through CoBank and/or the National Rural Utilities Cooperative Finance Corporation. Though not regulated by the Commission as a public utility, the Commission can be assured that the rates KEC will charge DRH are sufficient to recover its costs associated with serving the load.

**D. DRH Prefers that KEC and East River Provide it with Service.**

As the Commission is likely aware, when the NZ-1 project was initially announced, NZ-1 and DRH first committed to work with Otter Tail to provide electric service to the project and the parties endeavored for more than one year to come to terms on service. DRH and NZ-1 appreciates Otter Tail's efforts in trying to reach agreement on acceptable terms. In the end, however, the parties were unable to reach agreement on acceptable terms. Since reengaging with East River, KEC, and Basin Electric, NZ-1 and DRH have appreciated the cooperatives' efforts in developing reasonable terms for this important part of the overall project. NZ-1 and DRH continue to explore other locations for this or similar projects and while many decisions about whether to move forward with the project lie ahead, NZ-1 and DRH each have committed themselves to KEC through electric service agreements which provide the projects with the reliable and cost effective electric service they require.

**IV. Conclusion.**

For the foregoing reasons, DRH respectfully requests a hearing on this petition as soon as possible and following such hearing, that the Commission approve KEC as the supplier of retail electric service to the proposed DRH hydrogen facility.

Dated: June 28, 2024.

**DAKOTA RENEWABLE HYDROGEN, LLC**

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