Illinois
Department of Commerce
& Economic Opportunity

Hydrogen Economy Task Force
2025 Annual Report
to
The Illinois General Assembly

Hydrogen Economy Task Force
2025 Report

Executive Summary

The uncertainty of federal policies regarding hydrogen development at the end of 2024 solidified into reality this year: there is no longer substantive federal funding targeted for state and regional projects like the Midwest Alliance for Clean Hydrogen (MachH2). Now, hydrogen economy proponents must look solely to U.S. states to create welcoming platforms for hydrogen markets to emerge.

The fundamentals for market success are strong for Illinois. Potential use cases for hydrogen exist in our extensive transportation, industrial, and agriculture sectors. Various storage and transport infrastructure options for hydrogen can be explored. And our commitment to additional clean energy production, including renewables and nuclear power, is a strong signal to the market that we prioritize low and zero carbon energy investment.

The Hydrogen Economy Task Force (HETF) was created by Public Act 102-1086 in 2022. As part of our statutory responsibilities, the Hydrogen Economy Task Force is required to provide the Governor and the Members of the General Assembly with an annual report on our activities, findings, and recommendations. The Task Force was initially meant to sunset in June 2026, but the General Assembly extended its work until June 2028 via a resolution passed during the recent Veto Session.

In 2025, the HETF tracked what it believes to be the unfortunate and unwise fallout of federal disinvestment in the hydrogen sector. At the same time, the HETF recognizes the powerful role that hydrogen can play in helping the State of Illinois reach its codified goal of 100% clean energy by 2050, so the Task Force's mandate continues and has never been more important.

Message from the Chair

Illinois has laid important groundwork for a future hydrogen market by acting at a state level, by creating the Hydrogen Economy Task Force, and working to identify strengths as well as barriers to deployment across sectors, so that private investment and market platforms can emerge around clean hydrogen production, transportation and use.

While this is a great start, I believe that Illinois and the HETF should consider hosting a hydrogen summit to start gathering a wider perspective from experts, stakeholders, communities, and the legislative body on what's next. Hydrogen energy represents one of the most promising frontiers in the clean-energy transition, offering a pathway to decarbonize sectors that have traditionally been the hardest to decarbonize, from heavy industry to freight transportation.

As technology improves and production costs will continue to fall, the possibilities for expanding hydrogen are growing rapidly. Strategic investments, supportive state policies and coordinated planning can help build the infrastructure and markets needed to scale hydrogen safely and affordably. By expanding opportunities, Illinois can spur innovation, attract new clean-energy jobs and reduce long-term emissions across the state’s economy. Having a summit to discuss these possibilities would be beneficial for not only economic growth but for helping mitigate climate change.

Illinois can position itself as a leader, again. We already lead in quantum computing, EV manufacturing and infrastructure, clean grid energy production and capacity, and now in hydrogen. Illinois has the commitment for greater clean energy production to enable hydrogen generation. Illinois has the economic diversity - key transportation and distribution hubs, industrial centers, and agriculture - to use and sustain demand for hydrogen. Illinois has the skilled technical and scientific expertise that can enable hydrogen technology and entrepreneurship. Illinois has what it takes to lead and enable new markets.

~ Senator Laura Ellman (D-Naperville)

Impact of Federal Legislation and Executive Orders

The national hydrogen landscape is currently constrained, with limited federal funding. The federal One Big Beautiful Bill Act (HR1) signed into law in July was detrimental to many, if not all, aspects of renewable energy. Hydrogen was not spared. Clean hydrogen projects now must be under construction by the end of 2027 to qualify for section 45V tax credits of up to $3 per kilogram produced. The under-construction date had previously been 2032.

In October, the Trump administration cut $2.2 billion in grants for regional hydrogen hubs in ARCHES in California and PNWH2 in the Pacific Northwest, as well as an additional $5.4 billion for other clean energy projects across 16 states including Illinois. While the Midwest Hydrogen Hub has not been formally cut, it remains inactive, with no clear timeline for activation. Federal funding is not available for Illinois-led projects.

In yet another sign of disinvestment, the Trump administration announced in November that it was eliminating the Office of Clean Energy Demonstrations in the Energy Department, which had previously managed the awards of billions of dollars for the hydrogen hubs and other related technologies such as carbon capture.

Experts say this shift in federal policy risks ceding the hydrogen production and electrolyzer market to China, where government investment and adoption are accelerating. As Bloomberg reported[i] after the cuts to the two hubs, "Green hydrogen for making steel and powering ships is one of the few clean technologies where China doesn’t yet have an insurmountable lead. But recent shifts in US policy on hydrogen will impede the country’s ability to compete with China and other rivals in this futuristic fuel source."

State Legislation

State-level initiatives including associated workforce opportunities are now the primary avenue to develop hydrogen capacity. The state continues to maintain the Hydrogen Economy Task Force under the purview of DCEO. This task force is charged with developing a plan to deploy hydrogen across Illinois' economy including transportation, industry and agriculture. Additionally, members are to identify barriers, notably in environmental justice communities. Legislation of interest includes:

- Public Act 104-0436 was signed by the Governor on November 21, 2025. It amends the Illinois Vehicle Code to allow vehicles (or combinations) powered wholly or partially by an electric battery or a "hydrogen fuel cell electric fueling system" to exceed posted weight limits by up to 2,000 pounds.

- During the 2025 Veto Session, the General Assembly passed SB25, the Clean and Reliable Grid Affordability Act (CRGA). At the time of this report, CRGA is awaiting transmittal to the Governor's Office.
    - Section 1-10 of the IPA Act as amended by CRGA defines energy storage to exclude "technologies that require combustion" and hydrogen used for storage is then reconverted back into electricity through combustion. Therefore, hydrogen is not eligible for the incentives that IPA will offer at this time. The Integrative Resource Plan process would need to either recommend the legislature change the definition of "energy storage" or provide some other mechanism for incentivizing hydrogen-based storage.
    - Lack of Guidance for Siting Hydrogen Storage Projects. SB 25 provides counties with the authority to adopt siting standards for energy storage technologies as stringent as the standards provided in National Fire Protection Association Standard 855. However, National Fire Protection Association Standard 855 is not the NFPA standard for hydrogen storage; hydrogen storage is covered in the NFPA 2 Code.

Illinois Resources

Hydrogen Activities at Argonne National Laboratory

As one of the 17 U.S. national laboratories, Argonne located in suburban Chicago is among the laboratories conducting R&D activities for the Department of Energy (DOE) related to hydrogen.

The Section 45V hydrogen production tax credit was extended through the end of 2027. Argonne has been providing technical support for DOE in developing the 45VH2-GREET model, which will be used by the Department of the Treasury to determine the carbon intensities of individual hydrogen projects to assign tax credit levels. DOE has released multiple versions of 45VH2-GREET on the DOE GREET website.

Argonne has also assessed the potential for geologic hydrogen production in the United States by engaging with startup companies active in this emerging area. In collaboration with DOE's Office of Nuclear Energy, Argonne examined synergies between nuclear energy and hydrogen production, with a focus on applications in petroleum refining, e-fuel production, and power and backup power for data centers. In addition, Argonne evaluated the potential of methane pyrolysis for producing hydrogen and carbon black.

Argonne conducts material research to improve the performance and durability of the electrocatalysts and electrode membrane assemblies used in low temperature polymer electrolyte membrane (PEM) fuel cells. Argonne conducts engineering studies to evaluate the performance of hydrogen storage systems for both small- and large-scale applications.

Argonne is constructing a heavy-duty fuel cell test facility for testing PEM fuel cell systems ranging from 150-600 kW being developed for a wide range of applications. The test facility will have an environmental chamber enabling the fuel cell systems to be tested at temperatures ranging from -40˚C to 50˚C (-40˚F to 120˚F).

Research Facilities for Biofuels

The UIUC Center for Advanced Bioenergy and Bioproducts Innovation (CABBI) is leveraging Illinois' strengths in biomass, carbon capture and storage (CCS), and hydrogen production. CABBI, working closely with iFAB (Illinois Fermentation and Agriculture Biomanufacturing Tech Hub) and the Illinois Sustainable Technology Center at the Prairie Research Institute, provides a rare and robust research and implementation ecosystem. Focus extends beyond corn and soybeans to include perennial grass crops, such as Miscanthus.

Hydrogen can serve as a chemical feedstock in the production of bio-based products, including ammonia, creating a feedback loop that enhances the hydrogen-bioeconomy. The overall carbon intensity of the hydrogen-bioeconomy depends on crop feedstock and precision/biomanufacturing processes. CABBI's expertise in feedstock optimization and conversion technologies provides opportunities to scale sustainable fuels, SAFs, and other bio-based products.

The National Corn-to-Ethanol Research Center (NCERC) at Southern Illinois University Edwardsville (SIUE) can scale up the fermentation process to 22,000L – the largest process development capacity provided by an academic institution in the U.S. Research in partnership with companies from across the globe has led to 100+ technologies in the commercial marketplace that generate billions of dollars in annual revenue and thousands of direct and indirect jobs.

SAF is a "drop-in" fuel that meets all the same technical and safety requirements as fossil-based jet fuel, but its components of hydrocarbons come from a more sustainable source. LanzaJet, headquartered in Illinois, is building the world's first Alcohol-to-Jet (ATJ) SAF commercial production facility in Georgia, which can produce 10 million gallons of SAF and renewable diesel per year relying on low carbon intensity (CI) ethanol, including ethanol from corn (if its CI score meets the criteria). At NCERC, they are validating new technologies to lower the CI score for the ethanol produced from the corn-to-ethanol industry and to scale up a low-cost low-energy pathway to convert

carbohydrates in various wastes into bioethanol to support SAF production. Green hydrogen, produced through electrolysis, is a well-established and mature technology; however, NCERC is actively collaborating on producing hydrogen through fermentation, an area that NCERC can explore with its Ferm Suite capability.

UIUC CLEETS Modeling Platform for Transit

As previewed in the HETF's 2024 Report, a team at the Grainger College of Engineering evaluated the viability of deploying hydrogen fuel cell electric trucks (FCETs) as a strategy to decarbonize heavy-duty freight movement across Illinois, overcoming the limitations of battery-electric trucks. To accomplish this, the research team developed the Clean Logistics Energy Efficiency & Transportation Simulation (CLEETS)—an agent-based simulation and optimization platform capable of modeling statewide freight activity, truck routing behavior, and refueling infrastructure. Using Illinois' highway network, freight flow data, and realistic vehicle parameters, CLEETS determines optimal hydrogen station locations and dispenser allocations that maximize system-wide freight speed and productivity under budget constraints.

Simulations of a fleet of approximately 8,000 hydrogen trucks using 400 dispensers show that an optimized hydrogen network can sustain near-highway-limit average speeds with minimal refueling delays. The optimal infrastructure configuration concentrates stations along major freight corridors, and performance gains diminish beyond 400 dispensers, indicating a practical investment threshold.

Compared with battery-electric trucking, FCETs deliver significantly higher freight productivity, shorter refueling times, and greater payload capacity, making them far more efficient for long-haul operations. The study concludes that hydrogen-based trucking, supported by strategically deployed infrastructure, offers a scalable and economically balanced pathway for statewide freight decarbonization, and positions CLEETS as a robust tool for future hydrogen supply chain and grid-impact analyses.

Illinois Microreactor Demonstration Project

Anticipating the need for all types of energy, the UIUC successfully received approvals to demonstrate the use of advanced Micro Modular Reactors (MMRs) for efficient, carbon-free hydrogen production to support local transit and scalable clean energy applications. The Illinois Microreactor Demonstration Project (IMDP) is a rapidly advancing initiative centered on deploying NANO Nuclear Energy's KRONOS MMR, a high-temperature gas-cooled reactor (HTGR). The project has achieved key regulatory milestones with the U.S. Nuclear Regulatory Commission (NRC), targeting a construction permit application in early 2026 for 2029 operation.

A major IMDP capability is leveraging the KRONOS reactor's high-temperature output to demonstrate efficient, carbon-free hydrogen production. This will establish a unique testbed for validating various hydrogen generation technologies. The project is enhanced by strategic integration with the campus' existing Abbott Power Plant, affording operational flexibility and proving the viability of coupling advanced nuclear with legacy infrastructure to produce clean fuel. This clean fuel already has a key local customer: the Champaign-Urbana Mass Transit District (MTD). MTD plans for an additional 10 operational Hydrogen Fuel Cell (HFC) buses by 2025, growing to at least 35 by 2033. The average bus requires 3,600 kgH2/yr, creating a projected demand of 126,000 kgH2/yr by 2033; a full fleet transition would require 424,800 kgH2/yr. To meet this, a 45MW (th) MMR with a high-efficiency solid oxide electrolyzer can produce ~500 kgH2/hour, far exceeding MTD's projected needs.

State Incentives for Hydrogen Manufacturing

Illinois' Reimagining Energy and Vehicles Act, or REV Illinois, incentivizes manufacturing of green hydrogen in the state through a package of retained payroll withholding and tax credits available to eligible companies; the benefits last at least 20 years.

The Hydrogen Fuel Replacement Tax Credit Act was passed in 2023 and will be a benefit for tax years ending on or after December 31, 2027, and beginning before January 1, 2029. This tax-credit incentive to be administered by the Department of Commerce and Economic Opportunity is for “qualifying hydrogen” (such as hydrogen produced via water electrolysis using emissions-free electricity) that replaces fossil fuels or non-qualifying hydrogen.

In the 2024 Report, a recommendation was to create a “no wrong door” system within Illinois government for companies interested in investing in, or setting up, hydrogen operations with the state. Today, the Department of Commerce and Economic Opportunity and its statewide non-profit partner Illinois EDC are working in tandem to provide site, partnership and incentives information to hydrogen prospects.

Outreach and Communications Highlights

- Chair Ellman served as a panelist at a state gathering for hydrogen in Washington, D.C., sharing the advantages that Illinois provides for developing hydrogen-related businesses.
- Chair Ellman attended the National Hydrogen Policy Leaders convention where the primary topic was the energy demand challenge as data centers, quantum tech, and EVs grow.
- Chair Ellman presented to a delegation of German hydrogen businesses in Chicago at the invitation of the German American Chamber of Commerce of the Midwest in Chicago.
- Member Dana Wynn-Stockert participated as a panelist on “Pathways to Employment” at the 2025 Illinois Renewable Energy Conference in Normal hosted by the Strategic Energy Research (SER) group.
- Member Dr. Carrie Schoeneberger authored “Hitting the Mark: How Targeted Deployment of Hydrogen Can Maximize Climate Benefits,” a report about the climate benefits of hydrogen and the importance of using it in valuable end uses.
- Member Dr. Petros Sofronis participated in the Sustainable Research and Innovation Congress in Chicago where he gave a presentation titled “Hydrogen Fuel Cell Trucking for Illinois” during the session “Hydrogen Integration: Navigating the Future of Energy Systems.”

Task Force Recommendations

- Use the State of Illinois' power as a convener to host a national hydrogen conference to bring together industry, academic and other collaborators, which would make a strong statement about Illinois' leadership in this growing industry.

- Work to advance a roadmap for hydrogen-computer interfaces. Illinois' growing data center market presents a strategic opportunity for the state to invest in hydrogen-enabled energy solutions. Efficient hydrogen storage could become the preferred choice for AI-driven industries where energy reliability and performance outweigh cost. The creation of hydrogen and energy storage testbeds, inspired by previous projects, could combine prototyping, public-private partnerships, and demonstration of hydrogen applications in energy storage, and computing.

- Identify one or more CEJA Workforce Hubs in proximity to hydrogen projects that could implement curriculum and training for hydrogen production jobs ahead of the three-year Hub renewal in Q4 2026. Collect input from the industry to assure that curricula align with current needs and best practices.

- Develop a stronger relationship with The National Hydrogen Fuel Cell Bus Council in which the managing director for the Champaign-Urbana Mass Transit District (MTD), Karl Gnadt, is a board member. The Council provides a national platform for advocacy, bringing together suppliers and transit agencies to inform legislature and executive priorities on zero-emission transit.

- Explore further avenues to promote private investment, including a Hydrogen Exchange.

Hydrogen Economy Task Force Members 2025

State Sen. Laura Ellman (D-Naperville), Chair

State Rep. Terra Costa Howard (D-Glen Ellyn)

Patrick Devaney, Secretary-Treasurer, AFL-CIO

Sarah Duffy, Director of External Affairs, Illinois Power Agency

Patrick Evans, President, Illinois Energy Association

Kyle Freeman, Deputy Director, Governor's Office of Management and Budget

State Rep. Bradley Fritts (R-Dixon)

Jon Horek, Vice President, Hydrogen, Invenergy LLC

James Hoyt, Global Director, Utilities Technology Center. Archer Daniels Midland Company

Elizabeth Irvin, Deputy Director, Office of Planning and Programming, Illinois Department of Transportation

Daniel LeFevers, Director, State and Consumer Programs, GTI Energy

Carly McCrory-McKay, Executive Director, Champaign County Economic Development Corporation

Dan McManus, Deputy for External Affairs, Illinois Department of Commerce & Economic Opportunity

Dulce Ortiz, Executive Director, Mano a Mano Family Resource Center

Chad Parker, Laboratory Supervisor, Office of Mines and Minerals, Illinois Department of Natural Resources

State Sen. Sue Rezin (R-Morris)

Laura Roche, Chief of Staff, Illinois Environmental Protection Agency

Dr. Carrie Schoeneberger, Industrial and Hydrogen Analyst, Science Office at Natural Resources Defense Council

Doug Scott, Chair, Illinois Commerce Commission

Petros Sofronis, James W. Bayne Professor, Department of Mechanical Science and Engineering, University of Illinois Urbana Champaign

Catherine Stashak, Engineer, Office of the Illinois State Fire Marshal

Michael Wang, Director, Systems Assessment Center - Environmental Assessment Leader, Argonne National Laboratory

Dana Wynn, Associate Director for Career & Technical Education. Illinois Community College Board (ICCB)

[i] How Trump's Green Hydrogen Cuts Are Opening the Door for China - Bloomberg