NYSERDA's Clean Hydrogen Program in New York State

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NEW YORK STATE | NYSERDA
New York State Energy Research and Development Authority

Agenda

- **Overview New York Hydrogen Assessment**
- **New York Hydrogen Investment & Awards**
- **Q&A**
-

Overview

NYSERDA supports the full ecosystem of clean tech innovation.

Who We Help:

- Innovators and entrepreneurs
- Investors
- Universities, research institutes, accelerator programs, and incubators

How We Help:

- Support to research, develop, pilot, and scale climate tech innovations
- Funding, public investment, and market activation
- Catalyzing private market investment

Tech Areas:

- Advanced Fuels & Thermal Energy
- Commercialization
- End-Use Innovation
- Grid Modernization
- Power Generation & Storage

Every dollar of NYSERDA funding contributes $15 in leveraged funds

Advanced Fuels & Thermal Energy

Program Focus:

TheAdvancedFuels & Thermal Energy Research program focuses on innovative solutions to build ecosystems for clean hydrogen and other low carbon alternative fuels, including ***production, transmission, distribution, storage and adoption*** of these fuels in hard-to-electrify sectors and support grid reliability.

Areas of innovation:

CleanHydrogen: see more details at the *hydrogenwebpage*;
Alternative Fuels: see more details at the *Alternative fuels webpage*
System Transition & Thermal Energy Network *(new areas)*

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New York Hydrogen Assessment

Clean Hydrogen – NYS Hydrogen Assessment

Strategic Report

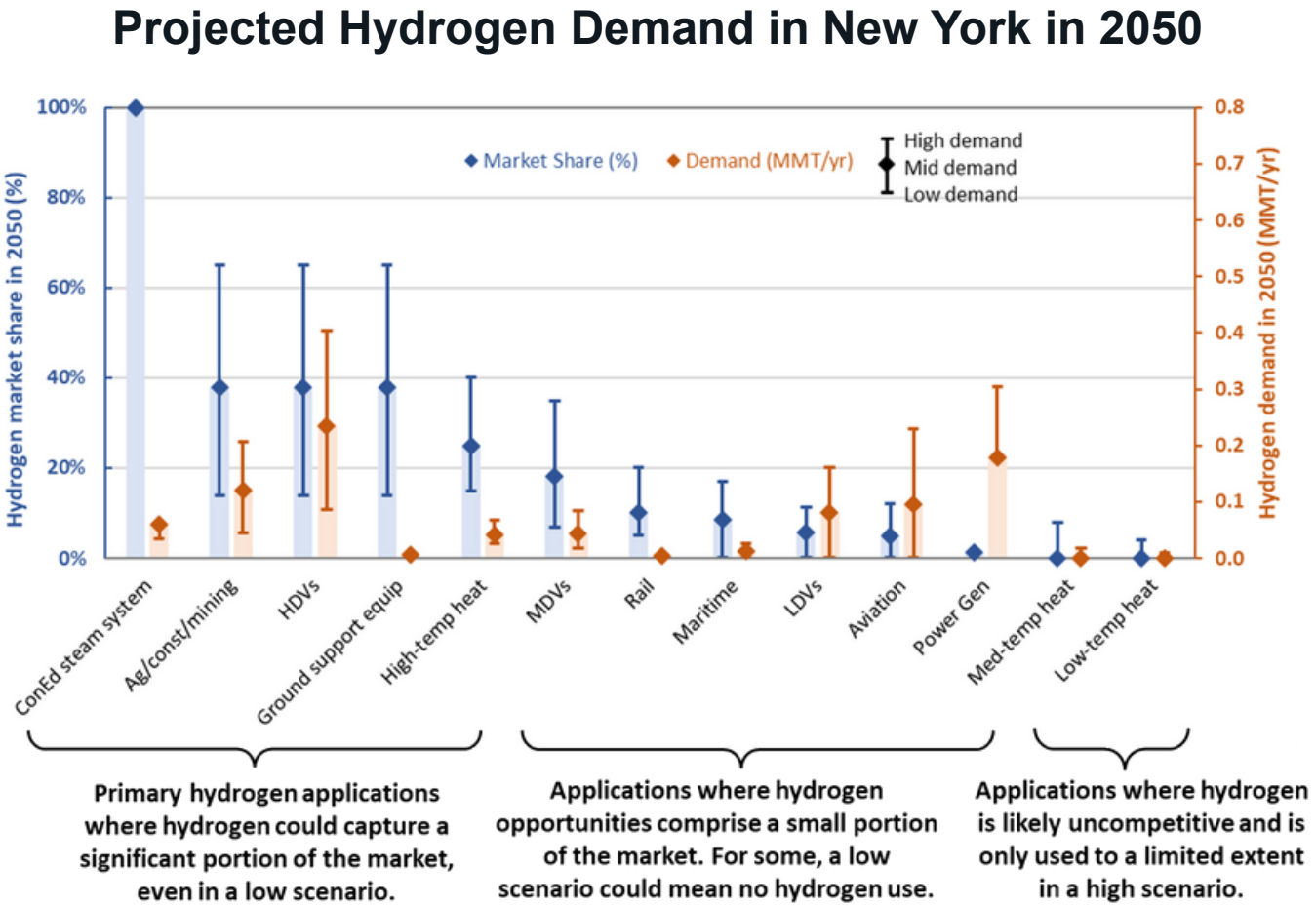
On April22, 2025,NYSERDA released the New York State Hydrogen Assessment, which focuses on hydrogen produced with renewable energy, using electrolysis and water. The comprehensive assessment includes:

- Hydrogen demand scenarios across the transportation, industry, heating, and power sectors in New York State;
- Statewide infrastructure and related cost for hydrogen production, storage, and delivery;
- Total Cost of Ownership (TCO) for hydrogen applications compared to fossil fuel alternatives;
- Innovation focusareas

Access the report:

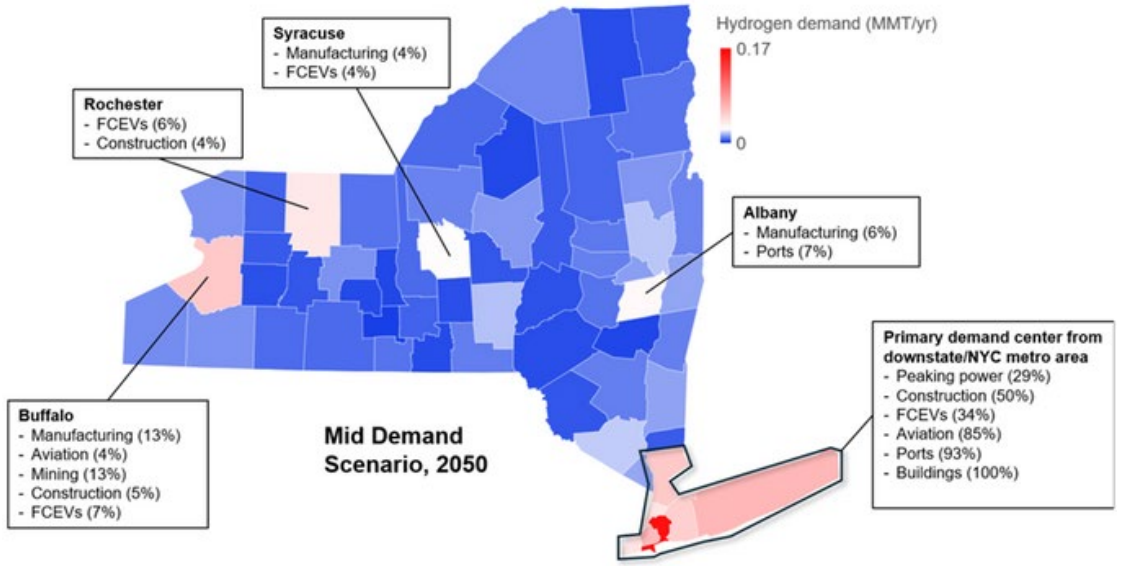
- Full Report [PDF]
- Summary [PDF]

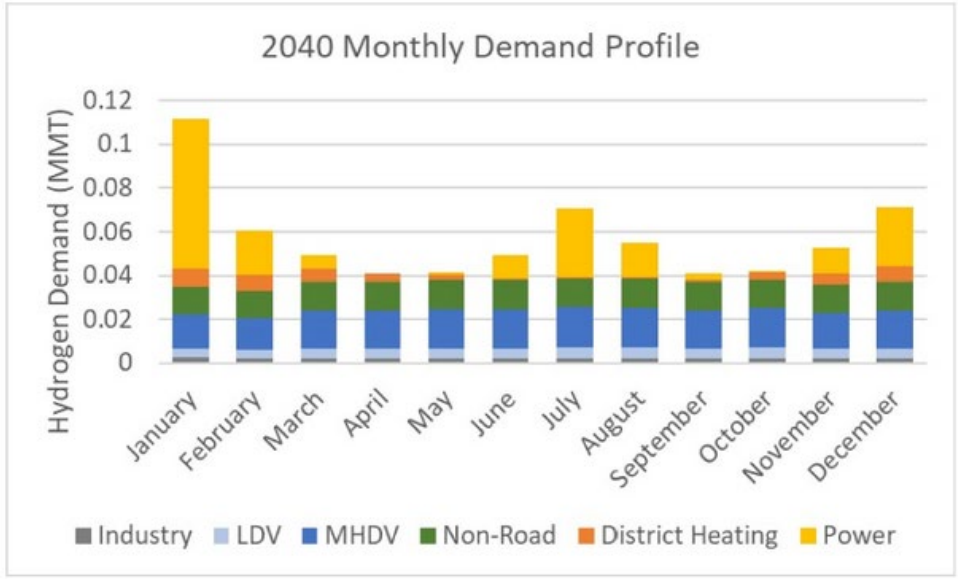
Hydrogen Demand Projection



- **Total hydrogen demand** in NY may reach 0.5 ~ 2MMT/yr by 2050 across various hard-to- electrify sectors, including high-temperature industrial process, district heating, fuel-cell electric vehicles, etc.
- **Different scenarios** modeled for 2030, 2040 and 2050 for low-demand, mid-demand, and high-demand outline a range of potential market growth and technological development across sectors.

Hydrogen Demand Variation

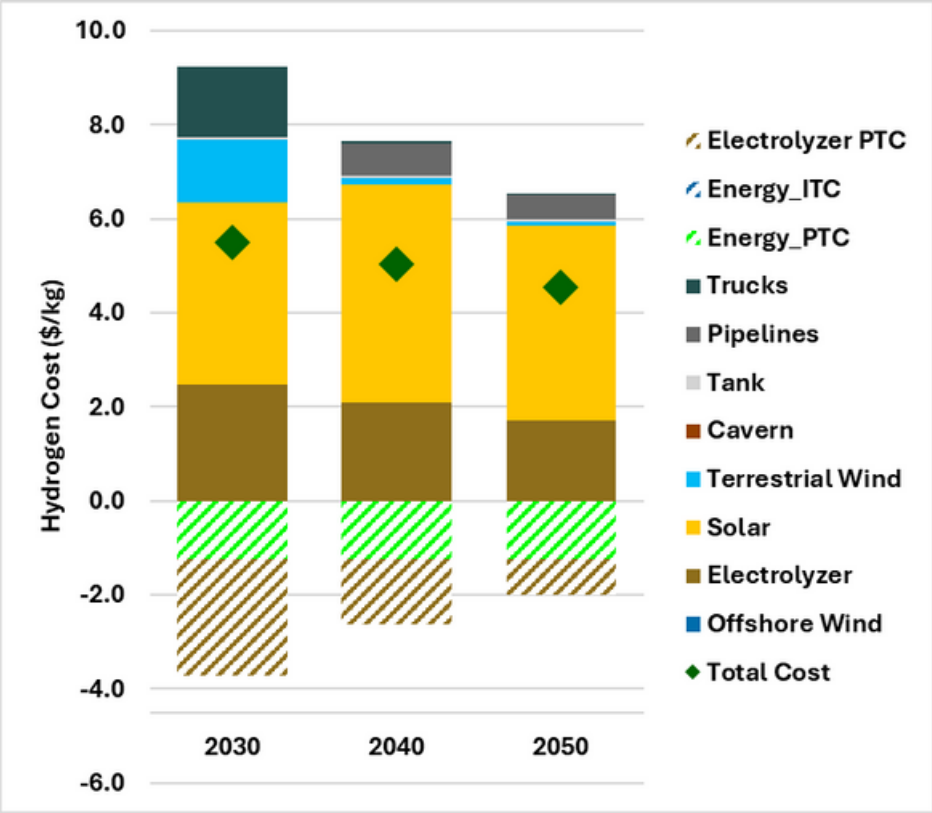




- **Geographical variation:** Hydrogen adoption concentrates around the New York Metropolitan area, a major hub for industrial, transportation, and heating needs.
- **Seasonal variation:** By 2040, hydrogen demand peaks in winter months, driven by district heating needs and increased statewide electrification.

Hydrogen Cost Estimation

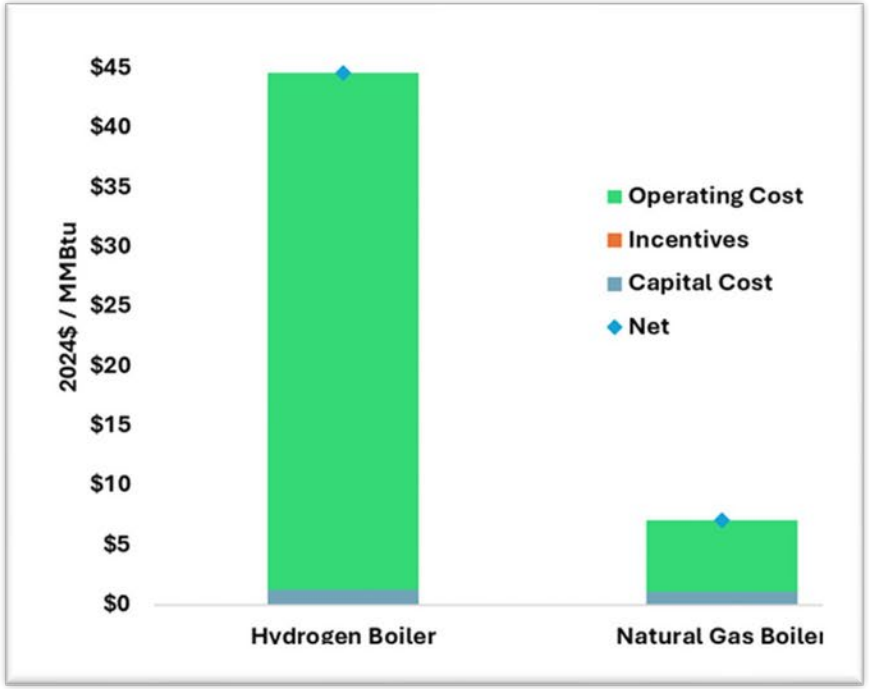
Hydrogen Cost from Base Case



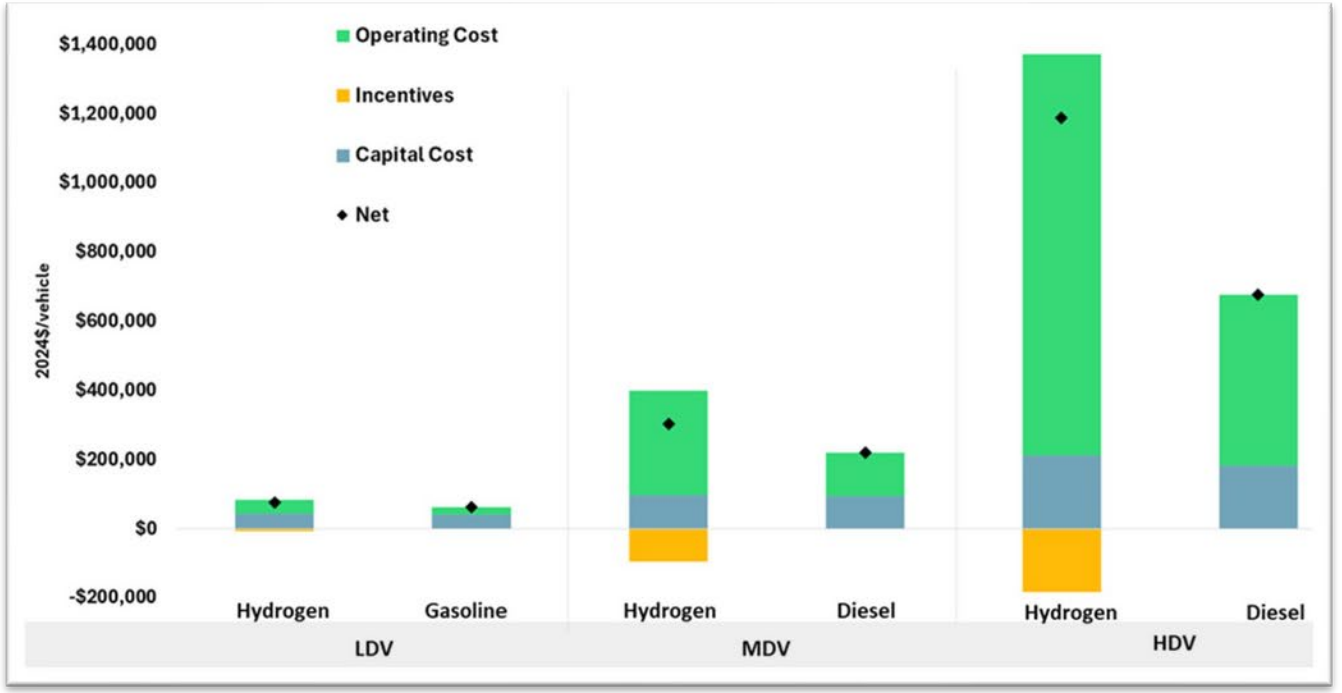
- *Key assumptions for base case:*
  - Mid-demand; 50% hydrogen imported from other states; hydrogen is only produced from solar and very limited land-based wind in NY state. Levelized cost of hydrogen
  - (LCOH) is calculated with production tax credit (PTC) and phase-out dates.
- *Key results for base case:*
  - Main driver for LCOH is renewable electricity: ~60%
  - Electrolyzers accounts for ~30%
  - Production cost (LCOE + electrolysis) accounts for ~ 90%
  - Transportation and storage cost is only ~ 10%
- *Sensitivitystudy*
  - 5 additional cases evaluate variations in hydrogen demand, renewable energy deployment, pipeline & electrolyzer cost.

Total Cost of Ownership Comparison

High-temperature Industry



Fuel Cell Electric Vehicle



- Adopting hydrogen presents **significant total cost of ownership challenges across all sectors**.
- Even with tax credits, **hydrogen fuel cost remains a major barrier** to end-users.
- It is necessary for the State to **invest in hydrogen infrastructure** (production,distribution&storage) to help lower costs and drive economiesofscale.

Innovation Investment & Awards

Clean Hydrogen Investment: 2023 - 2025

Since 2023, NYSERDA has dedicated $32M in funding to support hydrogen innovation.

	Technical Focus Areas	*PON # & Release year*
Closed	•Research, development, & demonstrations (RD&D) enabling hydrogen applications for high-temperature industrial manufacturing processes. •Clean hydrogen production & integration with renewable energy (e.g., solar, wind, hydropower). •Technology development for NOx control. •Demonstrations of hydrogen-based systems to provide black start provision, electricity, & heat supply to microgrids & grid firming. •Hydrogen storage technology (salt caverns, underwater, limited footprint at urban locations) •Hydrogen fuel cell electric vehicles and fueling stations	• *2023: PON 5322 & PON 5500 (Round 1) 2024: PON 5712 &* • *PON 5500 (Round 2)*
Active	• Clean Hydrogen Fuel Cell for Firm Capacity and Industrial process (link)	• *PON 5944 (proposals due October1)*
	• Developing Maritime Vessels to Transport Hydrogen at Scale (link)	• *PON 6021 (proposals due October 6)*

*Some recently awarded projects and projects still under contract negotiation are not shown.

Clean Hydrogen Investment: Draft Plan for 2026 – 2030

InDecember 2024, NYSERDAfiled theInnovation&Researchinvestment plan draft (2026-2030 CEF proposal) for public comment, including hydrogen investment: link.

Problem Statement	NYSERDA Intervention Approach	Intervention Typologies
• Lack ofdispatchable, zero emission power resources. Current fuel infrastructure (e.g. • storge, distribution) limits effectiveness of large-scale hydrogen deployment.	Investment in development and demonstration projects that enhance the efficiency, durability, and cost-effectiveness of hydrogen fuel cells and infrastructure for hard-to-industrial applications, transportation, and power generation.	• Development &lab-scale prototyping Pilots, sub & • full-scale demonstrations Commercialization services •

Awarded Projects Summary

Technical Focus

- Hydrogen production technology (10)
- Hydrogen infrastructure
  - Hydrogen storage technology (4)
  - Hydrogen transportation technology (2)
- Hydrogen applications
  - Hydrogen for industrial processes (3) Fuel cell
  - electric vehicle (1) NOx control for hydrogen
  - combustion (1) Hydrogen for grid firming &
  - energy storage (3)

Project Category

- Feasibility Studies (16)
- Product Development (3)
- Pilot Demonstrations (4)

Project Teams*

- Universities/national labs (4)
- Small business (9)
- Large business (6)

23 projects awarded
>$23M NYSERDA funding

See details of awarded projects at Hydrogen Projects

* Only lead contractors are counted here.

Latest Awards Announcement (August 2025)

Project Title	Lead Proposer	NYSERDA funding	Cost Share	Category	Project Location
Subsurface Assessment & Feasibility Evaluation for Hydrogen Storage in New York	GTI Energy	$220,000	$224,000	Product Development	New York State
Validation of a Hydrogen-Fueled Linear Generator as a Nearly-Zero-NOx DEFR	National Grid Ventures	$2,000,000	$2,455,126	Demonstration	Northport, NY
Cryo-compressed Hydrogen Distribution & Onsite Storage	Plug Power Inc.	$2,000,000	$3,100,796	Product Development	Slingerlands, NY
Ambient Temperature and Low-Pressure Bulk Green Hydrogen Storage for Demand Response	Stony Brook Univ.	$4,900,000	$6,095,000	Demonstration	Staten Island, NY
Zero-emissions Ferry Demonstration	SWITCH Maritime LLC	$2,000,000	$25,443,050	Demonstration	New York, NY

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