



ECONOMIC IMPACT OF THE NORTHEAST HYDROGEN AND FUEL CELL INDUSTRY

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The Northeast Electrochemical Energy Storage Cluster (NEESC) recently completed a second IMPLAN¹ economic analysis of the region’s hydrogen and fuel cell industry to assess the growth and trends of the industry based on data from 2011 and 2015.^{2, 3} The region consists of the states from Maine to New Jersey and the industry includes the original equipment manufacturers (OEMs) and supply chain for the hydrogen and fuel cell industry. The study’s findings suggest that the hydrogen and fuel cell industry in the Northeast region has experienced growth over the last four years based on several factors including employment, revenue and investment, labor income, and state and local tax revenue.

The hydrogen and fuel cell supply chain had a significant bearing on the region’s economy, contributing over \$1.4 billion in revenue and investment; more than 6,620 direct, indirect and induced jobs; and labor income of approximately \$615 million. The growth of the industry from 2011 to 2016/2017 is shown below:

	Northeast Cluster Economic Data 2011	Northeast Cluster Economic Data 2015	Northeast Cluster Economic Data 2016/2017
OEMs	30	30	26
Supply Chain Members	1,091	1,179	1,200+
Direct Jobs	2,135	1,806	1,937
Total Rev & Investment (\$M)⁴	\$1,179	\$1,421	\$1,412
Total Jobs⁴	5,770	6,558	6,620
Total Labor Income (\$M)⁴	\$449	\$620	\$615

The study also reported that state and local tax revenues stemming from the Northeast region’s hydrogen and fuel cell industry were in excess of \$84.2 million.

¹ An IMPLAN is an economic impact analysis tool that combines databases concerning economic factors, multipliers and demographic statistics with modeling software. IMPLAN allows the user to develop local-level input-output models that can estimate the economic impact of certain activities, including the direct, indirect and induced impacts by sector using industry-specific multipliers, local purchase coefficients, and income-to-output ratios.

² NEESC is a network of industry, academic, government and non-governmental leaders working together to provide electrochemical energy storage solutions. The cluster is focused on the innovative development, production, promotion and deployment of hydrogen and fuel cell products. The cluster is based in the New England States, New York and New Jersey. The NEESC program is funded through the [US Small Business Administration’s Innovative Economies Initiative](#). The Connecticut Center for Advanced Technology administers the cluster in partnership with the Connecticut Hydrogen-Fuel Cell Coalition, New Energy New York, the Massachusetts Hydrogen and Fuel Cell Stakeholders, the Hydrogen Energy Center and the Clean States Energy Alliance.

³ The 2012 IMPLAN analysis was based on 2011 data and the 2017 IMPLAN analysis was based on 2016/2017.

⁴ Includes direct, indirect, and induced impacts.



Key findings from the 2017 IMPLAN economic analysis include:

- Including multiplier effects, the northeastern hydrogen energy and fuel cell industry has a total economic impact of an estimated \$1.4 billion in revenue and investment, 6,620 full and part-time jobs, and \$614.6 million in labor income.
- Within the region, the industry's largest impacts are felt in Connecticut (e.g., total employment impact of 2,834 workers), New York (e.g., impact of 1,764 workers) and Massachusetts (e.g., impact of 1,605 workers).
- Along with its impact on economic activity, the northeastern hydrogen energy and fuel cell industry also generates an estimated \$84.2 million, or depending on the method used in the analysis, \$117.6 million in state and local taxes.
- Several states in the region (e.g., Connecticut, Massachusetts, New Jersey and New York) are among the top places for the hydrogen energy and fuel cell industry, based on their current activities or potential for future growth.

The study also notes the geographic concentration of OEMs and supply chain companies in the Northeast and identifies the region as a global leader in the hydrogen and fuel cell sector with all of the hallmarks of a vibrant and strong cluster. This cluster provides benefits to its companies (including suppliers) and workers, and the entire region. The proximity of the OEMs and supply chain companies in this cluster has provided a competitive advantage for research, design, development, manufacturing, and export of commercial products to national and international markets.

The ultimate drivers for business development and markets for commercial deployment can be divided into a stationary market for fuel cell distributed generation (DG) and a transportation market for fuel cell electric vehicles (FCEVs) with hydrogen refueling.

Hydrogen and fuel cell technology provides an opportunity for the Northeast region to more fully utilize its renewable energy industry using hydrogen and fuel cells for transportation, energy storage, and use at consumer sites. Such use continues to make the region a showcase for renewable energy while reducing greenhouse gas (GHG) emissions as new jobs are created. This configuration will also increase local end user reliability, which is of high value for business and industry.