



# **Job Creation Analysis in the Hydrogen and Fuel Cell Industry**

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# Drivers for Market Growth

- World electric consumption is projected to more than double between 2003 and 2030.
- Transportation demands for petroleum currently exceed domestic supply. Alternative fuels will be required for energy security.
- Increased energy efficiency for transportation and electric generation will be required by all global consumers as traditional fuel prices increase, i.e. oil prices per barrel increases over \$150.
- Reduced emissions of GHG and primary air pollutant mandates for mobile and stationary applications.



# Industry Employment

<b>Industry Employment</b>			
	<b>2006</b>	<b>2007</b>	<b>2010 (Estimated)</b>
<b>Direct Employment</b>	<b>927 Jobs</b>	<b>1,156 Jobs</b>	<b>1,635 Jobs</b>
<b>Indirect Employment</b>	<b>1,214 Jobs</b>	<b>1,514 Jobs</b>	<b>2,142 Jobs</b>
<b>Total Employment</b>	<b>2,141 Jobs</b>	<b>2,670 Jobs</b>	<b>3,777 Jobs</b>

- Job growth directly associated with the industry is estimated to grow in Connecticut by over 700 jobs between 2006 and 2010, however such growth would be modest compared to potential applications of a mature market.
- In 2007, Connecticut's hydrogen and fuel cell industry employed 1,156 employees, an increase of 229 jobs since early 2006.
- Direct and indirect jobs would increase from 2,141 in 2006 to over 3,700 by 2010.



## Jobs

- Proximity to Anchor Industries: Aerospace, Defense and Energy Companies
- Proximity to Universities
- Access to Capital Markets
- Access to Professional Labor Pool
- Quality of Life



# Economic Multipliers

<b>Economic Multipliers</b>			
	<b>Employment</b>	<b>Industry Revenues</b>	<b>Employee Compensation</b>
<b>Multiplier</b>	2.31	1.84	1.72

- For each job the hydrogen and fuel cell industry directly supports, an additional 1.31 jobs are indirectly supported elsewhere in Connecticut.
- For every \$1.00 of revenue generated by industry, an additional 84 cents of revenue is received by the state of Connecticut.
- For every \$1.00 paid to industry employees, an additional 72 cents is paid by other employers in the supply chain.



## Discussion

What can states do to create jobs for the hydrogen and fuel cell industry?



## State Programs

- Market Research Planning and Analysis
- Development Authority:
  - Debt Financing and Investment Capital
- Innovation:
  - Support Research; Develop and Market New Products and Services
- Economic and Community Development:
  - Grants, Loans, and Workforce Training
- Incentives



# State Policies

- Renewable Portfolio Standard
- Public Benefit Fund
- Net Metering
- Greenhouse Gas Reduction Goals
- Green Procurement
- Public Development





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