

Digest of Green Reports and Studies

Title	California Community Colleges: Technical Training for Competitive Advantage in the Hydrogen Economy – DRAFT
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URL	http://www.timestructures.com/downloads/Training%20for%20Competitive%20Advantage%20in%20the%20Hydrogen%20Economy.pdf
Summary	<p>The report stresses the importance of hydrogen energy development and related workforce training to comply with California and Federal policies of a hydrogen energy based economy in the future. Also, the development of hydrogen related technology will allow California to exercise its global competitive advantage economically as a primary producer of hydrogen related technology.</p> <p>Four of the California Community Colleges' Economic and Workforce Development Program's initiatives will collaborate to support the hydrogen economy with training, technical assistance, and business development services:</p> <ul style="list-style-type: none"> ▪ Advanced Transportation Technology, ▪ Small Business Development Centers, ▪ California Advanced Technology, and ▪ Contract Education.
Key Findings	<p>Contains a U.S. map of hydrogen producing locations.</p> <p>Provides a table of hydrogen production technologies.</p> <p>Lists California based hydrogen related companies and locations.</p> <p>Contains forecasts of distributed energy systems.</p> <p>Contains forecasts of hybrid and hydrogen vehicle use and of fuel costs.</p> <p>Contains chart of U.S. federal energy R & D spending trends.</p> <p>Lists technical training related to fuel cell technologies.</p> <p>Alternative fuels, defined: http://www.afdc.doe.gov/altfuels.html The Department of Energy's definition of alternative fuels states that they are substantially non-petroleum and yield energy security and environmental benefits. Alternative fuels are a substitute for conventional engine fuels such as gasoline and diesel. The U.S. Energy Policy Act defines alternative fuels as the following:</p> <ul style="list-style-type: none"> ▪ Methanol, Ethanol, and other alcohol fuels ▪ Blends of 85% or more of alcohol with gasoline ▪ Liquid Natural Gas and Compressed Natural Gas ▪ Propane – Liquefied petroleum gas ▪ Hydrogen and Electricity ▪ Biodiesel
Recommendations	<p>Proposed objectives to promote the development of a hydrogen based economy:</p> <ul style="list-style-type: none"> ▪ Create a coordination and information sharing collaborative and network that successfully anticipates and tracks alternative energy and hydrogen economy developments. ▪ Provide appropriate workforce training and support to elements of the stationary and vehicle hydrogen industry clusters. ▪ Provide technology transfer and advanced technology support to prime contracts, and small and medium sized businesses including state and global supply networks for all aspects of the emerging alternative fuels and hydrogen based economy. ▪ Expand current on-campus academic programs, curriculum, and student outreach programs to

	<p>include hydrogen content.</p> <ul style="list-style-type: none"> Revise existing and develop new curriculum to keep up with industry changes and the emergence of new skills for new job opportunities.
Definition of "Green"	N/A
Methodology	Literature research
Data Sources Cited	<p>List of distributed generation products: http://www.apep.uci.edu/DER/edg/Search/Alldb.aspx</p> <p>Fuel cell information: http://www.fuelcells.org/</p> <p>Diagram of a Canadian hydrogen industry cluster with company examples and development dispersion. Source: Glenn MacDonell, Director of Energy Department of Industry, Government of Canada</p> <p>Additional sources indicated in footnotes and attachments.</p>
Report Geography	<p>Centers of hydrogen economy activity fall roughly into 4 geographic regions being defined as:</p> <ul style="list-style-type: none"> Greater Los Angeles/Orange County area Sacramento Bay Area San Diego
Green Occupations Cited	<p>Examples of occupations that could grow and require training or retraining in response to the hydrogen economy (employment projections listed in attachment):</p> <p>Engines and Machine Assembly & Maintenance</p> <ul style="list-style-type: none"> Engine and other machine assemblers Bus and truck mechanics and diesel engine specialists Control and valve installers and repairers Industrial machinery mechanics Maintenance workers, machinery <p>Gas and Chemical Production</p> <ul style="list-style-type: none"> Chemical plant and system operators Chemical equipment operators and tenders <p>Energy Distribution</p> <ul style="list-style-type: none"> Petroleum pump system operators, refinery operators Tank car, truck, and ship loaders Gas compressor and gas pumping station operators Service station attendants <p>Emergency Response and Other</p> <ul style="list-style-type: none"> Emergency medical technicians and paramedics Hazardous materials removal workers <p>Safety retraining for first responders throughout areas that the hydrogen powered vehicle(s) will travel and of areas where hydrogen based facilities are located in the event of hazardous materials accidents and injuries.</p> <p>Additional emergency response personnel for retraining:</p> <ul style="list-style-type: none"> Police Fire Emergency Room Staff <p>Safety retraining for delivery personnel that maintain hydrogen based systems.</p>
Green Industries Cited	N/A
Keywords	<ul style="list-style-type: none"> California Advanced Technology Initiative California Air Resources Board California Community Colleges' Economic and Workforce Development Program California Energy Commission California Fuel Cell Partnership California Hydrogen Business Council California Hydrogen Highway Network

	<ul style="list-style-type: none"> ▪ California Stationary Fuel Cell Collaborative ▪ Centers of Applied Competitive Technologies (CACT) ▪ Distributed Generation ▪ Fuel cell ▪ Hydrogen Initiative ▪ Hydrogen refueling stations ▪ Industry Driven Regional Collaborative ▪ Math Engineering and Science Academies ▪ National Research Council ▪ State Technologies Advancement Collaborative ▪ Wind
Legislation Cited	<ul style="list-style-type: none"> ▪ California Hydrogen Highway Initiative ▪ Green Wave initiative ▪ Pavley Law
Bibliography (Y/N)	N (footnotes listed)
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