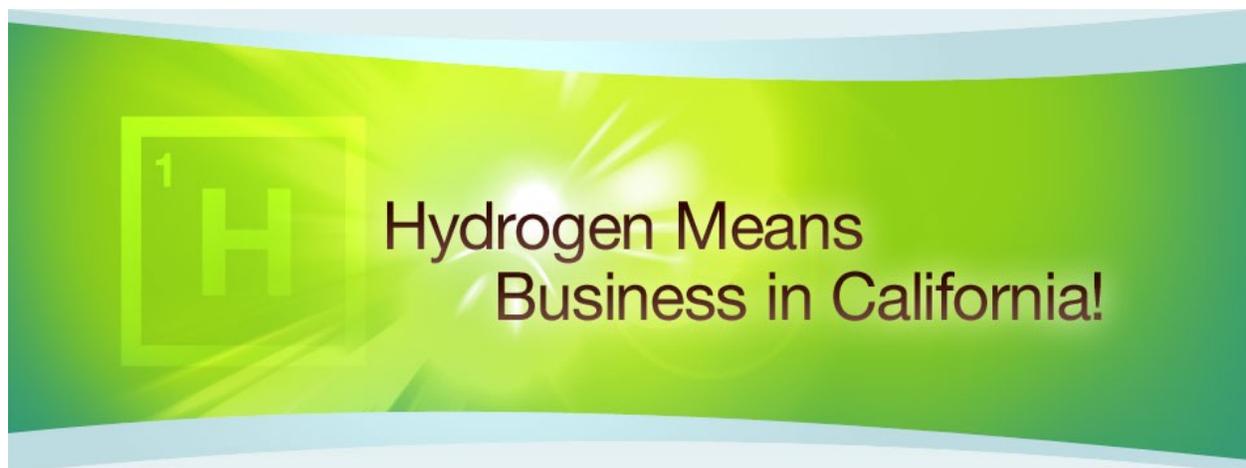

ANNUAL REPORT 2013

July 29, 2014

The California Hydrogen Business Council connects hydrogen technology developers, businesses, energy leaders, government, and infrastructure providers with a common vision of energy and transportation fueled by zero-emission hydrogen.

Our members develop, adapt, and implement technology and services that are taking the hydrogen economy into the mainstream.



CONTACT INFORMATION

Main Office

3438 MERRIMAC ROAD
LOS ANGELES, CA 90049

Fax

202-223-5537

DC Office

1211 CONNECTICUT AVENUE, NW | SUITE 600
WASHINGTON, DC 20036

Email

info@californiahydrogen.org

Phone

310-455-6095

Website

www.californiahydrogen.org

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EXECUTIVE SUMMARY

The 2013 Annual Report of the California Hydrogen Business Council (CHBC) is designed to inform members, potential members and other stakeholders about the organization's activities including advocacy, events and membership changes in 2013, progress in the organizational restructure as well as its plans for 2014.

Continuing under its new management and through collaborative work of the Board of Directors, members and staff, the CHBC made significant progress during the third year of a complete restructuring effort. The CHBC reached several important milestones, increasing its membership by 48%, launching a new hydrogen energy storage program module, and improving its strength and presence in California by recruiting strong leaders in the industry as members and Directors. The CHBC also promoted networking and advocacy in the hydrogen energy industry sector to expand business opportunities in hydrogen and fuel cells. The CHBC organized two successful summits, three board meetings, two technology tours, one VIP Luncheon, ten press releases, submission of several comments and position letters and three all-hands calls for membership engagement.

2013 – BREAKING NEW GROUND

2013 was an exciting year for the CHBC. The CHBC continued its evolution to be an impactful industry advocate for the interest of its members, leading to significant achievements throughout the year: an extremely successful summit, unprecedented increase in membership, development of a first program “module”, and successful committee work, among other improvements to the effectiveness of the organization.

The association management company Technology Transition Corporation (TTC / www.ttcorp.com) continued to manage and staff the growing depth and breadth of the CHBC's activities. TTC is a renowned name in the hydrogen and fuel cell industry, having managed the National Hydrogen Association (NHA) from its founding in 1989 to the merger with the U.S. Fuel Cell Council to create the Fuel Cell and Hydrogen Energy Association (FCHEA) in 2010. TTC also continues to manage the Hydrogen Education Foundation (HEF) and its programs, the Hydrogen Student Design Contest (www.hydrogencontest.org) and H-Prize (www.hydrogenprize.org).



Jeff Serfass, President of TTC has over two decades of experience in clean energy, mainly in hydrogen sector, serving as President of the NHA and the HEF. As Managing Director he provides strategic guidance to CHBC.

Emanuel Wagner, TTC Program Coordinator for the Hydrogen Education Foundation and the Biomass Thermal Energy Council, is serving the CHBC as Assistant Director, managing the day-to-day operations of the organization.

James Provenzano, Executive Director of Clean Air Now!, was contracted by TTC to provide his experience and California relationships and connections to assist with on-the-ground support for special events like technology tours and meetings.

TTC's unparalleled skill, reputation and experience in the hydrogen industry have enabled the CHBC to play an increasing effective leadership role in California environmental policy.

GOALS FOR 2013

HIGH VALUE PROJECTS:

1. Develop a pro-active Advocacy program in support of the following main goals:
 - Secure funding for hydrogen fueling infrastructure development necessary for 2015 vehicle rollout and beyond
 - With member input, identify barriers to adoption of stationary and mobile fuel cells and hydrogen energy technology
 - Maintain SGIP program beyond 2013
 - Expand SGIP to support fuel cell forklift trucks
 - Maintain reactive capability to provide testimony in proceedings that may develop
 - Supplemental: Enable a supportive framework for stationary fuel cells and hydrogen energy storage
 - Supplemental: Additional activities to support and enhance CHBC's advocacy efforts
2. Develop a Research and Analysis program in support of the following main goals:
 - Continue the development of an industry data project outlining the state of the industry, including main actors, key market data and other important information for companies interested in adding to the marketplace, by developing funding vehicles or identifying other ways to achieve this goal
 - Supplemental: Develop work group-led stationary fuel cell program with focus on hydrogen energy storage to advance the analytical, technical, and policy support within the CHBC to improve energy security and build-out of renewable energy
 - Supplemental: Conceive an industry vision document describing the opportunities for California provided further legislative and regulatory support of the industry

CHBC CORE ACTIVITIES:

3. Produce 6 high-quality in-person CHBC meetings in support of key topics to improve member benefits, build opportunities for business development; conduct workshops for potential customers; and support a potential national hydrogen and fuel cell business event in California.
 - Supplemental: Develop a third General Meeting/Annual Membership Meeting
4. Maintain active Communications, Education and Outreach program by generating interest for the technology; expand social media where effective with the goal to further elevate the CHBC as the voice of the industry in California.
5. Expand CHBC membership, especially on the manufacturing side, and thereby increase membership revenue in support of CHBC activities.

The organization made significant progress towards most of these goals in 2013, as the following pages outline. These achievements would not have been possible, however, without the financial support of its many members. A special thanks goes out to the CHBC's Platinum and Gold members for their significant support of the council.

2013 PLATINUM MEMBERS



2013 GOLD MEMBERS



In the next sections, detailed information on the CHBC's activities in each program area will be provided. This includes Advocacy, Hydrogen Energy Storage, Education and Outreach, Events, and Membership. Additionally, goals and plans for the future will be reviewed at the end of the report. Supplementary information is provided in the Appendices.

ADVOCACY

The advocacy committee was formed at the end of 2011 as a pilot effort, made permanent in 2013, and is chaired by Robert Bienenfeld (American Honda). Its members in 2013 were Mark Abramowitz (Community Environmental Services), Tyson Eckerle (Energy Independence Now), Andy Marsh (Plug Power) and Larry Watkins (South Coast Air Quality Management District).

The advocacy committee seeks to support legislative and regulatory activities aimed towards increasing the percentage of California energy consumption that comes from clean and efficient hydrogen energy. The Committee also aims to maximize the demand for hydrogen and fuel cell systems in California, and achieve widespread recognition of the environmental, economic, national security, and job-creation benefits of fuel cell and hydrogen energy.

The Advocacy Committee's goals include regulatory advancement, incentive development and market research and analysis. The CHBC supports initiatives to increase the number of hydrogen fuel stations to advance the commercial release of hydrogen fuel cell vehicles. The CHBC also advocates for tax credits for hydrogen and fuel cell systems, the expansion of incentive programs like the Self-Generation Incentive Program (SGIP) and bills that provide funding or assistance to new projects or retrofitting projects of existing buildings and facilities.

In the last board meeting of the year (December 2013), the Chair urged members to suggest advocacy issues that the committee should address. CHBC expects that its members be willing to take the lead in calling for action with a certain advocacy issue, with the support of the CHBC.

The CHBC provided letters of support on several important issues in 2013. These are outlined below.

ADVOCACY ACTIONS

AB8/SB11 ALTERNATIVE FUEL AND VEHICLE TECHNOLOGIES FUNDING PROGRAM

The CHBC formally supported AB 8 and SB 11 in June of 2013, asked its membership to write letters of support to their representatives and provided a template letter for members to use. These bills extended the sunset dates on important programs like the Alternative and Renewable Fuel and Vehicle Technology Program, Air Quality Improvement Program, Enhanced Fleet Modernization Program, all of which were authorized under AB 118. These programs provided critically needed investment in air quality and clean transportation and specifically identified a minimum of \$20 million annually in state funds towards developing a hydrogen refueling infrastructure network of at least 100 stations to assure that stations and vehicles are ramping up together.

CHBC's letter underscored how this commitment supports the near-term, early commercial launch of FCEVs. The letter in full is attached in Appendix A. AB 8 was signed into law by Governor Brown and filed with Secretary of State on September 28, 2013.

VIP LUNCHEONS

The CHBC held a VIP Luncheon in March of 2013 with Cliff Rechtschaffen, senior advisor to Governor Jerry Brown. Mr. Rechtschaffen works on energy, environmental and agricultural issues. Organizational members were invited to participate in this event. Ten CHBC member organizations attended this event. The lunch allowed CHBC members to have an informal and wide ranging discussion on key hydrogen-related issues of importance to their companies and organizations.



CLIFF
RECHTSCHAFFEN

EDUCATION AND OUTREACH

Formed in 2012, the Education and Outreach Committee was tasked with identifying low cost high value efforts to educate customers, policymakers, investors, media and other stakeholders on the facts related to hydrogen energy and fuel cells.

Chaired by Tyson Eckerle (Energy Independence Now), with members James Provenzano (Clean Air Now!), Bob Oesterreich (Air Liquide Advanced Technologies U.S. LLC), Geoff Budd (ITM Power), Jeff Reed (Southern California Gas Company), Elan Shore (California Fuel Cell Partnership) and Mark Abramowitz (Community Environmental Services), the committee works to develop or connect parties to information resources that advance the level of knowledge and interest in hydrogen and fuel cell technologies, products and markets.

Unlike the other CHBC committees, E&O Committee members are recruited from the entire membership. They help identify key stakeholders and key issues facing the industry that could be addressed through education and outreach. They assist in the development of materials and other educational resources and help develop strategies for reaching out to key stakeholders and decision makers on these issues. CHBC members can use these CHBC educational resources to help build market understanding for products and services.

The Education and Outreach Committee helps guide the organization's development of educational resources and outreach strategies and implements "all hands" calls for the entire membership, identifies materials and resources for website development, and provides input on hydrogen information materials. In 2013, the Committee focused on developing relationships with local and regional groups in support of CHBC's mission and goals.

ALL HANDS CALLS

The CHBC held three "All Hands Calls," in March, June and September of 2013 in an effort to improve membership value and communication. The calls were designed as a novel, interactive version of a newsletter and were open to all members of the CHBC. Each call had between ten and twenty attendees. The discussions included updates on the 2013 Program Plan, legislative developments and activities, industry news and upcoming events as well as updates from the newly formed Hydrogen Energy Storage committee. Each of the calls ended with a section where all members had the opportunity to bring up issues, comments, questions, new projects, or



industry updates of which all members should be aware. These calls served as an effective forum for discussion and will be held quarterly in 2014.

HYDROGEN ENERGY STORAGE

2013 marked the inaugural year for significant work on Hydrogen Energy Storage (HES). The CHBC, based on member requests, launched an HES program to address the increasingly important role energy storage will play in the state's future energy mix. HES has the potential to become a significant business opportunity in California, as the state moves to an ever increasing use of renewable energy, currently set for 33% by 2020. The CHBC can provide help to California's decision makers in assisting this market growth of renewable energy and address challenges caused by this build-out. Recognition for the unique role that hydrogen energy storage can play is the focus of that work, by helping to manage the intermittency of the dominant renewables, in addition to broader grid management. The actual uses of hydrogen that can be produced off-peak by solar and wind facilities include augmenting natural gas delivered in pipelines by creating a renewable component of that gas, and its use as a transportation fuel. Hydrogen added to a natural gas pipeline could also be retrieved downstream, thus using the pipeline itself for storage. All of these uses of renewably produced hydrogen are potential components of a hydrogen energy storage strategy.

The CHBC used the knowledge and energy of interested members who formed the HES Working Group, a new CHBC entity in 2013. Out of the efforts of the Working Group, the HES Committee was formed, composed of selected Directors and also members not currently serving on the Board. This program was financed by externally raised program funding from CHBC members, including Hydrogenics, ITM Power and Southern California Gas Company. Operating as an externally funded special "module", the new program did not adversely impact CHBC's core programs identified in the 2013 Program Plan.

The HES Committee held several calls in July, August and September and November of 2013. The HES Committee and Working Group were both very active their inaugural year. Their main activities are outlined below.

COMMENTS ISSUED TO CPUC

In June of 2013, the CPUC circulated an energy storage rulemaking in support of the following goals: the optimization of the grid, the integration of renewable energy and the reduction of greenhouse gas emissions to 80% below 1990 levels by 2050. On July 3rd, 2013, Jeff Serfass, Managing Director, submitted comments on the Assigned Commissioner's Ruling (ACR) describing how hydrogen energy storage can play a key role in meeting the goals of storage procurement policy that the ACR outlined. The CHBC's commentary encouraged the Commission to ensure the hydrogen energy storage cases and scenarios are included in the development and validation of the cost-benefit model. It addressed factors like the use of renewable hydrogen in existing generation resources that may not be located near hydrogen production sites. Furthermore, the comments encouraged the commission to direct the consultants supporting the rulemaking to follow and incorporate the results of the various HES demonstrations into their analysis and model development.

A few months later, California Energy Commissioner Peterman released her Proposed Decision to adopt an energy storage procurement framework and design program. On September 23rd, 2013, the CHBC

submitted comments requesting that the Proposed Decision provide further clarity, particularly with regard to the specified procurement buckets and requirements in order to avoid disadvantaging potentially attractive options like hydrogen energy storage in the procurement process. The comments were a combined effort of the CHCB Hydrogen Energy Storage Committee and the larger HES Working Group. As a result of these initiatives led by the CHBC HES Committee, CPUC staff expressed their willingness to include and consider hydrogen energy storage technology in future work.

WHITE PAPER

Members of the CHBC Hydrogen Energy Storage Committee also started the development of a White Paper, which outlines the technology of hydrogen energy storage and power to gas, and provides data on business cases and ongoing projects. The completion of the White Paper is scheduled for 2014.

NETWORKING EVENTS

As described below, the CHBC held several successful events in 2013 including technology tours and the introduction of the CHBC signature events. The CHBC will continue and expand these events in 2014.

HYDROGEN AND FUEL CELL SUMMITS

The CHBC conducted two signature summits. The purpose of these summits was to connect and encourage communication between members as well as provide updates about the industry, technology, advocacy and any other developments. Expert speakers were from varied industry sectors and presented briefings and panels in order to better inform the CHBC's membership.

CHBC SPRING SUMMIT – DOWNEY, CA

The CHBC's Spring Summit, held April 9th at the Southern California Gas Energy Resource Center, focused on legislation, funding, and developing projects in hydrogen business. Attendees learned about hydrogen storage energy, cap & trade, public & private transportation with hydrogen fuel cells and opportunities at shipping ports.



Over 60 attendees participated in the Spring Summit.

Presenters included:

- **Kevin Bell**, Director, Distributed Power Projects, Ballard Power Systems
- **Gil Castillo**, Senior Manager, Alternative Vehicle Strategy at Hyundai Motors America, Hyundai
- **Stephen Ellis**, Manager, Fuel Cell Vehicle Marketing at American Honda Motor Company, Chairman, Fuel Cell and Hydrogen Energy Association
- **Jackie Ferlita**, Director of Emissions and Greenhouse Gases, Element Markets
- **Dr. Aaron Katzenstein**, Program Supervisor, South Coast Air Quality Management District
- **Dr. Jay Keller**, Zero Carbon Energy Solutions
- **Vic LaRosa**, CEO/President, Total Transportation Services Inc.
- **Kevin Maggay**, Environmental Management Division, Port of L.A.

- **Keith Malone**, Communications and Government Relations, California Fuel Cell Partnership
- **Dr. Marc Melaina**, Senior Engineer, Hydrogen Technologies & Systems Center, National Renewable Energy Laboratory
- **George Minter**, Director of Policy and Environment, Southern California Gas Company
- **James Provenzano**, Clean Air Now!
- **Jeff Reed**, Director of Emerging Technologies - Southern California Gas
- **Robert Rose**, Executive Director, Breakthrough Technologies Institute / Advisor, ITM Power
- **Dr. Susan Schoenung**, Longitude 122 West
- **Jeffrey Serfass**, Managing Director, California Hydrogen Business Council
- **Ghassan Sleiman**, Service Engineer, Hydrogenics
- **Dr. Shane Stephens-Romero**, Manager Research Development & External Relations, Senior Scientist, Advanced Power and Energy Program, UC Irvine
- **Jerome Torresyap**, President, Vision Motor Corp

Toyota, Hyundai and Honda showcased their latest fuel cell vehicles at the meeting for attendees during the Ride 'n Drive / Vehicle program. The hydrogen energy storage panelists gave their perspectives on hydrogen for energy storage options to integrate renewable energy.

This meeting owed its success to its sponsor, Hydrogenics, the hosting organization, Southern California Gas and their staff at the Energy Resource Center, the support of the CHBC members, attendees and the gracious help of volunteers from UC Irvine and the National Fuel Cell Research Center, namely James Kast and Peter Willette. The presentations featured at the meeting are available on the Members Only site of the CHBC website.

HYDROGENICS
MEETING SPONSOR

CALIFORNIA HYDROGEN AND FUEL CELL SUMMIT – SACRAMENTO, CA



The California Hydrogen and Fuel Cell Summit, was held October 9-10, The event gathered over 160 representatives of companies in the hydrogen and fuel cell industry, government agencies and NGOs at the California EPA in Sacramento, CA to celebrate progress, discuss emerging opportunities and identify the issues that need business and or government attention. The summit was supported by the California Fuel Cell Partnership and the California Stationary Fuel Cell Collaborative.

This Summit provided a balanced forum for businesses, academia, and government agencies to explore hydrogen and fuel cells through intelligent conversation, insightful presentations and thought provoking sessions. The CHBC expanded the Summit to cover two full days with a special focus on envisioning new technology contrasted by the advances already made, using hard data from industry developments in the real world.

Presenters on the first day included:

- **Wade Crowfoot**, Deputy Cabinet Secretary and Senior Advisor in the Office of the Governor
- **Andy Marsh**, President and CEO of Plug Power
- **Pierre-Etienne Franc**, Vice President of Advanced Business and Technologies, Air Liquide and Chair of the Governing Board of the Fuel Cells and Hydrogen Joint Undertaking (FCH JU)
- **Dr. Clark Parker**, Governing Board Member, Senate Rules Committee Appointee of the South Coast Air Quality Management District
- **Daryl Wilson**, President and CEO of Hydrogenics
- **Robert Bienenfeld**, Assistant Vice President of American Honda Motor Company
- **Catherine Dunwoody**, Executive Director, California Fuel Cell Partnership
- **Professor Scott Samuelsen**, Co-Chair, California Stationary Fuel Cell Collaborative
- **Dr. Tim Brown**, formerly UC Irvine, now Co-Founder and President, FirstElement Fuel
- **Joan Ogden**, Professor of Environmental Science and Policy, UC Davis
- **Morry Markowitz**, President & Executive Director of the Fuel Cell and Hydrogen Energy Association
- **Stephen Ellis, Manager**, Fuel Cell Vehicle Marketing, American Honda Motor Company
- **Tyson Eckerle**, Executive Director, Energy Independence Now
- **Bob Oesterreich**, Director of Hydrogen Energy, Air Liquide
- **Mike Beckman**, Vice President - Head of Hydrogen Fueling & Industrial Applications, Linde
- **Jaimie Levin**, formerly AC Transit, now Senior Program Manager and Director of West Coast Office, Center for Transportation and the Environment
- **Bob Rose**, Executive Director, BTI/Fuel Cells 2000
- **Eric Denhoff**, Executive Director, Canadian Hydrogen and Fuel Cell Association

The second day of the Summit featured:

- **Dr. Alberto Ayala**, Chief Deputy Executive Office for the California Air Resources Board
- **Bonnie Holmes-Gen**, Senior Director, Policy and Advocacy for the American Lung Association in California
- **Kathryn Phillips**, Director of the Sierra Club California
- **James Provenzano**, President of Clean Air Now!
- **Carla Peterman**, Commissioner at the California Public Utilities Commission
- **Jeff Reed**, Director of Emerging Technologies at Southern California Gas Company, and chairman of the new CHBC Hydrogen Energy Storage Committee
- **Dr. Tom Bialek**, Chief Engineer for Smart Grid at San Diego Gas & Electric
- **Dan Rastler**, Senior Manager of Strategic Initiatives at the Electric Power Research Institute
- **Rob Harvey**, Director for Energy Storage at Hydrogenics
- **Geoff Budd**, ITM Power's Agent for Canada and the USA
- **Janea Scott**, Commissioner for the California Energy Commission
- **Larry Stapleton**, Vice President for Sales at Ballard Power Systems
- **Mark Cohen**, Vice President of Product Line Management for ReliOn
- **John Chimenti**, Hydrogen Energy Systems, Air Products and Chemicals

- **Mickey Oros**, Senior Vice President for Business Development for Alteryx
- **Erik Hansen**, Vice President for Sales and Hydrogen at Plug Power
- **Martin Schuermann**, CEO of Vision Motor Corp
- **Pinakin Patel**, Director, Special Systems and Research for FuelCell Energy
- **Dr. Dan Sperling**, Director of the Institute of Transportation Studies, UC Davis

This meeting would not have been as successful without the support of its Summit sponsors.



Furthermore, CHBC’s Platinum Members, the Bay Area Air Quality Management District and South Coast Air Quality Management District provide significant contributions that allow the CHBC to plan these large Summits.



TECHNOLOGY TOURS

Two technology tours were held in 2013, one at the Toyota Ballard Fuel Cell System and another at the Alternative Fuel Cell Center at Rio Hondo Community College.



TOYOTA - BALLARD FUEL CELL SYSTEM TOUR

On April 24th, Toyota hosted a CHBC visit to Toyota’s US headquarters in Torrance, California to tour their 1.1 MW Ballard Fuel Cell System. The system is the largest PEM-FC system of its kind and the first deployment of a Ballard stationary fuel cell power generation platform.

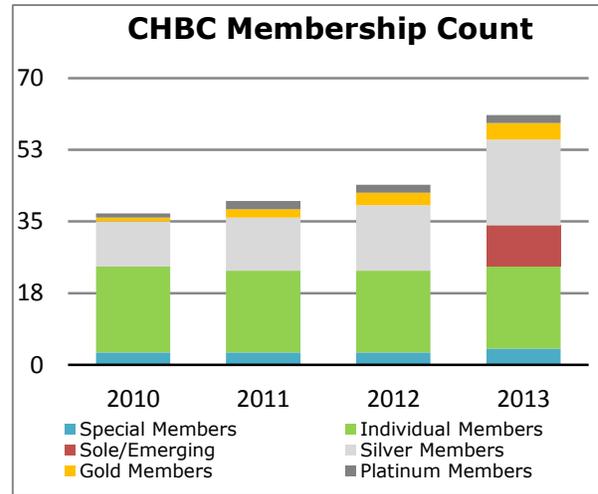
ALTERNATIVE FUELS EDUCATION CENTER TOUR

About 16 participants including CHBC members and non-members attended the technology tour of the Alternative Fuel Education Center at Rio Hondo Community College on November 14th. The Alternative Fuels program is the only Associates of Science Degree program in California currently active. The program offers training to students, fleet programs, independent shop owners and specialty contract courses. The tour led by Professor John Frala included all those technologies and how they are presented to the students and industry.

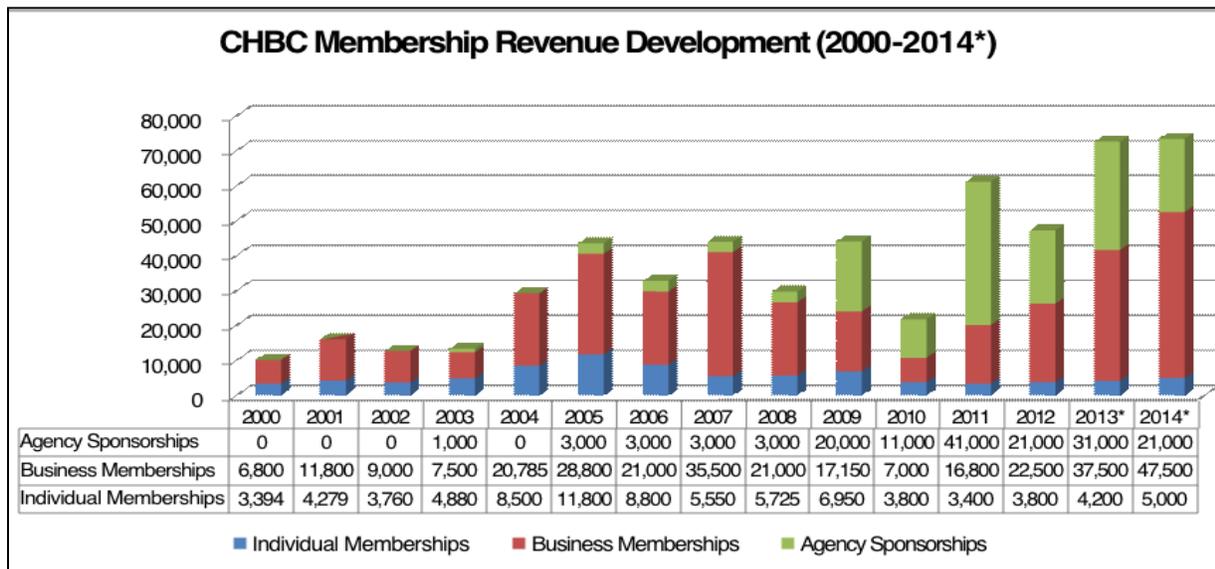


MEMBERSHIP

The transformation of the CHBC has continued to drive a significant increase in membership, with 21 new members in 2013, a 48% increase! The most notable additions to the membership in 2013 were FuelCell Energy in the gold category and several additions to the silver category, including companies such as NEL Hydrogen AS, Hydrogenics Corporation, H2Safe LLC, Rio Hondo College, Powertech Labs Inc., Freudenberg-NOK, Proton OnSite and Nuvera Fuel Cells. Additionally, Engineering, Procurement & Construction LLC upgraded their membership from individual to silver level.



Membership overall has increased by 61% since the CHBC began restructuring in 2010, while strengthening the financial support provided by businesses. 2013 has been the most successful year in raising revenue from membership dues since the CHBC's formation, thanks in large part to a new focus on advocacy issues, successful events and energy storage.



MEMBERSHIP COMMITTEE

The Membership Committee, chaired by Larry Stapleton (Ballard Power Systems), worked to expand the membership and develop membership services to grow the organization. Committee members include Robert Bienenfeld (American Honda), Richard Cromwell III (Richard Cromwell and Associates), Paul Scott (ISE Corporation), and Mark Abramowitz (Community Environmental Services). The committee met several times to identify, approach, and track prospective members. Their work was supported by staff and online tools that were developed for this effort, as well as a newly develop membership prospectus.

NEW ORGANIZATIONAL MEMBERS IN 2013

Freudenberg-NOK Sealing Technologies

Freudenberg Sealing Technologies in the Americas is represented by **Freudenberg-NOK Sealing Technologies (FNST)**, a joint venture partnership between Freudenberg & Co. in Germany and NOK Corp. in Japan. Established in 1989 to address the sealing needs of customers in the United States, Canada and Mexico, FNST has become a leading producer of elastomeric materials and precision molded products for the aerospace, aftermarket, automotive, fluid power, appliance, energy, food and beverage, construction, recreational, industrial and chemical industries. www.fst.com

FuelCell Energy, Inc., which returned as a CHBC member in 2013, is an integrated fuel cell company that designs, manufactures, installs, operates and services stationary fuel cell power plants. www.fuelcellenergy.com



GrupTelco is a brand new incorporated company in the energy business, particularly on new and renewable technologies.



Part of the IGX Group, **GTM Technologies** comprises a complete line of Gas Transportation Modules or GTMs for the storage and transportation of compressed natural gas (CNG). Configured around Type III composite cylinders that are lightweight, the IGX GTM can store CNG at up to 3600 psi (248 bar). GTMs can be configured for placement into standard shipping containers or onto the back of small trucks. The GTMs offered by IGX are an economical alternative to the steel solutions, which are extremely heavy and result in both decreased fuel economy when transporting the modules as well as greater wear and tear on the vehicle and roads. www.gtmtechnologies.com

H2Safe LLC owns patents on technology for safer storage of compressed or liquid hydrogen, compressed or liquid natural gas, industrial gases, oxygen and liquified petroleum in mobile, stationary, airborne and maritime applications. www.h2safe.net



HYDROGENICS **Hydrogenics**, another returning CHBC member, has over 60 years of experience designing, manufacturing, building and installing industrial and commercial hydrogen systems around the globe. www.hydrogenics.com

NEL Hydrogen is a world-leading supplier of hydrogen generation plants based on water electrolysis technology. The company supplies energy efficient hydrogen solutions for industrial applications, hydrogen fueling stations and distributed energy systems worldwide. www.nel-hydrogen.com



Nuvera hydrogen supply systems and fuel cell technology are transforming the logistics, automotive, aerospace and marine industries. As more industries adopt hydrogen fuel cells as the energy technology of choice, Nuvera is positioned as a leading global provider of advanced power solutions. www.nuvera.com

Paramount Energy West is a technology firm engaged in the development and implementation of advanced hybrid renewable energy power generation systems. www.paramountenergywest.com



Power+Energy supplies hydrogen separators and hydrogen purity analyzers and is developing high-efficiency, low cost hydrogen generators for fuel cell applications. P+E hydrogen separators separate pure hydrogen gas from reformate, syn-gas or other mixed gas streams, producing nine 9's H₂ with all impurities reduced to < 1 part-per-billion (ppb). www.powerandenergy.com

Powerdisc is a 10-year old fuel cell company headquartered at the National Research Council of Canada's Institute for Fuel Cell Innovation in Vancouver, Canada. The firm has proven and protected a fuel cell technology breakthrough - eFlow™ - that delivers economic and performance gains. www.powerdisc.ca



Powertech, a BC Hydro subsidiary, specializes in clean energy consulting, independent testing and power system solutions. Since our inception in 1979, we have served electrical utilities, oil and gas companies, automotive and electrical equipment manufacturer in order to meet the complex and changing needs of our customers around the world. Innovation and quality are paramount in delivering these services. www.powertechlabs.com

Proton OnSite designs and manufactures proton exchange membrane (PEM) electrochemical systems to make hydrogen from water producing safe, pure, reliable onsite hydrogen to meet global hydrogen requirements ranging from grid-level support for energy storage to turbine generator cooling in power plants. www.protononsite.com



Rio Hondo College officially opened its doors for instruction in 1963 and is celebrating its 50th anniversary in 2012-2013. As a comprehensive community college, Rio Hondo offers many strong career-technical programs, such as nursing, fire and police academies, automotive and alternative fuels, a full transfer curriculum, and basic skills courses/services. www.riohondo.edu

Terrella Energy Systems is a manufacturing and service company that specializes in roll embossing technology using flexible graphite materials for application in energy and thermal management systems. They also provide engineering service with a rapid turnaround and lean design approach to deliver their clients' design quickly during early stages of the production cycle. www.terrellaenergy.com



Trillium Energy Systems is developing a new, low-cost, green technology that produces hydrogen gas (H₂) from electricity, water and a proprietary electrolyte called B9. According to third party testing the technology is safe, efficient and economical. www.trilliumenergysystems.com

Western Hydrogen Limited is a Canadian company dedicated to the development and commercialization of a new hydrogen manufacturing technology called molten salt gasification. The molten salt gasification process is projected to have significant economic and environmental advantages over current hydrogen manufacturing technologies including lower hydrogen supply costs, maximum feedstock flexibility, significantly lower GHG emissions, high pressure hydrogen production and low cost CO2 capture.
www.westernhydrogen.com



The list of all members is attached in Appendix B.

RESEARCH AND ANALYSIS

For 2013, the CHBC identified the collection of industry data as an important item to educate legislators and companies interested in investing in the hydrogen and fuel cell market in California. These efforts were led by the industry data project subcommittee.

INDUSTRY DATA PROJECT AD HOC COMMITTEE

The Ad Hoc committee was chaired by Richard Cromwell (Richard Cromwell and Associates), and members included Tyson Eckerle (Energy Independence Now), Chris White (California Fuel Cell Partnership) and Hank Wedaa. The subcommittee discussed the following points:

- Outline the scope of an industry data collection
- Describe the format of the data collection (report vs. online database)
- Identify avenues for funding

Staff and members were tasked to approach potential funding entities, including CARB and the CEC. While this approach has not resulted in commitments, the conversations have been positive and will continue in 2014.

MANAGEMENT

The CHBC held three board meetings in 2013. The first meeting was held on April 9th following the CHBC Spring Summit. It mainly focused on the achievements of 2012, goals, and vision for 2013. The second meeting was held on July 25th and focused on the improvement of organizational efficiency of the committees, as well as establishing specific, concrete goals for 2013. The final meeting of the year was held on December 11th, concurrent with the Annual Membership meeting including board elections, and the program plan and budget for 2014 was reviewed.

A list of the 2013 Board of Directors is attached as Appendix C.

PLANS FOR THE FUTURE

2014 will be marked with the strengthening of the industry association by establishing a pattern of strong signature events, increased awareness and activities in market sectors, supportive appropriate state policies, and an increasingly broad and diverse Board of Directors and membership. Beyond

leading discussions of hydrogen for energy storage and managing the intermittent renewables on the electric grid, new market sectors will be addressed that build on the experience of the module approach.

The CHBC will attempt to expand existing activities and develop new modules as necessary in support of goods movement, ports and airports, vehicle deployment and fueling, telecommunications power, biogas, and beyond. These new and expanded activities not only help the members in those sectors, but they also help the CHBC attract new members.

To maximize the CHBC's effectiveness, staff and the Board will continue to increase collaboration and cooperation with other key organizations and events in the state and beyond. While the CHBC is having an impact in the state, it will cement its national visibility in 2014.

GOALS FOR 2014

The sections below describe the main goals for Advocacy, Education and Outreach, Membership, Hydrogen Energy Storage and Research and Analysis based on the current budget. The "supplemental" goals below may be accomplished if there is a surplus budget, raised via new memberships, upgrading of existing memberships, and external funding. If raised, this funding can be allocated to specific supplemental activity with direction from the board and input from main funders.

ADVOCACY

- Build support for infrastructure development in preparation for light duty vehicle rollout in 2015
- Advocate for policies that facilitate the expansion of telecom power, goods movement and power business for CHBC members in these sectors
- Strengthen the Advocacy Committee by expanding representation from each of the market sectors to be able to both plan initiatives in each of the sectors and to respond to unexpected policy issues
- Augment federal and state agency relationships and develop relationships in areas of importance to the objective of growing markets (DOE, CEC, Cal/EPA)
- Amplify the policy messages of CaFCP and CSFCC in CHBC activities for stronger industry impact
- Supplemental: Conduct a policy briefing of Assembly in support of 2014 advocacy goals
- Supplemental: Produce and submit white papers and reports needed to communicate CHBC's views on key policy and regulatory developments and to advocate public policies on behalf of the industry to the California State Assembly and government agencies

NETWORKING

- Produce 8 high-quality in-person CHBC meetings in support of key topics to improve member benefits, build opportunities for business development; conduct workshops for potential customers; and support a potential national hydrogen and fuel cell business event in California.

EDUCATION AND OUTREACH

- Maintain active communications, education and outreach program by generating interest for the technology; expand social media where effective with the goal to further elevate the CHBC as the voice of the industry in California

HYDROGEN ENERGY STORAGE

- Achieve awareness of the option of hydrogen for energy storage with California regulatory bodies, state agencies, legislators and other decision makers
- Build the analytical understanding of the role that hydrogen can play in managing increasing penetrations of renewable energy
- Build relationships with key California and national stakeholder groups that can help build awareness of the role of HES
- Enable the eligibility of hydrogen in existing funding vehicles and develop new mechanisms, where appropriate, for state support of HES in member driven projects and for expansion of CHBC HES capability, including SGIP and EPIC

RESEARCH AND ANALYSIS

- Produce a document that can be shared with agencies, legislators, the public, and prospective members to convey information about who the business council is and what the member companies contribute to the economy in California
- Supplemental: Secure funding for a project module to create an industry report for CHBC's advocacy positions and E&O.
- Supplemental: Develop work group-led stationary fuel cell program with focus on hydrogen energy storage to advance the analytical, technical, and policy support within the CHBC to improve energy security and build-out of renewable energy

MEMBER SERVICES AND DEVELOPMENT

- Increase CHBC membership, especially on the manufacturing side and sectors currently underrepresented, which increases membership revenue in support of CHBC activities
- Develop approach and value proposition to engage utilities in CHBC

APPENDICES

APPENDIX A



**CALIFORNIA HYDROGEN
BUSINESS COUNCIL**

CA Office: 3438 Merrimac Road Los Angeles, CA 90049 DC Office: 1211 Connecticut Ave NW, Ste 600 Washington, DC 20036

Phone: (310) 455-6095 | Fax: (202) 223-5537
info@californiahydrogen.org | www.californiahydrogen.org

BOARD OF DIRECTORS

Mark Abramowitz | President
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STAFF

Jeffrey Bertass | Managing Director
Emanuel Wagner | Assistant Director
James Provenzano | Senior Consultant
Dr. Shane Stephens-Romero | Advisor

The Honorable Henry Perea
California State Assembly Member, 31st
District
State Capitol, Room 3120
Sacramento, CA 95814

The Honorable Nancy Skinner
California State Assembly Member, 15th
District
State Capitol, Room 3160
Sacramento, CA 95814

RE: AB 8 - SUPPORT

Dear Assembly Members Perea and Skinner,

The California Hydrogen Business Council (CHBC) is pleased to express strong support for AB 8. The CHBC connects hydrogen technology developments, businesses, energy leaders, government, and infrastructure providers with a common vision of energy and transportation fueled by zero-emission hydrogen. Our members develop, adapt, and implement technology and services that are taking the hydrogen economy into the mainstream.

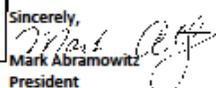
For many years now, California has been a leader in recognizing and addressing social concerns such as reducing dependence on petroleum, reducing smog forming emissions and reducing greenhouse gasses. California has taken many aggressive steps to require zero emissions vehicles like battery electric and fuel cell electric vehicles (FCEVs). Unlike other governments, California has gone beyond simply regulating lower emissions; the State has put in place an impressive regulatory structure to address carbon in fuels (the Low Carbon Fuel Standard), carbon in the economy (Cap and Trade), consumer incentives (Clean Vehicle Rebate Program), and alternative fuel vehicle infrastructure (AB118 and the Clean Fuel Outlet programs).

Additionally, Governor Brown addressed the challenge of infrastructure to support ZEVs by his Executive Order from March 23, 2013. This comprehensive approach by the state of California is unique: addressing consumers, infrastructure and vehicles.

The growth of hydrogen infrastructure will be an important component of the low carbon future that California has long envisioned. Hydrogen has been identified by the California Air Resources Board as an "ultra low carbon fuel" and FCEVs are recognized in the Zero Emission Vehicle mandate as one of the key components to a successful approach to meeting the state's goals. Automakers have consistently stated that publically accessible, broadly available hydrogen infrastructure is a necessary pre-requisite to the successful introduction of FCEVs.

The AB 8 bill extends the sunset dates on important programs that provide critically needed investment in air quality and clean transportation, and specifically identifies up to \$20 million annually in state funds towards opening a minimum hydrogen refueling infrastructure network of at least 100 stations to assure that stations and vehicles are ramping up together. We believe that this commitment is essential to support the near-term, early commercial launch of FCEVs.

Thank you for your leadership on this important issue.

Sincerely,

Mark Abramowitz
President
California Hydrogen Business Council

APPENDIX B

2013 CHBC Members

Member Type	Company	Primary Contact	Title	City	State
Platinum	South Coast Air Quality Management District	Larry Watkins	Program Supervisor	Diamond Bar	CA
Platinum	Bay Area Air Quality Management District	Jack Broadbent	Executive Officer/Air Pollution Control Officer	San Francisco	CA
Gold	Ballard Power Systems	Larry Stapleton	Vice President, Sales	Burnaby	BC
Gold	Clean Energy	Richard Cromwell III	Consultant	Seal Beach	CA
Gold	FuelCell Energy	Pinakin Patel	Director, Special Systems & Research	Danbury	CT
Gold	Plug Power, Inc.	Andy Marsh	President and Chief Executive Officer	Latham	NY
Silver	Air Liquide Advanced Technologies U.S. LLC.	Bob Oesterreich	Director of Hydrogen Energy	Houston	TX
Silver	American Honda Motor Co., Inc.	Robert Bienenfeld	Senior Manager, Environment and Energy Strategy	Torrance	CA
Silver	California Air Resources Board	Mike Kashuba		Sacramento	CA
Silver	California Fuel Cell Partnership	Catherine Dunwoody	Executive Director	West Sacramento	CA
Silver	Engineering, Procurement and Construction (EPC)	John Cornish	President	Denver	CO
Silver	Freudenberg-NOK	Alex Berdichevsky	Director R&D	Plymouth	MI
Silver	General Motors	Britta Gross	R&D and Strategic Planning, Director	Warren	MI
Silver	H2Safe, LLC	Kay Kimberly Siegel	Director	Los Angeles	CA
Silver	Hydrogenics Corporation	Michel Archambault	Business Development & Sales Director	Mississauga	ON
Silver	Hyundai America Technical Center	Jerome Gregois	Powertrain Performance Manager	Los Angeles	CA
Silver	Intelligent Energy	Josh Mauzey	Senior Manager	Long Beach	CA
Silver	ITM Power	Geoffrey Budd	Agent for Canada and the USA	Surrey	BC
Silver	Johnson Matthey Fuel Cells	Anca Faur-Ghenciu	Development Program Manager, Fuel Cells	West Chester	PA
Silver	National Renewable Energy Laboratory - NREL	Keith Wipke	Group Manager and Senior Engineer	Golden	CO
Silver	NEL Hydrogen	Donna Rennemo	USA Agent	Cambridge	CA
Silver	Nuvera Fuel Cells	Lauren Armstrong	Marketing Communications Specialist	Billerica	MA
Silver	Powertech Labs, Inc.	Angela Das	Manager, Hydrogen Stations	Surrey	BC
Silver	Proton Onsite	Stephen Szymanski	Director – Government Business	Wallingford	CT
Silver	Rio Hondo College	John Frale	Alternative Fuels Education, Hybrid/Electric Vehicles	Whittier	CA
Silver	Schatz Energy Research Center	Peter Lehman	Director	Arcata	CA
Silver	Southern California Gas Company	Jeff Reed	Director, Emerging Technology	Los Angeles	CA
Silver	The Linde Group	Mike Beckman	VP & Head of H2 Fueling and Industrial Applications	New Providence	NJ
Silver	Total Transportation Services, Inc.	Tony Williamson	Director, Business Development & Marketing	Rancho Dominguez	CA
Silver	Toyota Motor Sales, USA, Inc.	Cindy Knight	Environmental Communications Administrator	Torrance	CA
New Busi.	GrupTello, S. de R. L.	Arturo Epstein	Director	Naucaipan	MEX
New Busi.	GTM Technologies Inc.	Michael Koonce	President	San Francisco	CA
New Busi.	Paramount Energy West LLC	Ed Hinders	Member	San Antonio	TX
New Busi.	PowerEnergy, Inc.	David Kepniz	Director of Sales and Marketing	Ivyland	PA
New Busi.	PowerDisc	Dag Hinrichs	VP of Business Development	Lake Oswego	OR
New Busi.	Terrella Energy Systems Ltd	John Kenna	Founder and President	Mission	BC
New Busi.	Trillium Energy Systems	Blake Putney	Executive Vice President	Palo Alto	CA
New Busi.	VNG	John Atkinson	Director of Regulatory and Government Affairs	Los Angeles	CA
New Busi.	Western Hydrogen	Mykola Makowsky	Project Engineer	Calgary	AB
Sole Prop.	Community Environmental Services	Mark Abramowitz	President	Yorba Linda	CA
Sole Prop.	Longhude 122 West, Inc.	Susan Schoenung	President	Menlo Park	CA
Sole Prop.	Zero Carbon Energy Solutions	Jay Keller	Consultant	Oskland	CA
Individual	Clean Air Now!	James Provenzano	President	Los Angeles	CA
Individual	EERGC Corporation	Mark Sheldon	Sr. Research Engineer	Huntington Beach	CA
Individual	Lilium Energy	Eaden Saw	Marketing Consultant	San Jose	CA
Individual	Mehta Associates	Ben Mehta	Owner	Cupertino	CA
Individual	O2Micro	Bill Densham	Director, Strategic Marketing	Santa Clara	CA
Individual	Pete Capital Partners, LP	Bruce Pate	Chief Investment Officer	San Francisco	CA
Individual	Praxair, Inc.	Jeff Richards	Key Account Manager	Wilmington	CA
Individual	Primidea Building Solutions, Inc.	Robert Desautels		Danville	CA
Individual	Ramco Consulting	Ram McCormack	President	La Jolla	CA
Individual	Richard Cromwell and Associates	Richard Cromwell III	President and CEO	Desert Hot Springs	CA
Individual	RIX Industries	Dave Savidge	Sales and Marketing Manager	Benicia	CA
Individual	Swagelok	Frank DiPane	Account Manager	Glendale	CA
Individual	The Leighty Foundation	Bill Leighty	Director	Juneau	AK
Individual	Third Orbit Power Systems, Inc.	Glenn Rambach	President	Cameron Park	CA
Individual	Transportation Power Inc	Paul Scott	Vice President, Advanced Technologies	Poway	CA
Individual	Witt Gas Controls Management	David Bell	President	Alpharetta	GA
Individual		Hank Wedas		Anaheim	CA
Individual		Anupom Ganguli		Arcadia	CA
Affiliate	California Stationary Fuel Cell Collaborative	Scott Samuelson	Co-Chair	Irvine	CA
Affiliate	CALSTART	Fred Silver	Vice President	Pasadena	CA
Affiliate	Coalition for Clean Air	Martin Schlageter	Interim Executive Director	Los Angeles	CA
Affiliate	Energy Independence Now	Tyson Eckerle	Executive Director	Santa Barbara	CA

APPENDIX C



CALIFORNIA HYDROGEN
BUSINESS COUNCIL

2013 CHBC Board of Directors Contact Information

Officers

Mark Abramowitz
(President)
Community Environmental Services
18847 Via Sereno
Yorba Linda, CA 92886
chbc@environmentpolicy.com
mobile: 714-936-6338

Robert Bienenfeld
(Vice President)
Assistant Vice President
American Honda
robert_bienenfeld@ahm.honda.com
business: 310-783-3056

Larry Stapleton
(Secretary)
Vice President, Sales
Ballard Power Systems
9000 Glenlyon Parkway
Burnaby, BC V5J5J8, Canada
larry.stapleton@ballard.com
business: 604-412-8607
mobile: 206-707-1348

Tyson Eckerle
(Treasurer)
Executive Director
Energy Independence Now
120 E. De la Guerra St., Suite B
Santa Barbara, CA 93101
tyson@einow.org
business: 805-899-3399

Directors at Large

Geoff Budd
Representative for the USA and Canada
ITM Power
1366 West 13th Ave. Suite 802
Vancouver, BC V6H 1N8, Canada
Gb@itm-power.com
business: 604-620-8525
mobile: 604-617-5588

Richard Cromwell, III
Clean Energy Fuels
P.O. Box 1207
Desert Hot Springs, CA 92240
rcromwell@cromwellandassociates.com
business: 760-329-6462
mobile: 760-799-8155

Mike Beckman
Vice President - Head of H2 Fueling and
Industrial Applications
Linde North America
michael.beckman@linde.com
business: 908-771-1692

Anca Faur
Development Program Manager, Fuel Cells
Johnson Matthey Fuel Cells
1397 King Rd
West Chester, PA 19380
ahencia@imusa.com
business: 610-232-1999
mobile: 484-354-8152

Andy Marsh
CEO
Plug Power
968 Albany Shaker Road
Latham, NY 12110
andy_marshall@plugpower.com
business: 518-738-0383
mobile: 518-817-7093

Bob Oesterreich
Director of Hydrogen Energy
Air Liquide Advanced Technologies
2700 Post Oak Blvd.
Houston, TX 77056
Bob.oesterreich@airliquide.com
business: 713-402-2161
mobile: 630-561-5792

Jeffrey Reed
Director – Emerging Technologies
Southern California Gas / SDG&E
555 W 5th St
Los Angeles, CA 90013
jgreed@semprautilities.com
business: 858-654-1123
mobile: 858-735-7590

Larry Watkins
SCAQMD
21865 Copley Drive
Diamond Bar, CA 91765-4182
lwatkins@aqmd.gov
business: 909-396-3246
mobile: 626-841-1883

Ex-officio Government Liaisons

Gerhard Achtelek
California Air Resources Board
1001 I Street
Sacramento, CA 95814
gachtelek@arb.ca.gov
business: 916-323-8973
mobile: 916-838-4220

Mike Kashuba
California Air Resources Board
1001 I Street
Sacramento, CA 95814
mikashuba@arb.ca.gov
business: 916-323-5123
mobile: 916-397-4906

Immediate Past President

Paul B. Scott, ScD
Transportation Power
12302 Kerran Street
Poway, CA 92064
pbscott2@gmail.com
business: 626-644-4171

Director Emeritus

Henry Wedaa
525 S. Anaheim Hills Road – A211
Anaheim, CA 92807
hankwedaa@gmail.com
business: 714-282-3226
mobile: 714-715-6750

Management

Jeff Serfass
CHBC Managing Director
jserrfass@californiahydrogen.org
business: 310-455-6095 x312
mobile: 202-549-0282

Emanuel Wagner
CHBC Assistant Director
ewagner@californiahydrogen.org
business: 310-455-6095 x360

James Provenzano
CHBC Senior Consultant
President
CleanAirNow!
jjpro@californiahydrogen.org
business: 310-472-8633
mobile: 310-308-9775

