



RHIA
RENEWABLE HYDROGEN ALLIANCE

2021 ANNUAL REPORT



**OUR MISSION –
PROMOTING THE USE OF RENEWABLE
ELECTRICITY TO PRODUCE HYDROGEN AND
CLIMATE NEUTRAL FUELS TO REDUCE
DEPENDENCE ON FOSSIL FUELS ACROSS
MULTIPLE SECTORS**



**LETTER FROM THE PRESIDENT
Don Ruff, RHA Board President**

It is my pleasure to introduce the Renewable Hydrogen Alliance's annual report of accomplishments for the year 2021. While it wasn't a huge improvement over 2020 as far as the pandemic was concerned, it was a year of continued policy, outreach and membership development success. We are proud that RHA continues to build its reputation as a reliable source of information and an effective and trusted advocate for promoting the production, distribution and use of renewable hydrogen in the Pacific Northwest. During 2021, RHA:

- Published the Pacific NW Renewable Hydrogen Action Plan;
- Advocated in the Washington and Oregon State legislatures on Zero Emission Vehicle (ZEV) transportation infrastructure, renewable hydrogen financial incentives and clean energy policy issues, among others;
- Served on state task forces and advisory committees to help shape policy and regulations for the burgeoning hydrogen sector;
- Brought on a new Executive Director;
- Added new Directors to the RHA Board;
- Continued to build membership; and
- Held our Renewable Power to Clean Fuels Symposium in person for the first time since 2019.

Every year has brought about more and bigger opportunities for renewable hydrogen to be a game changer in addressing climate change, and RHA is keeping up the pace to make sure that members and are informed, connected and ready to take advantage of those opportunities.

2021 also saw the realization of the work RHA began in 2020 on strengthening its organizational structure, stabilizing funding and ensuring that its goals, objectives and activities in the renewable hydrogen sector are in line with members' needs and expectations. With the hiring of RHA's new executive director, bringing on new board members and maintaining a strong level of engagement in the governance of RHA, the Board is making sure that RHA can fulfill its mission to accelerate using renewable electricity to create hydrogen and displacing fossil fuels across multiple sectors in the Pacific Northwest economy. Creating clean fuels from renewable electricity is crucial to effectively addressing the crisis of climate change. The Board pledges continued support for that mission and looks forward to meeting the challenges.

Sincerely,

Don

**NOTE FROM THE EXECUTIVE DIRECTOR
Michelle Detwiler, RHA Executive Director**

Adaptation: a change or the process of change by which an organism or species becomes better suited to its environment.



While we certainly had high hopes that 2021 would be a lot different than 2020 in terms of the pandemic, I think the term "adaptation" is a perfect word that captures our growing collective capacity to do the best we can within the ongoing and persistent pandemic related circumstances. When something as disruptive as a global pandemic persists as long as this one has, adaptation is not only inevitable, but necessary for survival.

As I began my tenure as RHA's second Executive Director, taking over from RHA's founder, Ken Dragoon, I had to adapt from being a member to being responsible for a variety of key decisions and actions to ensure that RHA continued to be a strong, well-respected and trusted organization. I made a point of reaching out and talking to every member, asking what do they like about being a member of RHA, what do they need, what could we do better?

I heard positive and encouraging feedback about how beneficial the introductions and connections we make for members have been, praise for our success in the legislature, how helpful it was to get information first about what is going on with renewable hydrogen in the Pacific NW and how we had so effectively raised awareness about renewable hydrogen. I also heard where we could improve including providing more regular information to members, increasing visibility of the organizational structure and decision-making processes, and giving members more engagement opportunities in the setting of our legislative agenda. In this report, you will find how we set about to meet these needs and requests.

During 2021, RHA continued to pursue legislation and regulations to position renewable hydrogen as a feasible, sustainable and practical solution to tackle climate change, and educated policymakers, advocacy groups, agency staff, and others about renewable hydrogen. We added to our legislative successes in both Oregon and Washington in 2021 and we kept a close eye on positive developments for hydrogen at the federal level for the benefit of our members.

The need to adapt to climate driven irreversible changes in our environment, weather, and vital services that allow us to live our lives adds to the urgency of our work at RHA. Hopefully the pandemic is finally in the rearview mirror and we can spend much more time together, learning from each other, cheering each other on, making important connections and accelerating the speed of new and innovative solutions to protecting people, our environment and our future. Wishing you the best and thank you for spending time to read about our work during 2021.

Sincerely,

Michelle

ADVOCACY, EDUCATION AND OUTREACH

2021 was a year of considerable growth in awareness of and interest in all aspects of hydrogen on the part of policymakers, businesses, the general public, the media and other stakeholders as a feasible way to reduce GHG emissions. RHA saw this first hand with more state legislators we met with being familiar with how hydrogen can be used to reduce emissions, the exponential growth in programs, funding and other announcements from the US Department of Energy's (DOE) Hydrogen Fuel Cell and Technologies Office (HFTO), and the greater number and diversity of stakeholder groups engaging on the subject of renewable hydrogen for the first time.

RHA testified at committee hearings in Washington and Oregon on bills related to:

- Cap and invest;
- Green ammonia, including a bill that would have developed a certification and labeling protocol for fertilizer products made from renewable hydrogen;
- Transportation electrification planning, where we continued to urge policy makers to ensure that renewable hydrogen fueling infrastructure for fuel cell electric vehicles is included in such planning; and
- Our Renewable Hydrogen Study.

To raise RHA's profile with the Oregon legislature, we invited and held one on one meetings with over two dozen legislators, all of whom showed a keen interest in learning more about the potential of renewable hydrogen to help the state meet its GHG and climate protection goals.

Federal Hydrogen Policy and Initiatives

With a new President in the White House and his cabinet setting the direction at the agency level came a new and historic priority policy focus on climate change and how to put the considerable resources of the federal government to work tackling this environmental and economic threat to human existence.

This policy focus has elevated the work that the US Department of Energy (DOE) has been doing for decades on hydrogen research, development and demonstration to a whole new level with exponential growth in funding and other opportunities not seen before. While RHA does not lobby at the federal level, we do consider it an important service to our members to keep them informed on activities regarding the hydrogen economy at the federal level and to ensure that we engage on their behalf, however possible to ensure they can benefit from those activities. To this end, RHA was quite active during 2021 participating in stakeholder meetings lead by HFTO providing feedback on hydrogen related policy and project activities in the Pacific Northwest.

Infrastructure, Investment and Jobs Act (IIJA) - As the White House was developing and negotiating the Infrastructure, Investment and Jobs Act (IIJA), sponsored by our own Oregon US Representative Peter DeFazio, and in anticipation of its passage, HFTO issued a Request for Information (RFI) on hydrogen hub demonstration project locations and feasibility. RHA consulted

with and compiled input on behalf of members to develop a response to the RFI highlighting the abundant renewable resources, affordable energy, interest on the part of Northwest Tribes in hydrogen and other quality attributes that would make the Pacific Northwest an ideal location for a renewable hydrogen hub. At the HFTO H2IQ Hour where the Director of HFTO and her staff provided an overview of the results of the RFI responses, RHA was quite pleased that the Director highlighted information provided by RHA in her presentation slide deck.

With the passage of the IIJA late in 2021 that includes \$9.5 billion in total funding to support the establishment of regional hydrogen hubs and advanced research in electrolyzer technology, the flurry of activity became more intense. RHA immediately engaged in discussions with members, federal and state agency staff, political consultants and other stakeholders around the planned funding opportunity to be released in Spring of 2022. We look forward to continuing our work with and on behalf of members to help develop a winning proposal for a Pacific Northwest renewable hydrogen hub and to provide input and guidance on other DOE initiatives related to development of a national hydrogen economy.

Federal Highway Administration Hydrogen (FHWA) Corridor Designations – RHA engaged with and submitted letters of support to the Washington and Oregon Departments of Transportation (WSDOT and ODOT) on their successful nominations for hydrogen corridor designations for major highways in both states.

Based on plans to produce renewable hydrogen and install refueling stations for hydrogen fuel cell electric vehicles in Washington, WSDOT nominated and FHWA designated the entire length of I-5 from the Canadian border to the Oregon state line as a Hydrogen-Pending Corridor,

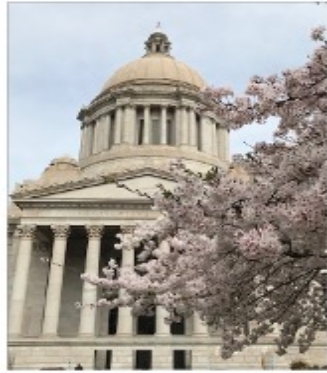


Source: Federal Highway Administration

connecting to Oregon's new Hydrogen-Pending Corridor on I-5 between Washington and California. Washington also received Hydrogen Corridor-Pending status on the entire length of I-90 from Seattle to Spokane (as indicated by the dotted line in the map above).

State Legislative Activity

Washington



The Washington legislature continued its climate policy progress building upon the 2019 passage of the Clean Energy Transformation Act by passing both a low carbon fuels standard and a cap and invest program in the 2021 session. Thanks to RHA's advocacy efforts, both of these programs include renewable hydrogen as an eligible compliance pathway to meet GHG reduction targets mandated by these programs. RHA worked to get several other bills passed that included and addressed renewable and green electrolytic hydrogen through a variety of policy and budgetary actions with strong bi-

Credit: M. Detwiler

partisan support for developing a clean hydrogen industry in Washington and the region. RHA supported legislative victories included:

HB 1091 Clean Fuels Standard (CFS) - Hydrogen is included as a clean fuel under the CFS and a carbon intensity (CI) calculation will be established for electrolytic hydrogen using the specific fuel mix provided by each utility participating in the CFS; the bill also includes capacity credits for hydrogen fueling infrastructure development.

SB 5000 Fuel Cell Electric Vehicle Tax Exemption - Beginning July 1, 2022, SB 5000 removes the Manufacturer's Suggested Retail Price (MSRP) eligibility cap on the sale or lease of a new passenger, medium duty passenger, and light duty truck fuel cell electric vehicle (FCEVs) for a 50% sales and use tax credit based on the purchase price or fair market value at the time of the sale or lease.

For used passenger, light duty trucks and medium duty passenger FCEVs, 100% of the sales and use tax is exempted up to a market value of \$16,000. The number of vehicles sold to be eligible for the credit is capped at 650.

Over \$7 million appropriated for hydrogen infrastructure including fueling station and fuel cell backup generation projects.

Over \$16 million appropriated for competitive grant programs that include hydrogen related infrastructure and vehicle end use market development opportunities.

Oregon



Credit: M. Steinkusz

Oregon also saw progress on the legislative front related to renewable hydrogen with the passage of Senate Bill 333, an RHA request bill for a renewable hydrogen study to be conducted by the Oregon Department of Energy (ODOE). We believe the findings of this study will help to form the basis for policy recommendations that the legislature could take up to create more momentum in the development of the industry in Oregon. RHA also supported renewable hydrogen language added to an offshore wind planning bill that passed. As in Washington, both of these bills received strong bi-partisan support.

Other bills included:

HB 2165 Utility Transportation Electrification Funding - This bill raised the MSRP cap on FCEVs to 60k from 50k for eligibility for the Charge Ahead ZEV vehicle rebate.

House Bill 3055 Omnibus Transportation Bill - This bill allows NW Natural to recover costs from investments in transportation infrastructure that support vehicles fueled by hydrogen or renewable natural gas.

State Regulatory Activity

In addition to engaging in and commenting on various regulatory proceedings in Washington and Oregon, RHA was also sought out and appointed to two key stakeholder and rules advisory committees.

[Oregon Department of Transportation \(ODOT\) Hydrogen Pathways Study](#) – RHA participated in ODOT's Hydrogen Pathways Study stakeholder group providing input on the recommendations being developed for building out FCEV infrastructure in Oregon and the timeline. The study outlines recommendations if 5-10 percent of zero emission vehicles are hydrogen fuel cell electric vehicles by 2035.

[Oregon Department of Environmental Quality \(DEQ\) Clean Fuels Program \(CFP\) Expansion](#) – Late in 2021, RHA was appointed to the Rules Advisory Committee (RAC) to advise on the rulemaking for expanding the Clean Fuels Program. The purpose of the rulemaking is to propose changes to the Clean Fuels Program regulation. Changes may include:

- The expansion of the annual average carbon intensity reduction targets beyond 10% and beyond 2025;
- Modifications to the program that will support achievement of the new standards;
- Other modifications to improve the effectiveness of the Clean Fuels Program.

The RAC was not schedule to begin work until 2022 and as a result will be reported in our 2022 Annual Report.

Outreach and Education

2021 Renewable Power to Clean Fuels Symposium

In August 2021, RHA finally was able to hold our Renewable Power to Clean Fuels Symposium in person again which hadn't happened since May 2019. The Symposium was put on as a "hybrid" in person and virtual event in partnership with the Columbia Willamette Clean Cities Coalition's Green Transportation Expo at the Tacoma Convention Center.

The one day event included panels on Washington and Oregon renewable hydrogen policy, projects, industrial uses and how to decarbonize the Pacific Northwest energy system with clean fuels. Panelists represented key sectors and businesses all looking at or directly involved in hydrogen projects, technologies and/or equipment manufacturing including, Microsoft, Ballard, Nel Hydrogen, Puget Sound Energy, Tri-Met, All American Marine and Klickitat Valley Hospital. Senior ranking legislators from Oregon and Washington and state agency representatives also joined us to discuss what has been accomplished at the state level to support and grow the renewable hydrogen sector and what still needs to be done.

"The Symposium was well done and so valuable. The legislative panel was informative, the presentations by Mitsubishi, Obsidian Renewables, Chris Wood and All American Marine were really great. Most of all, it was so nice to see people in person! Thanks for your work to put it on."

- Chris Crowley, Northwest Green Hydrogen



Alan Mace, Ballard Power presents on the Clean Fuels in Industrial Uses in the PNW panel



L to R: RHA Executive Director Michelle Detwiler, WA Rep. Ed Orcutt, WA Senator Reuven Carlyle and OR Senator Michael Dembrow



Ray Johnson presents on Tacoma Power's first in the nation electrofuels tariff

We also got to tour the exhibit floor and see fuel cell vehicles of all classes.



Michelle in a Toyota Mirai FCEV

Women in Hydrogen

In 2020, Martina Steinkusz, RHA's Director of Market Development, and Sandra Safro of K&L Gates' Washington, DC office (and the Hydrogen Rising podcast) co-founded North American focused Women in Hydrogen (WiH). This group meets once per month and brings together women working in the hydrogen field from all over the country and in all professional capacities to get to know each other, share updates on what they and their organizations are working on, professional development advice and challenges, and just take time to enjoy some comraderie and connection.



In 2021, WiH organized the first annual event for National Women's Day (March 8) that brought together women and male allies in hydrogen to discuss the state of the industry and trends for its growth and success. The event featured speakers from Tacoma Power, Nel Hydrogen, EPRI, DOE's HFTO and many others. On National Hydrogen

Day (Oct 8) the group hosted a research focused hydrogen event inviting women from the University of Oregon, Gas Technology Institute and the Baker Institute for Public Policy. In addition, the group organized three in-person networking events in Portland, OR, Tacoma, WA and Washington DC.

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Media

RHA continued to be sought out for interviews with major industry publications such as *H2 View*, as well as by local and regional media outlets such as *Oregon Business Magazine* and the *Casper Star-Tribune*. Virtual and in person conference presentations included the World Hydrogen Leaders conference, Hawaii Energy conference, the Oregon Solar Energy Industries Association Annual conference, Western Green Hydrogen Initiative Summer Workshop, Hydrogen Industrial Series North America and the National Association of Regulatory Utility Commissioners (NARUC) Annual Meeting and Education conference.

RHA also lent its voice to raise awareness on national and international issues during 2021. RHA signed on to a letter to encourage the United State Postal Service to procure more zero emission vehicles to replace its aging gas and diesel fleet. We also signed on to a media statement along with other global hydrogen industry groups calling on COP26 participating nations for clarity on policy to support investment in hydrogen and unlock new collaborations for action on hydrogen to support net zero targets.

SIGNIFICANT PROJECTS

Douglas County Public Utility District Electrolyzer Project



Photos courtesy Douglas PUD

One of the most significant and visible signs of RHA's successful legislative advocacy was the groundbreaking in March 2021 of Douglas County PUD's renewable hydrogen electrolyzer project. The PUD was able to undertake this project as the result of passage in 2019 of Washington Senate Bill 5588 which granted PUDs the authority to use customer funds to produce and sell renewable hydrogen.

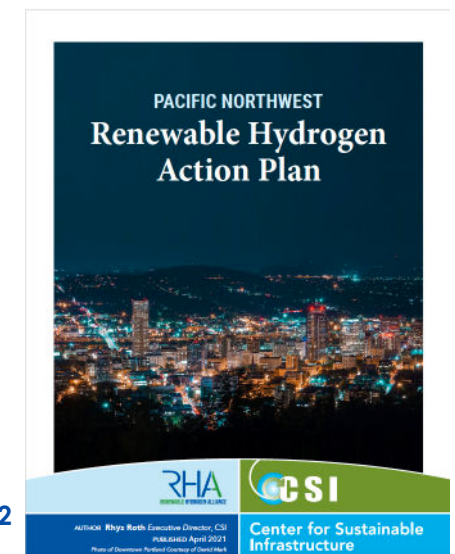
The PUD is installing a Cummins 5 megawatt (MW) electrolyzer that will be powered with surplus energy from its Wells Dam in East Wenatchee, WA. The PUD secured several commitments to sell the hydrogen it will produce, including to a new hydrogen fueling station planned for Chehalis, WA just off of I-5.

Pacific Northwest Renewable Hydrogen Action Plan

In the Spring of 2021, RHA, in coordination with the Center for Sustainable Infrastructure (CSI) released the [Pacific Northwest Renewable Hydrogen Action Plan](#). The Plan offers a strategic agenda for policy, projects, and research to scale up renewable hydrogen production and use in the region. The Plan includes recommendations for both short term and long term actions to grow a viable renewable hydrogen sector in the Pacific Northwest and realize the climate, economic and social benefits that renewable hydrogen offers the region and the planet.

“The purpose of the Action Plan is to accelerate the deployment of RH2 in the Pacific Northwest, and realize the climate, economic, environmental and social benefits that RH2 offers the region and the planet.”

- Rhys Roth, Founder, CSI



“Every step counts toward building a hydrogen economy. For decades, Toyota has developed hydrogen powered fuel cell electric technology, so being part of this visionary initiative has the potential to scale hydrogen in the region; thus, benefiting the economy and creating a path toward carbon neutrality.”

- Michael Lord, Sustainability and Regulatory Affairs Executive Engineer, Toyota Motors North America

“We want to put a spotlight on what is already being done to advance the RH2 sector and recommend a pathway for success into the future.”

- Michelle Detwiler, Executive Director, RHA

MEMBER COMMITTEES

Members provide valuable input and information to RHA and to each other through their participation in member-only committees. This information guides and informs RHA's work and decision making on behalf of members in fulfilling its mission—advocating for beneficial policy, creating economic opportunity and jobs, and producing positive environmental impact throughout the Pacific Northwest. Members are welcome to join as many committees as they wish and we strongly encourage as much participation as possible. Committee participation is one of the most effective ways for members to understand and help develop RHA's work on their issues and interests and access information on the latest developments in the renewable hydrogen sector.

Three committees were active during 2021: Policy, with Oregon and Washington subcommittees; Commercial Development with the Transportation subcommittee, and Technical.

Policy Committee

The Policy Committee meets about four times a year and provides information to members on relevant legislative and regulatory issues and activities that potentially affect RHA members in Oregon, Washington, Idaho and Montana. The Oregon and Washington subcommittees meet monthly and provide information and updates to members on the legislative and regulatory activities in these two states where RHA actively engages in advocacy. A key function of the policy committee is to solicit input and recommendations from members on the development of RHA's legislative issue agenda for upcoming legislative sessions.

In 2021, the Policy Committee heard updates on federal policy as it relates to the regulation of pipelines, the Infrastructure, Investment and Jobs Act, and federal tax incentives for hydrogen. It

also heard updates on developments in California hydrogen related legislation and regulation as well as hydrogen related legislative activity in Montana and British Columbia.

In the Oregon and Washington subcommittees, members were regularly kept informed on the progress of proposed legislation beneficial to renewable hydrogen related to low carbon fuel standards, tax incentives for clean energy projects including renewable hydrogen projects, appropriations for hydrogen fueling infrastructure and many other issues. Members also provided valuable input and review in order to shape and develop RHA's legislative agenda for the 2022 sessions.

Commercial Development

Each of the Commercial Development committee's monthly meetings features a presentation by a member on a project they are planning or that is in one or another stage of development or construction. This is an excellent forum for members to share information about project successes, challenges, resource needs, and best practices. Challenges reported in project development, construction or financing can sometimes reveal policy or regulatory gaps and generate RHA legislative requests. Within the Commercial Development committee is also a Transportation subcommittee that focuses on educating members about renewable hydrogen applications in the transportation sector including latest technology developments, projects, and funding opportunities.

Members presenting to the committee in 2021 included:

- Toyota
- Scottish Hydrogen and Fuel Cell Association
- Nel Hydrogen
- Standby Systems
- HydroStar

Technical

The Technical Committee provide updates to members on technical and technology developments in the renewable hydrogen industry and serves as a forum for members to share information and request input on technological advancements and challenges, resource needs, and best practices.

Members presenting to the committee in 2021 included:

- K&L Gates
- NW Natural
- Mitsubishi Power

MEMBERSHIP

By the end of 2021, RHA had added 10 new members to our growing membership that represents electric and gas utilities, clean energy and transportation advocacy organizations, project developers, law firms, consultants, transit agencies, and manufacturers of hydrogen electrolyzers, fuel cells, and fuel cell vehicles. Our members join RHA for many reasons - to learn about the industry, support our advocacy for clean energy and clean transportation policies, support our efforts to create a successful renewable hydrogen sector through policy and regulatory changes that reduce economic barriers to their business success, get connected with potential business partners and/or funding sources, and amplify our messages to educate policymakers, stakeholders and the general public about the versatility of renewable hydrogen.

"I know RHA works hard to provide great information to their members and make sure we're visible anywhere and everywhere hydrogen related activities are going on in the NW and it shows!"

- John Gentile, Cascadia Technologies

New members who joined in 2021 (a full list of members can be found at the end of this report):

- | | |
|----------------------------------|---|
| Colorado Hydrogen Network | Novo Hydrogen |
| Countrywide Renewables | Oregon Coast Energy Alliance Network (OCEAN) |
| Daroga Power | Pacific Northwest National Laboratory |
| HTEC | Scout Clean Energy |
| The Leighty Foundation | Standby Systems |

LOOKING FORWARD

In 2022 RHA will continue to educate and bring our message to decision-makers ranging from elected officials and CEOs to clean energy advocates and social and environmental justice groups. We'll continue to build understanding and consensus among diverse and non-traditional groups and stakeholders about the importance of a viable and sustainable renewable hydrogen industry.

RHA looks forward to participating in the 2022 Oregon and Washington legislative sessions, advocating for favorable legislation that supports development of the industry. RHA plans to advocate for and support proposed legislation including the addition of a definition of green electrolytic hydrogen based on the definition in California statute into all Washington statutes where renewable hydrogen is defined and included. RHA will also work on policies to streamline the process for siting renewable hydrogen projects, and establishing a statewide strategy for accelerating the development of a renewable hydrogen industry in Washington state.

While we have not yet been successful in securing Governor proclamations in our region declaring state recognition of October 8th as National Hydrogen Day, we will continue our annual pursuit of this goal.

JOIN US!

Our members are the strength of our organization. We invite you to join us in creating viable and sustainable multi-sector decarbonization solutions to protect our planet for future generations.

- | | | |
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| 3Degrees | Douglas County PUD | NW Natural |
| Andioma | Electrify Now | Obsidian Renewables |
| Ballard Power Systems | Eugene Water & Electric Board | Oregon Applied Research |
| Barlow Strategies | Forth Mobility | Phoenix Finance |
| Bonneville Environmental Foundation | FortisBC | Portland General Electric |
| Cable Huston | H2B2 USA | Nel Hydrogen |
| California Hydrogen Business Council | Jeff Hammarlund | Puget Sound Energy |
| Canadian Hydrogen and Fuel Cell Association | Christopher Hinton | Renewable Hydrogen Canada |
| Center for Energy Efficiency and Renewable Technologies | HydroStar US | Renewable Northwest |
| Center for Hydrogen Safety | K&L Gates | Ian Richardson |
| Center for Transportation and the Environment | Klickitat County PUD | Roberto Ruiz |
| Colorado Hydrogen Network | McDowell Rackner & Gibson | Solar Oregon |
| Columbia HyFuel | Eric Mick | Southern California Gas Company |
| Columbia-Willamette Clean Cities Coalition | Mitsubishi Power Systems | Tacoma Power |
| Confederated Tribes of the Umatilla Indian Reservation | Nikola Motor Company | The Warren Group |
| | Northwest Energy Coalition | Toyota Motor North America |
| | Northwest Green Hydrogen | TriMet |
| | Nowland Services | Vashon Climate Action Group |
| | | US Hydrogen Alliance |



To find out about joining RHA, please visit: <https://renewableh2.org/become-a-member/>.
To see more of our achievements and learn more about renewable hydrogen, visit: renewableh2.org.

RHA is a non-profit 501(c)(6) organization based in Portland, Oregon, established to advocate using renewable electricity to produce hydrogen and climate-neutral derivatives to reduce dependence on fossil fuels.

RHA engages in education and outreach to utilities, the renewable energy and environmental communities, regulators, legislators, and others, promoting climate-neutral fuels from renewable electricity as critical to reaching climate change goals, and serving as a renewable hydrogen information clearinghouse.

Renewable Hydrogen Alliance
(503) 386-2010 | renewableh2.org

To save resources and reduce our impact on the environment, this report is available in electronic form only. Please print responsibly.