Clean Energy Transition Institute

Mission, Purpose, Goals

Clean Energy
Transition Institute

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Clean Energy Transition Institute

Mission

The Clean Energy Transition Institute's mission is to accelerate the transition to a clean energy economy in the Northwest by advancing economic deep decarbonization strategies. Our vision is to decarbonize the Northwest economy at the speed and scale that climate science requires.

The Institute provides research and roadmaps for the pathways to a low-carbon economy; offers an information clearinghouse for decarbonization solutions and technologies; and convenes stakeholders to facilitate the shift to clean energy in the Northwest.

Purpose

The role of the Clean Energy Transition Institute is to:

- Provide research and analytics on the pathways to a clean energy, low-carbon economy
- Offer an information clearinghouse for decarbonization solutions and technologies
- Convene stakeholders to facilitate the shift to a low-carbon economy in the Northwest

Value Proposition

The Institute was founded on February 8, 2018 to provide analytics for policymakers to understand how to accelerate the clean energy transition. We communicate findings about the transition clearly to people not immersed in the deep decarbonization pathways. We convene stakeholders to examine and resolve specific trade-offs on decarbonization and to remove barriers to accelerating the transition.

The Institute is upstream of the legislative process and adds value by being an independent, nonpartisan entity with the core competencies of skilled analysis and research abilities; seasoned facilitation skills; project management; communications expertise; and training in framing questions and translating complex issues into comprehensible formats.

Geographical Focus

The Clean Energy Transition Institute is headquartered in Seattle, Washington and focuses primarily on the four Northwest states—Idaho, Montana, Oregon, and Washington, and we recognize that our work is relevant in other states where deep decarbonization is a goal.

Audience

The Clean Energy Transition Institute supports Northwest decision-makers engaged in passing climate and clean energy policies and building the clean energy economy:

- Non-governmental organizations and advocacy groups that work on energy and climate
- State, regional, and city level elected officials, their staff, and agencies crafting policies and developing strategies to meet carbon emission reduction targets
- Utilities and public utility commissions
- Clean tech industry and businesses incorporating climate change into their plans
- Climate and energy experts and academicians
- Philanthropic funders and investors in the clean energy transition

Situation Analysis

With unassailable evidence of global climate change mounting and a diminishing window of time to steer the world toward rapid decarbonization,[1] there must be a swift acceleration of the clean economy. While thousands of nations, states, cities, and businesses have set a wide range of aspirational carbon emission reduction goals, the challenge of achieving them is increasingly dawning on policymakers.

The last decade witnessed considerable focus on carbon pollution reduction strategies. To achieve a low-carbon future, deep energy efficiency and managing energy demand are critical throughout all energy systems. Electricity supplies must become as close to 100 percent clean as possible and nearly all heating and cooling for buildings and many transportation systems must be electrified to take advantage of an increasingly clean grid. Lower carbon fuels, such as hydrogen or biofuels, must be deployed to power aviation and marine and other carbon-intensive systems that are harder to electrify.

New business models for utilities are required to enable the transformation. Electrifying the transport sector with clean electricity commands a massive overhaul of the vehicles and fueling infrastructure currently in place. Technology and automation are part of the solution set yet bring a variety of challenges with regard to privacy and job shifts, among others. Questions abound about how the transition will take place, among them:

- What does this transformation entail and how is it financed?
- What is the role of utilities in a deeply decarbonized world, and that of the technology companies providing the innovation and solutions to spur the clean energy transformation?
- What policies do state legislatures need to adopt in lieu of a national climate and energy strategy, while the Trump Administration and a Republican-controlled Congress attempt to methodically dismantle America's clean energy efforts?
- What clean energy and carbon-reduction strategies can cities and other local jurisdictions implement to prove the clean energy transition is achievable, reduce emissions, and set the stage for when the United States gets serious about rapidly decarbonizing and these efforts can be scaled and multiplied?
- How can we grow a clean energy workforce that brings evenly shared economic prosperity throughout the nation while transitioning fossil-fuel dependent communities?

Existing players in energy system arenas, such as fossil fuel companies and utilities, have vested interests in outcomes that prolong the use of their assets. They are not incentivized at this juncture to decarbonize, and without meaningful carbon pricing throughout the United States, they continue to promote the carbon-polluting technologies that built the 20th Century, eschewing, if not blocking, the clean energy technologies that will define the 21st Century.

Increasingly, policymakers, states, cities, and businesses have come to realize that decarbonization is a complex matter that requires careful analysis, up-to-date information on rapidly evolving technologies, and opportunities to convene, learn, and collaborate to create a decarbonized future that makes sense for their specific energy conditions. They require energy systems expertise from individuals and organizations whose primary interest is in achieving a low-carbon future.

Having an independent, climate-focused entity that is technology-agnostic and willing to take a hard look at the choices involved in pursuing a deeply decarbonized future provides valuable information for the debates about: the use of fossil fuels in energy systems through 2050; the challenges of

[1] Jeff Tollefson. April 25, 2018. *Nature*. "Can the world kick its fossil-fuel addiction fast enough?" https://www.nature.com/articles/d41586-018-04931-6

decarbonizing the transport sector; how to clean the electricity grid for energy systems overall to become as decarbonized as possible by 2050; the role of nuclear energy; the role of natural gas; the role of carbon sequestration and biological carbon, among many other challenging issues that must be addressed to attain a clean energy revolution.

This is the focus of the Clean Energy Transition Institute. The Institute will examine the best practices from states and countries leading the clean energy transition. It will provide credible information and reports and serve as an honest broker for the advocacy community, utilities, governmental organizations, and other institutions engaged in the clean energy economy.

Focus Areas

The Clean Energy Transition Institute has three focus areas: the low-carbon pathways, urban carbon pollution reduction, and developing a clean energy economy workforce:

Low-Carbon Pathways

The Institute released its first study on June 5, 2019, *Meeting the Challenge of Our Time: Pathways to a Clean Energy Future in the Northwest*, a deep decarbonization pathways study for Idaho, Montana, Oregon, and Washington (NWDDP study). The NWDDP study is the Institute's keystone that demonstrates its value proposition as a skilled research and analysis entity and points toward several follow-on activities to implement the study's findings.

The Institute is convening a series of meetings to ensure that the NWDDP study conclusions are understood by the key policymakers:

- The Northwest electricity grid must be 96% clean no later than 2050, but more effectively by 2035;
- 100% of all passenger vehicles must be electric starting with sales in 2035; 60% of medium-duty and 40% of heavy-duty vehicles must be electric by 2050;
- Building electrification and with deep energy efficiency are critically important solutions, as is the need to eradicate natural gas for heating spaces and water.
- Grid transmission between the Northwest and California must be better integrated to for a cost savings of $11.1 billion
- Biomass supplies in the Northwest must be accurately assessed and allocated to the hardest sector to decarbonize: aviation and diesel for long-haul trucking
- Emerging technologies to produce synthetic fuels will be required starting in 2040, so investment and R & D are necessary in 2020

Urban Clean Energy

With cities consuming approximately 70% of global energy and projected to house roughly 60% of the global population by 2030, it is crucial that local communities lead in greenhouse gas reduction. Cities are on the front lines of climate change and have demonstrated more willingness than other branches of government to act on climate. Local governments are responsible for providing basic services, infrastructure, and economic development, and they are the level of government that citizens interact with most closely.

Each community is unique; each state has its own set of laws and economic assets, challenges and opportunity; and each region of the country varies significantly in terms of its energy sources and uses, and therefore the decarbonization solutions that will work best for them. This variability presents challenges for scalability and solutions, as there is no one-size-fits-all approach to apply. However,

aggregated demand for concentrated action on climate in state and cities is paramount at this time when the country's leadership has backed away from addressing carbon pollution.

What is the best role of city resources, capacity, and political influence, particularly given the urgency of addressing climate change? While it is true that cities are not using their largest levers to full effect—namely, their power to direct land use and transportation planning—an honest assessment of what cities can affect is required, one that reflects how carbon emissions are generated, where the authorities lie to reduce its generation, and the role cities play within that framework.

The Clean Energy Transition Institute's Founding Executive Director has nearly a decade of experience helping Northwest communities implement decarbonization strategies through Climate Solutions' New Energy Cities program[2] and producing reports[3] analyzing urban low-carbon strategies. Since Climate Solutions ended the New Energy Cities program in 2016, Ms. Quigley continued working with Northwest cities in partnership with Stockholm Environment Institute. This work will be folded into the Clean Energy Transition Institute to provide advice to Northwest cities on specific carbon emission reduction strategies, while also publishing reports, giving presentations on urban clean energy solutions, and convening local government stakeholders to learn how to accelerate deep decarbonization in cities.

Clean Energy Workforce

In the coming three decades, as the United States decarbonizes by investing in clean, renewable electrical power; electrifying as many vehicles and industrial processes as possible; radically reducing building energy intensity with market-based solutions; and swapping fossil fuel sources for low-carbon alternatives for transportation, the clean energy job market is anticipated to expand exponentially. This massive transition requires a coherent workforce development strategy, combined with dedicated funding and well-designed labor market policies, to ensure that United States workers receive the skills, training, and education to succeed in the clean energy economy.

The International Renewable Energy Agency (IRENA)'s fourth Annual Review of Renewable Energy and Jobs[4] released in May, 2017 predicted that the number of people working in the renewables sector around the world could reach 24 million by 2030, more than offsetting fossil-fuel job losses and becoming a major economic driver around the world. However, IRENA cautions that "[s]ignificant effort in training and education is needed to provide the labour market with the required skills."

The 2019 U.S. Energy and Employment Report (USEER),[5] a comprehensive survey of 30,000 American energy business representatives conducted by BW Research Partnership previously on behalf of the U.S. Department of Energy and now for Energy Strategies and the National Association of State Energy Officials (NASEO), expects a 4.6% growth in employment in renewable and energy efficiency sectors in 2019, with the highest growth anticipated in energy efficiency jobs.

[2] Climate Solutions' New Energy Cities program. https://www.climatesolutions.org/programs/new-energy-cities

[3] See the following publications: "Revolution Required: Meeting Current and Future Energy Challenges" (2015); "Urban Clean Energy Revolution" (2015): "Powering the New Energy Future from the Ground Up" (2012); "Energizing Cities: New Models for Driving Clean Energy Investment" (2010). https://www.cleanenergytransition.net/publications

[4] International renewable Energy Agency (IRENA). May 2017. Renewable Energy and Jobs Annual Review 2017. http://www.irena.org/DocumentDownloads/Publications/IRENA_RE_Jobs_Annual_Review_2017.pdf

[5] The 2019 U.S. Energy & Employment Report, A Joint Project of NASEO & EFI. March 6, 2019. https://static1.squarespace.com/static/5a98cf80ec4eb7c5cd928c61/t/5c7f3708fa0d6036d7120d8f/1551849054549/USEER+2019+US+Energy+Employment+Report.pdf

Further the 2019 USEER reported that 77% of employers had difficulty hiring qualified workers in 2018, an increase of approximately 7 percentage points from 2017. Twenty-nine percent of employers said it was "very difficult," compared with 26% in 2017.

In addition, the energy sector—particularly the utility sector—must address the "graying" of its workers as baby boomers born between 1946 and 1964 retire. According to the U.S. Department of Labor, the average age of utility workers was over 50 in 2018.[6] Estimates range from 38 percent of utility workers retiring by 2024[7] to more than 50 percent turning over by 2021.[8] According to Power Engineering,[9] "[b]y most accounts, the power sector will need more than 100,000 new skilled workers by 2018 to replace those retiring workers. But attracting new talent has become an arduous undertaking as the industry faces a shortage of qualified workers and increased competition for college graduates."

Recognizing that one-third of oil reserves, one-half of gas reserves, and over 80% of current coal reserves should remain in the ground and not be burned to stave off the direst climate change consequences,[10] attention must be paid to transitioning the 1.1 million employees that the USEER identified as working in traditional coal, oil, and gas industries in 2016.

In addition to the imperative to transition from a carbon polluting to a clean energy economy, the United States must address income inequality and unevenly shared prosperity. The transition to a clean energy economy cannot come at the expense of those least able to adapt and in fact, concerted efforts are required to ensure that those lacking economic opportunity and access to jobs are trained to receive the jobs that the clean energy economy creates.

Goals

The Clean Energy Transition Institute's 2019 goals are as follows:

1. **Advance the NWDDP Study Findings and the Institute's Value Proposition:** Advance action on decarbonization through ongoing presentations of the NWDDP study; convenings of key stakeholders to create frameworks and policies to accelerate action on decarbonization; and **communication** about the Institute's work.
2. **Co-Develop Transition from Gas Project with Community Partners:** Develop a pilot project for examining the equity component of incorporating equity considerations into decreasing natural gas in buildings with community partners.
3. **Map the existing clean energy projects and companies in the Northwest.** Create an interactive map indicating where clean energy activities are underway in the Northwest and their economic impact in different state legislative districts.
4. **Sustainable Growth and Organizational Capacity:** Raise adequate funds for the Institute to hire staff to accomplish its mission.

[6] Eva Marie Schulte. IBM Energy & Utility Industry Blog. January 10, 2018. "Preparing for the Aging Utility Workforce." https://www.ibm.com/blogs/insights-on-business/energy-and-utilities/preparing-aging-utility-workforce/#_edn2
[7] Center for Energy Workforce Development. Gaps in the Energy Workforce Pipeline 2013 Survey Results. http://www.cewd.org/Documents/2013CEWDSurveyExecutiveSummary.pdf
[8] 13 WHOTV.com. February 24, 2016 "Utilities Industry Working to Attract Young People in 'Graying-Out' Workforce" http://whotv.com/2016/02/24/utilities-industry-working-to-attract-young-people-in-graying-out-workforce/
[9] Power Engineering. December 13, 2014. "Who Will Replace Power's Aging Workforce?" https://www.power-eng.com/articles/blogs/power-points/2014/12/who-will-replace-powers-aging-workforce.html
[10] University College, London. Phys.org. January 7, 2015. "Which fossil fuel reserves must stay in the ground to avoid dangerous climate change?" https://phys.org/news/2015-01-fossil-fuel-reserves-ground-dangerous.html

Board of Directors

The Clean Energy Transition Board of Directors met on February 7, 2018 to incorporate, choose officers, appoint an Executive Director, and approve Articles of Incorporation. The founding Board is comprised of the following climate and clean energy leaders:

Jabe Blumenthal: A Seattle native and resident, Jabe graduated from Yale University in 1982 with a degree in Applied Mathematics and went to work for Microsoft, designing the first version of Excel and becoming the company's first Program Manager. In 1994 he left Microsoft to teach mathematics and physics at his alma mater, Lakeside High School in Seattle, where he was the Head of the Science Department until the end of the 2003 school year. He is active in land conservation efforts in the West Coast, especially in the successful effort to protect the Loomis Forest in northeastern Washington, as well as in many regional environmental and political endeavors and campaigns.

Marc Daudon: Principal and co-founder of Cascadia Consulting Group, Marc has over 25 years of international environmental consulting experience, with expertise in the fields of sustainability, resource conservation, waste management, energy, climate change, and strategic planning. Marc helps public and private sector clients design and implement strategies to achieve their sustainability goals. Marc has a Masters in Public and Private Management from Yale University and a BA in Government and Legal Studies from Bowdoin College. He is Chair Emeritus of the Board of Washington Conservation Voters and serves on the boards of the Washington Environmental Council and Climate Solutions.

Ross Macfarlane: Ross brings more than 30 years of experience working on public policy and environmental issues. He was a partner at Preston Gates & Ellis (now K&L Gates) where he managed the environmental law practice and represented a wide range of public and private clients. Ross managed Climate Solutions' Business Partnership Program until spring 2016, helping to build support in the region's corporate community for strong climate and energy policy and private investment in solutions. Ross also led Sustainable Aviation Fuels Northwest, the first stakeholder roadmap for cleaner fuels to power the next generation of flight. Ross was selected by business and community leaders as a "Pivotal Leader," which recognizes individuals who have the skills and experience to drive the region's clean energy economy. A Northwest native, Ross is a graduate of Pomona College and the University of Washington School of Law.

John McGarry: John moved to Seattle in 2015 after a 25-year career as an investment banker in New York, Hong Kong, and Chicago. His most recent role was as a senior banker raising capital for U.S. companies in the Healthcare, Consumer Products, and Retail industries. John is a partner at Social Venture Partners and currently serves on the environmental new grant committee. He was a Fellow in the Northwest Conservation Philanthropy Fellowship program in 2015 and is a member of E8, a clean-tech angel investor group. John holds a Masters in Business Administration from the University of Chicago and a Bachelor of Arts in Economics from Northwestern University.

Staffing and Operations

Founding Executive Director Eileen V. Quigley is a seasoned executive leader of for-profit and nonprofit businesses, and a proven entrepreneur. The Clean Energy Transition Institute is her eighth start-up venture. Quigley worked at Climate Solutions from 2009-2016, serving as Director of Strategic Innovation, overseeing the New Energy Cities, Sustainable Advanced Fuels, and Northwest Biocarbon Initiative programs, and as Deputy Director.

In recognition of her expertise in city-led clean energy innovation, Quigley was invited to deliver a paper and presentation, *Revolution Required: Meeting Current and Future Energy Challenges*, at Kühne Logistics Universität in Hamburg, Germany in May 2015. She is the author of several papers on clean energy solutions and was instructor at Western Washington University's Institute for Energy Studies, where she taught the low-carbon pathways.

Prior to joining Climate Solutions, Quigley was a division head in a technology company with P & L responsibility for seven years; ran a national nonprofit advocacy organization composed of a 501(c)(3), a 501(c)(4), and a for-profit entity, as well as two nonprofit organizations in Seattle; and was a national political and business reporter for television and print outlets. She has extensive experience with budgeting and fundraising, as well as hiring and managing diverse teams.

Quigley currently serves on the board of Stockholm Environment Institute-US; the advisory board of the University of Washington's Clean Energy Institute; and on the Advisory Board of Western Washington University's Institute for Energy Studies, where she also co-teaches a winter quarter course on deep decarbonization. She received her Master of Science in Journalism from Columbia University and her Bachelor of Arts in Literature from Yale University.

Personnel in addition to Quigley in 2019 include Evolved Energy Research, the consulting firm that produced the Northwest Deep Decarbonization Pathways study, and the Institute's Team: Digital Communications Manager Caleb Smith; Research Assistant Nicole Larson; and Communications Consultant Brad Kahn of Groundwork Strategies.

Conclusion

Time is short to reduce carbon emissions throughout the world at the scale the climate crisis requires. The Northwest has a head start in decarbonizing with its relatively clean electricity supply. If the Northwest cannot achieve deep decarbonization, it is questionable whether other parts of the nation can. Its proximity to California—the country's leading state in the transition to a clean energy economy—offers a significant opportunity to demonstrate all along the West Coast how decarbonization can proceed in the coming decades.

The decisions made now will determine whether the United States embraces the clean economy and does its part to ensure a livable climate for humanity and biodiversity. Those decisions must be informed by the most up-to-date, reliable, unbiased economic and technical information, as well as a robust dialogue among key decision-makers. The Clean Energy Transition Institute aims to provide that information and convening function to ensure the clean energy transition proceeds as quickly as possible in the Northwest and demonstrate that we can and will achieve a low-carbon economy.