Clean Energy Transition Institute

Mission, Purpose, Goals

Clean Energy Transition

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Clean Energy Transition Institute

Mission

The Clean Energy Transition Institute is a nonprofit organization incorporated in Washington State that promotes strategies to achieve deep decarbonization and accelerate the transition to a clean energy economy by identifying low-carbon pathways, advancing urban carbon pollution reduction, and building a clean energy economy workforce.

Purpose

The role of the Clean Energy Transition Institute is to provide:

- Thought leadership on and roadmaps for the pathways to a clean energy, low-carbon economy;
- An information clearinghouse for research on decarbonization solutions and technologies;
- Convenings to facilitate the development of solutions among stakeholders to bring about the shift to a low-carbon economy;
- Strategies to reduce carbon emissions in local jurisdictions and build a clean energy workforce.

Geographical Focus

The Clean Energy Transition Institute is headquartered in Seattle, Washington. Its primary geographical focus is the Pacific Northwest but it is anticipated that its work products could have national application.

Audience

The Clean Energy Transition Institute's audience is: non-governmental organizations and advocacy groups that work on energy, climate, and the environment; elected officials and agencies at the state, regional, and local level who want to craft policies to accelerate the transition or meet the carbon emission reduction targets their jurisdictions have pledged to achieve; the clean tech community; utilities; public utility commissions; businesses and business associations that are incorporating climate change and climate policy into their plans; thought leaders and academics who work in the climate and energy field; and funders and investors interested 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.

[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

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 actually entail and how is it financed?
- What is the role of utilities in a brave new electric world, and that of the technology companies that are providing the innovation and solutions to spur the clean energy transformation?
- What policies do state legislatures need to adopt in 2018-2020 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 will provide valuable information for the debates about: the use of fossil fuels in energy systems through 2050; the challenges of decarbonizing the transport sector; how clean the electricity grid must be for the overall energy systems to become as decarbonized as possible by 2050; the role of nuclear energy, among many other challenging issues that must be addressed to attain the 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 Clean Energy Transition Institute will commence its low-carbon pathways work commissioning an economy-wide pathways study of the energy systems for Washington, Oregon, Montana, and Idaho that focuses on the actions that Washington and Oregon can take to get on a path to deep decarbonization.

While the Pacific Northwest possesses several assets that prime it to lead in carbon emissions reductions, it is not yet a model for how to achieve a low-carbon economy. A deep decarbonization pathways study would offer guidance to Washington and Oregon policymakers, advocates, and investors for making decisions about climate policy over the next five years by addressing the question: How does the Northwest decarbonize the built environment, transport sector, and electricity grid between now and 2050 and at what cost?

There is a need for an independent study that builds on existing studies that encompasses the whole Northwest and that is economy-wide—not just the electric grid or only for one state or for only one utility—that explicitly identifies what is needed to decarbonize the Northwest economy with a holistic, integrated approach that offers system-wide solutions for buildings, transportation, and electricity in a deeply decarbonized future. An additional goal for the study is to offer guidance for how Northwest policymakers could consider integrating California and Northwest energy systems in a way that should lower costs and may help ease the institutional and political barriers to greater market regionalization.

There is a considerable amount of uncertainty concerning the cost and viability of evolving low-carbon technologies. A Northwest Deep Decarbonization Pathways study would provide a common set of assumptions and an analytical roadmap to inform discussions among Washington and Oregon legislators, advocates, utilities, and businesses to move policy and investment to the next stage.

After the study is completed, the Institute will convene a series of meetings to ensure that its conclusions are understood by the key policymakers who will be advancing climate policies in the 2019 Oregon and Washington legislative sessions. The study will provide the basis for further analysis of specific pathways, and multiple opportunities for organizing stakeholders around specific recommendations from the study.

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. Nearly 25 years after U.S. cities first began acting on climate, and despite the significant engagement of thousands of American cities working to reduce their emissions, the country is not on a trajectory to reduce carbon pollution at the scale required to stave off a climate crisis.

Cities are where engagement happens. 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. Cities are also on the front lines of climate change and have demonstrated more willingness than other branches of government to act on climate.

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 2017 U.S. Energy and Employment Report (USEER), a comprehensive survey of 30,000 American energy business representatives conducted by BW Research Partnership on behalf of the U.S. Department of Energy, found that nearly three-quarters (73 percent) of employers reported difficulty hiring qualified workers over the last 12 months, with 26 percent noting it was very difficult.[5]

In addition, the energy sector, in particular the utility sector, must address the "graying" of its workers as baby boomers born between 1946 and 1964 retire. Estimates range from 38 percent of utility workers retiring by 2024[6] to more than 50 percent turning over by 2021.[7] According to Power

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[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] U.S. Department of Energy. January 2017. U.S. Energy and Employment Report. https://www.energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report_0.pdf

[6] Center for Energy Workforce Development. Gaps in the Energy Workforce Pipeline 2013 Survey Results. http://www.cewd.org/Documents/2013CEWDSurveyExecutiveSummary.pdf

[7] 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/

Engineering,[8] "[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,[9] 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.

An initial focus of the Clean Energy Transition Institute's workforce development program in 2018 is to write a memo outlining a regional clean energy economic strategy at the request of U.S. Senator Maria Cantwell (D-Washington). As the ranking member of the U.S. Senate Energy and Natural Resources Committee, Senator Cantwell is laser-focused on clean energy technology and economics and particularly interested the jobs that clean energy offers not just for the Northwest, but throughout the United States, particularly in those regions struggling with a loss of manufacturing jobs or that need to transition from fossil fuel jobs.

Goals

The Clean Energy Transition Institute's 2018 goals are as follows:

1. **Operational:** Launch the Clean Energy Transition Institute legally and financially.
2. **Low-Carbon Pathways:** Provide a technically and economically grounded study in collaboration with key stakeholders as a basis for conversations about decarbonization among key policymakers, regulators, utilities, and advocacy groups in the Northwest by August 2018 in time to influence policy development for the 2019 Washington and Oregon legislative sessions and participate in the Washington State Academy of Sciences October 2018 symposium on low-carbon pathways.
3. **Urban Clean Energy:** Work with Northwest communities to implement ambitious decarbonization strategies and produce a white paper on what cities can and cannot do when it comes to reducing carbon emissions.
4. **Clean Energy Workforce:** Produce a memo for U.S. Senator Maria Cantwell articulating how to operationalize regional clean energy economic centers and develop a clean energy workforce development strategy to fund and execute on in 2019.

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:

[8] 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

[9] 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

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 seventh start-up venture. Quigley worked at Climate Solutions from 2008-2016, 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 as a Senior Fellow at Climate Solutions. 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 2018 include Evolved Energy Research, a consulting firm hired to produce the Northwest Deep Decarbonization Pathways study and a part-time website manager.

Conclusion

There is very little time to get extremely serious about deeply reducing carbon emissions throughout the world. 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 decade.

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.