



CLEAN ENERGY TRANSITION INSTITUTE STRATEGY

Fall 2019-Spring 2020

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. The Institute provides research and analytics on 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. Our vision is to decarbonize the Northwest economy at the speed and scale that climate science requires.

PURPOSE

The Institute was founded on February 8, 2018 to provide analytics for policymakers to understand how to accelerate the clean energy transition. The Institute is 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.

Our efforts support Northwest decision-makers engaged in building the clean energy economy and in passing climate and clean energy policies: nongovernmental organizations, advocates, utilities, businesses, investors, academicians, and elected officials and their staffs and agencies. We communicate findings about the clean energy transition clearly to those not immersed in deep decarbonization. We convene stakeholders to examine and resolve specific trade-offs on decarbonization and to remove barriers to accelerating the transition.

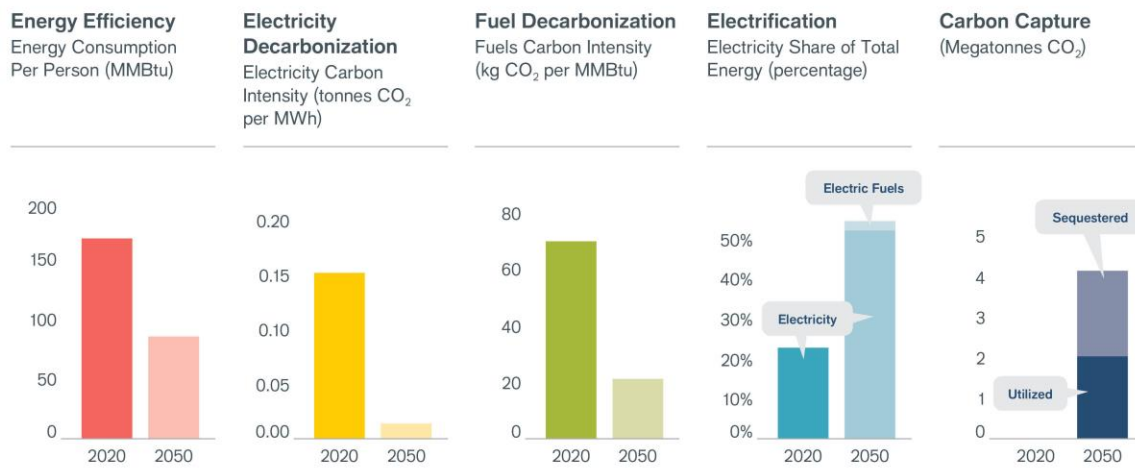
DEEP DECARBONIZATION

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) that shows how the region could attain an 80 percent decrease in carbon emissions below 1990 levels by 2050.

The NWDDP study identified five decarbonization pathways for the Northwest as depicted below and raised questions about the barriers and trade-offs for achieving deep decarbonization in the Northwest. In the remaining months of 2019 and throughout 2020, the Institute will work with key influencers in the region to develop a decarbonization implementation plan to guide actions from 2020-2030 by:

1. Identifying emission targets to attain for 2025 and 2030;
2. Articulating barriers to deep decarbonization to achieving the targets;
3. Convening decision-makers to determine how to put the region on a decarbonization path.

Five decarbonization strategies.



Source: Northwest Deep Decarbonization Pathways Study, May 2019, Evolved Energy Research, page 65.

ENERGY EFFICIENCY

Energy efficiency is a critical cost-reduction decarbonization strategy: the less energy needed, the less investment required for new energy resources. The study finds that aggressive building and appliance efficiency improvements cause per capita energy consumption to decrease 50 percent from 2020 to 2050. Efficiencies in planes, marine vehicles, and industrial processes are also essential.

ELECTRICITY DECARBONIZATION

A clean grid is an integral strategy. The Northwest achieves its decarbonization goals with an electricity grid that is 96% clean by 2050 as coal is eliminated and natural gas generation is reduced to only 3.7%. Better electricity grid integration between the Northwest and California would save \$11.1 billion.

FUEL DECARBONIZATION

Liquid and gas fuel carbon intensity decreases by 70% in 2050, when all passenger vehicles and nearly half of all freight trucks are electric. Biomass is best reserved for the harder-to-decarbonize sectors, namely aviation, maritime, and long-haul trucking.

ELECTRIFICATION

Electricity consumption increases by more than 50% and comprises one-half of all energy demand in 2050, with clean electricity replacing gasoline and diesel fuels for vehicles and natural gas in the built environment.

CARBON CAPTURE

Emerging technologies that deploy hydrogen created through electrolysis by renewable energy with captured carbon dioxide to produce either synthetic gas or liquid fuels will play a key role by 2040. Four million metric tons of CO₂ will need to be captured annually by 2050, with about half used to produce synthetic fuels and the other half sequestered.

IMPLEMENTING DEEP DECARBONIZATION

The decarbonization pathways for the Northwest are clear and consistent with deep decarbonization studies of California, the United States as a whole, and in other countries throughout the world. But questions abound as to how best to implement strategies to achieve the required emission cuts. The Institute's work is to answer those questions, several of which are identified below, and identify the trade-offs and barriers to deep decarbonization in the region.

Cleaning the Grid:

- What are the barriers and key actions needed to clean the Northwest grid?
- What will replace the coal that must be off the grid in Washington state by 2025, as legislation passed during the 2019 session requires?
- What investments are needed to meet energy and capacity needs and assure grid reliability?
- What is the role of natural gas on the grid as coal is removed?
- How and where should solar and wind be developed in the region?
- What if we don't hold hydroelectricity constant through 2050, as the NWDDP study did, but assume snowpack declines and hydro is less reliable over the next 30 years?
- What power would replace generation if the Lower Snake River Dams are removed?
- What power would replace the Columbia Generating Station if it is retired earlier than 2043?
- What if small modular reactors (SMRs) were available as a resource in the Northwest? Would they be cost-effective?

Building Electrification and Energy Efficiency:

- What is the role of energy efficiency, demand management, smart grid technology, and conservation in decarbonizing the Northwest?
- Can we do a better job of modeling energy efficiency and demand management?
- What policies would drive more aggressive efficiency and demand-side management?

Role of Natural Gas

- How best can natural gas be limited in buildings and on the grid?
- What is the economic impact of different policies for decreasing gas use in the economy?
- If methane leakage and flaring emissions are accounted for, how much of a decarbonization solution is natural gas?
- What if we model natural gas at a higher price point?

Regional Grid Integration

- How do we develop the critical path to increasing transmission between the Northwest and California, and other western states, given the significant technical and political issues?
- What is the total cost impact of the timing and size of upgrades to interregional transmission?
- What is the benefit of different quantities of added transmission?
- What are the political difficulties of building new transmission lines?

Biomass Assessment and Use

- How best to assess how much actual biomass is available in the Northwest for which uses?
- What is the status of research at the Northwest universities engaged in biomass/biofuels work over the past decade?

- What innovation is required to bring biomass to scale for aviation and long-haul trucking?

Vehicle Electrification and Vehicle Mile Reduction

- What must happen in 2020 to put the region on the transportation electrification path? Should money be put into passenger EV subsidies that are user-owned or not? Should we require electrified Ubers and Lyfts? What will increase societal demand for EVs?
- What analytics exist on transportation electrification and what still needs to be examined?
- What research exists about cost-effectiveness to guide decisions about which transportation sectors are the most important to electrify?
- What are the impacts of rate of adoption of EVs on total system costs?
- What is the cost impact of vehicle automation and/or vehicle sharing?
- What are the challenges to the grid to meet the projected increased load?
- Who should pay for and own charging infrastructure?
- How much emphasis needs to be put on behavior change?
- What role can reducing vehicle miles traveled and increasing access to transit play?
- What are the policies needed to achieve widespread transportation electrification?

Emerging Technologies

- How best to determine the state of emerging technologies, such as power-to-X, electrolysis, direct air capture, and their potential role in the Northwest?

GOALS

The Institute has identified the following goals to guide its work from the fall of 2019 through June 2020.

Goal 1—Advance Deep Decarbonization Strategies in the Northwest. Advance action on decarbonization through presentations, convenings, and workshops with key stakeholders to create frameworks and policies to accelerate action on decarbonization.

Goal 2—Co-Develop Building Decarbonization Strategies with Community Partners. Co-create a pilot project with community partners to examine how to incorporate equity considerations into strategies for decarbonizing buildings, such as removing natural gas, weatherization, and energy conservation.

Goal 3—Map Clean Energy Economic Development Opportunities in the Northwest. Create an interactive map that shows where clean energy activities are underway in the Northwest and their economic impact in different state legislative districts throughout the four states.

Goal 4—Sustainable Growth and Organizational Capacity. Raise adequate funds for the Institute to hire staff to accomplish its mission.

CONCLUSION

The overwhelmingly positive response to the release of the NWDDP study indicates that the Clean Energy Transition Institute has already played an important role in elevating the pathways to a low-carbon future in the Northwest. Now is the time for the Institute to prove its value proposition is supported by a diverse group of key stakeholders and funders to ensure that it can achieve its ultimate goal of accelerating deep decarbonization in the Northwest region.