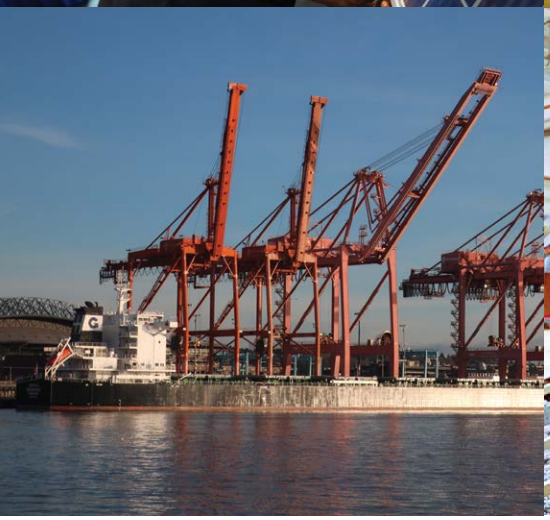
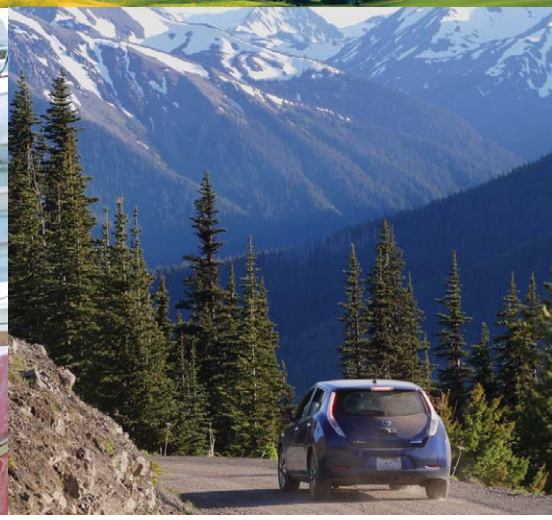
Accelerating the Clean Energy Transition in the Northwest

June 2021 Impact Report





Clean Energy Transition Institute

Letter from the President of the Board

The clean energy transition is well underway and presents enormous challenges and opportunities for our region and the world. We must move quickly to avert the worst of climate disruption and, at the same time, make well-informed decisions.

Governments, utilities, businesses, advocates, and policy-makers must implement viable and equitable clean energy solutions. Faced with myriad decarbonization strategies and a ticking clock, they need reliable, unbiased analysis of the opportunities, risks, and trade-offs of different approaches.

Enter the Clean Energy Transition Institute.

My fellow founding Board members and I helped Eileen start the Institute in 2018 to meet that need and put the Northwest on a path to a low-carbon economy. It was our belief that, in a region actively debating the energy transition, stakeholders needed clear, nonpartisan analysis to underpin decision-making. The support and engagement that we have experienced over the past three years validates this belief.

I remain convinced that the Northwest can be a leader in decarbonization work across the United States, and that the Institute has a meaningful role to play. On behalf of the Clean Energy Transition Institute Board, I invite you to join our efforts to meet the challenge of attaining net-zero emissions in our region by 2050.

John McGarry
Board President and Founding Board Director

Letter from the Executive Director

As we slowly gain ground against the COVID-19 pandemic, Americans are grappling with the deep inequities that the pandemic laid bare, as well as the undeniable impacts of human-caused climate change, both of which require urgent action. At the Clean Energy Transition Institute, we maintain that systemic racial inequity and the climate crisis must be addressed in tandem.

We know that society to date has prospered under an economic system built to benefit some at the expense of others and that failing to confront structural injustices only reinforces them. A durable, sustainably decarbonized economy must address all sectors, and it must benefit all communities.

This Impact Report describes the Clean Energy Transition Institute's accomplishments over our first three years. Our trailblazing regional decarbonization analysis in 2019 led to state-specific research that proved decarbonization is technically and economically viable for Washington. Now we aim to ensure that the region seizes the opportunity to accelerate deep decarbonization equitably in the coming decade.

With the support of our funders and partners, the Institute fills a critical niche at a crucial time in our region. We are pleased to share our history, current projects, and vision for the future. We invite you to engage with us in this vital work.

Eileen V. Quigley
Founder and Executive Director

BPA lock and dam, Eileen V. Quigley

Our Impact

The Clean Energy Transition Institute aims to accelerate the transition to a clean energy economy in the Northwest. We use an independent, systemic, economy-wide lens to advance technical, economic, and equitable decarbonization solutions focused on the unique characteristics of our four-state region, Idaho, Montana, Oregon, and Washington.

By **providing unbiased research and analytics** on decarbonization and **convening decision-makers** to evaluate various low-carbon approaches, we help steer limited resources toward the solutions that will best reduce emissions from the electricity, buildings, transportation, and industrial sectors.

Our focus on accurate and unbiased research has made the Institute a trusted ally among a wide range of stakeholders who understand **we only have time to pursue actions that get the job done**.

Seminal Research on Decarbonizing the Northwest

Prior to 2018, Northwest decarbonization studies had narrow scopes. Some examined specific sectors and territories, others specific states, or a single utility service area, but none looked at the entire regional economy.

In 2019, the Clean Energy Transition Institute commissioned the first deep decarbonization pathways study mapped to the Northwest's economic and institutional realities. *Meeting the Challenge of Our Time: Pathways to a Clean Energy Future for the Northwest* showed how Idaho, Montana, Oregon, and Washington could achieve a low-carbon economy by 2050. This seminal research:

- Established a baseline for policymakers to rely on;
- Demonstrated that decarbonization was achievable at a reasonable cost; and
- Highlighted the importance of a regional approach for reducing emissions.

Stakeholders enthusiastically embraced the findings. Over the next year, Institute staff presented the research and analysis to key policymakers throughout the Northwest, catalyzing constructive policy debates about the opportunities and trade-offs of different decarbonization approaches. We began to see regional conversations about how to bend the emissions curve down as quickly and equitably as possible.

Montana and Oregon Explore Pathways

Late in 2019, Montana Governor Steve Bullock's staff invited the Institute and Evolved Energy Research to present the results of our decarbonization pathways modeling to the state's Climate Solutions Council, which was charged with developing strategies to reduce greenhouse gas emissions. We worked with the governor's team to model Montana-specific results from the *Meeting the Challenge* study. These were incorporated into the Montana Solutions Plan that Governor Bullock announced on September 9, 2020.

In Oregon, we partnered with Renewable Northwest, GridLab, and Evolved Energy Research to test various emission reduction targets with a clean energy standard which passed during Oregon's 2021 legislative session.

Judith Gap, Montana. David J Laporte/Creative Commons

Washington State Seizes the Moment

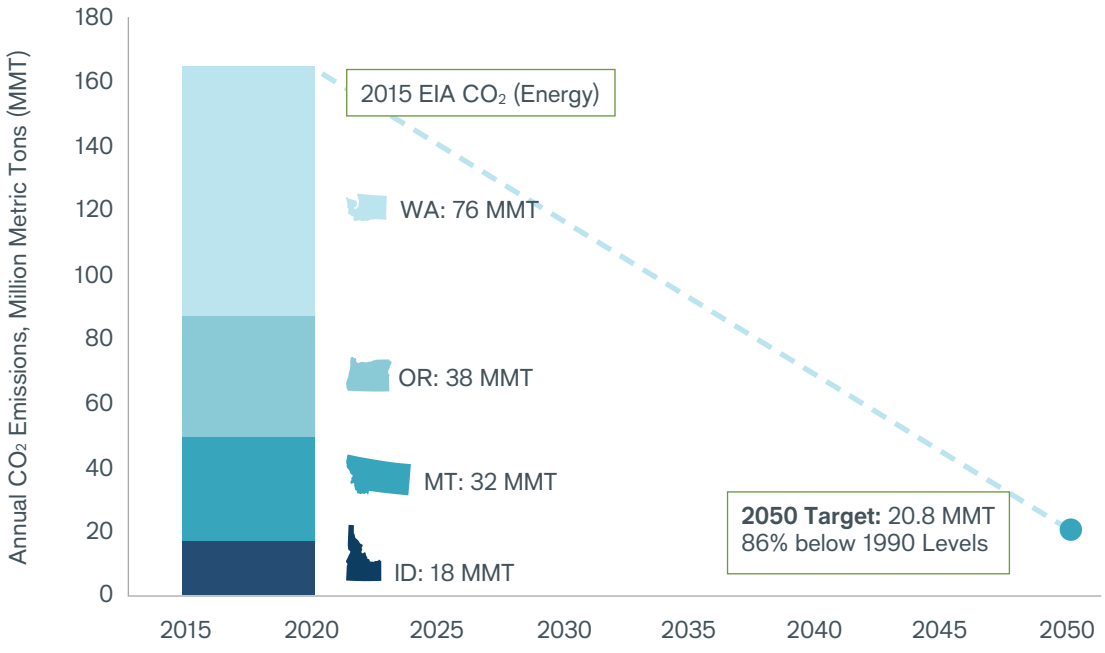
Aggressive targets to reduce carbon emissions are empty slogans if leaders do not have realistic strategies to achieve them. Building on the success of the *Meeting the Challenge* study, the Institute won a competitive bid to support development of the Washington 2021 State Energy Strategy. Our 12-member team:

- Conducted a technical advisory process that included decarbonization and economic impact modeling, as well as soliciting technical advice from 150 stakeholders;
- Examined the equity implications and economic impacts of decarbonization;
- Produced a meta-analysis of decarbonization studies and a compendium of Washington state climate and clean energy policies; and
- Reviewed approximately 700 studies of solutions for the buildings, transportation, electricity, and industrial sectors.

Our work produced detailed analyses and recommendations for how the state could meet its ambitious clean energy standard and net-zero economy-wide emission reduction targets. This work paved the way for major accomplishments during the state's 2021 legislative session, during which lawmakers passed:

- A low carbon fuel standard;
- A phase-out of gasoline cars by 2030 contingent upon the state adopting a tax on vehicle miles traveled;
- A tool for mapping EV charging infrastructure needs;
- Expanded broadband service to connect underserved areas to the clean energy grid; and
- Greenhouse gas emission reductions from hydrofluorocarbons.

Trajectory to 86% below 1990 emission levels by 2050 for the four Northwest states as modeled in the *Meeting the Challenge* study.



Source: *Meeting the Challenge: Pathways to a Clean Energy Future for the Northwest*, p. 23

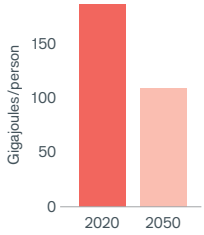
Five Key Decarbonization Strategies

The Northwest region is blessed with a 79% clean grid, which gives us a leg up with decarbonization. Clean electricity will play a primary role in decreasing carbon emissions from transportation, buildings, and industry—the sectors we must focus on over the coming decade. The following graphic describes how the five decarbonization strategies were modeled in the *Meeting the Challenge* study, which aimed at an energy sector target of 86% reduction below 1990 emission levels by 2050 in order to attain an economy-wide target of 80% below 1990 levels by 2050.

ENERGY EFFICIENCY
Reducing energy consumed to provide energy services

Aggressive building and appliance efficiency improvements cause per capita energy consumption to decrease by 50%.

This more efficient use of energy means that, despite population increase and economic growth, energy demand will be two-thirds of today's levels in 2050.



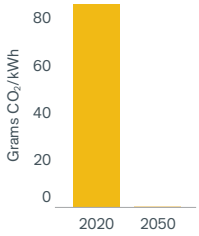
Reduction in Energy Consumption 2020-2050 (gigajoules/person)

CLEAN ELECTRICITY
Reducing the emissions intensity of electricity generation

The region achieves its decarbonization goals with an electricity grid that is 96% clean by 2050.

The average carbon intensity of electricity generation—already relatively low in the Northwest due to hydroelectricity—decreases to near-zero by 2050.

The share of electricity from gas-fired generation is just 3.7% in 2050.

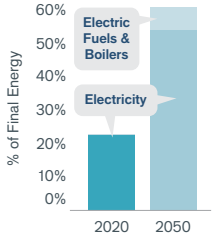


Decrease in Electricity Carbon Intensity 2020-2050 (grams CO_2 per kWh)

ELECTRIFICATION
Switching end uses from fuel to electricity

By 2050, all passenger cars on the road and nearly half of all freight trucks will need to be electric.

Electricity consumption increases by more than 50% and comprises one-half of all energy demand due to electrification of transportation, buildings, and industrial processes.

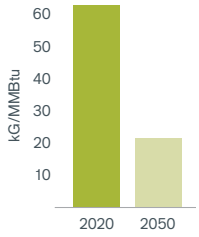


Increase in Electricity Share of Total Energy 2020-2050 (% of Final Energy)

CLEAN FUELS
Reducing the emissions intensity of liquid and gaseous fuels

The carbon intensity of liquid and gas fuels decreases by 70% in 2050.

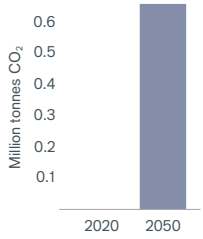
Emerging technologies that deploy hydrogen, carbon capture, and synthetic gas to create low-carbon fuels will play a key role by 2040.



Decrease in Fuels Carbon Intensity 2020-2050 (kG/MMBtu)

CARBON SEQUESTRATION
Capturing CO_2 from a facility or removing CO_2 from the atmosphere

Four million metric tons of CO_2 will need to be captured annually by 2050, with about half of the CO_2 used to produce synthetic fuels and the other half sequestered.



Increase in Carbon Capture 2020-2050 (million tonnes CO_2)

Source: *Meeting the Challenge: Pathways to a Clean Energy Future* for the Northwest, p. 54

Looking Ahead

The Biden administration has stated its intention to address the climate crisis and create economic opportunity while decarbonizing the American economy. Since 2019, Washington state has passed several ambitious carbon emission reduction targets and a suite of associated clean energy policies. This year, Oregon passed aggressive greenhouse gas emission reduction targets for electricity sold to Oregonians, a significant legislative milestone.

We have a unique opportunity to position the Northwest to lead the nation in rapidly and equitably decarbonizing our regional economy.

Our research proves that the Northwest can be decarbonized affordably by 2050. It is now time to determine how that transition should unfold equitably, particularly between now and 2030. Here is how the Institute will help guide regional action in the coming year:

Clean Energy Industry: With key stakeholders, co-convene a summit on how the clean energy transition could impact manufacturing in Washington, positively and negatively. How can policy support the industrial sector? What growth opportunities exist? What is the state's competitive advantage? What industries are at risk due to the transition?

Visualizing and Chronicling the Transition: Use interactive data visualization software to create a Northwest Clean Energy Atlas presenting the region's clean energy assets and deficits. We are also working on a storytelling project that will examine the impact of the transition on rural communities in the region.

Operation 2030: Continue modeling deep decarbonization pathways with a specific focus on high-impact solutions between now and 2030. We will explore:

- Decarbonizing buildings, with a focus on the role of natural gas;
- Reducing emissions from industrial processes;
- The potential benefits of distributed energy resources;
- Enhancing and expanding regional transmission;
- The feasibility of hydrogen and other emerging low-carbon energy technologies.

Economics and Equity: Dig deep into the economic impacts of the transition. What are the jobs that are likely to be gained and lost in the coming decade? What can be done to ensure that opportunity is available for communities that have either been historically marginalized economically or left behind by economic disruption? We aim to:

- Quantify the sector-level costs and cost savings from the transition;
- Assess the distribution costs for households and businesses across different income levels; and
- Analyze differences in decarbonization costs between urban and rural areas.

Clean Energy Transition Institute Evolution

2017
Decarbonization Pathways Workgroup forms to study how the Northwest, with its unique energy characteristics, might achieve an emissions target of 80% below 1990 levels by 2050.

2018
Stolte Family Foundation funds the launch of the Clean Energy Transition Institute to provide research and data analytics on decarbonization pathways for the Northwest.

2019
The Institute releases *Meeting the Challenge*, the first regional economy-wide decarbonization pathways analysis in the United States.

The Institute shares the results of the study with a wide range of stakeholders, including city and state agencies, utilities, research universities, clean tech business and investor communities, and advocacy groups.

2020
The Institute wins the competitive bid to provide technical and economic analysis for the Washington 2021 State Energy Strategy.

The Institute and Evolved Energy Research provide decarbonization modeling for Montana.

2021
Washington State Legislature passes a raft of climate and clean energy bills.

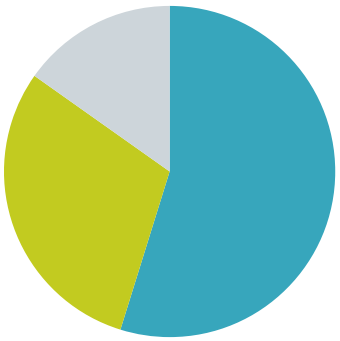
The Institute and Evolved Energy Research complete decarbonization modeling for Oregon policymakers, who pass a clean energy standard with one of the fastest timelines for eliminating power sector emissions in the country.

Photo credits (l to r): Energy efficiency installation, William Belcher; *Meeting the Challenge* briefing, Eileen V. Quigley; Boeing assembly plant in Renton, WA, REUTERS/Alamy Stock Photo
Solar Installer on roof, Shawn O'Connor/Alamy Stock Photo.

Financials 2018-2020

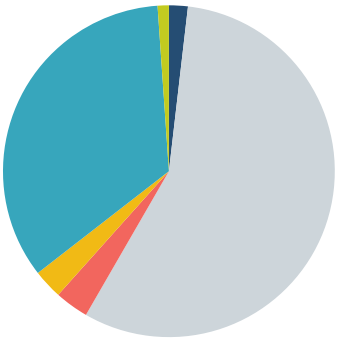
From 2018-2020, the Clean Energy Transition Institute received a total of $1,046,975 in foundation grants, individual donations, and program service revenue, and spent a total of $881,743.

Revenue 2018-2020



- Foundation Grants $573,750
- Individual Donations $311,080
- Program Service Revenue $159,111

Expenses 2018-2020



- Fiscal Sponsor Start-Up Fees $16,202
- Professional Fees $498,157
- Office Expenses and Technology $28,994
- Legal and Financial $25,308
- Compensation $303,468
- Marketing and Travel $9,613

Donors 2018-2020

The Clean Energy Transition Institute gratefully acknowledges the funders that have provided the financial support that has sustained our work since 2018 as follows (*indicates multiple year funding):

$50,000-$500,000
Stolte Family Foundation*

$25,000-$49,999
Anonymous (1)
Jabe Blumenthal and Julie Edsforth*
Bullitt Foundation
David and Linda Cornfield*
Ordinary People Foundation*

$10,000-$24,999
Anonymous (2)
William Donnelly*
Genevieve L. Gormley and Ian W. Freed*
Kathleen Hebert*
John McGarry and Michelle Wernli*
Seattle Foundation
Sustainable Path Foundation

$5,000-$9,999
Marc Daudon and Maud Smith*
Frank Greer and Stephanie Solien*
Innovation Network for Communities
Ruth Lipscomb*
Ross and Lisa Macfarlane*
Rosemary C. Quigley/ James S. Richards*
Stephen and Liann Sundquist*
The Vandeventer Family Foundation
Rogers and Julie Weed*
Martha Wyckoff

$1,000-$4,999
Lisa Adatto
Brynn Arborico*
Marley Arborico*
Eric Berman*
Angela Braestrup/ The Henry Foundation*
Eric and Susan Carlson*
Miriam Cytryn and James Birmingham
Michael Ehrenberg and Donna Richman
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Virinder Singh, EDF Renewable
Valerie Tarico and Brian Arbogast
Liz Thomas and Ron Roseman*
Alan C. Vaughan

$50-$999
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John Bartlett
Jim and Barbara Becker
Celia Bowker
Betsy Bridge
Rhea and Clark Coler
Margaret Davis
John Finnerty
Jonathan Fink
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The Van Hemert Family Fund
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Installing solar panels, Oregon Department of Transportation.

Front Cover Photo credits: Solar worker inspecting panel, iStock/Alvarez; Wind turbines seen from Steptoe Butte State Park, WA, Edmund Lowe Photography/Shutterstock; Port of Seattle, Eileen V. Quigley; Energy efficient factory built housing, Chuck Murray; EV in the Olympic Mountains, Jessica Plumb.

Will you join us in helping make the Northwest a leader in the clean energy transition?
Contact: info@cleanenergytransition.org ▪ www.cleanenergytransition.org.

Clean Energy Transition Institute