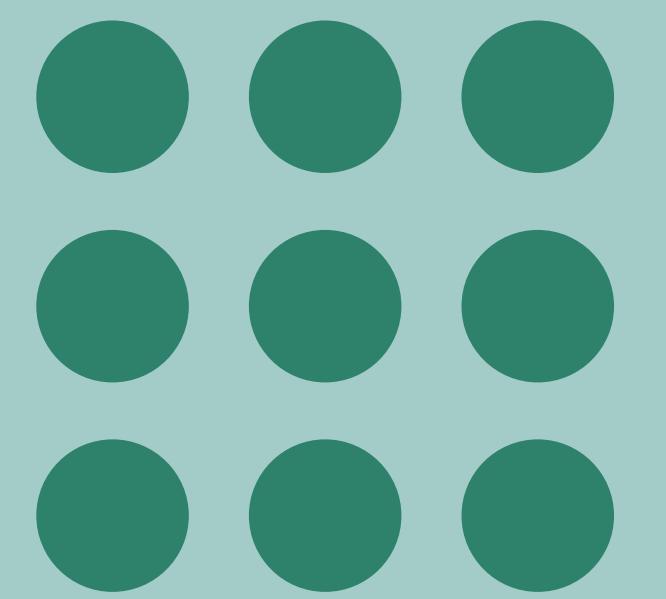


# 2022 Impact Report

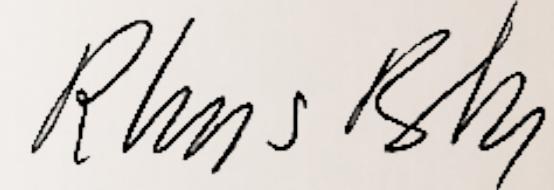


Center for  
Sustainable  
Infrastructure

# CSI Levercraft: Clean Industry and Infrastructure Innovation

Here at the Center for Sustainable Infrastructure, we practice good “levercraft,” meaning we work hard to leverage our efforts for greatest impact. That levercraft has led to two core strategies for shaping a positive future: infrastructure innovation and clean industry transformation. Infrastructure lasts for decades and can make possible – or impossible – sustainable prosperity and healthy communities. And clean industry allows us to generate prosperity without the negative consequences of pollution, waste, and inequity.

In 2022, we worked to advance clean industry and infrastructure innovation in the Pacific Northwest, as replicable models for the rest of the country, with a focus on **industrial and agricultural symbiosis**, **green hydrogen**, and **local blueprints for community renewal**. Thanks to great support from our donors and partners, we’re making incredible progress on each of these efforts, and are excited for the year ahead!



**Rhys Roth**

CSI Founder and Executive Director



# Portland and Denmark Exchange Accelerates Clean Industry

CSI and our partners established the Portland – Denmark Knowledge Exchange in 2022, with Portland civic and business leaders joining CSI in Denmark in June to study Danish clean industry initiatives. Portland leaders saw industrial symbiosis in action, with the aim of bringing back knowledge and ideas to help Portland build a vibrant hub for clean industry innovation. With their visionary clean industry hub, Portland leaders are forging a collaborative, durable, multi-benefit approach to decarbonization. This collaboration is born out of sharp conflict over Portland climate policies and promises big progress toward a thriving, prosperous, and inclusive economy in Portland.



## GROWING INDUSTRIAL SYMBIOSIS IN WASHINGTON

Less than a year after CSI worked with bipartisan legislators to establish the [nation's first Industrial Symbiosis program](#), we notched another win for Clean Industry by significantly increasing state investment. The initial investment in 2021 was \$500,000, but this year legislators increased funding to over \$2 million per biennium.

## EXPANDING SYMBIOSIS GLOBALLY

Rhys Roth is working the rubber chicken circuit! In October, Rhys represented the Pacific Northwest at the Industrial Symbiosis Global Leadership Conference in Kalundborg, Denmark, telling the story of how CSI is working to import symbiosis to the Pacific Northwest. Rhys also moderated a panel of business innovators at the Decarb Invest Conference in Washington, D.C., titled "How are industrial hubs forming and finding their commercial 'How'?"



**"WE CAME BACK WITH A SHARED UNDERSTANDING AND VISION FOR AN INDUSTRIAL SECTOR THAT'S DECARBONIZED, THAT'S CIRCULAR AND CLEANER, AND THAT BENEFITS OUR REGIONAL ECONOMY AND INDUSTRY WORKERS. THIS TRIP WAS A GAME CHANGER."**

**– CARMEN RUBIO**  
Portland City Commissioner

## SYMBIOSIS FOR FOOD PROCESSING

Food processing is a critical part of the ag economy, with a strong cluster in Pasco. The City of Pasco treats wastewater from major food processors, but its infrastructure is outdated and at its capacity limit, hampering further growth in the industry.

New businesses like Darigold and other processors want to use the facility too, while regulators are requiring additional nitrogen removal to protect groundwater, leaving the City and processors in a pinch. CSI worked with the City to explore alternative treatment and value recovery options, and recommended anaerobic digestion to make fuel from wastewater, and algae to then remove the nitrogen before irrigating high-value crops and generating revenue for the City.



**"CSI HELPED US IDENTIFY SYSTEM-BASED OPTIONS THAT OFFERED NEW AVENUES TO TREAT THE WASTEWATER, EXTRACT VALUE FROM WASTE, AND SAVE SYSTEM USERS MONEY.**

**- DAVE ZABELL**

City Manager, City of Pasco

## PROJECT BENEFITS

- Anaerobic digestion will extract valuable renewable gas from methane in the wastewater.
- Algae for water treatment requires far less energy and can be sold as a value-added product. (fertilizer or feedstock for bioplastics, nutraceuticals, or livestock)
- New wintertime water storage will enable year-round processing.
- Hundreds of new processing jobs.

# Bringing Symbiosis to Agriculture

CSI proposed, and bipartisan legislators stepped up to fund, \$500,000 in the 2022 state budget to [launch a new Agricultural Symbiosis initiative](#). Ag Symbiosis – a concept we adapted from industrial symbiosis – converts waste into economic value for agriculture producers and processors, conserves valuable resources and slashes pollution.

Washington has an opportunity to pioneer this approach to generating higher value, creating good jobs and securing sustainability in our agricultural economy. The funding is enabling CSI to work with Washington State University and Pacific National Laboratories to develop recommendations to the legislature for standing up this first-of-its-kind initiative. The goal is to sustain Washington's agriculture economy and the land, water, and climate it depends on through the symbiotic sharing of wastes and resources.



# Landmark Green Hydrogen Legislation Passes

In 2021, CSI released the Pacific Northwest's first "Renewable Hydrogen Action Plan," which inspired Senator Reuven Carlyle, a graduate of the 2017 Denmark Study Tour, to propose groundbreaking renewable hydrogen legislation in Washington State. CSI worked with him and his advisers on the bill, and less than a year later he succeeded with the near-unanimous passage of Senate Bill 5910, designed to "accelerate the availability and use of renewable hydrogen in Washington State." In addition, the State invested \$2 million to develop a "Green Hydrogen Hub" proposal for the US Department of Energy's \$8 billion Hydrogen Hub Program.



**IT IS GREAT TO SEE THE TREMENDOUS IMPACT TO COME OUT OF THIS PNW RENEWABLE HYDROGEN ACTION PLAN. I'M GLAD TO HAVE CSI HELPING DRIVE THIS FORWARD.**

**- EVAN RAMSEY**

Senior Director, Bonneville Environmental Foundation



## GREEN HYDROGEN POWERS RURAL HOSPITAL AND SCHOOLS

See "Rural Renewal in Klickitat County" on page 6 to learn how green hydrogen will help a rural hospital and school district meet their energy needs.

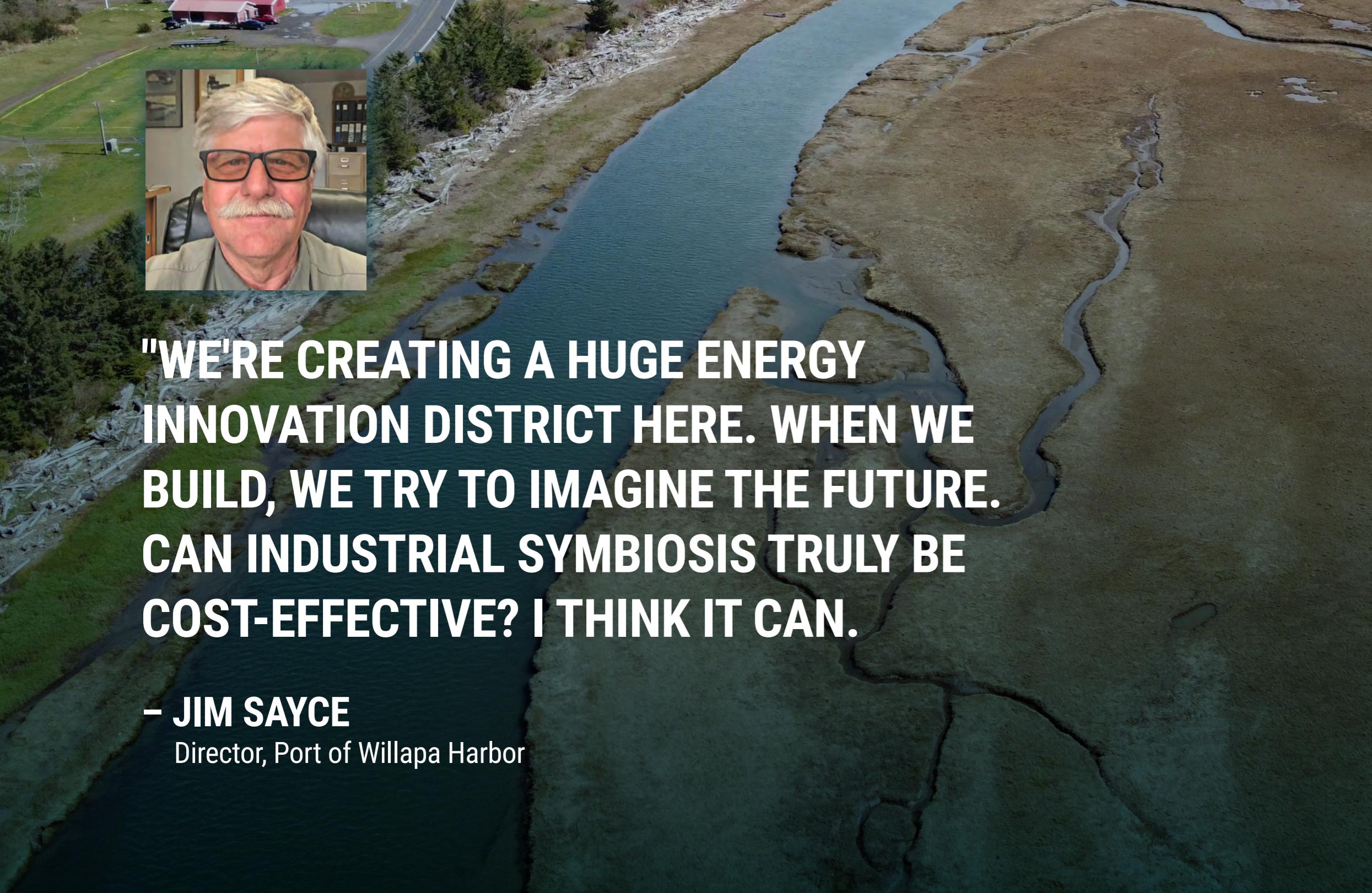


# Rural Renewal in Klickitat County

Last year, CSI worked with leaders in [Klickitat County](#) to develop a community-wide vision for renewal, anchored in clean energy for their hospital and schools. The effort culminated in a "Rural Economic Diversification Summit" (REDS) that we facilitated, aimed at attracting state and federal funding to bring their vision to life. In the months following the REDS, the community is making great progress toward its vision of rural renewal centered on clean, resilient energy:

- Klickitat Valley Health (KVH), the local hospital, was selected as one of 14 projects nationwide for the US Department of Energy's initiative "Energy Storage for Social Equity." The initiative aims to support underserved communities' energy storage, increase resilience, and maximize energy flexibility.
- KVH received a \$700,000 grant from USDA to remodel their hospital kitchen and are working with FEMA to apply for a hazard mitigation grant to fund a resilient microgrid that would serve the community even in times of disaster.
- State Representative Gina Mosbrucker secured \$3 million to purchase a hydrogen fuel cell that will help power the hospital and nearby schools. The project is also receiving consideration for inclusion in Washington State's legislative-directed application to USDOE for a regional Hydrogen Hub.
- The hospital project received \$2.5 million in the most recent federal budget, and the community continues to pursue project funding opportunities identified during the summit.





**"WE'RE CREATING A HUGE ENERGY INNOVATION DISTRICT HERE. WHEN WE BUILD, WE TRY TO IMAGINE THE FUTURE. CAN INDUSTRIAL SYMBIOSIS TRULY BE COST-EFFECTIVE? I THINK IT CAN."**

**- JIM SAYCE**

Director, Port of Willapa Harbor

## COMMUNITY VISIONS

7

# Reimagining the Willapa

Leaders from around Willapa Bay in Southwest Washington are coming together to reimagine a new future for their community, bringing fresh eyes and broader vision to their many challenges. Resilience, sustainability, innovation, clean energy, and opportunities for young people are some of the new priorities as they map a vibrant future that makes the most of natural resources for the long haul.

With CSI's help, Willapa Bay leaders have formulated a vision of sustainable economic and community renewal – including industrial symbiosis – and multiple projects to realize that vision. The projects are built around these three key strategies: Natural Resource Innovation Economy, Resilient Infrastructure, and a Regional Recreation Network.



## TACOMA GREEN ECONOMY STRATEGY

CSI is supporting Tacoma in developing a strategy to grow their green economy, with a focus on industrial symbiosis and green hydrogen. We hope to have good news to report in 2023!

# Our Vision

CSI's mission is to catalyze state-of-the-art sustainable infrastructure solutions that help communities of every kind thrive economically, socially, and environmentally.

**Our powerful proposition:** Pivoting to sustainable infrastructure is one of the biggest levers we have to tackle our toughest challenges – from climate change to inequitable prosperity to crippling cultural divisions – and together build a thriving future for everyone.

A HUGE THANK YOU  
TO OUR 2022  
FUNDING PARTNERS!



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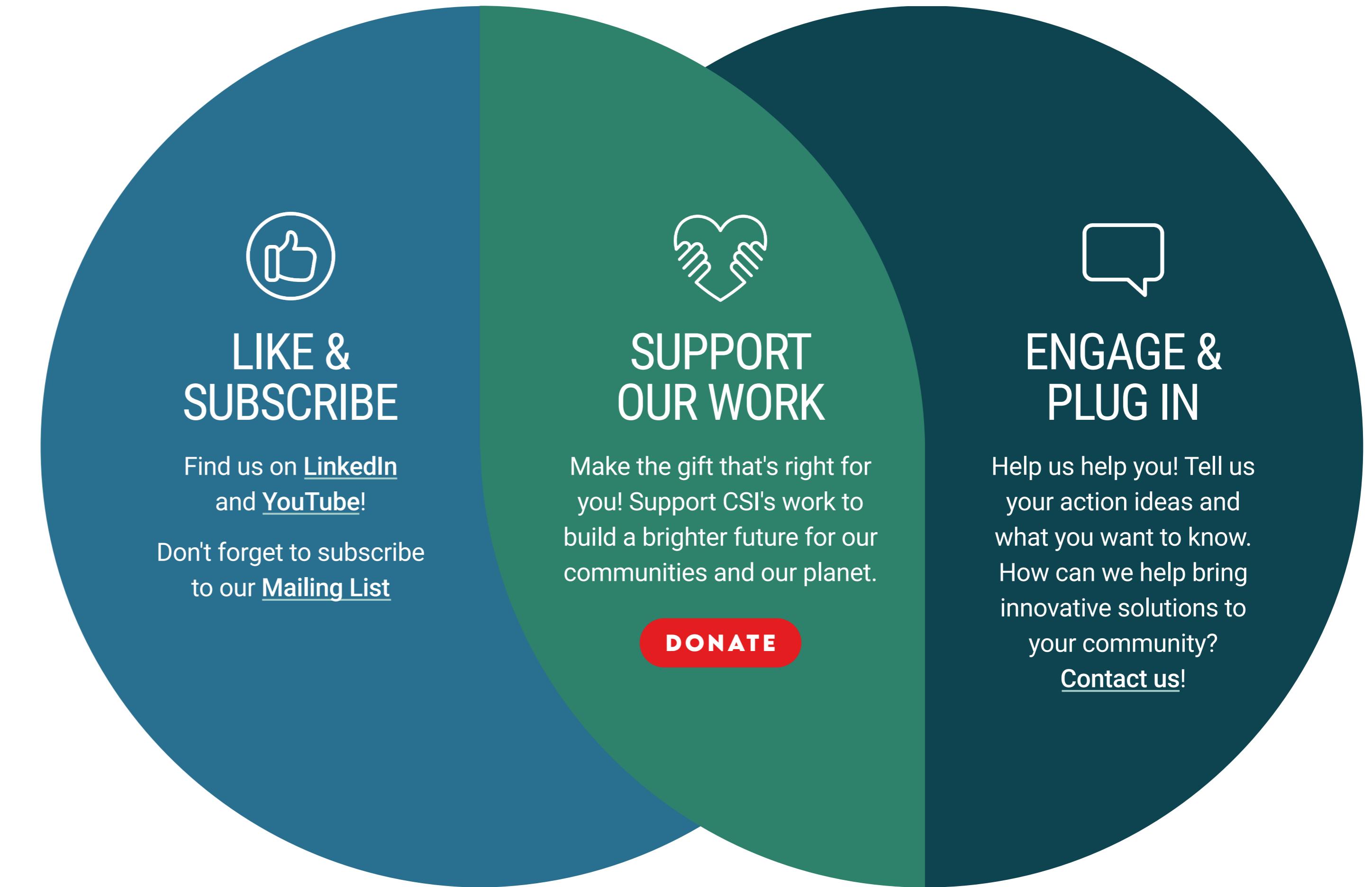
NANCY CONNERY



City of Portland, Oregon



Danish Energy  
Agency



# Center for Sustainable Infrastructure

## CONTACT

Rhys Roth, Founder and Executive Director

[rhys@centerforsi.org](mailto:rhys@centerforsi.org)

(360) 867-8819

**Center for Sustainable Infrastructure**

120 State Ave NE #303,  
Olympia, WA 98501

[sustaininfrastructure.org](http://sustaininfrastructure.org)

