Institute for Northwest Energy Future (INEF)

This new WSU state-funded energy research center aims to bring together researchers, industry leaders, policymakers and communities to innovate and develop cutting-edge clean energy technologies **using a systems approach**. Funding includes seven new faculty, six staff and four administrative positions as well as a new building.

INEF Leadership & Support Team

Noel Schulz
Inaugural Director
Bob Ferguson
Endowed Professor

Yonas Demissie
Assistant Director
Engineering &
Environment

Chad Kruger
Assistant Director
Agriculture,
Extension &
Outreach

Georgine Yorgey
Director
WSU Energy
Program

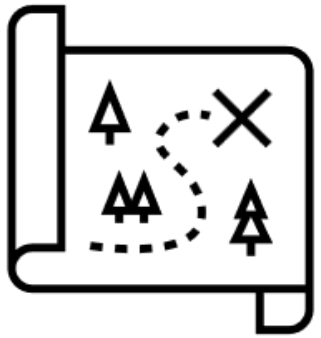
Carmine Hanks
Public Relations &
Communications
Coordinator

Yasmin Santana
Admin Assistant
to the INEF
Director

Desiree Urban
Procurement &
Contracts Coordinator

Headquartered at
WSU Tri-Cities

INEF Vision and Strategy

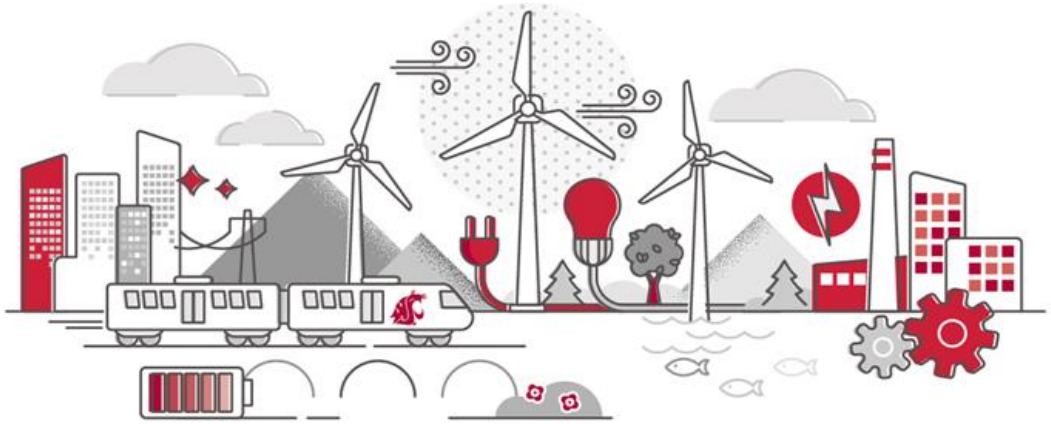


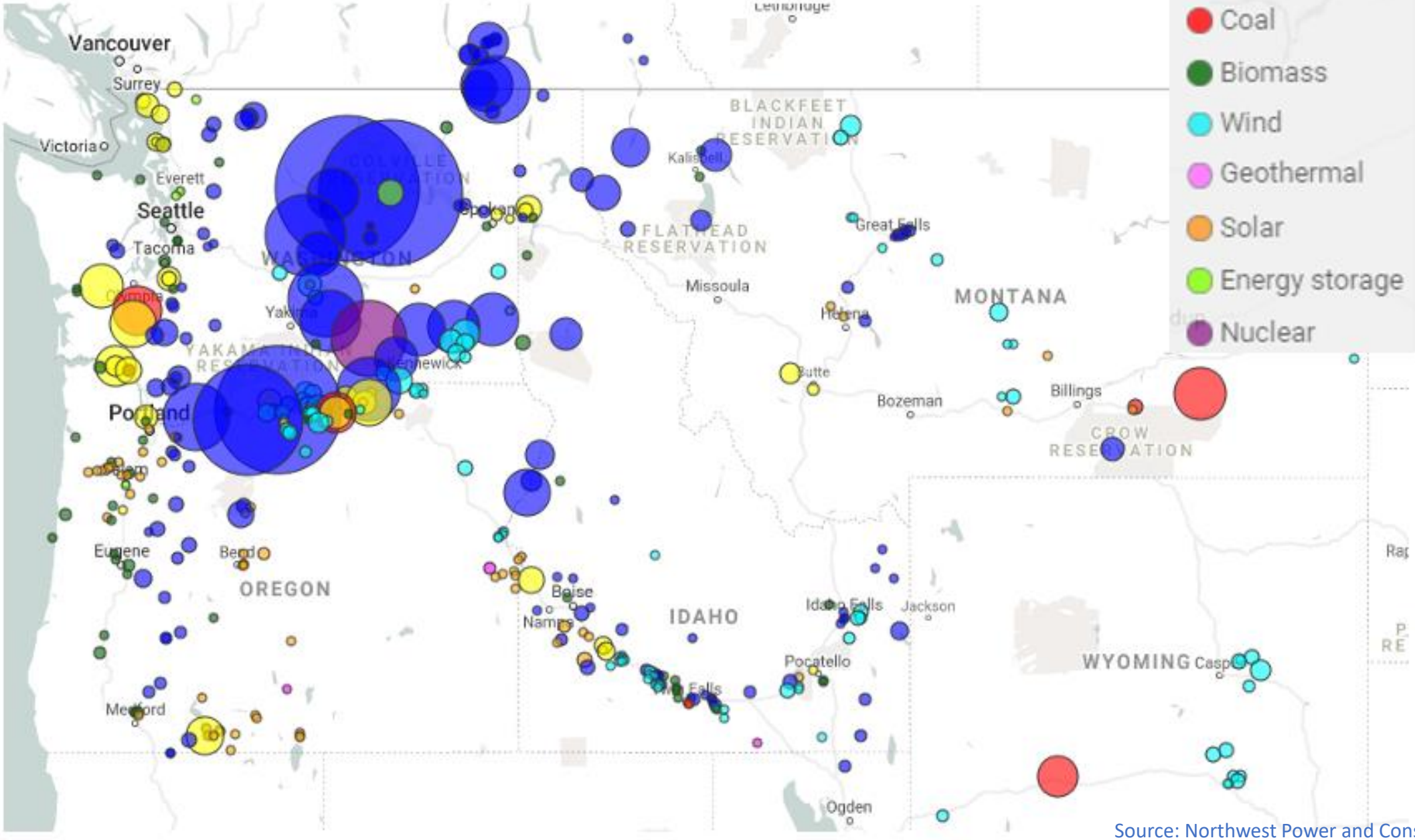
INEF will help develop and implement a roadmap for a clean energy systems approach in the Tri-Cities area, Washington and beyond.

Goals

- Provide research support
- Develop needed workforce
- Leverage the region's energy hub with
  - WSU's unique research, education and extension resources
  - Growing partnerships with industry and PNNL

Systems approach to energy ecosystem





Source: Northwest Power and Conservation Council

Leveraging WSU Tri-Cities Existing Activities & Growing Partnerships

Bioproducts, Sciences and Engineering Laboratory (BSEL)

US DOE Inclusive Energy Innovation Prize

Sustainable Aviation Fuel (SAF)

PNNL

Joint Institutes

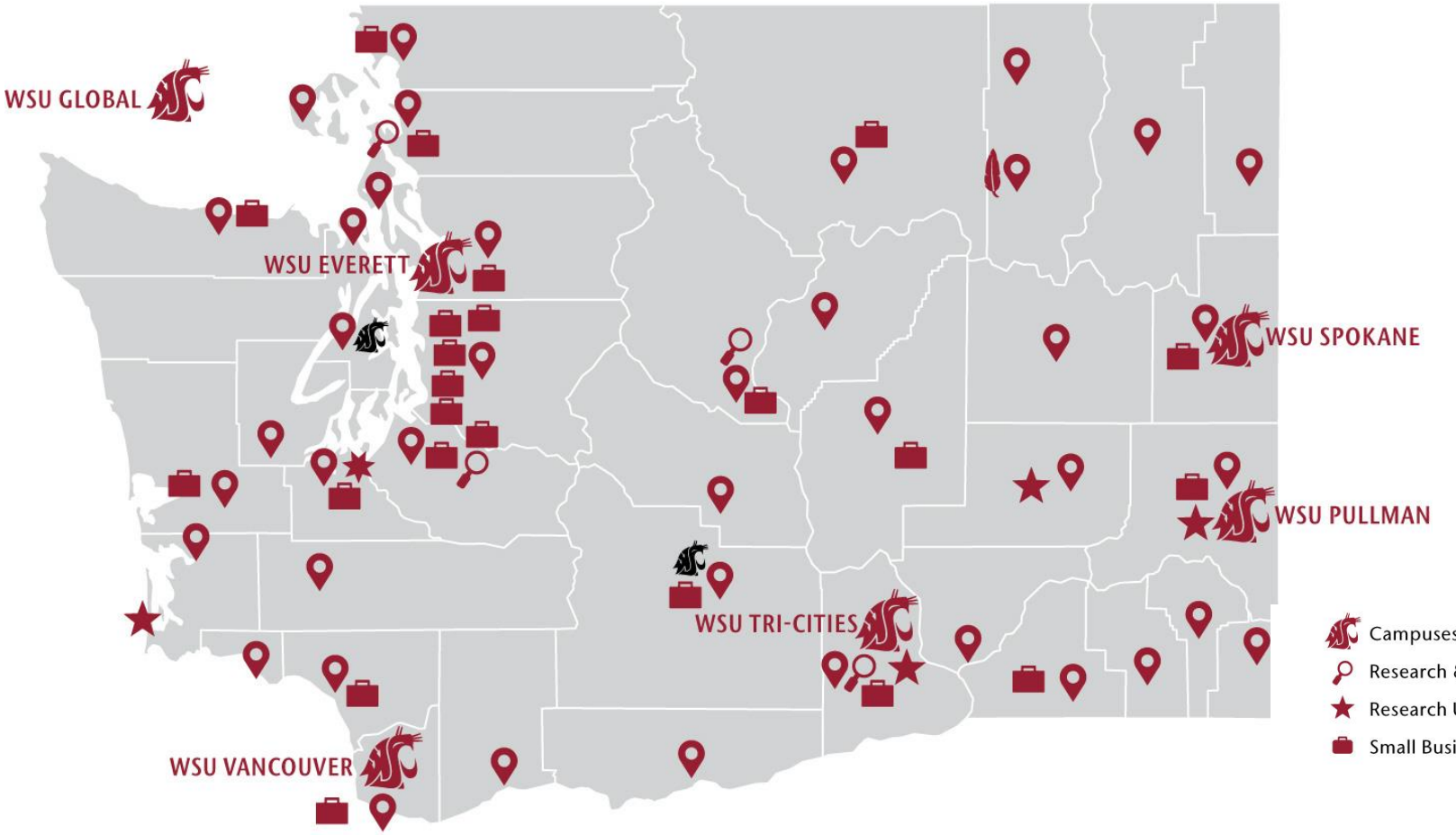
- Advanced Grid
- Bioproducts
- Nuclear Science and Technology

PNWH2

Pacific Northwest Hydrogen Association (PNWH2)

Leverage the WSU System Energy Ecosystem

While INEF is headquartered on the WSU Tri-Cities campus, it is a WSU System initiative with activities across the state.



WSU System has 28 Energy Related Entities For Research, Education and Outreach

WSU System Energy Related Activities For Research, Education and Outreach

WSU Extension

Institute for Northwest Energy Futures (INEF)

WSU Energy Program

Laboratory for Atmospheric Research (LAR)

Northwest Virtual Institute for Cybersecurity Education and Research (CySER)

WSU Fusion Initiative

Water Research Center (WRC)

The Aviation Sustainability Center (ASCENT)

HYdrogen Properties for Energy Research Center (HYPER)

Joint Center for Deployment & Research in Earth Abundant Materials (JCDREAM)

Freight Policy Transportation Institute (FPTI)

Institute of Materials Research (IMR)

Nuclear Science Center (NSC)

Energy Systems Innovation Center (ESIC)

Pacific Northwest Hydrogen Hub (PNWH2)

Bioenergy & Bioproducts Engineering

Center for Sustaining Agriculture and Natural Resources (CSANR)

Bioproducts Science and Engineering Laboratory (BSEL)

PNNL/WSU Advanced Grid Institute (AGI)

PNNL/WSU Nuclear Science and Technology Institute (NSTI)

PNNL/WSU Bioproducts Institute (BioIn)

Integrated Design + Construction Laboratory (ID+CL)

Composite Materials and Engineering Center (CMEC)

The Consortium for Hydrogen and Renewably Generated E-Fuels (CHARGE)

Clean Energy Ambassadors Network (CEAN)

WA Oilseed Cropping Systems Project

Center for Environmental Research, Education and Outreach (CEREO)

Key areas of WSU System Energy Related Activities

- Food-Energy-Water Nexus
- Energy and Artificial Intelligence
- Materials Science and Engineering for energy related applications

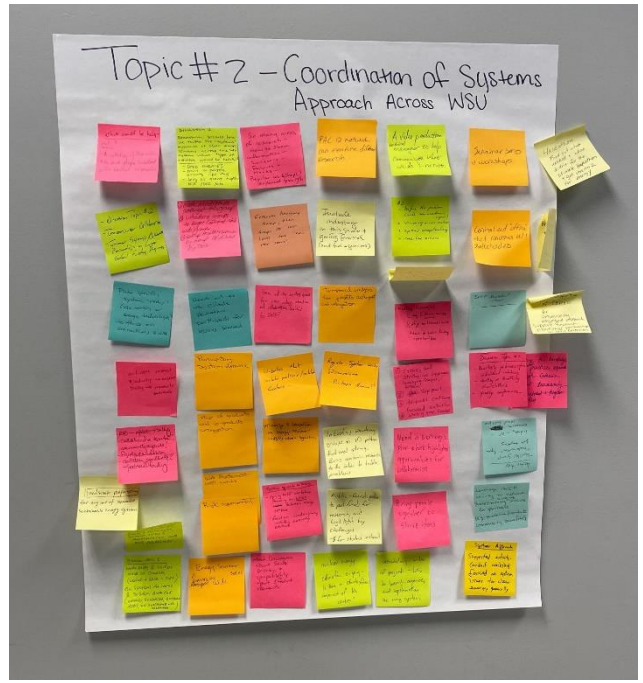
- Hydropower
- Advanced Nuclear Reactors and Fuel Cells
- Electrical Grid - Interconnections, Transmission, Distribution and Storage
- Buildings/Energy Efficiency/Sustainability
  - Federal Facilities Transition to Zero Emissions
  - Sustainable building materials

- Low Carbon Transportation Fuels
  - Biofuels – feedstocks genetics and production, conversion, co-products, fuel testing
  - Hydrogen and E-Fuels production, storage, conveyance

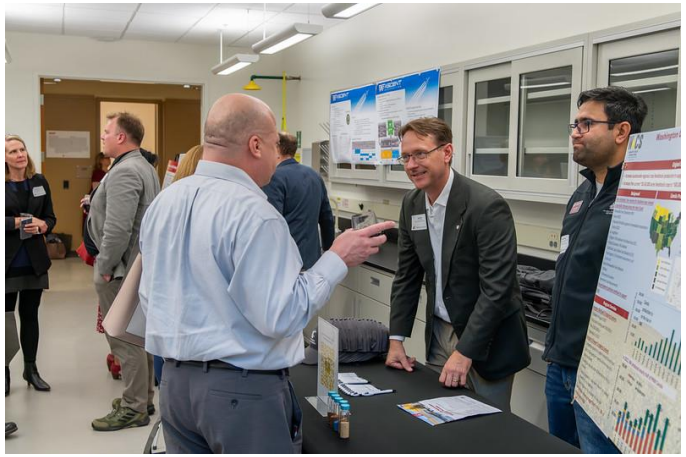
- Logistics and Supply Chain Development and Management
- Energy and Carbon Policy and Economics
- Energy Equity and Energy Justice
- Training/Policy/Services/Community engagement

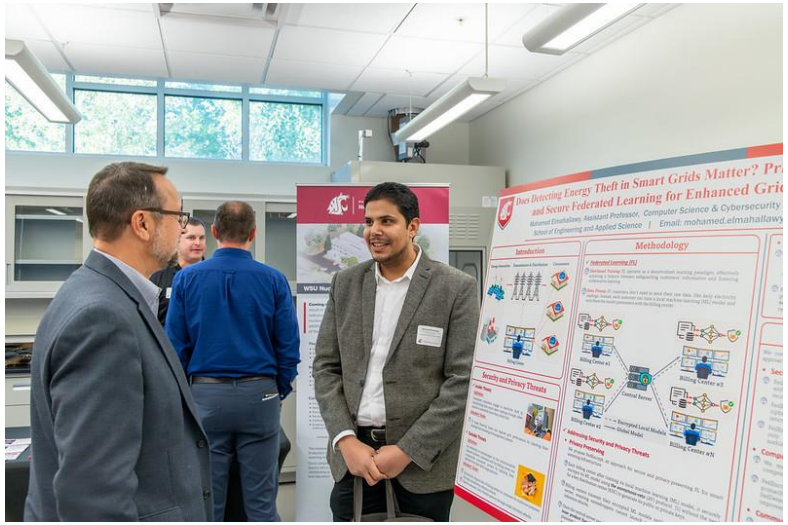
INEF Priority Activity
Building Community Across WSU System Energy Entities

- Whole bigger than sum of the parts – coordination and opportunities
- WSU System Energy Summit -- October 2
  Sixty-five WSU representatives together to discuss coordinating across the energy ecosystem
- Better integration of WSU Energy Program with WSU System
- Developing ways to share all our activities internally and externally



INEF Building Ribbon Cutting and Open House

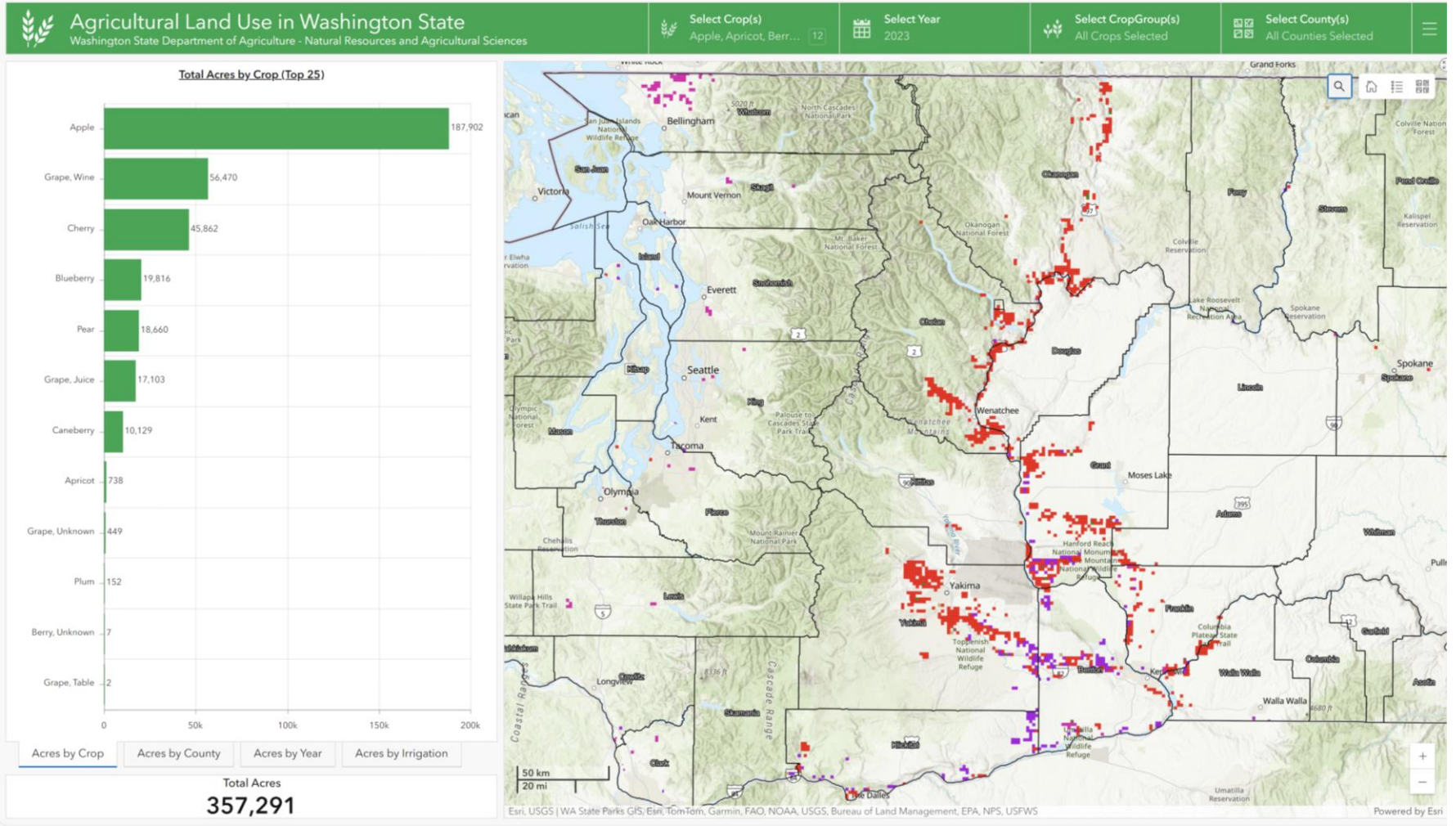




Additional INEF Activities

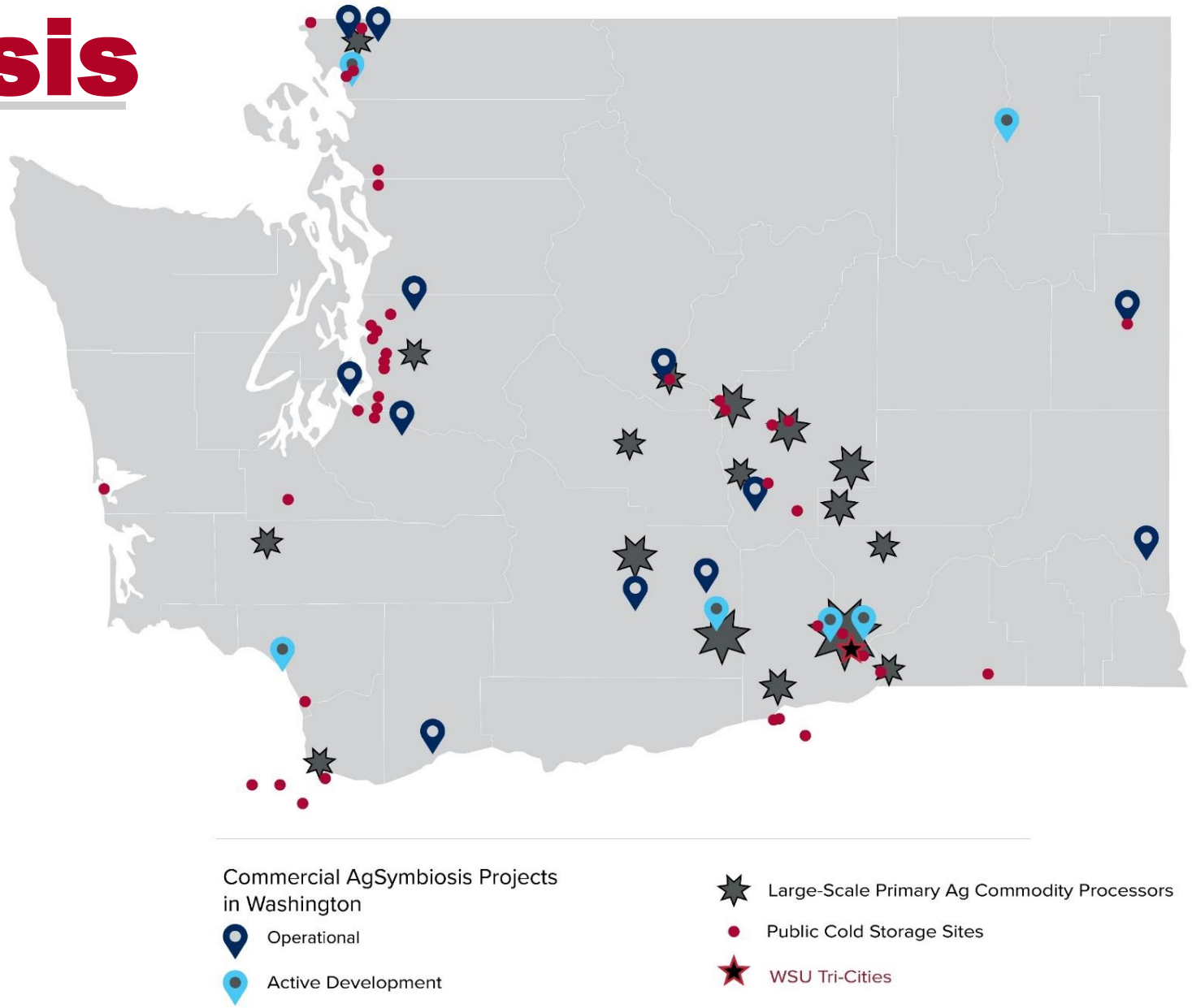
- Leverage existing partnerships with PNNL and regional community and industry partners
- Advance Regional Energy Educational/Research Program Collaborations
- Create INEF Industry Advisory Board and topic specific Working Groups
- Coordinate Collaborative Assessment Reports across energy ecosystem topics
  - Agriculture Symbiosis (funded through Washington Department of Commerce)
  - Future topics

The Food-Energy-Water Nexus in Washington: Orchards and Vineyards



AgSymbiosis

Opportunities Across Washington



Point locations are not exact

Topics for future collaborative assessment reports

- **Food-Water-Energy Nexus in Washington**
  - Energy-water trade off – irrigation versus hydrogeneration
  - Energy demand and energy use for food growth and processing
  - Electrifying agriculture including renewable energy
- Other suggestions
  - Grid resilience with increased demand
  - Water and land use in renewable energy production

Opportunities for Engagement

- Reach out to INEF about energy-related expertise across the WSU system
- Help us identify system level activities across energy ecosystem to tackle
- Partner with INEF on proposals and activities
- Introduce us to others across the energy ecosystem with whom we can collaborate

Many thanks for the opportunity to share about INEF

tricities.wsu.edu/inef/ tricities.inef@wsu.edu

WSU Energy Program

Supporting partners throughout Washington and the Northwest in advancing economic and environmental wellbeing through improving energy efficiency and transitioning to cleaner sources of energy.

- Georgine Yorgey
- Jim Columbo
- Matt Booth
- Erika Coveney
- Donna Cowsert
- Chelsea Edgecombe
- Brad James
- Karen Janowitz
- Jim Jensen
- Jonathan Jones
- Phil Liu
- Robert Kirchmeier, P.E.
- Gil McCoy, P.E.
- Gerry Rasmussen
- Matt Reznick
- Caroyn Roos, PhD
- Phillip Saunders
- Jason Selwitz, PhD
- Melinda Thiessen Spencer
- Mike Steele
- Ryan Tsingine
- Anne Whitney
- Veronica Yellowhair

Technical Assistance for Industrial Onsite Energy and Energy Efficiency

Northwest Onsite Energy Technical Assistance Partnership (DOE)

- Operates across the Pacific Northwest.
- Supports the industrial sector and other large energy users in adding onsite clean energy technologies – at no cost to the end user. (Qualifies you for federal ITAC implementation grants).
- Builds on recently completed project focused on industrial utilization of waste heat.

Recently completed work (DOE and BPA)

- King County West Point Treatment Plant on biogas optimization and utilization
- Webb Dairy, installation of first PNW commercial heat pump water heater

Webinar Nov 5, 11 am!

Funders: DOE, BPA

Energy Efficiency in Schools and Residences

School Energy Efficiency Pilot: rural/remote and low-income serving schools

Monitoring and verification for new, higher performance, cold-climate capable residential heat pumps

Pilot testing of in-window heat pumps (focus on renters) .

Funders: BPA, State of WA, WA Commerce

Solar Programs

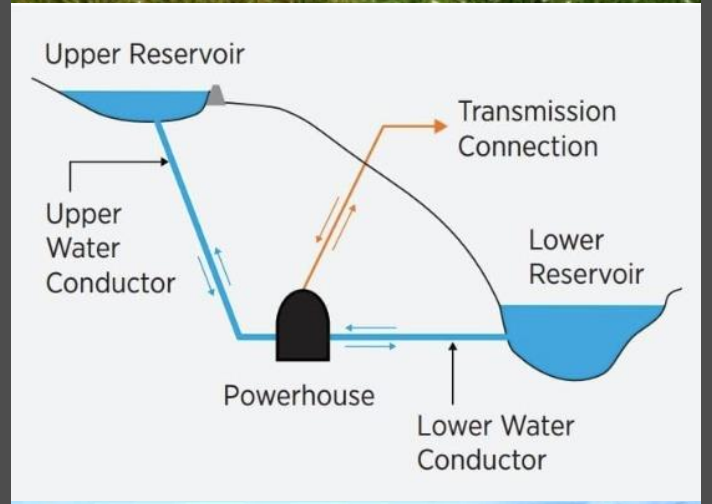
- Support for homeowners and business owners to install renewable energy systems
- Incentives for low income subscribers & low-income service providers.
- Supporting net-metering by collecting, compiling and reporting utilities net-metering data.

Funders: State of WA, Utilities

Green Transportation

- The Green Transportation Program -> public fleets in WA
- Tribal Green Transportation -> education and technical assistance to 55 federally recognized tribes in WA, OR, ID, MT
- Medium- and Heavy-Duty Vehicle Incentive Program -> fleet assistance and qualification in WA

Funders: State of WA, DOE, WSDOT

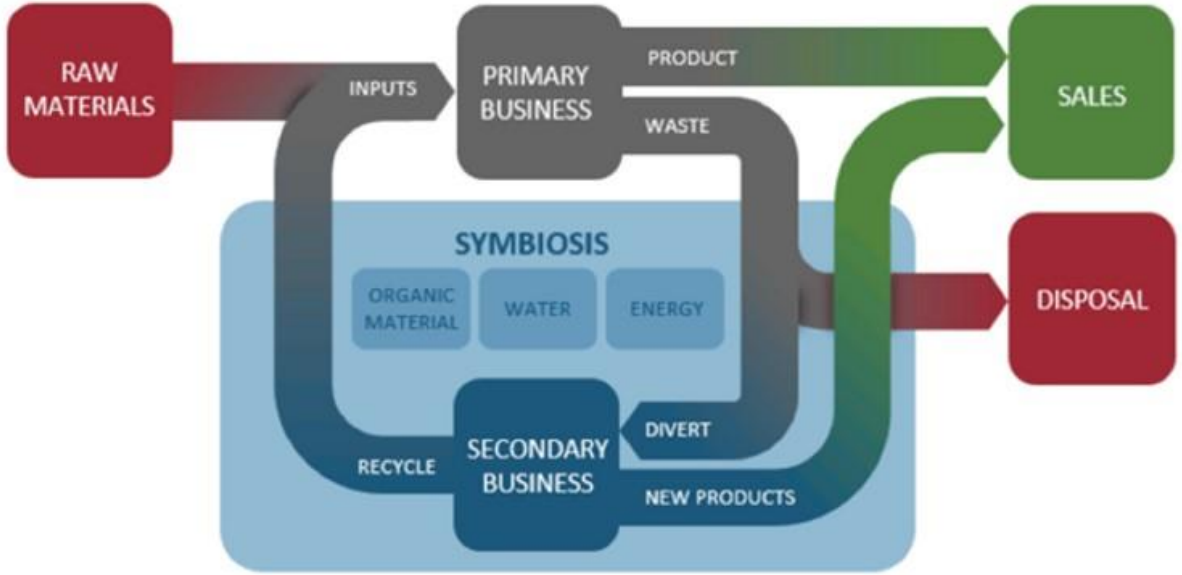


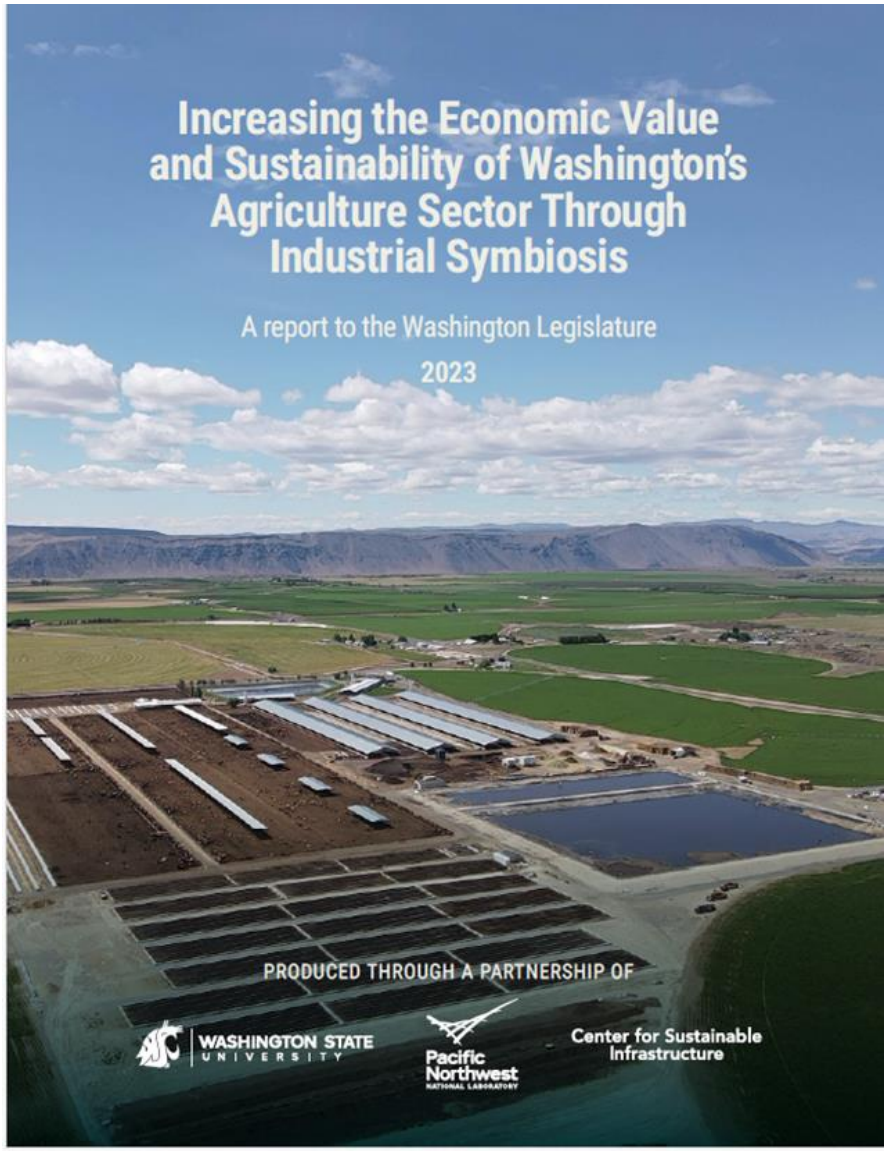
Legislative Reports Supporting State Energy Policy

- Study of Information and Perspectives on Pumped Storage Hydropower Siting (ongoing)
- Least Conflict Solar Siting (completed)
- Feasibility of Recycling Wind Turbine Blades in WA (completed, not feasible)

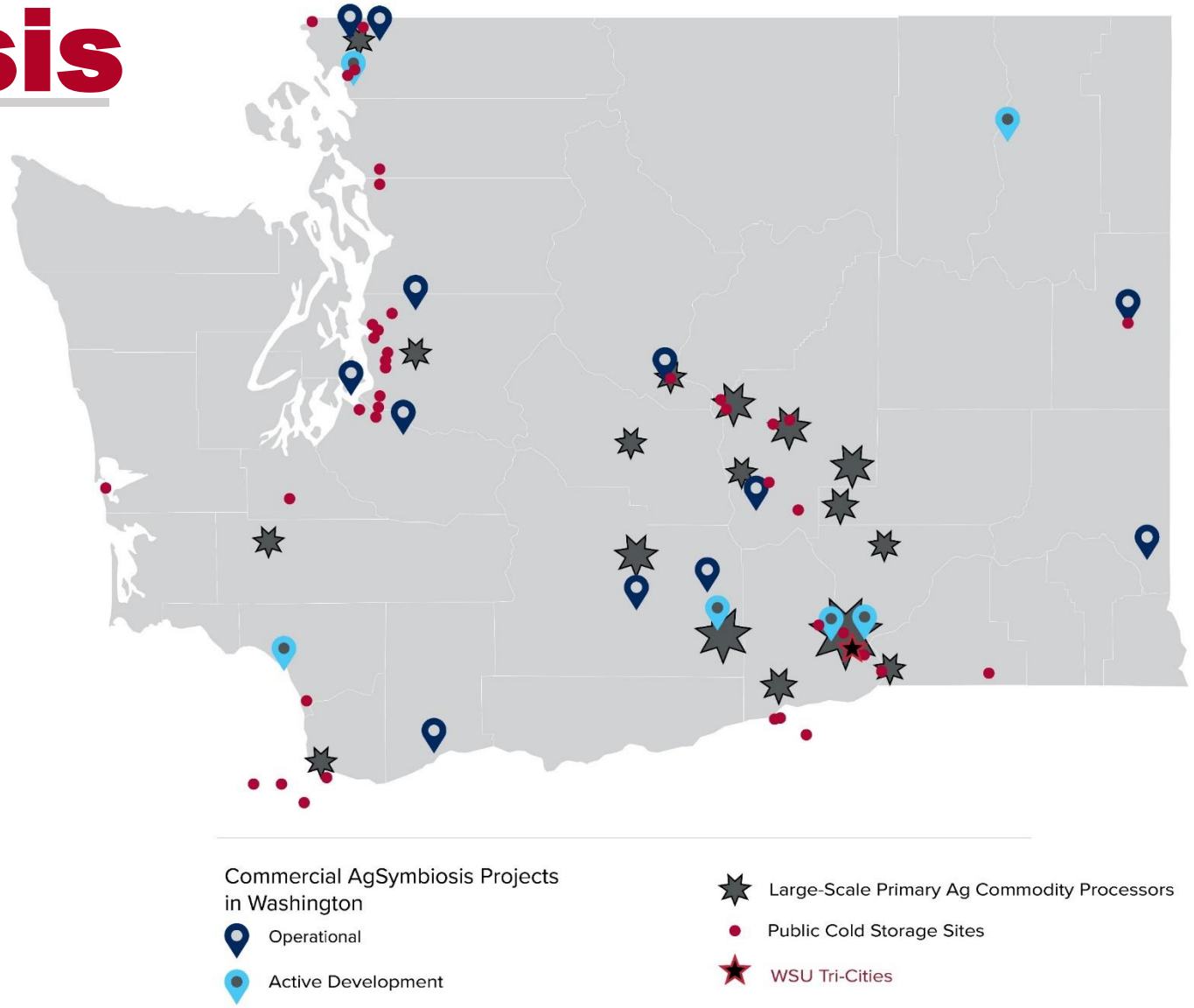
Agriculture Symbiosis

Agriculture Symbiosis happens when food, beverage, or farm businesses partner with each other, or with businesses from other industry sectors, to share their surplus resources – energy, water, and organic 'wastes' – for mutual economic benefit.





Roth, R., M.P. Wolcott, G.G. Yorgey, J.L. Male, T. Sturdevant, D. Camenzind, F. Pierobon, J. Padowski, C.E. Kruger, A. Whittemore, T. Carroll, K. Jensen, S. Moddemeyer, and A. Ybarra. 2023. Increasing the Economic Value and Sustainability of Washington's Agricultural Sector through Industrial Symbiosis: A report to the Washington Legislature. WSU Center for Sustaining Agriculture and Natural Resources, and WSU Institute for Northwest Energy Futures, Richland, WA.

AgSymbiosis

Opportunities Across Washington