

# Washington's Green Economy Interim Report



Pursuant to Chapter 415 Laws of 2019 - HB 1109 Section 129(38)

**ENERGY**

December 1, 2019

REPORT TO THE LEGISLATURE

**Lisa Brown, Director**

# Acknowledgments

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# Executive Summary

## Overview

Communities in Washington must respond to climate change by reducing emissions and preparing for a resilient future characterized by adapting to the current and foreseeable effects of climate change. Our state has strengths in key sectors that can be leveraged to respond to climate change and are essential to simultaneously meeting the state's greenhouse gas emissions targets and achieving economic success.

To address requirements detailed in ESHB 1109, the Washington State Department of Commerce convened a work group regarding the development of Washington's green economy based on the state's competitive advantages in energy, water, natural resources and agriculture. The Green Economy Work Group is a broad group of stakeholders, each with a unique perspective on the sectors identified in the proviso. The effort represents an opportunity to connect a number of highly promising efforts across the state to generate a response that measures up to the wide range of environmental challenges we face.

The final report, due in June 2020, will serve as a foundation from which to build Washington's green economy. This foundation must also include ongoing work on industrial symbiosis, which is the collaboration among public and private businesses to foster the use of industrial byproducts, including energy, water, materials and logistics. This foundation will also include updates to the State Energy Strategy and a commitment to rethink traditional infrastructure financing models.

The work group is examining the following areas and conducting the tasks described below:

### **Opportunities in Education and Workforce Development**

- Develop an inventory of higher education resources – including research, development and workforce training – to foster green economic development in energy, water, agriculture and forestry (natural resources)
- Identify investment opportunities in higher education research, development and workforce training to enhance and accelerate green economic development

### **Opportunities in Technology**

- Identify opportunities for integrating current and emerging technologies into and across energy, water, agriculture and forestry (natural resources) sectors of the state's economy
- Identify opportunities to create and enhance use of resources, including water and energy conservation, while minimizing environmental impacts and integrating with smart grid technologies

### **Policy Recommendations for State and Local Government**

- Make recommendations for green economic development investment opportunities
- Identify how state government can attract private investments to build the green economy in Washington to serve local, state, national and global markets
- Recommend policies at the state and local government level to promote and accelerate development of the green economy in Washington state

# Introduction

## Background

In March 2019, the Association of Washington Cities (AWC) released its report "Growing the Green Economy in Washington State: Exploring an Eco-nomic Center."<sup>1</sup> The report focused on the energy, water and agriculture/forestry sectors by emphasizing activities, opportunities and policy recommendations that have strong potential for supporting Washington state businesses in these areas.

Following on this effort, ESHB 1109.SL (38) tasked Commerce with convening a work group to identify resources and opportunities that would support development of Washington's green economy. The Legislature appropriated \$150,000 for fiscal year 2020 to do this work.

### What Does the Legislation Say?

The 2019-21 Supplemental Operating Budget, HB 1109.SL (38), directed Commerce to convene a work group regarding the development of Washington's green economy based on the state's competitive advantages. The work group must:

- Develop an inventory of higher education resources, including research, development and workforce training to foster green economic development in energy, water and agriculture
- Identify investment opportunities in higher education research, development and workforce training to enhance and accelerate green economic development
- Make recommendations for green economic development investment opportunities and how state government could serve as a clearinghouse, or economic center, to support private investments and build the green economy in Washington to serve national and global markets
- Identify opportunities for integrating technology in energy, water, natural resources and agriculture, and create resource efficiencies, including water and energy conservation and smart grid technologies
- Recommend policies at the state and local government level to promote and accelerate development of the green economy in Washington state
- Submit an interim report with the work group recommendations to the appropriate legislative committees by Dec. 1, 2019
- Submit a final report with the work group recommendations to the appropriate legislative committees by June 30, 2020

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<sup>1</sup> ["Growing the Green Economy: Exploring an Eco-Nomic Center," Association of Washington Cities, Center for Quality Communities, 2019.](#)

## Recent Related Efforts Commerce Is Leading

Commerce is currently working to update Washington's State Energy Strategy with two broad goals in mind. First, the strategy must identify pathways to meet the state's updated greenhouse gas (GHG) reduction targets. Second, the strategy must align the pathways with the requirements of the state's 100% clean electricity law (Clean Energy Transformation Act<sup>2</sup>).

While achieving those goals, the strategy must maintain competitive energy prices that are equitable for consumers. A key connection point for the green economy work is the requirement that the strategy increase competitiveness by fostering a clean energy economy that enables GHG reductions and economic advancement through jobs and workforce development.

Aligning the green economy work with current efforts around industrial symbiosis represents another significant opportunity. Industrial symbiosis is the use by one company or sector of underused resources from another company. The broadly defined resources include waste, byproducts, residues, energy, water, logistics, capacity, expertise, equipment and materials.

Creating new connections to use these assets would keep resources in productive use for longer. The systems approach to a more sustainable and integrated industrial economy would result in recommendations for specific projects and research and development efforts and would fit with the green economy mandate to identify sustainable business opportunities for Washington.

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<sup>2</sup> <https://www.commerce.wa.gov/growing-the-economy/energy/ceta/>

# Green Economy Work Group

## Green Economy Schedule and Work Program

To develop recommendations and a report for the Legislature by June 30, 2020, the group initially met in October 2019 and intends to meet four more times.

The work group will review the broad set of recommendations and opportunities outlined in the Association of Washington Cities' recent report "Growing the Green Economy: Exploring an Eco-Nomic Center."<sup>3</sup> These recommendations will provide the building blocks to initiate this effort.

Members will respond to these recommendations and determine which the group wants to prioritize, which might need more work, and whether any new recommendations and opportunities should be considered. A grouping of recommendations by sector from the report appears as "[Appendix B: Growing the Green Economy Recommendations by Sector](#)" and will be used to begin this work.

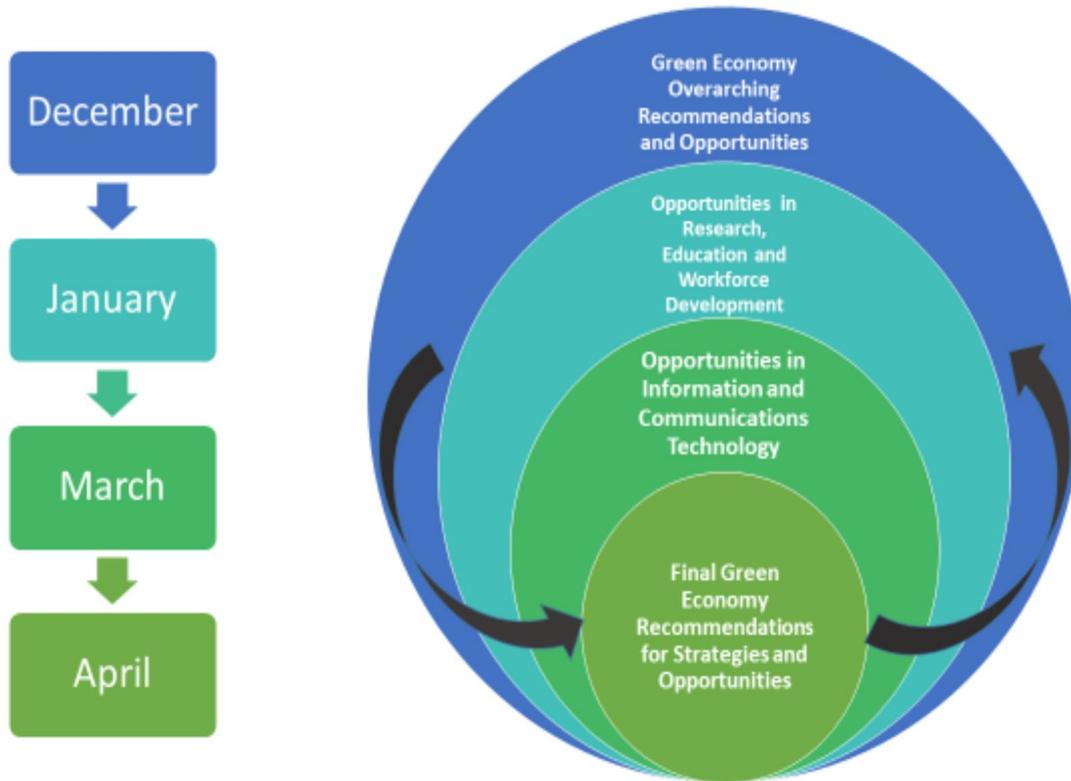
Beginning in January 2020, the work group will conduct a series of workshops that will refine these recommendations by establishing opportunities and connections in the following areas, with the anticipated result being the development of final recommendations for the Legislature in June. Figure 1 illustrates the following steps:

1. December: Identify and prioritize recommendations by sector
2. January: Workforce training and research and development
3. March: Private sector opportunities in information and communication technologies
4. April: Recommendation and strategy development

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<sup>3</sup> "[Growing the Green Economy: Exploring an Eco-Nomic Center.](#)" Association of Washington Cities, Center for Quality Communities, 2019.

**Figure 1: Green Economy Work Plan**



## Who Serves on the Green Economy Work Group?

The complete list of Green Economy Work Group members is in [Appendix A: Green Economy Work Group Membership](#). At present, the group has members from 25 organizations representing diverse interests in Washington state related to the economic sectors being examined in this effort. Work group membership draws from the following types of organizations: state government, educational institutions, private industry, regional government, local government, tribal government, nonprofits, labor, and energy and utility providers.

## Progress to Date

The Green Economy Work Group met for the first time Oct. 10, 2019, and began to identify opportunities and recommendations for the Legislature to support a green economy in Washington state. The group engaged in a facilitated process to identify key elements of a working definition of "green economy" and began to establish priorities to include in a draft purpose statement for the group.

## Definition and Purpose Statement

Following the initial meeting, a subgroup of members met separately to examine the results of the facilitated group process and put together a working definition for "green economy." A separate member subgroup met to build on the previous work to establish a purpose statement for the group.

**Working Definition of "Green Economy"**

*Climate change is driving ecological, economic and social disruption across the globe and in Washington state. Washington state is a leader in scaling existing and creating new solutions in response to these challenges. This presents significant economic opportunities, particularly for state businesses, workers, organizations and communities.*

*Washington's green economy makes, moves and uses goods and services for a cleaner footprint. The green economy produces strong and innovative businesses, good jobs, health, prosperity and resiliency for all communities throughout the state.*

**Green Economy Work Group Purpose Statement**

*The purpose of the Green Economy Work Group is to identify opportunities and resources and to develop policy recommendations that grow and transform Washington state's economy and serve as a model and leader in the international marketplace.*

*Success in this will include cross-cutting policy recommendations in higher education, workforce training, public and private research, innovation, and greater opportunities for strategic investment. These recommendations will be paired with specific strategies to deploy these tools and opportunities in an equitable and accessible manner for people and entities in communities throughout the state.*

# Appendix A: Green Economy Work Group Membership

**Table 1: Green Economy Work Group Membership**

Organization	Name	Title
Association of Washington Cities	Andy Meyer	Special Projects Coordinator
AVISTA	John Gibson	Chief R&D Engineer
Center for Sustainable Infrastructure	Rhys Roth	Executive Director
Chelan County PUD	Justin Erickson	Managing Director, Shared Services
CleanTech Alliance	Tom Ranken	President and CEO
Dept. of Agriculture	Evan Sheffels	Senior Policy Advisor to the Director
Dept. of Commerce	Michael Furze	Assistant Director, Energy Division
Dept. of Natural Resources	Anne Nelson	Executive Policy Advisor
Economic Alliance of Snohomish County	Patrick Pierce	Executive Director
Front and Centered	Deric Gruen	Program Director
HDR	Genesee Adkins	
McKinstry	Dale Silha	Vice President – Pacific Northwest Region
Puget Sound Energy	Ben Farrow	Manager New Product Development
Puget Sound Regional Council Economic Development Board	Jason Thibedeau	Principal Economic Development Manager
Sierra Club	Doug Howell	Senior Campaign Representative
Spokane Tribe	Mike Tedesco	Executive Director
South Puget Sound Community College	Jason Selwitz	Dean of Applied Technology
TRIDEC	David Reeploeg	Vice President for Federal Programs
Washington State Association of Counties	Paul Jewell	Policy Director

Organization	Name	Title
Washington Farm Bureau	Tom Davis	Director of Government Relations
Washington State Board for Community and Technical Colleges	Nate Humphrey	Director, Workforce Education
Washington State Forest Protection Association	Jason Callahan	Director of Government Relations
Washington State Labor Council	Larry Brown	President
Dept. of Transportation	Anthony L. Buckley	Director, WSDOT Innovative Partnerships Program
Washington State University	Brad Gaolach	Director, Metropolitan Center for Applied Research and Extension
	Paul Roberts	Lead Author of Growing the Green Economy in Washington State: Exploring an Eco-nomic Center

# Appendix B: Growing the Green Economy

## Recommendations by Sector

This appendix includes excerpted recommendations from the Association of Washington Cities report "Growing the Green Economy: Exploring an Eco-Nomic Center,"<sup>4</sup> organized by the key sectors of energy, water, agriculture and forestry. The Green Economy Work Group will use these as starting points from which to identify priorities for the group moving forward. The work group is not limited to these recommendations and might create different recommendations and priorities as it develops and refines its work products. These are provided in this report as a reference point only and not intended to reflect the process being undertaken by this group.

### Energy

#### **Focus on making Washington state a national and world leader in clean energy and clean technology.**

The state has a long history in clean energy, a firm policy commitment to advance these objectives, and educational institutions, businesses, governments, and NGOs already committed to this work. However, the creation of an Eco-nomic Center focused on clean energy and technology will require further leadership from the State of Washington with partnerships from these other groups. Energy is a regulated industry, so leadership must come, at least in part, from a coordinated effort involving the State Department of Commerce, Department of Natural Resources, Utilities and Transportation Commission, and others. To be clear, these agencies are already leaders in this area.

#### **Develop flexible grid and two-way energy management systems.**

Smart grid development is well underway in Washington, the United States and around the world. The development of the flexible grid capable of two-way energy management, leveling peaks and valleys from renewable sources, and delivering energy at optimal times is not far away. The integration of ICT is central to this effort and promises to improve energy efficiency. Investments in these emerging technologies will likely pay dividends and help inform other clean technology development. Both WSU and UW have received grant funding to develop smart grid demonstration projects.

#### **Transform energy markets and business models with new technologies and battery storage.**

New energy sources and energy consumption require flexible "electron management" demand strategies. For example, UniEnergy Technologies located in Mukilteo has developed systems to store and manage energy generated by renewable sources. Energy storage, EV technology, ICT, and microgrids will help shrink the carbon footprint, yet expand the complexity of managing the grid. New input/output, applied technologies and business models are needed

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<sup>4</sup> ["Growing the Green Economy: Exploring an Eco-Nomic Center." Association of Washington Cities, Center for Quality Communities, 2019.](#)

## **Prioritize and invest in cyber security.**

Cyber security threats will continue to plague our world as we move to integrate ICT into all manner of things including energy and smart grid systems. As systems move toward greater interoperability and communications, they open portals for hackers. Washington is home to some of the top technology companies in the world with the necessary talent to help protect energy and ICT systems. Cyber security should be a top priority for state and national security, utilities, industries, and (in particular) energy.

## **Develop investment models that meet tomorrow's energy needs and avoid stranded assets.**

Smart investments will become even more important and potentially more difficult to make in today's dynamic energy and technology environment. Energy is in the midst of a rapid technology transformation. It historically relied upon stable assumptions to make large scale capital investments intended to serve long periods of time (50+ years). Today, the assumptions of future technologies are less certain and the risks associated with large capital investments are greater. Utility providers want to avoid stranded assets that do not produce income, do not meet projected income targets, or have to be replaced and are a drain on the rate base. Thinking carefully up front can help reduce these risks.

## **Develop the smart grid and clean fuels to accommodate a clean energy transportation system.**

Transportation is undergoing radical transformation. Fleets, cars, buses, and other vehicles are transitioning away from fossil fuels to electricity or other cleaner fuel sources. Even air transportation is experimenting with cleaner fuels. Improved battery technology is key to improving performance and reducing costs. As that happens, the energy supply and smart grid capabilities will need to accelerate.

## **Support green - more efficient buildings.**

Energy-efficient buildings present new business opportunities. New technology integration and ICT capacity are dramatically increasing energy efficiency and water use while reducing GHG. An example is the new Catalyst Building in Spokane built with CLT.

New, more energy efficient materials are being introduced into structures along with more efficient HVAC, lighting, energy systems, and many other improvements. Buildings, including homes, are becoming living entities.

In Washington State, McKinstry, the Master Builders 'Built Green' program, and the Bullitt Foundation have helped pioneer these new building technologies. McKinstry and the Master Builders are partners in this study.

## **Cities take a direct role in the energy revolution.**

Cities are where most energy is used in buildings and transportation. They are also the primary utility providers for water, wastewater, solid waste, and in some instances electricity. Cities can bridge silos with their utility operations and integrate other operations as well. This is a new leadership opportunity for cities with the prospect of reducing energy costs, and GHG emissions while generating energy.

## **Support greater expansion of ICT for energy efficiency and energy smart technologies.**

Sometimes referred to as the Internet of Things (IoT), the integration of ICT permeates our lives in almost every way. Washington State has one of the most sophisticated manufacturing capabilities in the world with industries such as aerospace, technology, biomedicine, bioengineering, and many more. The state excels in the integration of ICT technology.

## **Support research in Food Energy Water (FEW).**

The relationship of food production, water consumption and energy consumption is an emerging research area. Agriculture is energy intensive and agricultural waste is a source of energy. As population increases, demand for food, energy and water will also increase. The relationship between water, energy and food production is complex and should be examined with an eye toward greater efficiencies, energy opportunities and economic development. Pioneering research in FEW is underway at WSU.

# Water

## **Consider forming a Water Center in Washington State.**

The Center would serve as an advocate and clearing house for innovative water research, promoting technology development and efficiency in all aspects of water (potable, wastewater, irrigation, industrial, and natural resources). PureBlue, located in Seattle and a partner in this study, may serve as a model for such a center.

The mission of an innovation center would be to add value to existing R&D and create employment opportunities and training. It would be complementary to, not in competition with, existing efforts. The organization model may be a non-profit NGO rather than a public or private model, thereby allowing contributions from all organization types.

## **Develop strong partnerships to meet tomorrow's water needs.**

Water systems are largely dependent on natural systems and variability, and on a number of partners to design, build, finance, manage, and maintain them. Providing water for future needs will require recognition of changes in nature, designing with nature, nimble and flexible responses, applying new technologies, and cutting across traditional silos.

## **Engage Washington cities in a focused dialogue on water.**

Cities play a key role in water. Among the largest water utilities in Washington State are Seattle Public Utilities, Tacoma Public Utilities, Spokane Public Works, Cascade Water Alliance, and the City of Everett Public Works. These and other city and water utility providers are at the cutting edge of best practices in water. Washington cities are laboratories for many of the practices needed in other parts of the U.S. and the world. Many cities large and small face challenges upgrading and/or building infrastructure to meet future challenges including water source, infrastructure and workforce development. Given the dynamic nature of water locally and globally, it would be timely for Washington cities (facilitated by AWC-CQC) to engage in a conversation on the future of water and the role of cities.

## **Engage the private sector in a direct dialogue on the future of water in Washington and beyond.**

Several private companies, organizations and NGOs are engaged in water. These include engineering companies such as HDR and companies such as McKinstry (both partners in this study), as well as companies engaged in water research areas, such as purification and infrastructure, financial, insurance, and legal expertise, which are needed to develop new finance structures and manage risk. These entities have tremendous expertise to offer, and enlightened self-interest in developing, advancing and promoting solutions that address a world water crisis. Indeed, without private expertise and investment, society likely cannot adequately meet future water needs.

## **Promote water research.**

As noted in this study, R&D efforts are already underway in Washington State. Examples include: Center for Sustainable Infrastructure, Washington State University Metropolitan Center for Applied Research and Extension, Washington State University Surface Water Group, Washington State University Center for Environmental Research Education and Outreach, University of Washington Center for Urban Waters, Walla

Walla Community College Water and Environmental Center, Whitman College, and University of Washington Climate Impacts Group. Promoting further research with these and other organizations should be encouraged.

## **ICT and AI**

Sometimes referred to as the 'Internet of Water', the integration of ICT and AI into all water systems is underway. It is timely for organizations such as AWC-CQC, the State of Washington (DNR, DOE, DOC), and large utilities to engage firms like Microsoft, the Gates Foundation and others to explore new opportunities in integrating technology and water.

## **Cyber security**

Cyber security threats will remain an issue as we move to integrate ICT in water and energy. As systems move toward greater interoperability and communications, they open portals for hacking and disruption. Washington is home to some of the top technology companies in the world with the talent to help protect water, energy and ICT systems. Cyber security should be a top priority for state and national security, utilities, and water and energy industries.

## **One Water**

The days of siloed water systems may be numbered. On the horizon are new practices and technologies that respect the value of natural systems as an asset, the limitations of water due to climate change and growth, and the need to treat water as a scarce resource. The One Water concept described in this study will present an opportunity for new systems development.

## **Explore new water reuse and reclamation opportunities.**

Washington State has made great progress in policies and practices promoting water reuse, and recycling and wastewater management. However, much more can and should be done to explore new opportunities and new scales for water reuse including R&D in surface water management, recycling, water quality, water recapture, and more.

## **Water efficiency**

The need for greater efficiency in water systems is obvious. The means to achieve greater efficiency in water systems is ripe for innovation, investment and opportunity.

## **Community-based solutions**

All approaches to water conservation and efficiencies will involve the communities being served, as well as modifying existing practices and behaviors. We can learn lessons from places like South Africa, Australia, the middle east, and now parts of the United States where water shortages are matters of national or regional concern and national security. Every year these concerns grow, and engaging affected communities is a necessary part of the response.

## **Examine water pricing**

As noted, scarcity of water supply has resulted in changes to how we value water. For water, changing price models bring potentially sweeping social and economic changes. This is an area where physical science, social science and policy converge. Further research and practical interdisciplinary approaches are needed.

## **Infrastructure financing**

The United States is spending hundreds of billions of dollars each year to upgrade and build new water infrastructure. These projects are competing in capital markets with other demands for infrastructure financing associated with sea level rise, disaster relief and energy. We need to develop financial strategies to address these projects Washington State's higher educational, business and financial institutions are in a position to lead these efforts.

## **Employment**

Water systems are experiencing a workforce retirement wave and need to replace and replenish human resources. New employees entering the water workforce will need new and better technical skills. Investing in this workforce is a necessity and an opportunity. Workforce training in water and energy may attract students beyond Washington's borders.

## **Education including K-12**

Throughout this study, the need for additional investments in higher education, R&D and partnerships has been identified. The earlier education of the next generation needs to be considered as well because they will live with water scarcity. Teaching the importance of water conservation should be part of our future and early educational K-12 curriculum.

## **Food energy water (FEW)**

The relationship of food production, water consumption and energy consumption is an emerging area of research. As population increases, demand for food, energy and water will also increase. The relationship between water, energy and food production is more complex and should be examined with an eye toward greater efficiencies and economic development.

# Agriculture

## **Encourage interdisciplinary approaches to address the future of agriculture.**

Washington State University is a leader in agricultural research and product development in Washington State, like other centers across the nation focused on agriculture. WSU is joined by UW and other institutions across the state with educational programs in agriculture or related fields. In Washington, there are a number of private companies and NGOs working on agriculture and in the agricultural supply chain including water, waste water, energy, genetics, biology, and more.

## **Find greater efficiencies in water, irrigation, wastewater treatment, and energy.**

The integration of ICT is promising for advancing the agricultural business model. The relationship of food, energy and water also presents opportunities for R&D and economic development.

## **Support investments in new sustainable farming practices.**

Washington State already has emerging companies in these areas. Additionally, biology, bioengineering and genetics companies are all prominent in Washington and are beginning to recognize agriculture as an area for further R&D and business development.

## **Aquaculture in marine and fresh water is a promising area for further R&D and business development.**

There have been some notable challenges in this field in Washington State resulting in a ban on farming Atlantic salmon in fish pens. These developments and lessons should inform best practices and future business development.

Shellfish Initiative Phase II, led by former Governor Christine Gregoire, was a partnership between state and federal government, tribes and the shellfish aquaculture industry. Governor Inslee has made it one of his priorities to renew the Initiative's commitments by preventing and fixing pollution problems, reopening shellfish beds, confronting ocean acidification, and improving the permitting process to increase sustainable aquaculture.

## **Provide additional funding for ocean acidification research.**

In 2013, the Washington State Legislature approved \$3.3 million to invest in scientific research on ocean acidification, which plagues the aquaculture industry.

# Forestry

## **Support CLT, which shows significant promise as a sustainable building material.**

The Catalyst project in Spokane should serve as an important laboratory for the application of CLT and other high-tech energy efficient building strategies.

### **State support of CLT and ICT should continue.**

The economy and the environment require new building and housing strategies. Both objectives can be served with continued policy initiatives. Recent examples of policy initiatives include:

- In 2018, the Washington State Legislature passed Senate Bill 5450, which requires the Washington State Building Code Council to update its codes to account for mass timber products, including CLT. The new law will make it easier for developers to use sustainable building materials by adding more certainty to the permitting process.
- In 2017, the Washington State Legislature approved allocating \$5.5 million to the Department of Enterprise Services for the construction of 20 kindergarten through third grade classrooms using CLT materials. These demonstration projects will take place in five school districts across Washington State, specifically in Mount Vernon, Seattle, Sequim, Wapato, and Toppenish school districts.

### **Encourage continued federal support of CLT.**

According to Forterra, The Timber Innovation Act of 2016 was introduced in the 114th Congress to "accelerate the use of wood in buildings, especially tall wood buildings" over 85 feet in height by providing additional resources for research, technical assistance and a tall wood building competition. The bill was reintroduced in 2017, and as of May 29, 2018, it had been read twice and referred to the Committee on Agriculture, Nutrition, and Forestry.

### **Local governments should develop energy codes and sustainability standards for buildings and building materials.**

This may include working with energy providers, utilities, private sector builders, architects, and other professional organizations to develop and periodically monitor and improve these standards. Washington State has taken steps to improve energy efficiency, but this movement is still in its infant stages.

### **Encourage new ICT applications that allow energy and systems management maximizing efficiencies.**

The introduction of ICT into various aspects of buildings promises to create a smart building revolution. Green buildings are emerging with new technology (e.g. HVAC, lighting, energy systems), dramatically increasing energy and water efficiency while reducing GHG. Buildings, including homes, are becoming living entities. The intersection of buildings and ICT presents real opportunities for business investment opportunities.

### **Develop new recycling opportunities.**

Events in China impacting established recycling systems create a need for new recycling capacity in the U.S. and opportunities for recycled building materials. There is an opportunity for development of deconstruction technologies and development of new recycling businesses.

## Appendix C: Draft Inventory of Educational Programs

This is a draft inventory of educational programs in energy, water and agriculture. This inventory will continue to be developed for the duration of the Green Economy Work Group program.

School	Description (quoted from school's program materials)	Web link	Degree
Bellingham Technical College	According to the US Energy Information Administration, global energy consumption has significantly increased and is expected to continue rising through 2035 (Energy Outlook, 2012). The energy industry is working to increase energy efficiency and looking toward innovative technologies to meet the growing demand. Prominent energy companies like BP and Phillips 66 are starting new departments focused on alternative energy and investing in technology development and production. New energy technology career categories are emerging at an unprecedented pace, and skill sets associated with energy technology cut across both traditional and emerging industries. The number of green jobs in Washington rose 32% in the last few years, and these trends are expected to continue as the demand for energy increases and resources decrease.	<a href="https://www.btc.edu/DegreesClasses/Programs/ProgramDetails.aspx?ID=145&amp;tab=tab2">https://www.btc.edu/DegreesClasses/Programs/ProgramDetails.aspx?ID=145&amp;tab=tab2</a>	Certificate of Clean Energy Technology
Bellingham Technical College	The Water and Wastewater Treatment program will train you for top jobs at water and wastewater treatment plants, including positions as water and wastewater treatment operators. WWT operators work to ensure that the safety, environmental and water quality standards for an employer's treatment system are met. BTC's Water and Wastewater Treatment program gives you training in technical skills and interpersonal skills to get you ready for top jobs in the field of water treatment.	<a href="https://www.btc.edu/DegreesClasses/Programs/ProgramDetails.aspx?ID=153">https://www.btc.edu/DegreesClasses/Programs/ProgramDetails.aspx?ID=153</a>	AAS Water & Wastewater
Bellingham Technical College	You can prepare for a rewarding career as a fish hatchery specialist, fish culturist, fisheries technician, net pen worker, shellfish hatchery worker, scientific aide, water quality technician, or habitat restoration specialist. In BTC's Fisheries and Aquaculture Science programs, you'll learn top skills such as fish culture, aquaculture, and fish spawning that will position you for the best aquatic science jobs in the fisheries industry.	<a href="https://www.btc.edu/DegreesClasses/Programs/ProgramDetails.aspx?ID=88&amp;tab=tab3">https://www.btc.edu/DegreesClasses/Programs/ProgramDetails.aspx?ID=88&amp;tab=tab3</a>	AAS Fisheries & Aquaculture Science

School	Description (quoted from school's program materials)	Web link	Degree
Big Bend Community College	BBCC provides students interested in Agricultural Technology and Management a comprehensive Associate in Applied Science (AAS) degree with three customized pathways intended to provide graduates with the skills needed to independently operate or support local, regional and national agriculture industries.	<a href="https://www.bigbend.edu/academics/programs/agriculture/advising/">https://www.bigbend.edu/academics/programs/agriculture/advising/</a>	AAS Agriculture Technology & Management/ Agricultural Agronomy Certificate/ Agricultural Business Certificate/ Agricultural UAS Certificate
Cascadia College	Sustainability is a concept, a discipline, an ideal. It is the recognition that the prosperity of our planet, our people, and our economy are inextricably linked. By blending coursework in natural sciences, social sciences, management, and technology, Cascadia College's Bachelor of Applied Science in Sustainable Practices provides a pathway to careers in the green industry. Graduates will learn the skills necessary to plan and implement sustainable approaches to how we live and work by managing complex projects for government agencies, private and non-profit organizations, water, energy, and agriculture industries, construction management firms, and educational institutions	<a href="http://www.cascadia.edu/programs/degrees/bassp.aspx">http://www.cascadia.edu/programs/degrees/bassp.aspx</a>	BAS Applied Science in Sustainable Practices
Cascadia College	The Associate in Applied Science-Transfer degree in Environmental Technologies and Sustainable Practices is a comprehensive technical degree that provides industry-specific knowledge and professional skills that are vital to staking a claim in the emerging green economy. Governments and businesses in this state and around the world are looking for professionals who can "pioneer innovative pathways" as we rethink and redesign how we consume resources; students in this program will have the chance to be a part of that as professional practitioners as well as in roles as informed consumers and political citizens.	<a href="http://www.cascadia.edu/programs/certificate/default.aspx">http://www.cascadia.edu/programs/certificate/default.aspx</a>	AAS Environmental Technologies and Sustainable Practices
Central Washington University	CWU is the first university in the Pacific Northwest with an institute that addresses energy issues from both conventional and alternative energy sources, with a special focus on energy management. The Institute for Integrated Energy Studies provides a unique interdisciplinary approach to provide education, research, and training in the areas of conventional and renewable energy resources.	<a href="https://www.cwu.edu/programs/integrated-energy-management-1#2879">https://www.cwu.edu/programs/integrated-energy-management-1#2879</a>	BS Integrated Energy Management

School	Description (quoted from school's program materials)	Web link	Degree
Central Washington University	Environmental Geosciences focuses on the interactions between solid Earth and the atmosphere and hydrosphere, including groundwater, soils, and climate.	<a href="https://www.cwu.edu/programs/geology#2861">https://www.cwu.edu/programs/geology#2861</a>	BS Environmental Geosciences
Central Washington University	Environmental Studies helps you understand the challenges facing our environment. The interdisciplinary program incorporates biology, geography, and geology to offer a comprehensive view of the world and how we can ensure it continues to thrive.	<a href="https://www.cwu.edu/programs/environmental-studies">https://www.cwu.edu/programs/environmental-studies</a>	BS Environmental Studies
Central Washington University	The Ecology and Evolution Specialization is designed for students broadly interested in basic and applied biology, natural resource management, agriculture, ecological restoration, conservation biology, disease dynamics, animal behavior, and biological research.	<a href="https://www.cwu.edu/programs/biological-sciences#2893#2893#2893">https://www.cwu.edu/programs/biological-sciences#2893#2893#2893</a>	BS Ecology & Evolutionary Biology Specialization
Central Washington University	The public health profession focuses on preventing disease, addressing inequities and developing policies and programs that help communities achieve optimal health and wellbeing. Our program aims to educate and empower the emerging generation of public health leaders.	<a href="https://www.cwu.edu/programs/health-sciences#2931">https://www.cwu.edu/programs/health-sciences#2931</a>	BS Public Health
Central Washington University	Want to improve your understanding of the world around you? Want to learn the details behind current important topics like climate, hydrogeology, environmental and geologic hazards? Then geology is a good fit for you.	<a href="https://www.cwu.edu/programs/geology#2862">https://www.cwu.edu/programs/geology#2862</a>	BA Geology
Central Washington University	You might say you take your life in your hands when you study biology. That's because it is literally the study of life—all life—from one-celled organisms to multi-species habitats. And when you study the biosphere at CWU, you will receive hands-on learning from award winning professors. Gain an understanding of biological concepts relevant to the individual and to society and gain an appreciation of scientific inquiry. Studying biology helps us decipher many social and economic issues and is at the forefront of environmental issues.	<a href="https://www.cwu.edu/programs/biological-sciences#2893#2893#2893">https://www.cwu.edu/programs/biological-sciences#2893#2893#2893</a>	BS/BA Biological Sciences
Centralia College	The Associate in Arts degree with an emphasis in Environmental Studies is intended for students who plan a career in an environmental field in areas such as environmental policy and law, urban planning, environmental ethics, and environmental advocacy.	<a href="https://www.centralia.edu/academics/arts-sciences/environmental-science.aspx">https://www.centralia.edu/academics/arts-sciences/environmental-science.aspx</a>	AA Environmental Science

School	Description (quoted from school's program materials)	Web link	Degree
Centralia College	The Associate in Science degree with an emphasis in Environmental Science is intended for students who plan a career as a scientist or technician in an environmental field such as conservation biology, environmental chemistry, environmental geology, energy resources, environmental planning, agro-ecology or atmospheric sciences.	<a href="https://www.centralia.edu/academics/arts-sciences/environmental-science.aspx">https://www.centralia.edu/academics/arts-sciences/environmental-science.aspx</a>	AS Environmental Science
Centralia College	The Natural Resources Management program prepares students for transfer into a program in forestry, fisheries, or wildlife management.	<a href="https://www.centralia.edu/academics/arts-sciences/natural-resources.aspx">https://www.centralia.edu/academics/arts-sciences/natural-resources.aspx</a>	AA Natural Resources Management
Centralia College	This program is for students who wish to complete a bachelor's degree in such disciplines as general or molecular biology, zoology, microbiology, genetics, entomology, botany, horticulture, soil science, phycology, ecology, marine biology, fisheries biology, or wildlife management. This program assumes a student is prepared to start college-level math and English courses.	<a href="https://www.centralia.edu/academics/arts-sciences/biology.aspx">https://www.centralia.edu/academics/arts-sciences/biology.aspx</a>	AA in Biology
Centralia College	This program is for students who wish to complete a bachelor's degree in such disciplines as general or molecular biology, zoology, microbiology, genetics, entomology, botany, horticulture, soil science, phycology, ecology, marine science, fisheries or wildlife management.	<a href="https://www.centralia.edu/academics/arts-sciences/biology.aspx">https://www.centralia.edu/academics/arts-sciences/biology.aspx</a>	AA in Science
Clark College	Environmental Science is the study of physical and biological properties that make up the environment and their relationship to living organisms on the planet. This interest area is an interdisciplinary field that combines foundational knowledge in a variety of earth sciences. As society explores new ways to live sustainably on the planet, research and creative solutions will build upon knowledge of natural systems. Environmental scientists apply mathematic and scientific principles to solve environmental issues and develop ways to reduce, correct, or prevent damage to the environment.	<a href="http://www.clark.edu/academics/programs/dept/environmental_science/index.php">http://www.clark.edu/academics/programs/dept/environmental_science/index.php</a>	AS Environmental Science

School	Description (quoted from school's program materials)	Web link	Degree
Clover Park Technical College	With the constant population growth and development of new technologies, environmental impact is a vital focus. Students in CPTC's Environmental Sciences & Technology program train for a wide range of career opportunities in the field of environmental science. Some of the training opportunities include hands-on water-quality monitoring; soil, water, and air sampling; mineral identification; wetland delineation and restoration; geographic information system mapping; and simulated hazardous waste site cleanup operations. This program takes advantage of CPTC's 110-acre outdoor learning laboratory at Flett Creek, across the street from our Lakewood Campus. If you love the outdoors and have a passion for nature, this program and career path might be your perfect fit.	<a href="http://www.cptc.edu/programs/environmental">http://www.cptc.edu/programs/environmental</a>	Certificate of Environmental Sciences & Technology
Columbia Basin College	Agri-Food Systems give you a broad, interdisciplinary understanding of agriculture systems and allow you to develop specialized knowledge of business management in agriculture and related areas. The program prepares not only aspiring growers of crops, but also students who are interested in related industries, such as global marketing, direct marketing, or food production to contribute to the changing field of agriculture.	<a href="http://www.columbiabasin.edu/index.aspx?page=407">http://www.columbiabasin.edu/index.aspx?page=407</a>	BAS Applied Science
Columbia Basin College	Agri-Food Systems give you a broad, interdisciplinary understanding of agriculture systems and allow you to develop specialized knowledge of business management in agriculture and related areas. The program prepares not only aspiring growers of crops, but also students who are interested in related industries, such as global marketing, direct marketing, or food production to contribute to the changing field of agriculture.	<a href="http://www.columbiabasin.edu/index.aspx?page=407">http://www.columbiabasin.edu/index.aspx?page=407</a>	AA Sciences in Agriculture
Columbia Basin College	Agri-Food Systems give you a broad, interdisciplinary understanding of agriculture systems and allow you to develop specialized knowledge of business management in agriculture and related areas. The program prepares not only aspiring growers of crops, but also students who are interested in related industries, such as global marketing, direct marketing, or food production to contribute to the changing field of agriculture.	<a href="http://www.columbiabasin.edu/index.aspx?page=407">http://www.columbiabasin.edu/index.aspx?page=407</a>	AA Sciences in Crop & Soil Science
Columbia Basin College	Agri-Food Systems give you a broad, interdisciplinary understanding of agriculture systems and allow you to develop specialized knowledge of business management in agriculture and related areas. The program prepares not only aspiring growers of crops, but also students who are interested in related industries, such as global marketing, direct marketing, or food production to contribute to the changing field of agriculture.	<a href="http://www.columbiabasin.edu/index.aspx?page=407">http://www.columbiabasin.edu/index.aspx?page=407</a>	AA Applied Science

School	Description (quoted from school's program materials)	Web link	Degree
Columbia Basin College	Environmental Science offers both science and non-science students the necessary background to understand the environmental problems that have arisen due to human activities. Courses deal with the interrelationships of soil, air, and water as they are affected by human activities. Students are challenged to think critically about their lifestyle choices and how these choices affect their immediate environment in the short term and the biosphere in the long run. Education of students is the key that opens their minds to the possibility that humans do, in fact, cause changes to their environment by using resources at rates that exceed the system's ability to replenish them.	<a href="http://www.colu.mbiabasin.edu/index.aspx?page=419">http://www.colu.mbiabasin.edu/index.aspx?page=419</a>	AS Environmental Science
Eastern Washington University	Environmental Science is an interdisciplinary field that combines physical, chemical and biological sciences with social, political and economic understanding needed to study the environment and address environmental problems. The Environmental Science program integrates classroom work in biology, chemistry, geology and social sciences (economics and planning) with extensive field, lab and research experience. All students take a core of Environmental Science courses complemented by a concentration in one of the three core sciences (biology, chemistry, and geology).	<a href="https://www.ewu.edu/cstem/environmental-science/environmental-biology-option-bs/">https://www.ewu.edu/cstem/environmental-science/environmental-biology-option-bs/</a>	BS Environmental Science with Biology option
Edmonds Community College	Environmental Science combines information from biology, chemistry, physics, and geology, stressing a scientific approach towards understanding the nature and scope of current environmental issues.	<a href="https://www.edcc.edu/programs/stem/envsc/default.html">https://www.edcc.edu/programs/stem/envsc/default.html</a>	AS Environmental Science
Edmonds Community College	The Associate in Science (AS-T) degree is designed to prepare science majors for transfer to a four-year institution with junior standing. The AS-T degree will generally provide the transferring student with at least 90 quarter (60 semester) credits upon entry to a four-year institution. This degree will satisfy some, but not all, of the general education requirements at the receiving institution.	<a href="http://catalog.edcc.edu/preview_program.php?catoid=52&amp;poiid=10423">http://catalog.edcc.edu/preview_program.php?catoid=52&amp;poiid=10423</a>	AS Environmental Science, Geology, Earth Sciences

School	Description (quoted from school's program materials)	Web link	Degree
Edmonds Community College	This certificate provides a theoretical foundation in urban agriculture through the study of environmental sustainability principles, ecology in agricultural systems, and plant and soil sciences. There is also a practical focus on the study and hands-on cultivation of organic food crops for year-round production and harvest in the maritime climate of the Puget Sound bioregion. Students explore career options and apply knowledge, skills, and techniques through internship, practicum, or research experience. This certificate may be combined with the Urban Agriculture Enterprises Certificate to achieve the larger Urban Agriculture Systems Certificate.	<a href="http://catalog.edcc.edu/preview_program.php?catoid=53&amp;poid=10683">http://catalog.edcc.edu/preview_program.php?catoid=53&amp;poid=10683</a>	Certificate of Urban Agriculture Production Certificate
Everett Community College	Geologists study the composition, processes and history of the Earth. They try to find out how rocks were formed and what has happened to them since formation. They also study the evolution of life by analyzing plant and animal fossils. Geophysicists use the principles of physics, mathematics and chemistry to study not only the Earth's surface, but also its internal composition; ground and surface waters; atmosphere; oceans; and its magnetic, electrical and gravitational forces.	<a href="https://www.everettcc.edu/programs/math-science/physical/geoscience/">https://www.everettcc.edu/programs/math-science/physical/geoscience/</a>	AS/AAS Geoscience
The Evergreen State College	Areas of study include sustainable development, environmental policies, ethics, ecology, landscape architecture, city and regional planning, economics, natural resources, sociology, and anthropology.	<a href="https://www.evergreen.edu/studies/sustainability-studies">https://www.evergreen.edu/studies/sustainability-studies</a>	BA/BS/BAS Sustainability
The Evergreen State College	Geology integrates a range of scientific disciplines to gain a comprehensive understanding of the Earth, the relationships between rocks, water, chemistry, biology, and the environment, in the context of a changing world.	<a href="https://www.evergreen.edu/studies/geology">https://www.evergreen.edu/studies/geology</a>	BA/BS/BAS Geology
The Evergreen State College	In this program, students learn introductory plant biology in an integrated way with cultural studies. You'll learn about plant anatomy, morphology, evolution, and systematics. Lectures based on textbook readings supplement the laboratory work. The learning community explores how present form and function inform us about the evolution of major groups of plants such as mosses, ferns, conifers, and flowering plants. Gain hands-on experience studying plants under microscopes and in the field. You'll also learn how to maintain a detailed and illustrated nature journal to develop basic identification skills of local native species of plants. We'll cover basic botanical illustration skills to support this work. This program also focuses on people's relationships with plants through seminar texts, films, and lectures. We'll examine ecological interactions and cultural factors that shape the relationships plants have with the environment, including humans and other organisms.	<a href="https://www.evergreen.edu/catalog/offering/botany-20767">https://www.evergreen.edu/catalog/offering/botany-20767</a>	BA/BS/BAS Botany

School	Description (quoted from school's program materials)	Web link	Degree
The Evergreen State College	This interdisciplinary field brings together the natural and social sciences to give you skills to study the environment in all its complexities, and engage with government to develop policy to effectively solve environmental problems.	<a href="https://www.evergreen.edu/studies/path/environmental-studies">https://www.evergreen.edu/studies/path/environmental-studies</a>	BA/BS/BAS Environmental Studies
The Evergreen State College	This program will focus on intensive group and individual field research on current topics in ecological science. These topics will include forest structure, ecosystem ecology, effects of forest management, ecological restoration, riparian ecology, fire history, bird abundance and monitoring, insect-plant interactions, and disturbance ecology. Students will be expected to intensively use the primary literature and student-driven field research to address observations about ecological composition, structure, and function. Multiple independent and group research projects will form the core of our work in local forests of the south Puget Sound lowlands, national forests, national parks, state forests, and other relevant natural settings.	<a href="https://evergreen.edu/catalog/offering/field-ecology-16325">https://evergreen.edu/catalog/offering/field-ecology-16325</a>	BA/BS/BAS Ecology
The Evergreen State College	We all eat food. But how is good food raised, grown, or foraged, by whom, and at what cost? How does food get from the farm to our table? What is the connection between soil, food, health, and the languages used to describe our experiences of it? This interdisciplinary Path provides not only an intellectual exploration of food and agriculture, but also practical hands-on approaches to food production and the science of post-harvest processing. Learn to read the land and weather, get field-based learning, understand sustainable food production, follow entire growing season from seed to harvest to market and put the science of soils, plants and resource management into practice.	<a href="https://www.evergreen.edu/studies/path/food-and-agriculture">https://www.evergreen.edu/studies/path/food-and-agriculture</a>	BA/BS/BAS Food & Agriculture
The Evergreen State College	You'll learn to grow food for yourself and others in the broader community, using ecologically informed methods of farming while also learning management and business skills appropriate for small-scale production. You'll focus on Northwest crop and livestock species—including orchard fruit, potatoes, sheep, and poultry—and be able to study chemistry, microbiology, and anatomy in a highly practical and experiential context.	<a href="https://www.evergreen.edu/studies/agriculture">https://www.evergreen.edu/studies/agriculture</a>	BA/BS/BAS Agriculture

School	Description (quoted from school's program materials)	Web link	Degree
Grays Harbor College	Demonstrate field identification of regionally important plant species and their communities; Interpret how ecological relationships influence plant succession and biodiversity in forested ecosystems; Recognize silvicultural treatments used in the growing and culturing of trees; Explain how forest management practices are applied to forestland ownership within the context of multiple resource uses; Identify and solve problems in natural resources through the application of mensuration and/or remote sensing techniques while utilizing appropriate equipment; Differentiate harvest systems in relation to site and stand characteristics; Recognize and resolve potentially hazardous situations in the forested environment and related operations.	<a href="https://www.ghc.edu/academics/degrees-and-certificates/natural-resources-forestry-technician-aas">https://www.ghc.edu/academics/degrees-and-certificates/natural-resources-forestry-technician-aas</a>	AAS/Certificate Natural Resources-Forestry Technical
Grays Harbor College	The Associate in Science - Track 1 degree prepares you for upper division study in the areas of: Biological Sciences, Environmental Sciences / Resource Sciences, Geology, Earth Science	<a href="https://www.ghc.edu/academics/degrees-and-certificates/associate-science-direct-transfer">https://www.ghc.edu/academics/degrees-and-certificates/associate-science-direct-transfer</a>	AS
Grays Harbor College	The Bachelor of Applied Science in Forest Resources Management (BAS-FRM) degree prepares students to engage professionally as Foresters in public and private companies, Conservation Scientists, Wildland Fire Supervisors, Surveyors and other environmental activities. If you love nature and the outdoors Washington State is one of the main forester centers in our country and there are many roles you can take to make a better world right here in Grays Harbor.	<a href="https://www.ghc.edu/academics/degrees-and-certificates/bachelors/forestry">https://www.ghc.edu/academics/degrees-and-certificates/bachelors/forestry</a>	BAS Forest Resource Management
Green River College	Earth science includes the sciences used to study the lithosphere - the solid portion of Earth, the atmosphere - the gaseous envelope surrounding Earth, the hydrosphere - the ice, water and water vapor at or near Earth's surface, the biosphere - the zone at or near Earth's surface that supports life, and space beyond the atmosphere.	<a href="https://www.greenriver.edu/students/academics/degrees-programs/earth-science/">https://www.greenriver.edu/students/academics/degrees-programs/earth-science/</a>	AS Earth Science
Green River College	The Bachelors of Applied Science in Forest Resource Management degree prepares students to directly enter employment in several Natural Resources areas. By developing academic skills in mathematics, science, English, humanities, and natural resource courses, the student can apply directly for jobs in natural resources management, forest engineering, water quality or wildlife biology.	<a href="https://www.greenriver.edu/students/academics/degrees-programs/bachelor-of-applied-science/bachelor%E2%80%99s-in-forest-resource-management/">https://www.greenriver.edu/students/academics/degrees-programs/bachelor-of-applied-science/bachelor%E2%80%99s-in-forest-resource-management/</a>	BAS Forest Resource Management

School	Description (quoted from school's program materials)	Web link	Degree
Green River College	The study of Environmental Science is concerned with natural and modified environments and their interactions with biological systems, including human. Students gain an understanding of the environmental and ecological context, including positive and negative impacts, and methods to analyze, interrelate, and resolve these complex systems. This program is designed to meet a wide variety of academic goals.	<a href="https://www.greeriver.edu/students/academics/degrees-programs/environmental-science/">https://www.greeriver.edu/students/academics/degrees-programs/environmental-science/</a>	AS Environmental Science
Green River College	This certificate program prepares graduates for entry-level positions operating and maintaining public drinking water distribution systems. The program is designed for a fall quarter start, depending upon student composition, computation and computing skills; please contact an advisor for skill assessment information.	<a href="https://catalog.greeriver.edu/previous_program.php?catoid=3&amp;poid=565">https://catalog.greeriver.edu/previous_program.php?catoid=3&amp;poid=565</a>	Certificate of Water Distribution Technology
Green River College	This degree program prepares graduates for positions in municipal drinking water distribution and treatment facilities. Along with appropriate operating experience, this degree provides a foundation for positions with responsibilities beyond the entry level. The requirements build on those for the Water Distribution Technology Certificate of Proficiency, which should generally be completed first.	<a href="https://catalog.greeriver.edu/previous_program.php?catoid=3&amp;poid=564">https://catalog.greeriver.edu/previous_program.php?catoid=3&amp;poid=564</a>	AAS Water Supply Technology
Green River College	This degree program prepares graduates to work in a variety of outdoor careers. Graduates monitor stream, lake, and wetland systems for water quality and functions of physical, biological, and chemical parameters. They identify plants and animals using taxonomic keys. They assist wetlands delineation and GPS/map their location. Graduates also apply and follow environmental regulations regarding stream and wetland protection.	<a href="https://catalog.greeriver.edu/previous_program.php?catoid=3&amp;poid=552">https://catalog.greeriver.edu/previous_program.php?catoid=3&amp;poid=552</a>	AAS Natural Resources-Water Quality
Green River College	This degree program prepares graduates to work in a variety of outdoor careers. The growing awareness of water quality, wetland protection, reforestation, and environmentally sensitive timber harvest requires the services of technicians with a broad knowledge base. People who are trained to measure and sample the forest, its wildlife, streams and wetlands will enhance their employment opportunities. Wildlife biologists and professional foresters need technicians to efficiently produce accurate data. Park managers need knowledgeable personnel to perform maintenance duties and interpret wildland ecology for the public. Wildland firefighters are needed with current certificates of knowledge and skills.	<a href="https://catalog.greeriver.edu/previous_program.php?catoid=3&amp;poid=549">https://catalog.greeriver.edu/previous_program.php?catoid=3&amp;poid=549</a>	AAS Natural Resources-Forestry

School	Description (quoted from school's program materials)	Web link	Degree
Lake Washington Institute of Technology	Students learn plant identification, plant propagation, sustainable landscape practices, soil science, practical pruning and botanical concepts. Through time spent in practical hands-on training, students will learn to propagate, seed, transplant, design landscape plans, and maintain a variety of plants. Students will participate in an industry based training experience. Graduates find jobs with nurseries, greenhouses, landscape firms, garden centers, and park departments. The classroom setting includes individual and small group instruction with a hands-on focus of horticultural practices. The program emphasizes a sustainable approach to horticultural principles.	<a href="http://catalog.lwtch.edu/preview_program.php?catoid=9&amp;poid=2190&amp;returnto=439">http://catalog.lwtch.edu/preview_program.php?catoid=9&amp;poid=2190&amp;returnto=439</a>	Certificate of Proficiency Environmental Horticulture
Lake Washington Institute of Technology	Students who complete the Sustainable Landscape Technologies certificate will be able to manage outdoor spaces in an ecological and sustainable manner. Focuses on emerging technologies and best management practices in modern residential & commercial landscapes including topics like: reduction of landscape water usage through modern irrigation technologies, BMP's related to irrigation systems maintenance and installation, BMP's regarding "right plant, right place: planting concepts and soil management, installation and use of ecologically responsible hardscape materials such as permeable materials, green roofs, living walls, and sustainably sourced woods or introduction to plant health care principles including a broad understanding of common cultural, insect and disease problems in the landscape and how to assess and address them.	<a href="http://catalog.lwtch.edu/preview_program.php?catoid=9&amp;poid=2259&amp;returnto=439">http://catalog.lwtch.edu/preview_program.php?catoid=9&amp;poid=2259&amp;returnto=439</a>	Certificate of Sustainable Landscape Technologies
Lake Washington Institute of Technology	The Environmental Horticulture AAS degree provides students with knowledge and skills needed for jobs with nurseries, greenhouses, landscape firms, garden centers, and park departments. Students learn plant identification, plant propagation, sustainable landscape practices, soil science, practical pruning and botanical concepts. Through time spent in practical hands-on training, students will learn to propagate, seed, transplant, design landscape plans, and maintain a variety of plants. Students will participate in an industry based training experience.	<a href="http://catalog.lwtch.edu/preview_program.php?catoid=9&amp;poid=2189&amp;returnto=439">http://catalog.lwtch.edu/preview_program.php?catoid=9&amp;poid=2189&amp;returnto=439</a>	AAS Environmental Horticulture

School	Description (quoted from school's program materials)	Web link	Degree
Lower Columbia College	Knowledge about the planet we inhabit, the surrounding universe and the natural forces that impact our world adds value to our daily lives and provides the basis for interesting careers in a broad range of disciplines: astronomy, earth sciences, geography, geology, meteorology and oceanography. Begin studies for an advanced degree leading to positions with government agencies or private industry as an independent consultant, teacher, or researcher.	<a href="https://lowercolu.mbia.edu/programs/natural-science.php">https://lowercolu.mbia.edu/programs/natural-science.php</a>	AS/AA Earth Sciences
Lower Columbia College	Today's environmental problems call for people who are educated in more than one discipline, highly trained in scientific and technical skills, and aware of the ecological, political, economic, and social dimensions of environmental decisions. The Associate in Science-Transfer (AS-T) degree in Environmental Science provides a foundation in basic physical, biological, and social sciences, and also addresses the human element in environmental issues. This curriculum prepares students to transfer and complete a BS or BA in an Environmental Science field for subsequent graduate study in MS, PhD, and law degree programs and careers in government agencies or the private sector.	<a href="https://lowercolu.mbia.edu/programs/natural-science.php">https://lowercolu.mbia.edu/programs/natural-science.php</a>	AS Environmental Science
North Seattle College	Intended for students planning to transfer to a four-year college or university and major in biology, environmental/resource sciences, chemistry, geology or earth sciences. This degree is designed to allow students to complete approximately 70 math/science credits required or recommended for admission into these majors. The remaining 20 credits of the 90-credit degree include 5 credits of ENGL&101 (composition) and 15 general education credits (humanities and social sciences).	<a href="https://northseattle.edu/degrees/associate-science-degree-option-1">https://northseattle.edu/degrees/associate-science-degree-option-1</a>	AS Option 1
North Seattle College	The Sustainable and Conventional Energy and Control Technology (formerly, Industrial Power & Control) Certificate prepares students for immediate employment and future advancement, in companies or government organizations that manufacture, service, sell, design or support electrical and electronic systems that control machinery, automation, and/or processes.	<a href="https://northseattle.edu/certificates/sustainable-and-conventional-energy-and-control-technology-certificate">https://northseattle.edu/certificates/sustainable-and-conventional-energy-and-control-technology-certificate</a>	Sustainable & Conventional Energy & Control Technology Certificate

School	Description (quoted from school's program materials)	Web link	Degree
Northwest Indian College	We are pleased to offer one of the only Bachelor of Science in Native Environmental Science programs in the world. Our cutting-edge program is designed to support students in becoming leaders in their fields and in their communities. Our curriculum is place-based, experiential, and culturally-grounded. That is, we draw on the deep and sustained connections to place and commitment to environmental protection to guide our programming. Our students excel in understanding the changing world around them by working within Indigenous Knowledge Systems and utilizing cutting-edge scientific methods, technology, and tools.	<a href="https://www.nwic.edu/life-on-campus/degrees-and-certificates/b-s-in-native-environmental-science/">https://www.nwic.edu/life-on-campus/degrees-and-certificates/b-s-in-native-environmental-science/</a>	BS Native Environmental Science
Olympic College	Biotechnology is a fascinating field which is at the cutting edge of science using living cells and materials produced by cells to create pharmaceutical, diagnostic, agricultural, environmental, and other products to benefit society. People working in this field make groundbreaking discoveries that fight disease, improve food production, clean up the environment and make manufacturing more efficient and profitable. Because of the various levels of occupations associated with biotechnology, students have several options. Associate degrees are available at a number of community colleges in Washington State that focus on the technical side of biotechnology. Bachelor's and graduate degrees are also available that prepare students for careers in biotechnology associated with research and development and quality control.	<a href="https://www.olympic.edu/biotechnology-associate-arts-aa-or-associate-science-track-2">https://www.olympic.edu/biotechnology-associate-arts-aa-or-associate-science-track-2</a>	AA/AS Biotechnology
Olympic College	Environmental Studies is an interdisciplinary field which studies the earth's natural systems in the context of human social and economic constructs. It is a broad discipline that includes basic principles of ecology and environmental science, as well as associated subjects such as ethics, policy and planning, law, economics, philosophy, environmental justice, pollution control and natural resource management. Choose from: 1.Environmental Science, which focuses on the use of the scientific method to investigate chemical, biological, and quantitative aspects of natural systems; or 2.Environmental Policy, which focuses on environmental policy development and the economic aspects of natural resource issues.	<a href="https://www.olympic.edu/environmental-studies-associate-arts-aa">https://www.olympic.edu/environmental-studies-associate-arts-aa</a>	AA Environmental Studies
Olympic College	Geologists study the structure, composition, and history of the Earth. Their concerns include locating water, fuels, and minerals resources; determining appropriate land usage; and diagnosing natural hazards such as floods, volcanoes, and earthquakes.	<a href="https://www.olympic.edu/geology-associate-arts-aa-or-associate-science-track-1">https://www.olympic.edu/geology-associate-arts-aa-or-associate-science-track-1</a>	AA/AS Geology

School	Description (quoted from school's program materials)	Web link	Degree
Olympic College	This degree is intended for students with an interest in transferring to a baccalaureate institution within the State of Washington in one of the targeted disciplines. Typically the Associate in Arts degree is best suited for transfer to certain baccalaureate institutions. Students should meet early in their matriculation at Olympic College with an academic faculty advisor to determine the degree suitable for them.	<a href="https://www.olympic.edu/associate-science-track-1-ast-1">https://www.olympic.edu/associate-science-track-1-ast-1</a>	AS Biological Sciences, Environmental / Resource Sciences/ Earth Sciences
Peninsula College	Designed for students interested in continuing their education in Biological Sciences, Environmental/Resource Sciences, Chemistry, Geology, and Earth Sciences. Designed to fulfill the requirements of four-year degree-granting institutions for transfer with junior standing.	<a href="http://pencol.edu/degrees">http://pencol.edu/degrees</a>	AS Environmental Science
Peninsula College	The Sustainable Agriculture and Food Systems Short Term Certificate of Completion is designed for both aspiring farmers and community leaders interested in learning how to work in a regional food system in the areas of advocacy, education, production, and nonprofit service. Students who complete the certificate program will gain foundational knowledge and skills to work on a farm or operate their own farm business. The program will also benefit those seeking careers in local and community food systems.	<a href="http://pencol.edu/proftech/sustainable-agriculture">http://pencol.edu/proftech/sustainable-agriculture</a>	Short-Term Certificate of Sustainable Agriculture and Food Systems
Pierce College at Fort Steilacoom	<ul style="list-style-type: none"> <li>•Biology Transfer I (Pre-professional): This track is recommended if you are interested in pursuing careers or further education in the medical, dental, chiropractic, veterinary, microbiology, botany, environmental science, fisheries, zoology, cell biology or related fields. If you are wishing to prepare for allied health careers, such as nursing, physical therapy, or occupational therapy, see those other pathways in the Healthcare category.</li> <li>•Biology Transfer II (Natural Resources): This is the recommended track if you are interested in the forestry, wildlife, marine biology, environmental studies, and related fields.</li> </ul>	<a href="https://www.pierce.ctc.edu/biology">https://www.pierce.ctc.edu/biology</a>	AS/AA Biology
Pierce College at Fort Steilacoom	Explore a wide range of environmental subjects, including water quality, weather and environmental biology, as you earn an associate's degree in environmental science for transfer to a four-year college.	<a href="https://www.pierce.ctc.edu/environmental-science">https://www.pierce.ctc.edu/environmental-science</a>	AS/AA Environmental Science

School	Description (quoted from school's program materials)	Web link	Degree
Pierce College at Fort Steilacoom	Geology includes the study of minerals, rocks, the dynamic processes that shape the Earth's surface over time, the history of life, dinosaurs, and mass extinction events. These include such topics as Earth's tectonics, volcanism, earthquakes, landslides, streams, and coastlines. Topics such as resources or climate change may be included.	<a href="http://catalog.pierce.ctc.edu/previous_program.php?catoid=7&amp;poid=1948&amp;returnto=317">http://catalog.pierce.ctc.edu/previous_program.php?catoid=7&amp;poid=1948&amp;returnto=317</a>	AS Geology
Seattle Central College	The Sustainable Agriculture Education (SAGe) Emphasis, Associate of Arts (A.A.) or Associate of Science (A.S.) degree integrates the study of food production methods and food systems models for sustainable bioregions. Study and apply an ecological approach to small-scale agriculture from a bioregional perspective while analyzing and evaluating the cultural, political, and economic dynamics that influence the sustainability of food systems.	<a href="https://seattlecentral.edu/programs/college-transfer/degrees/sustainable-agriculture">https://seattlecentral.edu/programs/college-transfer/degrees/sustainable-agriculture</a>	AA/AS Sustainable Agriculture Education
Seattle Central College	With an Environmental Science background, you can focus on environmental policy, collecting data or monitoring compliance on environmental issues. Some students who major in environmental science work outdoors monitoring water quality, tracking endangered species, introducing children to the natural environment, or advocating for new policies and better enforcement of policies that protect the environment and human health.	<a href="https://seattlecentral.edu/programs/college-transfer/college-transfer-programs/stem/environmental-science">https://seattlecentral.edu/programs/college-transfer/college-transfer-programs/stem/environmental-science</a>	AS Environmental Sciences
Shoreline Community College	Designed to meet the first two years of requirements for most science bachelor's degrees, including core science sequences in math, chemistry, biology, and/or physics, the Associate of Science – Transfer, Track 1 (AS-T1) in Shoreline's Natural Sciences Transfer program offers small class sizes in a supportive environment to prepare you for successful transfer to university.	<a href="https://www.shoreline.edu/programs/natural-sciences-transfer/environmental-health-pre-major.aspx">https://www.shoreline.edu/programs/natural-sciences-transfer/environmental-health-pre-major.aspx</a>	AS Environmental Health Pre-Major
Shoreline Community College	Designed to meet the first two years of requirements for most science bachelor's degrees, including core science sequences in math, chemistry, biology, and/or physics, the Associate of Science – Transfer, Track 1 (AS-T1) in Shoreline's Natural Sciences Transfer program offers small class sizes in a supportive environment to prepare you for successful transfer to university.	<a href="https://www.shoreline.edu/programs/natural-sciences-transfer/environmental-sciences-pre-major.aspx">https://www.shoreline.edu/programs/natural-sciences-transfer/environmental-sciences-pre-major.aspx</a>	AS Environmental Sciences Pre-Major
Shoreline Community College	Environmental Studies integrates knowledge across the natural sciences, social sciences and the humanities to explore the effects of human activities on the natural world. Students learn to identify environmental problems, analyze causes and develop solutions to promote preservation, sustainability and stewardship of the environment.	<a href="https://www.shoreline.edu/programs/general-transfer/environmental-studies-pre-major.aspx">https://www.shoreline.edu/programs/general-transfer/environmental-studies-pre-major.aspx</a>	AA Environmental Studies

School	Description (quoted from school's program materials)	Web link	Degree
Shoreline Community College	Master clean energy fundamentals while gaining knowledge of sustainable business practices and entrepreneurship. Learn through practical design projects and hands-on training activities. Study solar electric systems, building science, energy efficiency best practices and more.	<a href="https://www.shoreline.edu/programs/clean-energy-technology/clean-energy-technology-and-entrepreneurship-aas.aspx">https://www.shoreline.edu/programs/clean-energy-technology/clean-energy-technology-and-entrepreneurship-aas.aspx</a>	AAAS/Certificate Clean Energy Technology and Entrepreneurship
Shoreline Community College	Sustainable business is a commitment to ecologically sustainable business practices, such as renewing energy, recycling products, building green, investing green and using our resources efficiently. This short-term certificate in Sustainable Business Leadership focuses on sustainable business practices to include marketing and business strategies that promote green business. Courses compliment other advanced degrees or working professionals interested in sustainable business leadership.	<a href="https://www.shoreline.edu/programs/business-administration/sustainable-business-leadership-certificate.aspx">https://www.shoreline.edu/programs/business-administration/sustainable-business-leadership-certificate.aspx</a>	Certificate of Sustainable Business Leadership
Skagit Valley College	Have you always wanted to work in the natural environment? Interested in studying and managing our wildlands, lakes, rivers and coastal waters, managing for parks and recreation lands, or focusing on the impacts caused by urbanization, forestry practices or agriculture? Enroll in SVC's Bachelor of Applied Science in Environmental Conservation program today!	<a href="https://www.skagit.edu/academics/areas-of-study/science-engineering-math-stem/environmental-conservation/bas-environmental-conservation/">https://www.skagit.edu/academics/areas-of-study/science-engineering-math-stem/environmental-conservation/bas-environmental-conservation/</a>	BAS/AAS/Certificate Environmental Conservation
Skagit Valley College	Our Sustainable Agriculture program is designed to provide you with knowledge and skills in agro-ecological sciences, natural resource management, and environmental conservation. With an emphasis on 'small farm' agriculture, you will learn how to sustainably manage production and operations as the foundation of a resilient and local food system.	<a href="https://www.skagit.edu/academics/areas-of-study/food-beverage-management/sustainable-agriculture-education/">https://www.skagit.edu/academics/areas-of-study/food-beverage-management/sustainable-agriculture-education/</a>	AAS Environmental Sustainable Agriculture Education
South Puget Sound Community College	AS-T Track 1 focuses on chemistry, biology, environmental and natural resource sciences and geology and earth sciences.	<a href="https://spscc.edu/areas/science/associate-science-transfer-track-1">https://spscc.edu/areas/science/associate-science-transfer-track-1</a>	AS Track 1

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South Seattle College	Biology is an increasingly complex and exciting field, one that overlays other critical subdisciplines from anatomy, pathology and ecology to chemistry, genetics and botany. Each of these intersects with the study of life and living organisms. And of course, medical and scientific innovation continue to drive biology into new and thrilling directions. This means that your biology education will touch on issues impacting human, animal and plant life far and wide, including subjects like genetic engineering, transhumanism, GMO farming, and global climate change.	<a href="https://southseattle.edu/programs/biology">https://southseattle.edu/programs/biology</a>	AS Biology Track 1
South Seattle College	Environmental Science scholars ask questions such as: How can colony collapse disorder be prevented? Should genetically modified food be labeled as such? How does intensive farming impact plant biodiversity? Environmental Science uses a multidisciplinary approach to understand the changes in our natural and human environment. During the course of your studies, you'll draw on fundamental scientific knowledge in mathematics, chemistry, physics, and biology coupled with specialization in a particular area of science to provide advanced scientific and quantitative understanding of contemporary environmental challenges.	<a href="https://southseattle.edu/programs/environmental-science">https://southseattle.edu/programs/environmental-science</a>	AS Environmental Science Track 1
South Seattle College	Whereas the environmental science pathway is designed for students who want to focus on scientific careers in fields such as pollution abatement, water resources, ecosystem protection, environmental restoration, and environmental management, the environmental studies pathway is broader in focus.	<a href="https://southseattle.edu/programs/environmental-studies">https://southseattle.edu/programs/environmental-studies</a>	AS Environmental Studies Track 1
Spokane Community College	If you are interested in agribusiness and farming, the agriculture business program could be for you. Whether you are looking to expand your career in agriculture to the next level or want training to gain entry-level employment in our region's large agribusiness and farming industries, the program's comprehensive training is designed to prepare you for success.	<a href="https://scc.spokane.edu/What-to-Study/The-Natural-World/Agriculture">https://scc.spokane.edu/What-to-Study/The-Natural-World/Agriculture</a>	AAS/Certificate Agriculture Business/Technology
Spokane Community College	If you are interested in the world around you and understanding and solving environmental problems, a career in environmental or resource sciences may be right for you. Courses in this discipline will examine varying environmental concepts including the atmosphere, ecology, geology, and environmental chemistry.	<a href="https://scc.spokane.edu/What-to-Study/The-Natural-World/Environmental-Resource-Sciences">https://scc.spokane.edu/What-to-Study/The-Natural-World/Environmental-Resource-Sciences</a>	AS Environmental / Resource Sciences Track 1

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Spokane Community College	If you enjoy working outside and are passionate about planting, pruning and protecting trees in urban areas, then the arboriculture/urban forestry program is right for you. In this program, you will learn theory and skills in the science of arboriculture. You'll gain hands-on experience identifying, designing, planting, pruning and maintaining trees. You'll also learn how to diagnose pests and problems as well as how to protect the trees and treat for problems.	<a href="https://scc.spokane.edu/What-to-Study/The-Natural-World/Arboriculture-Urban-Forestry">https://scc.spokane.edu/What-to-Study/The-Natural-World/Arboriculture-Urban-Forestry</a>	AAS Arboriculture/ Urban Forestry
Spokane Community College	In this program, you'll learn to grow and care for landscape plants and vegetables as a horticulture professional. Through both classes and hands-on practice in the greenhouse, you'll study plant propagation, greenhouse construction, climate control, postharvest crop care, and greenhouse business management.	<a href="https://scc.spokane.edu/What-to-Study/The-Natural-World/Greenhouse-Nursery">https://scc.spokane.edu/What-to-Study/The-Natural-World/Greenhouse-Nursery</a>	AAS/Certificate Greenhouse Nursery
Spokane Community College	In this program, you'll prepare for a career in one of three areas: forestry, fish and wildlife management, or parks and recreation. Much of your learning will take place out in nature, where you'll learn skills in timber cruising, forest management, forest insect and disease identification, data sampling techniques, electro fishing, bird identification, GPS\GIS tools and much more.	<a href="https://scc.spokane.edu/What-to-Study/The-Natural-World/Natural-Resource-Management">https://scc.spokane.edu/What-to-Study/The-Natural-World/Natural-Resource-Management</a>	AAS Natural Resources Management
Spokane Falls Community College	The Associate in Science Transfer (AS-T) Degree #1 is designed to prepare students for upper division study in the areas of biological sciences, environmental/resource sciences, chemistry, geology, and earth science. Completing the AS-T degree will prepare students for upper division study; it does not guarantee students admission to the major. Track 1 degrees offered at SCC and/or SFCC include:	<a href="https://sfcc.spokane.edu/What-to-Study/Degrees-Explained/sfcc">https://sfcc.spokane.edu/What-to-Study/Degrees-Explained/sfcc</a>	AS Environmental / Resource Science
Tacoma Community College	Environmental science is the study of the interaction of humans and the physical and biological systems of the earth, and the dependence on natural resources by humans. It involves the study of the interaction and co-evolution of human, physical, and biological systems.	<a href="https://www.tacomacc.edu/academics-programs/programs/environmental-science">https://www.tacomacc.edu/academics-programs/programs/environmental-science</a>	AS Environmental Science
Tacoma Community College	Forestry work involves the management and protection of forests and other natural areas, such as wildlife habitats, wetlands and parks. Foresters direct recreational activities and conservation efforts in both public and private forests.	<a href="https://www.tacomacc.edu/academics-programs/programs/forestry">https://www.tacomacc.edu/academics-programs/programs/forestry</a>	AA Forestry

School	Description (quoted from school's program materials)	Web link	Degree
Tacoma Community College	The study of Aquatic and Fisheries Sciences is dedicated to sustaining healthy marine and freshwater environments. It has a wide focus from the organism to the ecosystem scale. We examine human-induced effects on ecosystems, such as habitat change and restoration, climate change and effects of invasive species on marine and freshwater ecosystems.	<a href="https://www.tacomacc.edu/academics-programs/programs/aquatic-fisheries-science">https://www.tacomacc.edu/academics-programs/programs/aquatic-fisheries-science</a>	AS Aquatic & Fisheries Sciences
University of Washington	Atmospheric sciences is a wide-ranging discipline that includes topics as diverse as weather forecasting, global warming, air quality, Pacific Northwest weather and climate, mountain weather, marine weather, El Nino, the ozone hole, ice ages, and the weather of Mars. It considers problems that are both scientifically challenging and critical for the welfare of modern society. These problems are addressed with theory, measurements, and computer simulations.	<a href="http://www.washington.edu/students/genocat/academic/atms.html">http://www.washington.edu/students/genocat/academic/atms.html</a>	BS/MS Atmospheric Sciences
University of Washington	Building on a foundation of natural science, social science, and humanities courses, the curriculum offers students flexibility in choosing an individual course of study. Internship, research, and study abroad opportunities develop skills and leadership for careers in environmental policy, sustainability, conservation, education, or consulting.	<a href="http://www.washington.edu/students/genocat/academic/envir.html">http://www.washington.edu/students/genocat/academic/envir.html</a>	BA Program on the Environment

School	Description (quoted from school's program materials)	Web link	Degree
University of Washington	<p>Civil and environmental engineering is a profession which interfaces closely with society in the planning, design, construction, and management of facilities serving the needs of people. These activities focus on: transportation infrastructure and construction; heavy construction; hydrology and hydrodynamics; structures, mechanics, and geotechnical engineering; drinking water and wastewater treatment, and water quality management; solid- and hazardous-waste disposal; and air quality management.</p> <p>A civil engineer may specialize in one or several of these activities and may further specialize in a particular function, such as design or management. The work frequently provides close associations with the legal profession, urban and regional planners, economists, public officials, biologists, chemists, financial consultants, architects, and system analysts. Education and practice require a consideration not only of the technological-science aspects of a particular problem but also of its relationship to social, economic, political, and environmental constraints. Civil and environmental engineers create and maintain infrastructure in a heavily human-influenced ecosystem.</p> <p>To accommodate these wide interests, the department is organized into six academic areas: construction engineering; transportation engineering; geotechnical engineering; structural engineering and mechanics; environmental engineering; and hydrology and hydrodynamics.</p>	<a href="http://www.washington.edu/students/gencat/academic/cive.html">http://www.washington.edu/students/gencat/academic/cive.html</a>	Bachelor/Masters of Science in Civil or Environmental Engineering
University of Washington	<p>Environmental health focuses on identifying, evaluating, and controlling environmental conditions that may have an adverse impact on human health. Examples of problem areas requiring environmental health expertise are assuring adequate quality and quantity of food and drinking water, safe treatment and disposal of domestic and industrial waste materials, limiting or reducing air and noise pollution, limiting occupational exposure to hazardous substances and unsafe conditions, assuring safe and healthful housing, controlling the spread of insect- and rodent-borne illness, proper selection and use of pesticides, and understanding the effects of global changes in climate and the atmosphere on human health.</p>	<a href="http://www.washington.edu/students/gencat/academic/envh.html">http://www.washington.edu/students/gencat/academic/envh.html</a>	BS/MS Environmental Health/MPH Environmental & Occupational Health/ MPH Occupational & Environmental Medicine/MS Occupational & Environmental Exposure Sciences

School	Description (quoted from school's program materials)	Web link	Degree
University of Washington	<p>Landscape architecture is a professional design discipline that addresses both the built and natural environments. It focuses on the design, analysis, and planning of outdoor spaces across a wide range of scales, with the intent of creating places that are both meaningful and functional. Landscape architects design everything from infrastructure elements, such as roadways, drainage systems, and parks, to prominent cultural monuments and gardens for public and private housing units. The education of a landscape architect includes aesthetic design skills, the development of social and environmental ethics, technical design skills, knowledge of a wide range of natural processes, an awareness of design history, and skills for working with other people. At the University of Washington, the focus is on urban ecological design education, which allows students to make a difference in the future of cities and urban regions all over the world.</p>	<p><a href="http://www.washington.edu/students/gencat/academic/larch.html">http://www.washington.edu/students/gencat/academic/larch.html</a></p>	<p>Bachelor/Masters of Landscape Architecture</p>
University of Washington	<p>Oceanography - study of the marine environment and its interactions with the earth, the biosphere, and the atmosphere - is prompted both by the intellectual desire to understand how the oceans move and how life develops in a salty, cold environment, and the need to use wisely the ocean's resources for the benefit of humanity. As an interdisciplinary science, oceanography integrates the basic principles of biology, chemistry, geology, physics, geophysics, mathematics, botany, zoology, meteorology, and geography. Applications of high technology to oceanographic instrumentation and vessels, increasingly sophisticated computers, satellite remote sensing, and innovative methodologies are rapidly opening new possibilities for exploration and study. Oceanography is divided into four areas of emphasis: Biological, chemical, marine geology and geophysics, physical.</p>	<p><a href="http://www.washington.edu/students/gencat/academic/ocean.html">http://www.washington.edu/students/gencat/academic/ocean.html</a></p>	<p>BA/BS/MS Oceanography</p>

School	Description (quoted from school's program materials)	Web link	Degree
University of Washington	<p>The School of Aquatic and Fishery Sciences (SAFS) encompasses multi-disciplinary programs at the interface between the traditional fields of natural history, environmental biology, and natural resource management. Primary foci are the management of sustainable fisheries of commercially important species; biocomplexity and ecosystem-based management; and sustainable aquaculture. In addition, human-induced effects on natural ecosystems (including habitat change and restoration, impacts of climate change, emerging diseases, the effects of invasive species, and processes affecting endangered species and declining populations) are major areas of research. In pursuit of these objectives, a variety of basic sciences are used, including ecology and evolution, population biology, behavior, physiology, microbiology, and genetics. The scope of aquatic systems ranges from watersheds, rivers and lakes, to estuarine and near-shore shelf, open ocean systems and culture facilities. Graduates of the School of Aquatic and Fishery Sciences are uniquely qualified for careers in universities as well as other educational settings, natural resources management agencies at the local to international levels, environmental consulting, and non-profit organizations with an environmental focus.</p>	<p><a href="http://www.washington.edu/students/gencat/academic/fish.html">http://www.washington.edu/students/gencat/academic/fish.html</a></p>	<p>BS/MS Aquatic and Fishery Science</p>
University of Washington	<p>The school's programs focus on the sustainability and functionality of complex natural resource and environmental systems, using an integrated, interdisciplinary approach across multiple scales involving the urban-to-wildland gradient. Its programs serve society generally, and natural resource professions in particular, with graduates well equipped to contribute to discussions and solutions to resource problems facing the region and the world. Interdisciplinary research and outreach centers and cooperatives include the Center for International Trade in Forest Products (CINTRAFOR), the Water Center, the UW Botanic Gardens, which include the Center for Urban Horticulture and the Washington Park Arboretum, the Olympic National Resources Center (ONRC), the Stand Management Cooperative (SMC), and the Precision Forestry Cooperative.</p>	<p><a href="http://www.washington.edu/students/gencat/academic/sefs.html">http://www.washington.edu/students/gencat/academic/sefs.html</a></p>	<p>BS/MS of Science or Master of Environmental Horticulture or Master of Forest Resources Management</p>

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University of Washington Tacoma	As one of the first such degrees in the nation, students will be prepared to address recent initiatives that have called for a significant “greening” of urban development, both locally and internationally. Graduates will be prepared for careers in planning agencies, corporations adhering to sustainability practices, consulting firms, nonprofit organizations, and environmental/resource related agencies at the local, state, and federal levels of government.	<a href="https://www.tacoma.uw.edu/urban-studies/sustainable-urban-development">https://www.tacoma.uw.edu/urban-studies/sustainable-urban-development</a>	BA Sustainable Urban Development
University of Washington Tacoma	The bachelor of arts degree in Environmental Sustainability prepares students to understand, analyze, and solve environmental and sustainability challenges. Interdisciplinary foundations in environmental sciences, including natural and social sciences, combine with training in communications, writing, law, critical perspectives, and emerging sustainability science. Students also choose one of four options for in-depth study: Environmental Policy and Law; Environmental Communication; Business/Nonprofit Environmental Sustainability; or Pre-Environmental Education. A capstone course or certificate links students to real-world projects, internships, and/or research. An organizing theme throughout the major is coupled human and natural systems.	<a href="https://www.tacoma.uw.edu/node/46527">https://www.tacoma.uw.edu/node/46527</a>	BA Environmental Sustainability
University of Washington Tacoma	The bachelor of science degree in Environmental Science provides students with a strong science background with a focus on the environmental issues of the future. Through lecture, lab and field classes, you will get hands-on experience with biology, chemistry, the geosciences, physics and math. In this program students learn how to draw connections between these disciplines needed to solve the complex environmental problems facing the local community and society at large. As part of the School of Interdisciplinary Arts and Sciences, this degree allows you to combine diverse approaches to the environment which incorporate humanities and the social sciences.	<a href="https://www.tacoma.uw.edu/node/40367">https://www.tacoma.uw.edu/node/40367</a>	BS Environmental Science

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Walla Walla Community College	Agricultural systems science is an interdisciplinary science, which systematically analyzes the interactions between the natural, human, climatic, political and economic components of the agroecosystem. The Agricultural Systems degree at WWCC provides successful students with a broad and complete understanding of these complex interactions. Students will learn to adjust current pathways as well as identify new pathways to minimize the many potential negative effects on environmental, societal and human health. In addition to classes in foundational agricultural knowledge, like that of basic soil, plant and animal science, students will be engaged in topics such as agroecology, policy, technology and sustainability to develop their critical thinking skills.	<a href="https://www.wwc.c.edu/bas-sas/">https://www.wwc.c.edu/bas-sas/</a>	BAS Agricultural Systems
Walla Walla Community College	Agriculture Science combines the fields of biology and chemistry with a practical understanding of crop management. The primary objectives of the program are to offer students technical knowledge in the areas of soils and fertilizers, pests and control procedures, and crop management. These objectives are accomplished with lecture/discussion periods, lab exercises, and field trips to production enterprise areas. Many courses are available for distance learning for students. The Agriculture Science curriculum is reviewed by an advisory committee composed of local and regional industry members and adheres to national and state skill standards.	<a href="https://dept.wwc.c.edu/agscience/">https://dept.wwc.c.edu/agscience/</a>	AAS/Certificate Agriculture-Plant & Soil Science
Walla Walla Community College	Focuses in: Watershed Management, Water Resources Management & Irrigation Management, Wildlife Ecology & Conservation Science, Environmental & Ecosystem Science, Forestry & Earth Science	<a href="http://portal3.wwc.c.edu/OCATemplates/DegreeSequence.html?epc=165U">http://portal3.wwc.c.edu/OCATemplates/DegreeSequence.html?epc=165U</a>	AAS/Certificate Water Technologies & Management
Walla Walla Community College	There is increased demand for technicians and operators with robust electrical, mechanical, and bio-chemical skills and knowledge. Graduates of the Energy Systems Technology degree program are in high demand by public works, power generation, food & beverage processing, pulp & paper milling, manufacturing, agriculture, irrigation, and renewable energy operations! Focuses in: Precision Agriculture, Renewable Energy, Facilities Energy Management	<a href="https://dept.wwc.c.edu/energy/department-overview/">https://dept.wwc.c.edu/energy/department-overview/</a>	AAS Energy Systems Technology

School	Description (quoted from school's program materials)	Web link	Degree
Washington State University	Environmental and natural resource sciences comprise an association of several areas of study at WSU. These sciences focus on factors related to the understanding and management of the environment and therefore have a commonality of interest. The Ph.D. program provides opportunities for doctoral study that involve integration and interaction among these various fields of science.	<a href="https://gradschool.wsu.edu/degrees/factsheet/doctor-of-philosophy-environmental-and-natural-resource-sciences/">https://gradschool.wsu.edu/degrees/factsheet/doctor-of-philosophy-environmental-and-natural-resource-sciences/</a>	Ph.D. Philosophy in Environmental & Natural Resource Science
Washington State University	From earth science to ecology, from global change to environmental sustainability, School of the Environment (SoE) undergraduate students master both scientific tools and practical skills that kick start a meaningful career in a rapidly changing world with majors in: Earth Science, Environmental & Ecosystem Sciences, Forestry or Wildlife Ecology& Conservation Sciences	<a href="https://environment.wsu.edu/undergraduate-studies/">https://environment.wsu.edu/undergraduate-studies/</a>	BS Earth & Environmental Sciences
Washington State University	IPS majors explore the science of plant development and production from the perspectives of a variety of disciplines. All students in the program take a core set of interdisciplinary courses selected specifically to give them a solid foundation on which they can build expertise in a specific discipline. There are seven majors from which to choose: Agricultural Biotechnology, Field Crop Management, Fruit & Vegetable Management, Landscape, Nursery & Greenhouse Management, Turf grass Management or Viticulture & Enology.	<a href="http://ips.wsu.edu/">http://ips.wsu.edu/</a>	BS Integrated Plant Sciences
Washington State University	The Agricultural and Food Systems degree program is an exciting, college-wide, interdisciplinary program that offers a Bachelor of Science degree with five majors from which to choose: Agricultural Technology & Production Management, Agricultural Education, Organic & Sustainable Agriculture, Agricultural & Food Business Economics or Agriculture & Food Security.	<a href="http://afs.wsu.edu/">http://afs.wsu.edu/</a>	BS Agricultural & Food Systems
Washington State University	The department of Biological Systems Engineering integrates the biological sciences and engineering for the development of engineering solutions to agricultural, food and natural systems.	<a href="https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-biological-and-agricultural-engineering/">https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-biological-and-agricultural-engineering/</a>	MS Biological & Agricultural Engineering
Washington State University	The department offers the PhD degree with four research areas of emphasis: Bioenergy and Bioproducts Engineering; Food Engineering; Land, Air, Water Resources and Environmental Engineering; and Agricultural Automation Engineering.	<a href="https://gradschool.wsu.edu/degrees/factsheet/doctor-of-philosophy-biological-and-agricultural-engineering/">https://gradschool.wsu.edu/degrees/factsheet/doctor-of-philosophy-biological-and-agricultural-engineering/</a>	Ph.D. Philosophy in Biological & Agricultural Engineering

School	Description (quoted from school's program materials)	Web link	Degree
Washington State University	The Graduate Certificate in Sustainable Agriculture increases knowledge and employment potential in any position focused on sustainability. This will include educational, commercial, and research endeavors for production, processing, or policy.	<a href="https://gradschool.wsu.edu/degrees/factsheet/graduate-certificate-in-sustainable-agriculture/">https://gradschool.wsu.edu/degrees/factsheet/graduate-certificate-in-sustainable-agriculture/</a>	Graduate Certificate in Sustainable Agriculture
Washington State University	The M.S. in Agriculture program is designed to provide practitioners and professionals with an opportunity to strengthen and diversify their expertise in agriculture-related disciplines.	<a href="https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-agriculture/">https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-agriculture/</a>	MS Agriculture
Washington State University	The MS degree is an interdisciplinary program with the flexibility for elective classes in the student's own area of specialization. In consultation with their advisor, students may select classes from a wide variety of areas (i.e., ecosystem science and management, ecological planning, land and water conservation, air quality management, water quality management, energy and carbon policy, etc.).	<a href="https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-environmental-science/">https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-environmental-science/</a>	MS Environmental Science
Washington State University	The School of the Environment offers a program of graduate study and research leading to a master of science in natural resource sciences. The M.S. in natural resource sciences emphasizes original research by the student. This degree provides an atmosphere of scholarship coupled with research opportunities that produces people capable of responding to the complicated issues of use, management, and protection of the environment and its natural resources.	<a href="https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-natural-resource-sciences/">https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-natural-resource-sciences/</a>	MS Natural Resource Sciences
Washington State University	WSU's Master of Science in Agriculture degree, Plant Health Management option combines WSU's world-renowned plant science graduate programs with business course in organizational management. The result is a high-quality MS degree to help advance your career. You will be qualified to manage commercial-scale agricultural or horticultural operations and address problems with plant pathogens, insects, and weeds, as well as environmental factors that affect plant health. You will be equipped to serve in decision-making roles and have essential skills for maximizing plant health using modern, scientifically sound methods.	<a href="https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-agriculture-plant-health-management/">https://gradschool.wsu.edu/degrees/factsheet/master-of-science-in-agriculture-plant-health-management/</a>	MS Agriculture-Plant Health Management

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Wenatchee Valley College	An education grounded in the study of the natural world provides the intellectual skills to make life decisions and is an important reason why natural and physical sciences are part of a liberal arts education. Understanding the natural world is part of being an educated person. The natural and physical sciences teach discipline and organization of knowledge and require each student to learn important critical thinking skills that can be applied in other disciplines and in other aspects of their lives.	<a href="https://www.wvc.edu/academics/sciences/index.html">https://www.wvc.edu/academics/sciences/index.html</a>	AAS/AST Natural & Physical Sciences
Wenatchee Valley College	Graduates of this pathway will be able to choose between advanced studies in a four-year natural resources program and a broad range of technical natural resources careers, including seasonal and full-time positions in which they collect natural resources field information. In professional and personal functions, graduates will be able to draw on a basic understanding of aquatic and terrestrial ecosystems, safe and accurate measurement techniques, and the social context of natural resources management.	<a href="https://www.wvc.edu/academics/natural-resources/index.html">https://www.wvc.edu/academics/natural-resources/index.html</a>	AAS-T Natural Resources
Wenatchee Valley College	The ATS degree prepares students for employment in agriculture and related fields. The pathways are General Agriculture, Horticulture/Tree Fruit Production, Sustainable and Organic Agriculture, and Agriculture Technology.	<a href="https://www.wvc.edu/academics/agriculture/index.html">https://www.wvc.edu/academics/agriculture/index.html</a>	ATS Agriculture
Western Washington University	Environmental Science draws on basic knowledge of the physical, chemical, biological, and quantitative aspects of natural systems. The knowledge of how natural systems work is applied to solving problems largely created by human activities. Often these problems are represented by disturbances in the functioning of natural systems as humans alter their own life-support systems – the air, the water and soil. The scale of disturbance ranges between molecular and cellular to individuals, populations, ecosystems, and regional and global levels. Committed to creating a space for students to value, change, and study the environment. Students in the program gain proficiencies in applying quantitative and critical thinking skills to environmental issues, writing and speaking effectively to professional audiences about issues in the field, using theoretical knowledge of environmental sciences in real world applications, and incorporating multiple disciplines into environmental sciences.	<a href="https://www.wwu.edu/majors/environmental-science-bs">https://www.wwu.edu/majors/environmental-science-bs</a>	BS Environmental Science

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Western Washington University	Environmental Science draws on basic knowledge of the physical, chemical, biological, and quantitative aspects of natural systems. The knowledge of how natural systems work is applied to solving problems largely created by human activities. Often these problems are represented by disturbances in the functioning of natural systems as humans alter their own life-support systems – the air, the water and soil. The scale of disturbance ranges between molecular and cellular to individuals, populations, ecosystems, and regional and global levels.	<a href="https://www.wwu.edu/majors/environmental-science%E2%80%9494marine-ecology-bs">https://www.wwu.edu/majors/environmental-science%E2%80%9494marine-ecology-bs</a>	BS Environmental Marine Science
Western Washington University	Prepares students to enter professional fields concerned with the sustainability of the human and natural environment. Studies in Environmental Policy concentrate on public policy development, governance, law, and the methods and processes of planning and decision making. By solving problems and implementing shared visions in both natural settings and urban communities, Environmental Policy promotes positive change in the environment.	<a href="https://www.wwu.edu/majors/environmental-policy-ba">https://www.wwu.edu/majors/environmental-policy-ba</a>	BA Environmental Policy
Western Washington University	Students who are passionate about making positive environmental choices and excited about teaching people about the environment will thrive in the Environmental Education program. By examining interacting social and natural systems through social sciences, natural sciences, and humanities, Environmental Education students make intellectual connections while gaining the practical skills necessary for building socially and environmentally sustainable futures. Environmental Education at Western consists of four distinct parts: students acquire an understanding of the content of environmental studies; examine the process of education for an environmental perspective; investigate ways of applying environmental education content and techniques in the professional roles they may pursue; and participate in internships, a field practicum, or research. Students studying Environmental Education become problem solvers who are able to meet the environmental challenges of our time.	<a href="https://www.wwu.edu/majors/environmental-education-ba">https://www.wwu.edu/majors/environmental-education-ba</a>	BA Environmental Education

School	Description (quoted from school's program materials)	Web link	Degree
Western Washington University	Students, faculty, and staff in the Department of Environmental Studies approach environmental understanding and problem solving through diverse programs that examine the interaction of social and natural systems to promote positive change in the environment. Western's interdisciplinary Environmental Studies curriculum is designed to help students make intellectual connections and gain the practical skills necessary for building socially and environmentally sustainable futures. The Department's undergraduate programs include a variety of major specializations. A range of minors, including Disaster Risk Reduction (DRR), Geographic Information Science (GIS), and Sustainable Design, are also available.	<a href="https://www.wwu.edu/majors/environmental-studies-ba">https://www.wwu.edu/majors/environmental-studies-ba</a>	BA Environmental Studies
Western Washington University	The Energy Policy and Management program fosters interdisciplinary thinking, learning and problem solving and integrates courses in economics, environmental studies, environmental science, and various other disciplines. Students gain knowledge and develop analytic skills in the policy and management aspects of today's diverse energy business, along with broad exposure to the science, environmental, business and policy aspects of the energy system that drive the formation and analysis of energy-related policies.	<a href="https://www.wwu.edu/majors/energy-policy-and-management-ba">https://www.wwu.edu/majors/energy-policy-and-management-ba</a>	BA Energy Policy & Management
Western Washington University	The goal of the Energy Science and Technology degree is to give students knowledge and analytic skills in the science and technology of today's diverse energy systems and industries. The degree is designed to prepare graduates to become leaders in Washington's emerging clean energy economy with an interdisciplinary education that emphasizes applied science and technology, complemented by energy policy and business practices that industry experts have prioritized among Washington's energy workforce needs.	<a href="https://www.wwu.edu/majors/energy-science-technology">https://www.wwu.edu/majors/energy-science-technology</a>	BS Energy Science & Technology
Western Washington University	The MA degree in Environmental Studies prepares students to address complex environmental problems using a highly interdisciplinary approach. The program prepares students in the analysis, development, conservation, and management frameworks of environmental resources for careers in business, government, planning, consulting, teaching, and research.	<a href="https://gradschool.wwu.edu/environmental-studies">https://gradschool.wwu.edu/environmental-studies</a>	MA Environmental Studies
Whatcom Community College	An efficient pathway for students to complete the majority of prerequisites for certain science and engineering majors such as atmospheric science, biology, earth sciences, environmental science and geology.	<a href="https://www.whatcom.edu/academics/degrees-certificates/associate-degrees">https://www.whatcom.edu/academics/degrees-certificates/associate-degrees</a>	AS

School	Description (quoted from school's program materials)	Web link	Degree
Yakima Valley College	Biology – this program focuses on cellular biology, microbiology, anatomy, physiology, botany, ecology, and evolution.	<a href="https://www.yvcc.edu/academics/life-sciences/">https://www.yvcc.edu/academics/life-sciences/</a>	AA Biology
Yakima Valley College	The mission of the Agriculture Program is to serve as a partner with the diverse agriculture industry to provide students with the attitudes, abilities, and problem-solving capabilities to meet career responsibilities and lead agriculture into the future.	<a href="https://www.yvcc.edu/academics/agriculture/">https://www.yvcc.edu/academics/agriculture/</a>	AAS Agribusiness

Website	Source	Accessed
<a href="https://www.sbctc.edu/">https://www.sbctc.edu/</a>	Washington State Board for Community and Technical Colleges	Aug. 29, 2019
<a href="https://www.wsac.wa.gov/colleges-and-institutions-washington">https://www.wsac.wa.gov/colleges-and-institutions-washington</a>	Washington Student Achievement Council	Sept. 3, 2019
<a href="https://councilofpresidents.org/institutions/">https://councilofpresidents.org/institutions/</a>	Washington State Council of Presidents	Sept. 9, 2019