



# Energy Program

WASHINGTON STATE UNIVERSITY

## WSU Energy Program

### Mission

To advance environmental and economic well-being by providing unmatched energy services, products, education and information based on world-class research.

### About Us

Our staff of energy engineers, energy specialists, technical experts and software developers work out of Olympia, Washington. The WSU Energy Program is a self-supported department within the WSU College of Agricultural, Human and Natural Resource Sciences.

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# Report to the Legislature

October 2021 Update



Washington

## Green Transportation Program

*Moving forward with Washington's public fleets*

Washington consumers and fleets are increasingly using alternative fuels and modes to move people and goods that conserve energy, increase efficiency, and use clean and renewable alternative fuels. Examples include clean electricity, biofuels and renewable fuels. The transition from fossil fuels – gasoline and diesel – is well underway. This is especially true for public fleets. These changes are often captured under the label "green transportation."

## The Washington State Legislature delivers green transportation through several strategies

The Washington State Legislature has fostered the acceleration of the adoption of green transportation in both the public and private sectors of the state through broad and successful strategies, including providing many grants and vehicle incentives to support green transportation for consumers and at all levels of government.

In 2019, the Washington State Legislature passed legislation directing the **Washington State University (WSU) Energy Program** to establish and administer a technical assistance and education program for public agencies on the use of alternative fuels and vehicles. The legislation said that education and assistance may be provided to public agencies including cities, counties, transit agencies, school districts, colleges and universities, utilities and PUDs, tribes, ports, and other state political subdivisions.

The WSU Energy Program was well-positioned to administer such an effort, and that same year it established the **Green Transportation Program (GTP)** to provide unbiased, up-to-date education and technical assistance to support the transition of public fleets to cleaner fuels.

## The WSU Energy Program shapes its support for Washington public fleets

The GTP promotes the adoption of new electric vehicles (EVs) and installation of more EV infrastructure by cities, counties, ports and other public agencies. It works to expand success in green transportation, including electrification of public medium- and heavy-duty vehicles; and it supports innovations in green transportation, such as renewable hydrogen for fuel cell vehicles.

Since 2019, the WSU Energy Program has launched and delivered technical assistance and education. Because many of the larger public sector fleets already had strong efforts, particular attention was given to medium and small public fleets that had fewer resources to devote to the analysis of their green transportation options. The goal with these smaller fleet operators is to help them make wise choices early and develop longer term plans for adopting green transportation. For those smaller and larger fleets that already began to "green" their fleets, the GTP provides assistance with next steps.

There are a variety of national, regional and state efforts that seek to help fleet owners make green transportation choices. A key strategy for the GTP is to leverage existing efforts and fill gaps. Therefore, one of the initial program elements was to survey existing technical resources and

“ It is extremely helpful to have a technical assistance program like the Green Transportation Program available at the state level. It has been highly beneficial for our team. This resource is invaluable. ”

Andrea Culletto  
Director  
Community Relations  
Twin Transit  
Chehalis, WA



Grand opening of Twin Transit's Mellen Street e-Transit Station in Centralia, WA

Photo credit: The Chronicle (Centralia, WA)



## The WSU Energy Program successfully performed key activities

### Data Gathering and Management

To support the strategy of collecting information about the state's public fleets, the GTP team:

- Developed a detailed database to manage information collected about public fleets and electrification plans throughout the state.
- Established contact with hundreds of public fleets in Washington – with a particular focus on mid-sized fleets.
- Gathered data and prepared the vehicle inventories for the Joint Transportation Committee (JTC) study about public fleet electrification.

Then, in order to fill gaps identified through its scan of existing resources, the GTP team undertook actions in a number of related areas and continues that work today.

GTP staff promote a variety of EVs, such as this all-electric refuse truck in Seattle, WA

outreach programs to identify gaps and compile existing best resources. This scan of support resources was critical to framing the technical assistance and education efforts that followed.

It was also important in identifying collaborators and partners for the effort.

Another key strategy was to develop information about the state's public fleets that can be used to guide and target technical assistance services and education. By knowing what vehicle mix different fleet operators manage, it was possible for the WSU Energy Program to determine what might be helpful as support assistance and education.

*“ WSU green transportation staff have provided extremely reliable information and valuable connections among local governments trying to break into electrification. Our organization is at the very early stages, but I know where I'm going to turn as soon as we are ready to take our first big step. ”*

Ann Soule  
Resource Manager  
City of Sequim Public Works  
Sequim, WA

## GTP on the Web



The WSU Energy Program developed the GTP web presence at [www.energy.wsu.edu/GreenTransportationProgram](http://www.energy.wsu.edu/GreenTransportationProgram).

This is a key portal to information and stakeholder engagement. Staff managing public fleets can subscribe to stay up-to-date about important, timely topics – there are currently 129 subscribers.

Key features include:

- Regularly updated news headlines and funding opportunities.
- Upcoming and past (recorded) technical assistance and education events.
- Resources – including guides and tools, applications, procurement links, and links to valuable resources at other organizations.

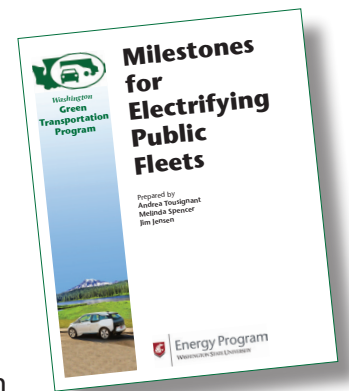


## Publications

The GTP team prepared materials to address topics raised by stakeholders. For example:

### *Milestones for Electrifying Public Fleets*

- Technical assistance staff combined the best ideas from many states and communities about the transition to EVs in public fleets as guidance for green transportation teams.
- This guide identifies and elaborates on ten specific steps that public fleet owners need to take to plan and budget for EVs and charging stations.
- It offers detailed advice about preparing for the best locations for charging stations and making sure sufficient power is available.
- In the first two months since this publication was posted on the GTP website, there were over 60 views and downloads.



When Spokane, WA police ordered Teslas for their fleet, the GTP shared the good news



Photo credit: Tesmanian.com

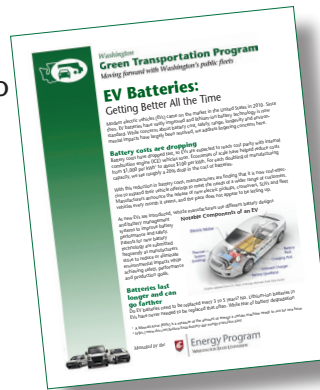
## Educational Webinars

To further its education mission, the GTP team and its partners presented focused webinars, which were recorded and posted to the website. Timely topics included:

- Grant writing for public fleets.
- Using the Fleet Procurement Analysis Tool.
- Charging station development and opportunities on Washington highway corridors.
- What to watch for in EV development – now and in the near future.
- Advances in energy/building code development for EV infrastructure.
- Black-owned businesses bring innovation to transportation electrification.
- The hydrogen economy in Washington – Part 1.

### EV Batteries: Getting Better All the Time

- This fact sheet was prepared in response to multiple requests and inquiries about the impacts from batteries used in EVs.
- It highlights falling battery prices, safety improvements, and the use of key materials.
- It also shares news about innovative technologies and new developments in reuse and recycling that are improving the economic and environmental sustainability of EV batteries.
- In the first few months since this publication was posted on the GTP website, there were over 300 views and downloads.



A total of 468 people from all fleet types and areas of Washington attended these webinars, and more than 60 attended multiple episodes. The hydrogen and building code webinars both attracted more than 100 attendees.

Photo credit: WSU Energy Program



The GTP is preparing a series of charging station field trips to share lessons learned and best practices



Seattle, WA and Seattle City Light are leaders in electrification nationally, and the GTP is prepared to help other cities meet their goals

Photo credit: Seattle City Light

## Technical Assistance

Technical assistance is at the heart of the program for Washington fleets, in terms of both education and direct technical support. Initial efforts – especially during the COVID-19 pandemic – focused on identifying and disseminating useful tools and success stories, including:

- Best web-based tools for calculating total cost of ownership, EV readiness, etc.
- Relevant and timely case studies and success stories.
- Virtual ride and drives.
- Detailed guidance for planning individual transitions to battery or fuel-cell vehicles, including the new *Milestones for Electrifying Public Fleets*.
- New resources – especially about environmental impacts, procurement and funding.

In 2021, the WSU Energy Program provided direct technical assistance to interested fleets – successfully responding to specific fleet requests, and reaching out to targeted fleets to build awareness and demand for support from the GTP.

The WSU Energy Program provided assistance to every major type of public fleet – state agencies, local cities and counties, transit agencies, school districts, tribes, ports, utilities, and universities and colleges. Outreach targeted mid-size and smaller fleets. Efforts to contact fleets reached 150, and requested assistance was provided to more than three dozen.

Technical assistance can take many forms including:

- Introducing green transportation to decision-makers and discussing or reviewing their plans for adding zero-emission vehicles and/or infrastructure.
- Analyzing their current fleet to identify potential candidates for electrification, discuss options for charging levels, or supporting assessments of charging capacity in existing facilities.
- Discussing funding opportunities, reviewing grant proposals, or helping develop a business case for a budget presented to local councils.

The WSU Energy Program meets public entities where they are in the process of “greening” their fleets. Whether they are just starting out, or far along, the goal is to help them take the next step.

# The WSU Energy Program is successfully addressing timely topics

## Communities

The transition to zero emission transportation extends beyond public fleets. Communities can also influence this transition through the establishment of building and energy codes. One of the best attended GTP webinars shared the latest information about state building requirements for EV infrastructure, as well as local energy code developments that extend and expand these codes.

Communities are also discussing the need to address workforce development and training to provide the labor to meet the many new and different types of industry and work necessary to complete this transition. In 2021, the GTP explored these topics and conducted interviews with fleet managers and workforce champions to begin this discussion. The results of these discussions are published on the GTP website.

## Equity

In addition to environmental goals, the transition to zero emission transportation offers the opportunity to address historic inequities. Health disparities and access to transportation, or mobility generally, are among these opportunities. The GTP has looked for ways to address these topics and has begun by increasing awareness of the HEAL Act and its impacts on public agencies and of the Washington Tracking Network and the resources it provides to address health, income, and other disparities. Inquiries about workforce development included questions

about equity, and in early 2021 the WSU Energy Program hosted a webinar about the successes of four Black-owned business in bringing innovation to electric transportation.

## Renewable Hydrogen

The GTP has fully incorporated fuel-cell vehicles (FCVs) and renewable hydrogen technologies as a possible alternative in Washington's electrified transportation future. Several transit agencies, ports, and even some local governments consider FCVs for their longer range and faster fueling times. The WSU Energy Program is working to provide unbiased information and resources to help evaluate these opportunities, including the following so far:

- Hosted a series of structured meetings for state agency staff involved in supporting renewable hydrogen development.
- Included renewable hydrogen development in the Alternative Fuel Vehicle Technical Assistance Group (AFV-TAG) forum.
- Started a webinar series devoted to renewable hydrogen and its potential for transportation decarbonization.
- Provided direct technical assistance to transit agencies, utilities and others expressing interest in renewable hydrogen for FCVs.



## Funding

When the GTP began, the WSU Energy Program started immediately tracking \$40 million in state grant funding to support zero emission vehicles and infrastructure. The first webinar was about grant writing, and the GTP team included grant topics and asked successful grantees to share lessons learned in AFV-TAG meetings. This biennium at least \$60 million will be tracked in state funding and potentially similar levels of resources from federal sources. The WSU Energy Program will support public fleets in taking full advantage of all of these resources, and planning is the key – helping fleet teams to define a project scope, budget and timeline.



## The WSU Energy Program partners with other stakeholders for strong deliverables

### Alternative Fuel Vehicle Technical Assistance Group AFV-TAG

Started by the Washington State Department of Commerce, the WSU Energy Program assumed leadership of the AFV-TAG. It has evolved into a dynamic partnership with several state agencies and many local governments. Participants learn about alternative fuel and electrification successes and challenges faced by different fleets and communities. AFV-TAG meetings are held bi-monthly and provide opportunities for peer-to-peer exchanges. Recordings are posted to the website.

- The first AFV-TAG meetings highlighted electric transit and school bus offerings to spur interest in available grants.
- In 2020, AFV-TAG went “on the road” virtually – to the Tri-Cities, Spokane, Vancouver and some smaller cities (Auburn, Edmonds, Kirkland, and Sequim).
- In 2021, the AFV-TAG focused attention on new technology breakthroughs, state and federal policy and funding developments, and shared lessons from local fleets expanding their EVs and infrastructure through successful grants.

In 2020 – despite the COVID-19 pandemic – average attendance was about 40 participants. In 2021, the average grew by more than one-third to 55 participants.

### Other Valuable Collaborations

The WSU Energy Program developed new and built on existing relationships to leverage collective resources to advance green transportation. This included:

- Coordinating activities with state agencies and fleets critical to advancing green transportation, including the Washington State Departments of Commerce, Enterprise Services, Transportation, and Ecology.
- Engaging with trade associations and advocacy groups, as well as regional planning organizations.
- Collaborating on and developing activities with many regional groups, including Western Washington Clean Cities, Columbia-Willamette Clean Cities, West Coast Electric Fleets, Forth Mobility, the Electric Vehicle Infrastructure Transportation Alliance, EV associations, the Automated Connected Electric and Shared





The Spokane Transit Authority shared details of their electric bus program with the AFV-TAG

Transportation group, Public Fleet Managers Association, NAFA Fleet Managers Association, Renewable Hydrogen Alliance, auto manufacturers and dealers, the electric vehicle supply equipment industry, and alternative fuel companies.

- Making tailored presentations to the Washington EV utility stakeholders, the NAFA-PNW Chapter, Puget Sound Regional Council, Tri-Cities Economic Development Council, King County Fleet Committee, the Washington Transit Association and the Washington Public Ports Association.

In addition to delivering and managing the GTP, the WSU Energy Program also collaborated on two important transportation electrification projects for the state, leveraging resources to benefit studies and further engage with fleets.

- In 2019-2020, the WSU Energy Program gathered data from all types of public fleets to support analyses completed for the JTC study about electrification of public fleets by 2035.
- In 2021, it supported stakeholder engagement for the mapping and forecasting tool – for both the public and private sectors – in development by the Washington State Department of Transportation. This tool will provide predictive information for the future – including EV adoption, EV charging, and utility demand, as well as health and economic information.

“ The Green Transportation Program and particularly the AFV-TAG meetings are an incredible source of statewide information about policy, industry news, and utility program design. I always learn something new at these meetings and I really appreciate the friendly community that they have cultivated in these sessions. My work is made easier from attending these sessions - and I don't often say that about meetings. ”

Cam LeHouillier  
 Manager  
 Energy Research and  
 Development  
 Tacoma Power  
 Tacoma, WA



## **The WSU Energy Program accelerates down the green transportation road**

The WSU Energy Program is pleased to continue to develop the Green Transportation Program. Looking ahead, it is:

- Continuing its outreach, technical assistance and education efforts – including coordinating the AFV-TAG.
- Closely tracking funding – the GTP team taps into its tools and relationships to track Washington grant funding awards, create website dashboards to highlight projects, promote successful fleets, and support new applicants, as well as looking ahead to possible future enhanced federal funding.
- Building infrastructure – the GTP team is working with relevant state and local governments, utilities, and private companies to identify and fill gaps in the EV charging infrastructure in every part of the state.
- Providing transit technical assistance – the JTC electrification study showed great promise for electrifying transit buses. The GTP team is working with transit fleets to further develop plans and make progress toward the use of battery-electric and fuel-cell-electric buses.
- Collecting helpful data about public fleet inventories and building support for further electrification, including for newly launched electric pickup trucks.
- Planning for new educational programs and events, such as ride-and-drives and field trips to EV charging stations that show best practices.

The expanding transition to zero emission vehicles is complex and exciting. The WSU Energy Program has a long history of providing unbiased resources for energy efficiency – along with clean, renewable

energy – and it has embraced the challenges of supporting public fleets in this transition through the GTP. As directed by the Washington State Legislature, it has succeeded:

- Reaching and supporting all of the major types of public fleets – from local governments, ports, and tribes to transit agencies, school districts, and utilities.
- Establishing a vibrant program with active online resources and virtual programs.
- Publishing valuable materials and tools.
- Hosting a growing technical assistance group
- Presenting engaging webinars on a wide variety of important and timely topics.

Despite COVID-19 pandemic challenges, the WSU Energy Program engaged with numerous public fleets and supported dozens as they take their next steps in this transition – offering unbiased assistance for battery electric, fuel cell electric, and alternative biofuels and vehicles.

The GTP has become an established feature of Washington’s zero emission transportation transition. The demand for GTP services by public fleets will increase substantially in the coming years. The WSU Energy Program is ready to work with legislators and others to meet this increasing demand and the challenge of realizing a clean transportation future.