

Puget Sound Zero-Emission  
Truck Collaborative

# Decarbonizing Drayage Roadmap: Executive Summary

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# Executive Summary

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The transition to zero-emission vehicles (ZEVs) serving ports in the Puget Sound region is a key step to improve air quality, reduce greenhouse gas emissions, and reduce environmental health disparities in communities living near port terminals and along major freight corridors. The shift toward ZEVs is being driven by industry trends, technology innovation, new state and federal policies, and public and private investments. As this transition is happening, trucking companies and independent owner-operators—self-employed truck drivers who own their own trucks and operate as a small business—are considering the new opportunities and challenges of zero-emission drayage.

To ensure that this transition is just and equitable requires a carefully crafted, long-term strategy that creates economic opportunity rather than disruption for drayage drivers and companies. The Puget Sound Zero-Emission Truck Collaborative (Collaborative) has developed this Roadmap to help guide that strategy. Over the course of many meetings, sessions with drivers and communities, presentations from experts and businesses, and small group discussions, the Collaborative developed recommendations to support an equitable, reasonable, and successful transition that provides opportunity, cleaner air, healthy communities, and an improved environment.

## Key Issues from Drivers and Communities

Throughout its work, the Collaborative heard from drivers and community groups about how they viewed the ZEV transition. These discussions underlined the potential benefits of ZEVs, including cleaner air, less noise, and healthier work environments. They also surfaced many issues and concerns that guided the Collaborative's work, including:

- **The higher upfront cost of ZEVs compared to current diesel vehicles**, including ZEVs' purchase price as well as costs related to charging and fueling, insurance, maintenance, and taxes.
- **Concerns about securing financing**, including the availability of appropriate and accessible loans, financing eligibility, and concerns about predatory loans.
- **Lack of information and training** about new vehicle technology and charging and fueling processes.
- **Risk for early adopters** due to uncertainties about technology, cost, vehicle durability and value over time, access to charging and fueling, and other issues.
- **The potential for drayage sector disruption in challenging economic times**, especially for independent owner-operators and small businesses that are particularly vulnerable to changes in the cost of doing business.
- **Impact on routes, timing, and logistics**, especially for battery electric vehicles given range limitations and charging times.
- **Availability, accessibility, and security of charging and fueling infrastructure**, which is currently lacking in the region. Charging and fueling facilities will require new land and utility infrastructure and will affect important issues like vehicle parking and traffic patterns.
- **Vehicle range and broader access to charging and fueling along freight corridors** for drayage drivers and companies that also carry freight for long trips.

- **Availability and cost of maintenance and emergency services as well as other auxiliary services like vehicle insurance**, recognizing the need to adapt services to new needs and requirements for ZEVs.
- **The additional weight of ZEVs and potential limits on loads due to weight regulations**, which may limit the types of drayage loads that ZEVs can carry.
- **Impacts of infrastructure and traffic in communities that are already overburdened** if charging and fueling facilities are not carefully sited and designed.
- **Disposal and recycling of batteries and tires**, including concerns about environmental impacts and the development of sustainable end-of-life solutions.

## Recommendations

To respond to these issues, this Roadmap offers nearly 70 detailed recommendations related to vehicles, charging and fueling infrastructure, and equity and opportunity as outlined below.

### *Regarding vehicles:*

- Bring ZEVs into cost-parity with diesel through financial incentives
- Pilot and demonstrate deployment of ZEVs and charging and fueling infrastructure in the region to test, educate and learn
- Catalyze a secondary ZEV market
- Provide alternatives to vehicle ownership
- Mitigate impacts of additional vehicle weight on drayage operations
- Ensure adequate vehicle maintenance and services
- Advance programs for residual battery and tire recycling and disposal
- Provide non-financial benefits for ZEV drivers at ports

### *Regarding infrastructure:*

- Develop initial publicly available charging and fueling infrastructure, and ensure a mix of options over time
- Ensure adequate power supply and infrastructure from utilities
- Enable an appropriate role for hydrogen vehicles and fueling as zero-emission solutions

### *Regarding equity and opportunity:*

- Ensure drivers and small companies have opportunities to adopt ZEVs but don't bear the risk of the transition
- Provide opportunities for drivers to test and understand ZEVs
- Provide driver and small business education, outreach, assistance, and ongoing engagement
- Engage communities regarding new facility siting and maximize community benefits
- Leverage the opportunity for the ZEV transition to create jobs

## Priority Near-Term Actions

Within the broader set of recommendations, the Collaborative identified several priority near-term actions that will be critical to undertake in the next three years to set the ZEV transition in motion. These critical first steps are:

- **Effectively implement sustainable local, state, and federal vehicle and infrastructure incentive programs:** Through Washington state’s medium and heavy-duty vehicle incentive program, the Northwest Seaport Alliance’s incentive program, and others, ensure that stackable point-of-sale rebates and other tax reforms and innovative financing are helping to make new ZEVs cost-competitive with new and used diesel vehicles and reducing the upfront cost of charging and fueling infrastructure. Aggressively pursue long-term sustainability and predictability of public funding for financial incentives.
- **Get initial ZEVs and infrastructure deployed in the region via demonstration projects:** Implement ZEV demonstration projects to gain experience with ZEVs in the region and catalyze early investments in vehicles and infrastructure. As part of this work, identify and engage “first movers” among supply chain partners and private sector entities who are most interested in helping to advance the transition to zero-emission drayage trucking.
- **Develop initial public charging infrastructure:** Provide opportunities for early adopters, including individual owner-operators and small companies that do not have the capital to establish their own charging infrastructure.
- **Engage in proactive utility planning:** Analyze and plan for future charging infrastructure needs. Advocate for policies that allow utilities to proactively develop infrastructure and programs that provide grid benefits from transportation electrification. Support initiatives that create a more robust grid to support large-scale electrification.
- **Actively engage drivers and communities:** Work with drivers to design and learn from incentive programs and demonstration projects. Engage communities about how to maximize local benefits and minimize impacts.
- **Provide technical assistance to fleets for vehicle adoption and infrastructure:** Support fleet managers and others to understand where shifting to ZEVs makes the most sense, how to transition fleets and build or access infrastructure most effectively, and how to connect with funding and programs that support the transition. Ensure that drivers and small companies have technical support to access financial incentives.

Additional actions valuable for accelerating and shaping the transition in the next three years are:

- **Lay the groundwork for secondary vehicle markets:** Implement used vehicle incentives and coordinated approaches for attracting used vehicles from California. Highlight opportunities through pilot deployment of used ZEVs in the region.
- **Provide opportunities for drivers to test out ZEVs:** Launch education, demonstration, ride-and-drive, and loaner programs for drayage drivers and smaller fleets to increase familiarity and reduce uncertainty about ZEVs.
- **Build local capacity for technical ZEV support:** Catalyze training and certification for ZEV maintenance, repair, and emergency services.
- **Advocate for operational and supply chain incentives for ZEV drivers:** Bolster financial incentives with operational incentives that improve access to terminals and warehouse. Help create buy-in and support from shipping and logistics companies that use the Puget Sound gateway.

## The Path Forward

The work of the Collaborative affirmed that this is not an easy journey, but it is one very much worth taking. Like all maps, this Roadmap will be refined as we learn more about the landscape. The Collaborative is proud of its work together and looks forward to cooperating on the Roadmap's effective implementation.