

Electrifying Drayage Alliance



Electrifying Drayage Alliance 2030 Roadmap Ports of Seattle and Tacoma

An implementation pathway to scale electric drayage by 2030

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Executive summary

The Electrifying Drayage Alliance (EDA) was established by Smart Freight Centre and The Climate Pledge, to accelerate the deployment of electric drayage by bringing together cargo owners, logistics providers, carriers, ports, terminals, charging providers, vehicle manufacturers, utilities, public agencies, and other stakeholders. The EDA 2030 Roadmap for Seattle and Tacoma establishes a practical implementation pathway to accelerate electric drayage deployment across the Northwest Seaport Alliance (NWSA) gateway through 2030.

Seattle–Tacoma enters this transition with a strong foundation. The Northwest Seaport Alliance has established a long-term zero-emission strategy, Washington has introduced incentives for medium- and heavy-duty zero-emission vehicles, the region's utilities are actively engaged in fleet electrification planning, and the Puget Sound Zero-Emission Truck Collaborative has already developed an extensive regional roadmap for decarbonizing drayage. A new shared charging depot in the SeaTac area provides an additional near-term opportunity to begin deploying electric trucks at greater scale.

The July 2026 EDA Seattle–Tacoma Roundtable reinforced that successful deployment will require several conditions to advance together. Cargo owners must identify freight that can be electrified and provide credible demand signals. Carriers need operating models that can compete with the used diesel trucks that dominate much of the local drayage market. Charging must be accessible to fleets that cannot install infrastructure at their own facilities. Ports and terminals must examine operational measures that improve truck utilization. Public incentives, financing, and other market mechanisms must reduce the financial risk borne by early adopters.

Seattle–Tacoma also presents operating conditions that distinguish it from other EDA markets. Some regional drayage operations move relatively heavy freight and take advantage of Washington's higher allowable diesel truck weights. Battery-electric trucks operating under current federal weight allowances may therefore not be suitable for every freight movement. Early deployment should focus on operationally suitable lanes - including repeatable port-to-warehouse, port-to-rail, retail, consumer-goods, and regional routes - where payload, range, charging access, and utilization support a competitive business case.

The EDA Seattle–Tacoma Roadmap builds on the [Puget Sound Zero-Emission Truck Collaborative Decarbonizing Drayage Roadmap](#), published in 2025. Rather than recreate its approximately 70 recommendations, this roadmap focuses on translating relevant recommendations into a smaller number of coordinated implementation priorities tied to near-term deployment.

The roadmap establishes a **shared ambition of enabling at least 300 electric drayage trucks operating across the Ports of Seattle and Tacoma by 2030**, while recognizing that deployment targets should be reviewed annually as market conditions, technology, infrastructure, and policy continue to evolve. Achieving this ambition will require coordinated action across five implementation pillars:

- **Strengthen demand signals**
- **Enable operational readiness**
- **Optimize port and terminal operations**
- **Enable supportive market conditions**
- **Coordinate, measure, and scale deployment**

The roadmap is intended to be a living document. EDA will review progress annually with coalition participants and adapt priorities as vehicle technology, infrastructure, public policy, freight demand, and market economics evolve.

How to use this roadmap

This roadmap is intended to support voluntary collaboration across the Seattle and Tacoma drayage ecosystem. It should be used by ports, terminals, cargo owners, logistics providers, carriers, charging providers, utilities, public agencies, and other stakeholders to:

- Identify practical actions within their respective roles;
- Align implementation efforts around a shared 2030 ambition;
- Monitor progress through annual roadmap reviews; and
- Inform updates and replication across future EDA port roadmaps.

The roadmap is designed to evolve alongside the market through annual progress reviews and coalition feedback.

Notice

This roadmap does not establish procurement commitments, allocate freight volumes, coordinate pricing, or otherwise influence commercial decision-making among participants. All procurement, contracting, pricing, fleet investment, and operational decisions remain the independent responsibility of individual organizations. Instead, the roadmap provides a voluntary framework for collaboration that helps stakeholders identify shared barriers, coordinate implementation activities where appropriate, and accelerate the transition toward commercially sustainable electric drayage.

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1. Purpose: why this port complex matters

The Ports of Seattle and Tacoma, operating together through the Northwest Seaport Alliance, form one of the principal container gateways on the U.S. West Coast and an important connection between trans-Pacific trade and markets across the Pacific Northwest and inland United States. The gateway connects marine terminals with rail facilities, warehouses, distribution centers, retail networks, and regional freight corridors throughout the Puget Sound region.

Drayage trucks play an essential role within this system. Approximately 4,500–5,000 trucks serve the gateway, and the fleet remains overwhelmingly diesel. Although the region has achieved substantial reductions in diesel particulate emissions through its longstanding clean-truck programs, including the replacement of more than 500 older diesel trucks, trucks continue to represent approximately one-third of greenhouse-gas emissions associated with the gateway. Electrifying drayage therefore represents an important opportunity to reduce freight emissions while improving air quality for drivers and communities surrounding ports and major freight corridors.

The region is not beginning from scratch. The Northwest Ports Clean Air Strategy establishes a goal of phasing out emissions from seaport-related activities by 2050, supported by implementation plans containing specific programs and projects. The Puget Sound Zero-Emission Truck Collaborative subsequently brought together ports, utilities, government agencies, industry, communities, and other stakeholders to develop a comprehensive strategy for transitioning regional drayage toward zero-emission vehicles. Its 2025 Decarbonizing Drayage Roadmap identified recommendations spanning vehicle affordability, charging and fueling infrastructure, utility coordination, financing, driver and small-business participation, workforce development, non-financial port benefits, and other conditions required for a successful transition.

The Seattle–Tacoma EDA 2030 Roadmap builds on that foundation and concentrates on converting regional readiness into operating trucks by connecting the existing policy, infrastructure, and planning environment more directly with freight demand and commercial deployment opportunities. Particular emphasis is placed on identifying electrifiable freight flows, connecting cargo owners with capable carriers, improving vehicle utilization, expanding practical charging access, reducing early-adopter financial risk, and measuring deployment outcomes.

This implementation focus reflects a central conclusion from the July 2026 Seattle–Tacoma Roundtable: the region already possesses many of the necessary building blocks. The next challenge is assembling those building blocks into repeatable deployment models.

2. Market Readiness Assessment for Seattle and Tacoma

The Seattle–Tacoma roadmap has been informed by the Puget Sound Zero-Emission Truck Collaborative's regional analysis, the Northwest Seaport Alliance's ongoing clean-truck activities, available vehicle and infrastructure programs, and the stakeholder discussion held during the July 23, 2026 EDA Roundtable. Together, these sources indicate that Seattle–Tacoma is moving from planning and market preparation toward early implementation.

2.1 Current market position

Seattle–Tacoma is entering an important early implementation phase for electric drayage. The region already benefits from an established zero-emission strategy, available public incentives, engaged utilities, and a strong foundation of stakeholder collaboration. At the same time, deployment remains limited relative to the overall drayage fleet, and the market has not yet reached the point where electric trucks can scale without coordinated support. The immediate opportunity is to convert the region's planning, funding, and infrastructure investments into commercially viable truck deployments by aligning suitable freight demand, carrier economics, charging access, and port and terminal operations.

Category	Baseline	Why it matters
Drayage fleet	Approximately 4,500–5,000 trucks serve the gateway; fleet remains overwhelmingly diesel	Large long-term electrification opportunity
Regional strategy	NWSA zero-emission strategy and Puget Sound ZEV Truck Collaborative roadmap established	Strong planning foundation already exists

Initial vehicle deployment	NWSA-supported first phase targets at least 19 battery-electric port-serving trucks	Creates an initial deployment cohort and opportunity for learning
Vehicle incentives	WAZIP provides Class 8 incentives, with enhanced support available for qualifying drayage vehicles	Can materially reduce the upfront vehicle cost gap
Shared charging	SeaTac shared depot under development with 26 charging stalls and a 7.5 MW utility interconnection	Provides a near-term charging pathway for fleets unable to install depot charging
Utility engagement	Seattle City Light, Tacoma Power, and Puget Sound Energy participate in regional electrification efforts	Provides foundation for coordinated infrastructure planning

2.2 Market strengths and remaining barriers

Seattle–Tacoma benefits from several market conditions that can support accelerated electric drayage deployment. The region has an established port decarbonization strategy, substantial state vehicle incentives, engaged utilities, an existing multi-stakeholder collaborative, and a shared charging project moving toward deployment. At the same time, the July 2026 roundtable demonstrated that these conditions do not by themselves create a viable electric drayage market.

Market strengths	Remaining barriers
Established regional zero-emission strategy	Limited long-term freight demand certainty
Strong vehicle incentives	Electric trucks must compete economically with used diesel vehicles
Shared charging infrastructure under development	Limited public/shared charging beyond the first SeaTac facility
Initial funded truck deployment	Utilization risk and uncertain residual value
Cargo-owner interest in freight decarbonization	Need to identify operationally suitable freight lanes that won't be impacted by payload limitations for heavier regional freight
Emerging turnkey leasing and charging models	Parking, charging, insurance, financing, and other operating costs remain material

The principal remaining challenge is coordinating market readiness and deployment. Trucks, incentives, charging, freight demand, and operational improvements must be assembled around the same use cases at the same time. The regional freight profile includes operations involving heavier commodities that may use Washington's higher allowable diesel truck weights. Battery-electric trucks may face payload constraints relative to diesel trucks operating under Washington's higher allowable weight limits. The first phase of implementation should consequently prioritize freight based on operational suitability rather than simply total freight volume.

2.3 Total Cost of Ownership (TCO) assessment

Electric drayage economics in Seattle–Tacoma must be evaluated against the vehicles carriers actually use, not simply against the purchase price of a new diesel tractor. Many drayage operators rely on older or second- and third-hand diesel vehicles. This creates a difficult capital-cost comparison for a new battery-electric tractor even when state and port incentives substantially reduce its purchase price.

Washington's incentive environment can materially improve the business case. The Washington Zero-Emission Incentive Program (WAZIP) provides point-of-sale support for eligible vehicles, with enhanced incentives available to qualifying drayage fleets and other eligible applicants. NWSA vehicle funding and other eligible programs may further improve economics for initial deployments. Purchase price, however, is only one component of the business case.

Roundtable participants identified several factors that can determine whether an electric truck is competitive in actual operation:

vehicle acquisition or lease cost;	charging cost;
parking cost;	annual vehicle utilization;
number of daily truck turns;	terminal waiting time;
maintenance;	insurance;
payload limitations;	financing cost;
residual-value risk;	duration and certainty of customer demand; and
access to public incentives.	

This makes utilization particularly important. A truck that spends significant time waiting at a terminal or traveling out of route to charge may struggle economically even with a heavily subsidized purchase price. Conversely, predictable freight, reliable charging, shorter terminal dwell times, and higher daily truck turns can materially improve the cost per load and cost per mile.

The preliminary TCO analysis compares a new battery-electric truck with new, second-hand, and third-hand diesel trucks to reflect the range of vehicle choices available to drayage carriers. The modeled new electric truck has a purchase price of \$290,000, compared with \$150,000 for a new diesel truck, \$55,000 for a second-hand diesel truck, and \$20,000 for a third-hand diesel truck. The analysis assumes a \$175,000 zero-emission truck incentive for the electric vehicle, substantially reducing its initial capital-cost disadvantage.

Operating assumptions also reflect differences between vehicle technologies and ages. The electric truck is modeled at 2.0 kWh per mile and \$0.18 per mile in maintenance costs, compared with fuel economy ranging from 7.69 mpg for a new diesel truck to 5.0 mpg for a third-hand diesel truck and maintenance costs ranging from \$0.20 to \$0.30 per mile. The analysis also accounts for differences in vehicle resale value and annual operating days.

Under these assumptions, incentives and lower operating costs allow the battery-electric truck to approach the total cost of ownership of diesel alternatives despite its higher initial purchase price. However, the results also demonstrate that vehicle acquisition incentives alone are not sufficient to ensure a strong business case. Vehicle utilization has a significant effect on cost per loaded mile. Operational measures that reduce terminal waiting time and enable additional productive truck turns can materially improve electric-truck economics.

The analysis therefore reinforces the need to consider vehicle incentives, freight demand, charging availability, and port and terminal operations together. For Seattle–Tacoma, early deployment should prioritize routes where electric trucks can achieve high utilization, predictable charging, and sufficient daily freight volumes. TCO results should be updated as real-world operating data from the first deployment cohort become available.

3. Implementation Framework for Ports of Seattle and Tacoma

The Seattle–Tacoma roadmap organizes implementation around five complementary pillars. These pillars align with the broader EDA U.S. roadmap framework while reflecting the distinct operating conditions identified through the Puget Sound Collaborative and the July 2026 roundtable.

The EDA Roadmap builds on the Puget Sound Truck Collaborative’s extensive groundwork in regional planning, driver and community engagement, and workforce development. While the Puget Sound Collaborative has established a policy and planning foundation, the EDA Roadmap focuses on translating that into commercial market conditions by connecting shipper demand signals with carrier readiness, charging access, and terminal operations. Together, these complementary efforts can help move zero-emission trucks from pilot projects to sustainable commercial deployments.

Throughout this roadmap, the following terms are used consistently:

- **Implementation pillars** describe the five areas of focus for the roadmap.
- 2030 stakeholder actions describe potential voluntary contributions by coalition stakeholders; they do not constitute agreed organizational commitments.
- **EDA implementation resources**, also referred to as **outputs**, are the tools, guidance, analyses, and other tangible resources resulting from those priority actions that EDA will develop to support implementation.
- **Annual outcomes** describe what the coalition aims to achieve by the end of each year.
- **Priority actions** are the quarterly activities undertaken to achieve those annual outcomes.
- **Progress indicators** are the measures used to monitor implementation in the progress dashboard and inform annual roadmap updates.

Pillar	Seattle–Tacoma stakeholder actions	EDA implementation resources
Strengthen demand signals	Cargo owners and logistics providers identify operationally suitable freight, consider electric drayage in procurement decisions, include electric drayage in carrier RFIs, and explore demand signals that could inform independent carrier investment decisions	Priority Freight Opportunity Map; shipper engagement toolkit and case studies; standardized RFI language for electric drayage; shipper procurement guidance; demand dashboard; business case library; shipper-carrier engagement toolkit; deployment case studies.
Enable operational readiness	Coordinate vehicle deployment, charging access, operational planning, and financial strategies to maximize vehicle utilization, improve operational performance, and demonstrate commercially sustainable deployment models within the Seattle–Tacoma market.	Route suitability assessments; carrier readiness assessments; charging deployment guidance; operational best practices; fleet transition planning; Regional charging overview; deployment-readiness assessment.
Optimize port & terminal operations	Ports and terminals evaluate and implement operational measures that measurably improve electric-truck utilization, such as appointment reliability, priority access, staging, or other efficiency measures	Port & Terminal Solutions resource; operational pilot assessments; operational performance metrics; green lane evaluation framework; implementation guidance and case studies.
Enable supportive market conditions	Public agencies and industry partners work to reduce remaining financial and operational barriers, particularly for small fleets and owner-operators, through incentives, financing, technical assistance, workforce support, and practical regulatory solutions. Infrastructure providers and utilities coordinate charging expansion with demonstrated and anticipated fleet demand	Incentive and policy inventory; TCO analysis; financing and ownership-model assessment; market-barrier recommendations. fleet/charging matching resources; utility and infrastructure guidance; grid and land assessment.
Coordinate, measure, & scale	Stakeholders participate in implementation through 2030, share appropriate deployment information and lessons learned through annual reviews, and use validated performance data to refine priorities and scale successful models	Roadmap dashboard with tracked indicators; annual progress report; implementation resource hub; cross-port EDA learning platform/hub.

4. Timeline

The implementation timeline should reflect Seattle–Tacoma's starting position: substantial planning has already occurred, but commercial deployment remains at an early stage.

Year	Annual objective	Annual outcomes
2026	Coalition alignment & deployment preparation	Translate existing regional recommendations into a focused EDA implementation program. Identify priority freight use cases, establish the initial demand pipeline, document charging and vehicle opportunities, clarify stakeholder roles, and prepare the first implementation workstreams.
2027	Initial deployment & validation	Support initial cohorts of electric drayage trucks, connect suitable freight with participating carriers, utilize the SeaTac shared charging facility and other available infrastructure, test port and terminal operational measures, and document actual operating economics.
2028	Expansion & replication	Apply lessons from initial deployments to additional carriers, cargo owners, freight lanes, terminals, and charging locations. Identify where additional shared or depot charging is required and refine financing and operational models based on actual deployment experience.

2029	Scaling & optimization	Increase utilization of the regional electric drayage fleet, expand repeatable deployment models, improve charging-network coverage and operational efficiency, and address remaining barriers preventing broader participation by smaller fleets and owner-operators.
2030	Assessment & next stage strategy	Evaluate progress across demand, truck deployment, charging, port and terminal operations, and market conditions. Document successful deployment models and remaining barriers and determine the next phase of Seattle–Tacoma electric drayage implementation beyond 2030.

5. Action plan for Ports of Seattle and Tacoma

The Action Plan translates the implementation framework and annual objectives into a sequence of priority actions through 2030. Each action contributes to achieving the annual outcomes described in the Timeline and advancing the coalition's shared ambition of enabling **300 electric drayage trucks** across the ports of Seattle and Tacoma by 2030.

Implementation is intended to be collaborative. While each action identifies a proposed implementation lead, successful delivery will require continued coordination across coalition members and stakeholder groups. Implementation is proposed to be organized through five working groups: Demand, Carrier, Ports & Terminal, Charging Infrastructure, and Market Enablement. The five working groups are identified in the table below.

Working Group Color Coding
Demand Working Group
Carrier Working Group
Ports & Terminal Working Group
Charging Infrastructure Working Group
Market Enablement Working Group

EDA will serve as the coalition convener and implementation coordinator, supporting implementation through the development of shared resources, facilitating collaboration, monitoring progress, and capturing lessons learned through annual roadmap reviews. The Action Plan will be reviewed annually and updated as market conditions evolve, implementation progresses, and new opportunities emerge.

2026: coalition alignment & market activation

By the end of 2026, the coalition aims to have:

- Match suitable freight demand with available electric drayage solutions and validate the TCO analysis
- Determine a charging infrastructure strategy, including charging at SeaTac.
- Complete the feasibility study of terminal solutions in port of Seattle and Tacoma.
- Confirm current and expected policies and incentives to feed into the Market Enablement Framework.
- Finalize roadmap actions and identify prospective owners; begin implementation of all 2026 priority actions

Q	Pillar	Priority Action	Lead	Output
Q4	All pillars	Launch the Seattle–Tacoma Roadmap at One Ocean Week and establish a small implementation group for each priority workstream	EDA	Roadmap released; workstream leads and meeting cadence confirmed
Q4	Strengthen demand signals; enable operational readiness	Identify delivery locations/lanes currently at TCO parity for electric drayage. Map initial deployment candidates: carrier fleet readiness, cargo volumes, route duty cycles, warehouse	EDA	Priority Freight Opportunity Map; 3-5 use cases screened with a named carrier; customer/LSP and charging pathway

		receiving constraints, charging access and staging needs.		
Q4	All pillars	Engage with relevant state, local, and regional agencies to identify areas of collaboration and	EDA; Catalyst Mobility	Meetings with Departments of Transportation, Ecology, Commerce, Puget Sound Clean Air Agency, Cities of Seattle, Tacoma, Kent, to discuss strategy, targets, areas of coordination
Q4	Enable operational readiness	Determine charging strategy at SeaTac and the ports of Seattle and Tacoma	Charging Infrastructure Working Group	Charging availability and gap assessment identifying existing and planned heavy-duty charging sites, capacity, carrier accessibility, expected operational dates, and gaps relative to priority routes and anticipated deployments.
Q4	Enable operational readiness; enable supportive market conditions; coordinate, measure & scale	Confirm the 2027 pipeline: carriers interested in vouchers, potential charging-hub users, and the routes that can support the first 10-25 trucks	Catalyst Mobility; NWSA; Carriers; CPOs; EDA team	2027 deployment pipeline and owners documented
Q4	Optimize port & terminal operations	Assess current terminal operational practices and ease and impact of solutions in Port & Terminal Solutions Guide at Seattle–Tacoma on a terminal level	Ports & Terminal Working Group	Port & Terminal Solutions Assessment for Seattle–Tacoma
Q4	Enable supportive market conditions	Compile current and expected policies and incentive programs affecting electric drayage trucks and charging infrastructure, including program eligibility and known stacking limitations where applicable.	Market Enablement Working Group	Easily navigable document developed providing Washington State-specific Policy and Incentive Overview; clear process developed to update the document/dashboard semi-annually.

2027: Deployment readiness & learning

By 2027, the coalition aims to have:

- Supported the first electric drayage deployments on suitable Seattle–Tacoma routes.
- Matched priority freight demand with carriers, incentives, and charging.
- Identified priority gaps for shared/public charging.
- Tested operational measures that improve truck utilization.
- Captured deployment lessons to inform 2028 actions.

Q	Pillar	Priority Action	Lead	Output
Q1	Strengthen demand signals; enable supportive market conditions	Prepare a practical shipper-to-carrier engagement pack: RFI language, lane data template, emissions/claims guidance and a checklist of information carriers need to price an electric option	EDA Team; shippers; LSPs; carriers	Draft pack tested with at least two shippers, one LSP and two carriers.
Q1	Strengthen demand signals	Confirm priority electrifiable lanes and match shipper demand with interested carriers.	Demand Working Group	Identify operationally suitable lanes - including repeatable port-to-warehouse, port-to-rail, retail, consumer-goods, and regional routes
Q1	Enable operational readiness; Strengthen demand signals	Select 2-3 first-mover lanes and agree on the practical operating plan for each: customer volume, pickup/delivery windows, truck type, charging plan, driver plan and performance measures.	Carriers; shippers; LSPs; CPOs; EDA team	Deployment plans developed and preliminarily approved for first-mover lanes.
Q1	Enable operational readiness	Develop deployment plans for the first cohort of electric drayage trucks.	Carrier Working Group	2027 Deployment Pipeline
Q1	Optimize port & terminal operations	Work with NWSA, terminals and carriers to assess practical utilization levers: appointment priority, faster gate processing, pre-staged chassis, drop-and-hook and staging options	Port & Terminals Working Group	One or more operational pilots or feasibility actions agreed
Q2	Strengthen demand signals	Test practical shipper commitment models that provide carriers with greater demand certainty.	Demand Working Group	Shipper–Carrier Demand Framework
Q2	Enable supportive market conditions	Assess deployment economics, including incentives, utilization, charging, payload, and carrier costs.	Market Enablement Working Group	Updated TCO Assessment
Q3	Enable operational readiness	Pilot the shipper engagement pack with leading cargo owners and LSPs in live sourcing or renewal cycles, including electric-service option requests and standardized data requirements.	Demand Working Group	At least three organizations use or test the pack
Q3	Enable operational readiness	Track utilization, charging, uptime, terminal time, payload, costs, and driver experience from early deployments.	Carrier Working Group	Initial Deployment Performance Data; First two deployment case studies drafted
Q4	Coordinate, measure & scale	Review deployment progress and capture lessons across all workstreams.	EDA	2027 Annual Progress Report
Q4	Coordinate, measure & scale; all pillars	Publish first annual dashboard; review the first deployment cohort and decide which lanes, customers and charging projects should scale in 2028	EDA + All Working Groups	Updated 2028 Action Plan; 2028 scale plan agreed upon; identify number of operating trucks targeted

2028: Market expansion & replication

By the end of 2028, the coalition aims to have:

- Expanded electric drayage deployment across proven Seattle–Tacoma use cases.
- Increased shipper demand and carrier participation.
- Advanced shared/public charging in priority locations.
- Replicated successful port and terminal operational measures.
- Used deployment experience to refine the pathway for 2029.

Q	Pillar	Priority Action	Lead	Output
Q1	Strengthen demand signals; Enable operational readiness	Replicate the strongest 2027 route model with additional customer-carrier combinations; use standard lane-data and service templates rather than redesigning each deployment	Carrier Working Group	At least two repeatable deployment models documented and reused
Q1	Strengthen demand signals	Expand from pilots to contracted service on priority lanes, with clear volume visibility and utilization plans for each additional vehicle	Demand Working Group	Pipeline supports 60-75 trucks operating by year-end
Q2	Enable operational readiness	Advance shared/public charging priorities identified through 2027 deployments.	Charging Infrastructure Working Group	Charging Expansion Plan updated against fleet deployment dates
Q3	Enable supportive market conditions	Refine recommendations based on deployment experience and market developments.	Market Enablement Working Group	Updated Market Recommendations
Q3	Enable operational readiness	Identify additional deployment opportunities based on charging, payload, and operational suitability.	Carrier Working Group	2029 Deployment Pipeline
Q4	Coordinate, measure & scale	Assess deployment, demand, charging, and operational progress across the coalition.	EDA	2028 Annual Progress Report
Q4	Coordinate, measure & scale	Publish annual dashboard and 2029 expansion plan, focusing on lanes and customer segments where utilization and economics are proven.	EDA + All Working Groups	Updated 2029 Action Plan; 60-75 operating trucks; 2029 scale plan agreed

2029: Scaling and optimization

By the end of 2029, the coalition aims to have:

- Scaled electric drayage across proven freight use cases.
- Expanded charging capacity to support fleet growth.
- Improved utilization through proven operational measures.
- Reduced remaining economic and operational barriers.
- Established a clear pathway toward the 2030 ambition.

Q	Pillar	Priority Action	Lead	Output
Q1	All pillars	Use operating data to identify the specific barriers preventing scale to 300: vehicle availability, customer volume, charging capacity, grid, land, terminal access, operating hours or finance	EDA team; coalition; agencies	Gap analysis completed; each priority barrier assigned an owner and next step.
Q1	Strengthen demand signals	Expand electric drayage demand across proven lanes and additional shippers.	Demand Working Group	Expanded Freight Opportunity Map
Q1	Enable operational readiness	Assess charging capacity against projected fleet growth and priority freight flows.	Charging Infrastructure Working Group	Updated Charging Needs Assessment
Q2	Optimize port & terminal operations	Scale successful operational measures across participating terminals.	Ports & Terminal Working Group	Expanded Terminal Solutions
Q2	Enable supportive market conditions	Update TCO and identify remaining barriers to broader carrier adoption.	Market Enablement Working Group	Updated Market Recommendations
Q3	Strengthen demand signals	Identify opportunities to aggregate or coordinate demand across additional freight flows.	Demand Working Group	2030 Deployment Pipeline
Q3	Enable supportive market conditions	Refine financing and risk-reduction approaches based on deployment experience.	Market Enablement Working Group + Carrier Working Group	Carrier Scaling Recommendations
Q4	Coordinate, measure & scale	Assess coalition progress and remaining gaps toward the 2030 ambition.	EDA	2029 Annual Progress Report
Q4	Coordinate, measure & scale	Confirm final 2030 priorities based on deployment and market progress.	EDA + All Working Groups	Updated 2030 Action Plan

2030: Assessment & knowledge transfer

By the end of 2030, the coalition aims to have:

- Identify main barriers hindering further adoption of electric drayage.
- Operational, charging and demand lessons documented for replication.
- Progress towards coalition's targets assessed and determine whether additional support is needed beyond 2030.

Q	Pillar	Priority Action	Lead	Output
Q1	Coordinate, measure & scale	Refresh the roadmap and confirm final gap-closing actions for each active carrier, lane and charging location.	EDA	2030 Progress Assessment; Final year action tracker with proposed owners identified
Q1	Strengthen demand signals	Assess growth in shipper demand and electric drayage freight volumes.	Demand Working Group	Demand Progress Summary
Q1	Optimize port & terminal operations	Evaluate operational measures implemented across participating terminals.	Ports & Terminal Working Group	Terminal Solutions Assessment

Q	Pillar	Priority Action	Lead	Output
Q2	Enable supportive market conditions	Assess remaining economic, financing, policy, and carrier adoption barriers.	Market Enablement Working Group	Updated Market Recommendations
Q2	Enable operational readiness	Assess charging availability, utilization, and remaining infrastructure gaps	Charging Infrastructure Working Group	Charging Readiness Assessment
Q3	Coordinate, measure & scale	Document practical Seattle–Tacoma playbook for shipper engagement, carrier deployment, charging siting and port/warehouse operations; identify lessons for other Northwest markets / heavy freight ports	EDA + All Working Groups	Seattle–Tacoma Implementation Lessons; Replication playbook drafted and validated
Q4	Coordinate, measure & scale	Assess performance against the 300-truck target and agree the post-2030 strategy, including the next infrastructure, demand and policy priorities.	EDA	2030 Annual Progress Report; 300 operating trucks targeted; post 2030 priorities agreed
Q4	Coordinate, measure & scale	Define priorities and the coalition's role in supporting continued deployment beyond 2030.	EDA + All Working Groups	Post-2030 Recommendations

6. Progress dashboard for Seattle–Tacoma

The dashboard below provides a set of working indicators for tracking progress toward the Seattle–Tacoma 2030 ambition. It should be reviewed annually, with values updated using coalition participation, project information and voluntary data contributions. The initial vehicle deployment reflects the NWSA-supported first phase targeting at least 19 battery-electric port-serving trucks.

Pillar	Indicators	2026 baseline	2027	2028	2029	2030
Strengthen demand signals	EV drayage solutions included in RFIs	To be determined through annual review				75%
	Dedicated freight commitments (% of total volume in coalition) for EV solutions	To be determined through annual review				15%
Enable operational readiness	EV drayage trucks operating at Seattle–Tacoma Port (based on port registries)	To be determined through annual review	19	To be determined through annual review	To be determined through annual review	300
	Charging stations/ports	To be determined through annual review				To be determined through annual review
Optimize port & terminal operations	Number of supporting solutions (e.g. physical green lane, virtual green lane, priority access)	0	1	2	3	3
Enable supportive market conditions	Active/funded incentive programs					To be determined through annual review

Coordinate, measure & scale	Annual progress report completed, including actions taken and lessons learned	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
	Number of engaged coalition members	35	40	45	50	60+

Looking ahead

Seattle–Tacoma has already completed much of the strategic groundwork required for the transition to zero-emission drayage. The region has a long-term clean-air strategy, a comprehensive collaborative roadmap, engaged utilities, vehicle incentives, an emerging shared charging network, and stakeholders across the freight ecosystem actively considering deployment.

Success will increasingly be measured not by the number of recommendations developed, but by whether suitable freight is identified, carriers can operate electric trucks competitively, charging is available where trucks need it, terminal operations support high utilization, and early deployment models can be repeated without requiring every project to be designed from the ground up.

Through coordinated implementation between 2026 and 2030, the Seattle–Tacoma coalition can demonstrate how existing regional planning and public investment can be converted into commercially viable electric freight operations while ensuring that smaller carriers and owner-operators have practical pathways to participate.

The roadmap provides a shared implementation pathway rather than a fixed prescription. As technology, freight markets, infrastructure, and public policy evolve, the roadmap will evolve with them. Annual reviews will allow the coalition to measure progress, identify remaining barriers, refine implementation priorities, and determine the next stage of electric drayage deployment across the Northwest gateway.

Appendices

Appendix A. TCO Assumptions and Preliminary Results

Appendix B. Local Stakeholders of Seattle–Tacoma Roadmap

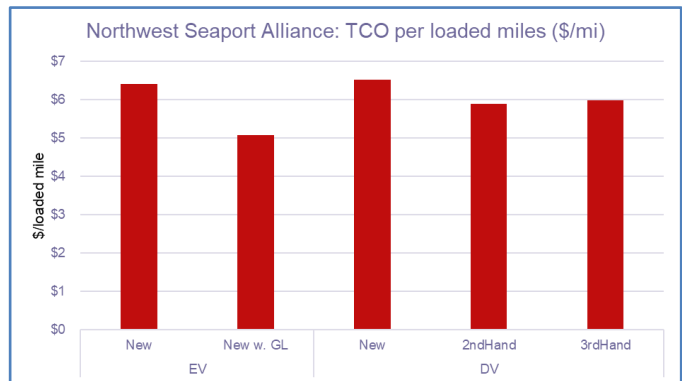
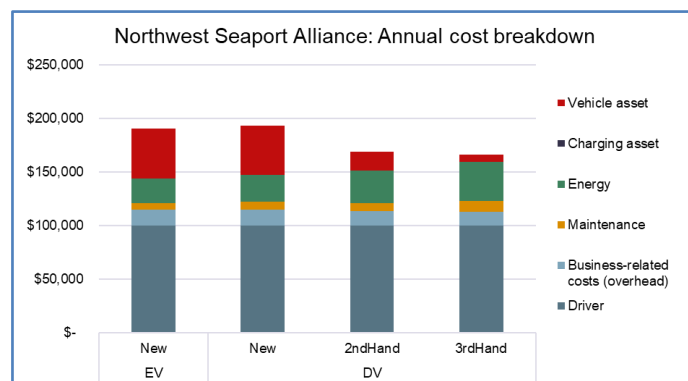
Appendix B. References

Appendix C. Glossary

Appendix A. TCO Assumptions and Preliminary Results

General assumptions used for the TCO

Metric	New eTruck	New Diesel Truck	2nd-Hand Diesel	3rd-Hand Diesel
Purchase Price	\$290,000	\$150,000	\$55,000	\$20,000
Resale value	\$58,000	\$37,500	\$15,000	\$15,000
Operational Days/Year	250	250	240	235
Fuel Efficiency	2.00 kWh/mile	7.69 mpg	6.15 mpg	5.00 mpg
Maintenance Cost	\$0.18 / mile	\$0.20 / mile	\$0.23 / mile	\$0.30 / mile
DEF Efficiency	—	385 mpg	308 mpg	250 mpg
DEF Cost	—	\$0.013 / mile	\$0.016 / mile	\$0.020 / mile
ZET Subsidy	\$175,000			



Note: TCO results represent modeled scenarios based on the assumptions shown above and should not be interpreted as costs applicable to every fleet or duty cycle. Actual costs will vary based on vehicle utilization, freight characteristics, energy and charging costs, financing, insurance, available incentives, terminal operations, and other fleet-specific conditions. Methodology and data limitations. The TCO comparison is a preliminary scenario analysis using the vehicle purchase prices, resale values, operating days, efficiency, maintenance costs, diesel exhaust fluid assumptions, and illustrative \$175,000 zero-emission truck subsidy shown in the table. The underlying model and source documentation were not available for this publication review. Annual mileage, loaded-mile share, electricity and diesel prices, charging tariffs and demand charges, infrastructure costs, financing terms, insurance, vehicle life, and the model calculation date therefore cannot be independently confirmed from the available materials. The \$175,000 figure is a modeling assumption, not a verified current incentive award or a statement of eligibility under WAZIP or another program. The figures and charts should be interpreted as illustrative rather than validated forecasts. Before relying on these results for investment decisions, users should verify the applicable incentive rules and update the model with route-specific utilization, charging, fuel, financing, and operational data.

Appendix B. Local Stakeholders of Seattle–Tacoma Roadmap

Organizations listed below are included for stakeholder mapping and outreach purposes only. Their inclusion does not imply endorsement of this roadmap, agreement to its targets or actions, participation in a working group, or any binding commercial or operational commitment. Working-group assignments and leads are illustrative and subject to confirmation with each organization before public attribution.

Company / Organization	Type	Working Group (subject to confirmation)	Working Group Lead (subject to confirmation)
Amazon	Shipper		
Amazon Global Logistics	LSP		
Apex Logistics International	LSP		
Boeing	Shipper		
Catalyst Mobility	NGO		
CEVA Logistics	LSP		
Crane Worldwide	LSP		
Einride	Carrier		
Graham Trucking	Carrier		
Green Worldwide Shipping	LSP		
Greenlane Infrastructure	CPO		
Husky Terminal	Port		
IKEA	Shipper		
J.B. Hunt	Carrier		
Mercer Logistics	LSP		
Microsoft	Shipper		
Northwest Seaport Alliance	Port		
Port of Seattle	Port		
Puget Sound Energy	Utility		
Ross Strategic	Consultant		
Seattle City Light	Utility		
Smart Freight Centre	NGO		
Tacoma Power	Utility		

Target	Shipper		
The Climate Pledge	NGO		
Zeem Solutions	CPO		

Appendix C. References

The following references informed the development of the EDA Ports of Seattle and Tacoma 2030 Roadmap and provide additional policy, technical, and market context.

B1. Local Policies and Incentive Programs

- Northwest Ports Clean Air Strategy
- Northwest Seaport Alliance Clean Truck Program
- Puget Sound Zero-Emission Truck Collaborative, Decarbonizing Drayage Roadmap
- NWSA zero-emission drayage vehicle and infrastructure initiatives

B2. State Program

- Washington Zero-Emission Incentive Program (WAZIP)
- Washington Climate Commitment Act programs
- Washington State Department of Transportation programs

B3. Federal Policies and Incentive Programs

- U.S. Environmental Protection Agency. (n.d.). *Clean Ports Program.* <https://www.epa.gov/cleanports>
- U.S. Environmental Protection Agency. (n.d.). *Clean Heavy-Duty Vehicles Program.* <https://www.epa.gov/clean-heavy-duty-vehicles-program>
- U.S. Department of Energy. (n.d.). *Alternative Fuels Data Center.* <https://afdc.energy.gov/>
- Joint Office of Energy and Transportation. (n.d.). *DriveElectric.gov.* <https://driveelectric.gov/>
- Federal Highway Administration. (n.d.). *Alternative Fuel Corridors.* https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/

B4. Technical Guidance

- Vehicle and charging guidance
- Utility/interconnection guidance
- EDA Total Cost of Ownership analysis

B5. Related Studies

- Puget Sound Zero-Emission Truck Collaborative, *Decarbonizing Drayage Roadmap* (2025)

Appendix D. Glossary

<u>Acronym / Term</u>	<u>Definition</u>
AFDC	Alternative Fuels Data Center, a U.S. Department of Energy resource providing information on alternative fuels, vehicles, charging infrastructure, and incentives.
BEV	Battery Electric Vehicle. A vehicle powered entirely by electricity stored in onboard batteries.
BCO	Beneficial Cargo Owner. The company that owns or controls the cargo being transported, regardless of which logistics providers or carriers move the freight.
CCS	Combined Charging System. A DC fast charging standard widely used for commercial electric vehicles in North America.
CPO	Charging Point Operator. A company that owns and/or operates electric vehicle charging infrastructure.
CPP	Clean Ports Program. A U.S. Environmental Protection Agency grant program that funds zero-emission equipment, infrastructure, and emissions reduction projects at ports.
DC Fast Charging (DCFC)	High-power direct current charging capable of rapidly charging heavy-duty battery-electric vehicles.
Drayage	The short-distance movement of freight between marine terminals, rail yards, warehouses, and distribution centers, typically performed by Class 8 trucks.
Freight Corridor	A recurring freight movement connecting marine terminals with warehouses, rail facilities, distribution centers, or other logistics destinations.
Green Lane	An operational strategy that provides priority processing or reduced delays for qualifying zero-emission trucks entering or exiting marine terminals.
Greenhouse Gas (GHG)	Atmospheric gases, including carbon dioxide (CO ₂), methane (CH ₄), and nitrous oxide (N ₂ O), that contribute to climate change.
Grid Capacity	The available electrical infrastructure and utility capability needed to support vehicle charging at a given location.
HV	Heavy Vehicle or Heavy-Duty Vehicle , generally referring to commercial vehicles above 14,000 pounds Gross Vehicle Weight Rating (GVWR).
Intermodal Freight	Freight transported using multiple transportation modes (e.g., ship, truck, and rail) without handling the cargo itself between modes.
LSP	Logistics Service Provider. A company that manages transportation, warehousing, freight forwarding, or supply chain services on behalf of cargo owners.
MCS	Megawatt Charging System. The next-generation high-power charging standard designed specifically for heavy-duty electric trucks.
MW	Megawatt. A unit of electrical power equal to one million watts, commonly used to describe large charging installations or utility capacity.
NACS	North American Charging Standard. A charging connector standard used by Tesla and increasingly adopted by other vehicle manufacturers.
NOx	Nitrogen Oxides. Air pollutants emitted primarily from diesel engines that contribute to smog and adverse public health impacts.
OEM	Original Equipment Manufacturer. A manufacturer of commercial trucks or other equipment (e.g., Daimler Truck, Volvo Trucks, Tesla).
NWSA	Northwest Seaport Alliance. A marine cargo operating partnership between the ports of Seattle and Tacoma that manages containerized cargo operations and related freight activities across the two ports.

<u>Acronym / Term</u>	<u>Definition</u>
Priority Freight Opportunity Map	An EDA planning resource that identifies freight corridors and use cases with the greatest potential for commercially viable electric drayage deployment.
Shared Charging	Charging infrastructure that serves multiple fleets or operators rather than being dedicated to a single carrier.
Staging Area	A location where trucks temporarily park, exchange chassis, or consolidate freight before or after terminal operations.
TaaS	Truck-as-a-Service. A commercial model that combines vehicle leasing with maintenance, charging, and other operational services into a single offering.
TCO	Total Cost of Ownership. The full lifecycle cost of operating a vehicle, including acquisition, financing, fuel or electricity, maintenance, insurance, residual value, and operating costs.
TEU	Twenty-foot Equivalent Unit. The standard unit used to measure container throughput at ports.
Utility Make-Ready Infrastructure	Electrical infrastructure installed by utilities to support future charging equipment, typically extending to the customer's property line.
Zero-Emission Vehicle (ZEV)	A vehicle that produces no tailpipe emissions during operation. Within this roadmap, the term primarily refers to battery-electric drayage trucks.