

Maritime Sector

Sector Strategy Update: June 2024

Prepared by the NW Center of Excellence for Marine Manufacturing & Technology

Please describe the greatest workforce needs facing your sector, with a focus on needs that career connected learning strategies can help to address.

The Washington State maritime industry continues to face significant technical workforce needs across the three sub-sectors addressed in this project:

1. Boat and ship building and repair
2. Underway transportation and operations
3. Commercial fishing and seafood processing

Maritime workforce needs can be broadly characterized by the following:

1. Immediate need for technicians across maritime disciplines – followed by an imperative to grow a maritime workforce bench.
2. Retention following hiring/placement.
3. Maritime is actively transitioning from a traditional legacy industry regarding how new participants to the workforce are identified and recruited. Understanding evolving community demographics, commuting, housing and family dynamic patterns of the modern workforce is critical to sustaining a competitive and thriving workforce.
4. More education and training capacity – this includes faculty/trainer development in high demand disciplines and the means to support credential attainment for faculty who wish to teach in high demand disciplines.
5. Greater connection to, and alignment with post-secondary education and training programs.
6. Grow and expand Career Connected Launch programming – this includes finding innovative strategies to on ramp current programs outside of the Launch network to full Launch endorsement.
7. Improve connections to K12 programming in an employer's immediate region to facilitate engagement, awareness and program development.

The workforce needs for the sub-sectors listed above are influenced by multiple factors, which will place new and expanded pressures on the maritime workforce system. Influencers and disruptors include, but are not limited to:

1. **Fierce competition** for a technically competent and trained workforce, both internal to the industry, and externally, across sectors competing for the same talent pool
2. **Assignment of defense assets** – the U.S. Navy has designated Naval Station Everett as homeport for its next generation of Constellation-class frigates. It is anticipated that 12 Constellation-class frigates will be based at Naval Station Everett. Everett Ship Repair has received designation to conduct military ship repair services. Fincantieri, has announced its expansion to the Everett area. The Constellation-class project points to a highly probable change in education program scope and workforce demand. As a system, tracking these types of developments is crucial to planning, development and delivery of contextualized maritime education and training.
3. **New and emerging maritime markets** that currently and will include electrification, propulsion technologies, blue economy development, offshore wind development, and

autonomous systems and vessels. Each of these technology advancements and market developments will impact the education and training requirements for the industry – for those just entering the industry and those currently in the industry.

4. **A thin maritime workforce pipeline** in need of new and expanded contextual training and education capacity for both the ashore and afloat sectors. This would include increased access in early grades to exploration and preparation activities and curriculum, open educational resources readily accessible to school districts and communities statewide, expanded supports for career connected launch endorsement, and the development of maritime pre-apprenticeship programming to reach youth and young adults from all communities.
5. Need to address **access barriers**, particularly in rural communities statewide. Barriers may include any combination of the following: connectivity, transportation, funding, housing and childcare, industry awareness, ready access to contextualized open educational resources, faculty capacity and professional development opportunities and pathways.
6. **Outdated and obsolete occupational titles.** These adversely impact high demand occupation lists, financial aid opportunities for students, NAICS codes, program development and expansion and perception of the industry overall. Our partnerships with organizations such as the Transportation Institute, contextualized programs in Washington State and other regions of the country, work with the Maritime Administration as a designated maritime workforce center of excellence, and industry have allowed us to build a collaborative network that will address this challenge. This work compliments career connected learning efforts statewide.

These and other influencing factors represent opportunities to support and grow career connected learning strategies for the maritime industry.

This update builds on the four (listed below) industry informed strategies created during the first phase of the project. The strategies have been updated to reflect actionable projects and initiatives, oriented to career connected learning. All goals support strategies and activities that are actionable, observable and measurable. Each has been developed with direction, guidance and leadership from the Statewide Maritime Sector Stakeholder Group. Core considerations in the development of the following goal statements include current and forecasted industry workforce needs; the imperative of creating a Career Connected learning pathway beginning at K-5; engaging all communities to address access barriers and strategically grow awareness of career opportunities and pathway options in maritime.

Goal One: *Improve awareness and access to Maritime Career Pathways with an emphasis on partnerships and engagement with Black, Indigenous, and People of Color and rural communities statewide.*

Goal Two: *Communicate the value of Maritime sector careers more effectively.*

Goal Three: *Build foundational tools to remove structural barriers to advancing an equitable maritime workforce plan.*

Goal Four: *Improve the cohesiveness of the Career Connected Learning Eco-system across the State.*

Focused and strategic career connected learning projects can support access to education and training for high demand occupations and skill sets in the maritime industry. Following are problem/challenge statements with recommended strategies that are intended to mitigate

access gaps and grow the statewide network of career connected learning.

1. Maritime employers are seeking skill sets and technical competencies in demand other industries (e.g. construction, agriculture, energy, aerospace, automotive). Commit resources to cross-sector pathway development for high demand occupations and skill sets such as welding, electrification, fuel technologies and project management. This effort would not replace contextualized maritime pathways, it would however, provide awareness and resource options for students, educators, families and CCL networks to embed maritime into the menu of career options for youth and young adults.
2. Attaining Career Launch designation can be a difficult and challenging process. Investment in a pilot project to create and test a provisional designation onramp to full designation would provide a process by which programs lacking capacity and other supports to effectively work with, and leverage Sector Leaders, other partners and industry members who either have, or could develop a paid work-experience for student technicians. The program receives direct grant funding to follow and clear and sequential process to full Launch designation.
3. Rural, underserved and underinvested communities are often impacted by resource deficits. Those may include inconsistent connectivity, transportation, funding, and other support services. Work strategically with career connect and other partners to develop solutions-based approaches designed to mitigate resource deficits, empowering rural communities.
4. Instructional Capacity - faculty development and connection to maritime industry employers. Develop projects and resources to support faculty professional development relative to the maritime industry. This would enable faculty to bring the industry into the classroom, develop and access open education resource modules focused on the maritime industry. Investing in, and developing faculty is critical to meeting workforce demand, establishing and growing contextualized programming. Competing with industry for qualified instructors requires innovative and new approaches.

NOTE: The updated Maritime Sector Strategy will now use the phrase Essential Skills in place of Soft Skills. We feel it more accurately represents the imperative of the skills. Essential Skills cover communication, teamwork, problem solving, organization, critical thinking, adaptability, conflict resolution, time management and leadership.

Between now and June of 2025, what are your sector’s 3-6 occupations that are highest priority for building supportive career connected learning pathways? Please focus on occupations that lead to economic self-sufficiency.

- Marine Electrician, SOC 49-2093
- Diesel Engine Technicians, SOC 48-3200
- Aluminum Welder/Fabricator, SOC 51-4121
- Sailors and Marine Oilers, SOC 53-5011
- Ship Engineer, SOC 53-5031
- Captains, Mates & Pilots, SOC 53-5021

For each of the occupations identified above, please provide the information below to help inform pathway development efforts and investments.

<p>Occupation: Marine Electrician SOC 49-2093</p>	<p>Sub-sector: Both ashore and afloat. Boat and shipbuilding and repair; Underway; and Commercial Fishing</p>
<p>Average wage: \$75,000 - \$87,600</p>	
<p>Which skills/competencies do employers use as a benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> ● AC/DC theory ● PLC’s ● Blueprint/schematic skills ● Safety awareness ● Knowledge of appropriate standards and regulatory requirements ● Communication skills ● Problem solving skills ● Battery technologies ● Tag out procedures ● Project Management 	<p>Which credentials do employers cite as a valuable benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> ● Journeyman credential ● Electrical Certificate/Credential from standards or other organization (NAVSEA, American Boat & Yacht Council, USCG, etc.) ● Corrosion Certificate/Credential ● Merchant Mariner Credential ● Post-secondary certificate or degree
<p>Please describe possible career progression opportunities for this occupation:</p> <p>Rigger, Entry Level Electrician, Systems Technician, Electronics Technician, Project Lead, Electrician, Corrosion Technician, Hydraulics Technician, Mechatronics Technician, Rigger, Autonomous Systems Technician, ROV Technician</p>	
<p>Please share the data, employer feedback, and/or Regional Network feedback that helped you identify this as a high-priority occupation:</p> <ul style="list-style-type: none"> ● One-on-one engagement with maritime employers ● Job postings on multiple platforms 	

- Employer demand for this skill set
- Technological advancement in the industry, i.e. electrification, battery technologies

Please describe the top barriers employers have identified to hiring for this occupation:

- Education and training capacity, which adversely impacts programmatic growth and expansion
- Competition with other maritime employers and other industries seeking the same or similar skill set
- Access to education and training programs in rural and underserved communities
- Basic/essential skills programming, including pre-apprenticeship

Please describe the type of programs or approaches employers have found helpful in hiring for this occupation:

- Direct hiring from contextualized maritime and related multi-sector programs.
- Registered apprenticeship.
- Hiring transitioning active-duty military personnel.
- Reaching into other industries for a similar skill set.
- Providing paid work experience opportunities for students.
- Recruitment via maritime specific employment platforms.

<p>Occupation: Diesel Engine Technician SOC 48-3200</p>	<p>Sub-sector: Both ashore and afloat. Boat and shipbuilding and repair; Underway; and Commercial Fishing</p>
<p>Average wage: \$60,300 - \$69,300</p>	
<p>Which skills/competencies do employers use as a benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> • Mechanical skills • Electrical and electronic skills • Battery technologies • EPA standards • Safety • Communication • Systems networking skills 	<p>Which credentials do employers cite as a valuable benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> • Original Equipment Manufacturer (OEM) Engine Certification, i.e. Detroit Diesel, Cummins Diesel Engine, Yanmar Diesel • Certificate/degree in diesel technology • Marine Engines & Fuel Systems Cert/ABYC • Merchant Mariner Credential
<p>Please describe possible career progression opportunities for this occupation:</p> <p>Diesel Propulsion Technician, Hybrid Fuels Technician, Diesel Technician, Diesel Mechanic,</p>	

Diesel Mechanic Technician, Mechatronics Technician, Systems Technician, Rigger

Please share the data, employer feedback, and/or Regional Network feedback that helped you identify this as a high-priority occupation:

- Demand data
- Direct employer engagement via interview and onsite work
- Technological changes and advancements relative to hybrid diesel propulsion
- Demand data via data analytics platforms
- Industry studies

Please describe the top barriers employers have identified to hiring for this occupation:

- Same or very similar skill sets required and in demand in other industries – energy, ground transportation, energy, automotive and construction
- Scale of student awareness is low compared to other industries
- Perception that maritime industry employment is less desirable compared to other industries
- Education and training capacity

Please describe the type of programs or approaches employers have found helpful in hiring for this occupation:

- Direct hiring from contextualized maritime and related programs.
- Participation as an apprenticeship employer.
- Hiring transitioning active-duty military personnel.
- Reaching into other industries for a similar skill set.
- Providing paid work experience opportunities for students.
- Direct hiring from OEM training programs.
- Recruiting via industry specific platforms.

<p>Occupation: Aluminum Welder/Fabricator</p>	<p>Sub-sector: Both ashore and afloat. Boat and shipbuilding and repair; Underway; and Commercial Fishing</p>
<p>Average wage: \$53,600 - \$61,000</p>	
<p>Which skills/competencies do employers use as a benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> ● Print reading & welding symbols ● Basic metallurgy 	<p>Which credentials do employers cite as a valuable benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> ● American Welding Society certifications: Certified Welder,

<ul style="list-style-type: none"> ● Welding positions & techniques ● Procedures and processes ● Safety/regulatory/class requirements ● Communication ● Adaptability 	<p>Certified Welding Fabricator, Certified Welding Inspector</p> <ul style="list-style-type: none"> ● Journeyman Credential ● Welding certificate/degree ● Military MOS
<p>Please describe possible career progression opportunities for this occupation:</p> <p>Entry Level Welder, Exotic Alloys Welder, Steel Welder, Aluminum Welder, Certified Welding Inspector, Corrosion Technician, Fabricator, Quality Assurance, Fitter, Non-Destructive Testing Technician, Project Lead, Metallurgist, Coatings Technician, Structural Welder</p>	
<p>Please share the data, employer feedback, and/or Regional Network feedback that helped you identify this as a high-priority occupation:</p> <ul style="list-style-type: none"> ● Direct one-on-one engagement with employers. ● National data (American Welding Society). ● Demand data from data analytic platforms. ● Program capacity challenges regarding expansion to meet needs. 	
<p>Please describe the top barriers employers have identified to hiring for this occupation:</p> <ul style="list-style-type: none"> ● Competition with other maritime employers and other industry sectors. ● Training capacity to meet required needs. ● Aluminum is a more complex alloy to weld, more difficult to find welders with a competent skill set. ● Aluminum is an expensive alloy, which can be a challenge for programs. ● Potential employers are unable to test successfully to weld for a boat or shipyard. 	
<p>Please describe the type of programs or approaches employers have found helpful in hiring for this occupation:</p> <ul style="list-style-type: none"> ● Direct engagement and recruiting with welding programs. ● Registered apprenticeship. ● Recruiting from other industries. ● On the job training – in house. ● Offering paid internships to student welding technicians. 	
<p>Occupation: Sailors and Marine Oilers SOC, 53-5011</p>	<p>Sub-sector: Underway Commercial Fishing</p>
<p>Average wage: \$57,300 - \$68,200</p>	

<p>Which skills/competencies do employers use as a benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> ● Regulatory & safety standards ● Navigation ● Engineering Technology ● Deck Technology ● Problem solving skills ● Communication skills ● Adaptability 	<p>Which credentials do employers cite as a valuable benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> ● Merchant Mariner Credential ● Ordinary Seaman ● Able Bodied Seaman ● QMED
<p>Please describe possible career progression opportunities for this occupation:</p> <p>Ordinary Seaman, Able Seaman, AB Unlimited, AB Limited, AB Special, AB OSV (offshore service vessel), AB Fishing, STCW AB, Lifeboatman, AB Modu (offshore well operations), Deck Hand, QMED (Qualified Member of the Engine Department), Oiler</p>	
<p>Please share the data, employer feedback, and/or Regional Network feedback that helped you identify this as a high-priority occupation:</p> <ul style="list-style-type: none"> ● One on one interviews with industry members ● Data analytics platforms ● Projected demand via workforce databases ● Industry resources (i.e. MARAD) 	
<p>Please describe the top barriers employers have identified to hiring for this occupation:</p> <ul style="list-style-type: none"> ● Shift to shoreside jobs requiring maritime experience new markets, such as offshore wind development ● Instructional capacity – can be difficult to identify and recruit instructors, who often have much higher earning opportunities underway 	
<p>Please describe the type of programs or approaches employers have found helpful in hiring for this occupation:</p> <ul style="list-style-type: none"> ● In house credential-track pathway and professional development ● Direct engagement with public, non-profit and private training programs ● Broad recruitment efforts ● Perception of the industry ● Retention of new hires 	
<p>Occupation: Ship Engineer SOC, 53-5031</p>	<p>Sub-sector: Underway Commercial Fishing</p>

<p>Average wage: \$65,400 - \$108,700 - \$130,300</p>	
<p>Which skills/competencies do employers use as a benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> ● Maritime safety ● Critical thinking ● Problem solving ● Regulatory/safety/class standards ● Adaptability ● Communication ● Regulatory understanding ● Mechanical aptitude 	<p>Which credentials do employers cite as a valuable benchmark to hire someone in this occupation?</p> <ul style="list-style-type: none"> ● Merchant Mariner Credential ● Licensure ● Apprenticeship ● Two- or Four-year certificate or degree ● QMED
<p>Please describe possible career progression opportunities for this occupation:</p> <p>Hydraulic Engineer, Automation Engineer, Refrigeration Engineer, Electro-Technical Officer, Engine Cadet, Third Engineer, Second Engineer, First Engineer, Marine Chief Engineer</p>	
<p>Please share the data, employer feedback, and/or Regional Network feedback that helped you identify this as a high-priority occupation:</p> <ul style="list-style-type: none"> ● Direct employer engagement and interviews ● Demand data via job search platforms ● Industry associations (i.e. Transportation Institute, MARAD & AWO) 	
<p>Please describe the top barriers employers have identified to hiring for this occupation:</p> <ul style="list-style-type: none"> ● Instructional capacity ● Competition with shoreside occupations requiring similar skill sets ● Perception of industry ● Being away from family and friends 	
<p>Please describe the type of programs or approaches employers have found helpful in hiring for this occupation:</p> <ul style="list-style-type: none"> ● Maritime programs ● Internal development ● Registered apprenticeship ● Training schools ● Industry specific sites 	

Occupation: Captains, Mates & Pilots SOC, 53-5021	Sub-sector: Underway Commercial Fishing
Average wage: \$52,600 - \$106,900 - \$134,000	
Which skills/competencies do employers use as a benchmark to hire someone in this occupation? <ul style="list-style-type: none"> ● Safety requirements ● Operations control and monitoring ● Technical skills: engineering, navigation ● Regulatory/safety/class requirements ● Project management ● Communication skills ● Problem solving skills ● Adaptability ● Safety of Life at Sea ● All appropriate maritime conventions 	Which credentials do employers cite as a valuable benchmark to hire someone in this occupation? <ul style="list-style-type: none"> ● Merchant Mariner Credential ● Licensure ● Credential/degree from accredited program ● Tonnage and vessel type licensure
Please describe possible career progression opportunities for this occupation: Boat Captain, Captain, Ferry Captain, First Mate, Harbor Pilot, Mate, Tugboat Captain, Ship Pilot	
Please share the data, employer feedback, and/or Regional Network feedback that helped you identify this as a high-priority occupation: <ul style="list-style-type: none"> ● Direct one-on-one employer engagement. ● Demand data platforms ● Employer roundtables ● Documented industry research sources 	
Please describe the top barriers employers have identified to hiring for this occupation: <ul style="list-style-type: none"> ● Competing shoreside opportunities requiring these skills sets, credentialing and licensure ● Not enough qualified prospects in pipeline ● Instructional capacity ● Credential attainment 	
Please describe the type of programs or approaches employers have found helpful in hiring for this occupation:	

- Promoting/developing from within an organization
- Training programs and maritime academies
- Industry job sites

For each region below, which workforce education & training programs are *effectively* meeting employer needs, or could effectively meet their needs with adjustment or expanded capacity? Where relevant, please color code responses to reflect their relevance to specific occupations.

Please provide your color-coding key below:

- (1) Marine Electrician
- (2) Diesel Engine Technician
- (3) Aluminum Welder/Fabricator
- (4) Sailors and Marine Oilers
- (5) Ship Engineer
- (6) Captains, Mates & Pilots

Capital	<ul style="list-style-type: none"> ● Centralia College, Welding Program
East	
King & Pierce	<ul style="list-style-type: none"> ● Boilermaker-Uptown/Shipyards, Boilermakers Local 104 & Puget Sound Employers Apprenticeship Committee ● Marine Electrician, Greater Puget Sound Electrical Workers Apprenticeship Committee ● Plumber/Steamfitter, Seattle Area Plumbers Housing Plumbers Pipefitters HVAC-Service Controls Technician/Refrigeration Mechanics and Marine Pipefitters Apprenticeship Committee ● Lake Washington Institute of Technology, Diesel and Heavy Equipment Technician ● Eat on the Wild Side, Inbreaker Apprenticeship ● Eat on the Wild Side, Marine Engineering ● Northwest Maritime Center, Seattle Maritime Academy ● Washington Maritime Blue, Youth Maritime Collaborative ● Northwest Maritime Center, Seattle Maritime Academy ● Washington Maritime Blue, Youth Maritime Collaborative ● Northwest Maritime Center, Real World Readiness ● Eat on the Wild Side, Inbreaker Apprenticeship ● Eat on the Wild Side, Marine Engineering ● Northwest Maritime Center, Real World Readiness ● Eat on the Wild Side, Inbreaker Apprenticeship ● Eat on the Wild Side, Marine Engineering ● Northwest Maritime Center, Seattle Maritime Academy ● Washington Maritime Blue, Youth Maritime Collaborative

Mid-Columbia	<ul style="list-style-type: none"> ● Residential Plumber and Steamfitter, Eastern Washington – Northeast Oregon Pipe Trades Apprenticeship Committee
North Central	
Northwest	<ul style="list-style-type: none"> ● Northwest Maritime Apprenticeship ● Marine Maintenance Technician Program, Skagit Valley College ● Whatcom Working Waterfront, Northwest Maritime Apprenticeship ● Skagit Valley College: (1) Marine Tech; and (2) Diesel Power Technology ● Centralia College: Diesel Technology ● Northwest Maritime Center, Maritime Career Launch
South Central	
Southwest	<ul style="list-style-type: none"> ● Clark College Welding Technologies ● Perry Technical Institute Welding Technology Program
West Sound	<ul style="list-style-type: none"> ● Olympic ESD, Maritime Career Launch ● Northwest Maritime Center, Maritime Career Launch ● Northwest Maritime Center, Real World Readiness ● Northwest Maritime Center, Real World Readiness ● Northwest Maritime Center, Maritime Career Launch ● Olympic ESD, Maritime Career Launch ● Northwest Maritime Center, Maritime Career Launch ● Olympic ESD, Maritime Career Launch ● Northwest Maritime Center, Real World Readiness

Between now and June of 2025, where is there regional momentum to support pathway development in this occupation?

For each region listed, please describe:

1. Key **momentum factors** (e.g., interested employers, high-priority for Regional Network, opportunity to improve equitable access, opportunity to scale existing programs, portions of CCW pathway already built)
2. **High-potential opportunities** to support pathway development
3. Is supporting those high-potential opportunities a **shared priority** across SL and RN?

Regional Momentum Factors – Aggregated

- (1) Marine Electrician
- (2) Diesel Engine Technician
- (3) Aluminum Welder/Fabricator
- (4) Sailors & Marine Oilers
- (5) Ship Engineer
- (6) Captains, Mates & Pilots



It is important to note, in any discussion of momentum factors regionally or statewide, there are common factors that will influence regional activities and drive demand for a technically competent maritime workforce. Those factors include, but are not limited to:

- a. The imperative to support more **instructional capacity** at all educational levels. Programs will continue to compete statewide for faculty willing to leave far more lucrative private sector employment and come into the classroom.
- b. **Cross-sector pathway development.** This is particularly true in areas where access and awareness are an area of identified opportunity. Cross-sector pathways support student awareness of career opportunities and most importantly, options to select from those opportunities with high demand technical and essential skills that ‘travel’ across sectors.
- c. **New and emerging industry expansion and markets** such as the planned US Navy expansion at Naval Base Everett; offshore wind (note: this momentum factor is based on Washington becoming a supply chain region for offshore wind at this time – there are infrastructural/Indigenous Community/commercial fishing/capacity/fisheries/heritage community and other considerations, and not enough is known to accurately predict beyond that point; new propulsion technologies and adoption of same, to address carbon emissions initiatives (these potentially include nuclear, ammonia, hydrogen, wind, etc.); blue economy initiatives that will impact all maritime sub-sectors and regions statewide; electrification initiatives for vessels, shoreside support, public ports and the infrastructure required to support these activities.

Please consider these common factors regarding each region and how they may differ and or be similar. This informs the approach to all our industry and education partner engagement.

- **Region 1 - Capital**

Key momentum factors:

Momentum factors for this region are informed by direct on the ground Sector Lead outreach to industry members, public ports, and engagement with the Regional Network. There are multiple factors at play in this region: the need to improve overall access to contextualized and cross-sector exploration, prep and launch content; the opportunity to scale up nascent or existing programs; and develop robust cross-sector pathways

providing students with informed career options – this includes professional development for faculty members. Maritime industry demand and expanding markets contribute to this as well, both in the immediate and broader geographic region. This can and will impact all six high-demand occupations in the Capital region.

High-potential opportunities:

Through direct outreach with industry and education partners, we have documented opportunities to adopt a phased project approach to support contextualized and cross-sector pathway development in the region. One project in development is a collaboration with the Construction, Ag/Natural Resource and ESD 113 to support a scaled welding/fabrication model framework. Other opportunities for pathway development include direct work with industry members, public ports and secondary and post-secondary education providers. These opportunities will influence expanded access across communities, awareness and options for students and their families. Faculty professional development represents a significant high-potential opportunity via externships, leveraging relationships with OEM manufacturers, supply chain, and open resource curriculum development.

Shared priority? Yes, across all six occupations.

- **Region 2 - East**

Key momentum factors:

Momentum in this region is informed by direct outreach and work with industry and education partners. College in the High School articulation. Recreational boat building, repair sector. Primary momentum here is focused on aluminum welding/fabrication, vessel systems overall (including electrical), and the development of other cross-sector technical skills. Awareness of maritime careers overall is important as well with regard to the underway sector of the industry.

High-potential opportunities:

College in the High School articulation – specifically for marine electronics. Faculty professional development and access to open resource curriculum and experiential modules. Faculty professional development may include externships, OEM training, access to industry standards-based curriculum and certification. The development of expanded cross-sector pathways for aluminum welding/fabrication, vessel systems and rigging, and related high-demand skills such as project management, and logistics. Awareness of underway maritime careers as well for inland and coastal operations. These opportunities inform expanded access across the rural community landscape. These opportunities are facilitated through direct engagement with the Regional Network and industry partners.

Shared priority?

Yes	Awareness Only
Marine Electrician	Sailors & Marine Oilers
Diesel Engine Technician	Ship Engineer
Aluminum Welder/Fabricator	Captains, Mates & Pilots

- **Region 3 – King & Pierce**

Key momentum factors:

Very mature and dynamic maritime industry in this region – across all high-demand occupations. This is influenced by multiple sub-sectors of the industry, new markets and

emerging technologies. Direct work with industry partners, the Regional Network, Port of Tacoma, education partners and other organizations drives this. Demand for shoreside and underway technical skills continues to grow – those include electrical, diesel and other propulsion technologies, aluminum welding/fabrication, project managements, AB, deck and engine room. The rapidly changing workforce demographic in this region informs the imperative of engagement in all communities to expand awareness of maritime industry career opportunities, and improved/expanded access to education and training.

High-potential opportunities:

There are multiple opportunities in this region including faculty professional development, multi-generation outreach and awareness, and collaboration with the Regional Network and other education partners to support efforts and initiatives. Robust pathway development and support of projects underway (such as Tacoma 253, Youth Marine Foundation) are critical. Leveraging work underway to ensure access and content for early learners is important.

Shared priority? Yes, across all six occupations.

- **Region 4 – Mid-Columbia**

Key momentum factors:

This region of the state has a very active aluminum boat building cluster as well as inland waterway operations. Through direct outreach with industry partners, the Regional Network, and other education partners, the project has documented specific technical workforce needs. Primary drivers are focused on aluminum welding/fabrication, rigging (which includes electrical), and engagement with K12 community. Awareness of inland and coastal maritime opportunities are a factor as well.

High-potential opportunities:

There are multiple opportunities in this region including faculty professional development, multi-generation outreach and awareness, and collaboration with the Regional Network and other education partners to support efforts and initiatives. The project will support pathway work to highlight cross-sector career opportunities, and will leverage efforts to ensure access and content for early learners is important. Awareness activities for inland underway operations.

Shared priority?

Yes	Awareness at this time
Marine Electrician	Sailors & Marine Oilers
Diesel Engine Technician	Ship Engineer
Aluminum Welder/Fabricator	Captains, Mates & Pilots

- **Region 5 – North Central**

Key momentum factors:

The primary factors in this region focus on cross-sector technical workforce needs – specifically aluminum welding/fabrication, electrical and diesel technologies. Overall maritime career awareness and cross sector pathway development are high priority.

High-potential opportunities:

Cross-sector pathways, particularly for aluminum welding/fabrication, electrical technologies, and essential skills. Faculty professional development and access to open

resource materials represent productive and measurable opportunities.

Shared priority?

Yes	Awareness Only
Marine Electrician	Sailors & Marine Oilers
Diesel Engine Technician	Ship Engineer
Aluminum Welder/Fabricator	Captains, Mates & Pilots

- **Region 6 – Northwest**

Key momentum factors:

Very mature and dynamic maritime industry in this region – across all high-demand occupations. This is influenced by multiple sub-sectors of the industry, new markets and emerging technologies. Direct work with industry partners, the Regional Network, regional ports (Edmonds, Everett, Skagit, Anacortes, Bellingham), education partners and other organizations drives this. Demand for shoreside and underway technical skills continues to grow – those include electrical, diesel and other propulsion technologies, aluminum welding/fabrication, project managements, AB, deck and engine room. The consistent and growing technical workforce needs in this region inform the imperative of engagement in all communities to expand awareness of maritime industry career opportunities, and improved/expanded access to education and training. New markets and expanded maritime operations are critical in this region – electrification and US Navy expansion will influence demand and workforce education and training needs at all levels: K12, community and technical colleges, registered apprenticeship and four-year programs.

High-potential opportunities:

There are multiple opportunities in this region including faculty professional development, multi-generation outreach and awareness, and collaboration with the Regional Network and other education partners to support efforts and initiatives. Robust pathway development, faculty professional development and support of projects underway are critical (i.e. the Around the America’s Project – where we will be the ROV sponsor, connecting to K12 classrooms and curriculum resources – expanding access and awareness across communities). Leveraging work underway to ensure access and content for early learners is important.

Shared priority? Yes, across all six occupations.

- **Region 7 – South Central**

Key momentum factors:

This region of the state has an active recreational boating cluster as well as inland waterway operations. Through direct outreach with industry partners, the Regional Network, and other education partners, the project has documented specific technical workforce needs. Primary drivers are focused on aluminum welding/fabrication, rigging (which includes electrical), marine service operations, and engagement with K12 community. Awareness of inland and coastal maritime opportunities are a factor as well.

High-potential opportunities:

There are multiple opportunities in this region including faculty professional development, multi-generation outreach and awareness, and collaboration with the Regional Network and other education partners to support efforts and initiatives, such as cross sector pathways to develop portable technical skill portfolios for students.

Leveraging work underway to ensure access and content for early learners is important. Awareness activities for inland underway operations.

Shared priority?

Yes	Awareness Only
Marine Electrician	Sailors & Marine Oilers
Diesel Engine Technician	Ship Engineer
Aluminum Welder/Fabricator	Captains, Mates & Pilots

- **Region 8 – Southwest**

Key momentum factors:

Momentum factors for this region are informed by direct on the ground Sector Lead outreach to industry members, public ports, and engagement with the Regional Network. There are multiple factors at play in this region: the need to improve overall access to contextualized and cross-sector exploration, prep and launch content; the opportunity to scale up nascent or existing programs, such as the new maritime program for the Vancouver School District; and develop robust cross-sector pathways providing students with informed career options – this includes professional development for faculty members. Maritime industry demand and expanding markets contribute to this as well, both in the immediate and broader geographic region. This can and will impact all six high-demand occupations in the Southwest region, as demand exceeds current pipeline capacity.

High-potential opportunities:

Through direct outreach with industry and education partners, we have documented opportunities to adopt a phased project approach to support contextualized and cross-sector pathway development in the region. Other opportunities for pathway development include direct work with industry members, public ports and secondary and post-secondary education providers. These opportunities will influence expanded access across communities, awareness and options for students and their families. Faculty professional development represents a significant high-potential opportunity via externships, leveraging relationships with OEM manufacturers, supply chain, and open resource curriculum development.

Shared priority? Yes, across all six occupations.

- **Region 9 – West Sound**

Key momentum factors:

Very mature and dynamic maritime industry in this region – across all high-demand occupations. This is influenced by multiple sub-sectors of the industry, new markets and emerging technologies. Direct work with private and public industry partners, the Regional Network, regional ports, secondary and post-secondary education partners and other organizations drives this. Demand for shoreside and underway technical skills continues to grow – those include electrical, diesel and other propulsion technologies, aluminum welding/fabrication, project managements, AB, deck and engine room. The rapidly changing workforce demographic in this region informs the imperative of engagement in all communities to expand awareness of maritime industry career opportunities, and improved/expanded access to education and training. New markets and expanded maritime operations are critical in this region – electrification and US Navy activity at Puget Sound Naval Shipyard will influence demand and workforce education and training needs at all levels: K12, community and technical colleges,

registered apprenticeship and four-year programs.

High-potential opportunities:

There are multiple opportunities in this region including faculty professional development, multi-generation outreach and awareness, and collaboration with the Regional Network, tribal, rural community leadership, and other education partners to support efforts and initiatives. The West Sound region is a critical maritime industry hub. Leveraging work underway to ensure access and content for early learners is important.

Shared priority? Yes, across all six occupations.

What is needed to increase participation of BIPOC students in your sector’s high priority occupations? To increase participation of students from rural areas? Which programs are doing this well?

Original strategic plan goals and strategy statements inform this work.

Goal - Improve awareness and access to Maritime Career Pathways with an emphasis on partnerships and engagement with Black, Indigenous, and People of Color as well as other under-invested communities.

Strategy Statements

- Map and identify gaps in the availability of Career Prep and Career Launch opportunities across communities.
- Develop contextualized Career Explore programs with leadership from Black, Indigenous, and People of Color and rural communities.
- Improve access to career connected learning programs the greater Olympic Peninsula region and rural communities statewide – access challenges in practice are addressed via multiple activities and focused initiatives. These include cross-sector high demand pathway mapping (ie electrical, welding, project management, engineering); multi-generational awareness and outreach; program expansion; new program development; working with community leadership to effect strategies; consideration of a provisional career launch endorsement pilot; development of maritime pre-apprenticeship programming; and professional development for K12 and post-secondary faculty.
- Invest in Native community efforts to expand Maritime career pathway opportunities to youth and young adults.
- Ensure continued investment and support for existing programs demonstrating success in supporting the Maritime talent pipeline.
- Implement Career Exploration programs in elementary and middle school.

Goal - Build foundational tools to remove structural barriers to advancing an equitable maritime workforce plan.

Strategy Statements

- Supplement current insufficient labor market data with an alternative model to better measure support and demand at local/state levels.
- Develop a working understanding of equity in the maritime sector and set benchmarks.

- Engage with K-12 CTE programs to identify barriers that need to be addressed and removed.
- Elevate native voices on identifying barriers facing their nations and communities.
- Identify policies to improve access to Career Connected Learning Opportunities in the greater Olympic Peninsula region and other rural communities statewide.
- Create an equity toolkit for maritime workforce partners to support organizational DEIB initiatives.

Following are high priority target activities designed to reach across communities.

Early Learner Access to Maritime	Instructional Capacity	OER Curriculum Resources
<p>Develop contextualized modules & activities.</p> <p>Modules are aligned with computational benchmarks and CTE career pathways.</p> <p>Provide robust professional development for faculty to support content and activity delivery.</p>	<p>Increase faculty professional development opportunities contextualized to maritime.</p> <p>Support access to credentialing opportunities for faculty.</p> <p>Develop and grow the number of CTE faculty across communities and pathway disciplines.</p>	<p>Invest in open resource & contextualized maritime curriculum - aligned with industry and are standards-based.</p> <p>Ensure resources are readily accessible by faculty statewide.</p>

There are several initiatives that are reaching Black, Indigenous and People of Color and rural communities very effectively, and include:

- Sawhorse Revolution – Boat Build
- Maritime High School
- Youth Maritime Collaborative
- Real World Readiness – Maritime, Northwest Maritime Center
- Machinists Institute

What overarching strategies do you recommend to support pathway development for the highest-priority occupations in your sector?

Goal: Communicate the value of Maritime sector careers more effectively

Strategy Statements

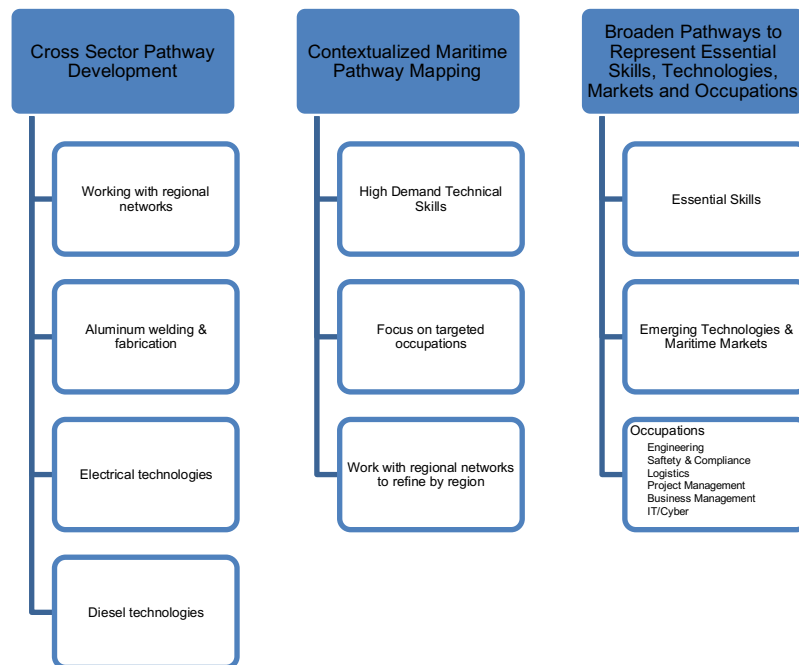
- Leverage the K-12 system to develop a two-generation strategy to engage youth and young adults as well as their families.
- Develop an easy-to-understand career lattice to show how career progression occurs.
- Create tools that highlight diverse working environments to broaden appeal for the Maritime Sector.
- Articulate that Maritime occupations are STEM based careers to ensure programmatic investment.
- Identify new communication channels to reach communities of focus.

- Conduct statewide training for workforce professionals in the Work Source system to connect active job seekers to maritime careers.

Goal Four: Improve the cohesiveness of the Career Connected Learning Eco-system across the State.

Strategy Statements

- Build an asset map of existing CCL programs (including K-12, post-secondary, and apprenticeship programs) in the state – *this strategy has been completed under this phase of the project and is now utilized to inform high priority activities.*
- Connect industry members to community-based organizations that are trusted messengers in communities.
- Develop a dashboard/data system to collectively measure the impact of Career Prep and Career Launch programs compared to industry demand.
- Identify areas for investment (programmatic, geographic community etc.) for future CCL funding to avoid overlap and ensure stewardship of public resources.
- Central to this goal is the development of open resource Navigators to support the development of Career Explore, Prep, Launch and Apprenticeship. It is critical to establish strong contextualized opportunities for early learners. This includes professional development for faculty. By doing so, the project creates and supports a connected network of exploratory and preparatory content. Establishing a framework for explore and prep, facilitating opportunities for launch and apprenticeship programming.
- The goal ties directly to regional momentum factors.

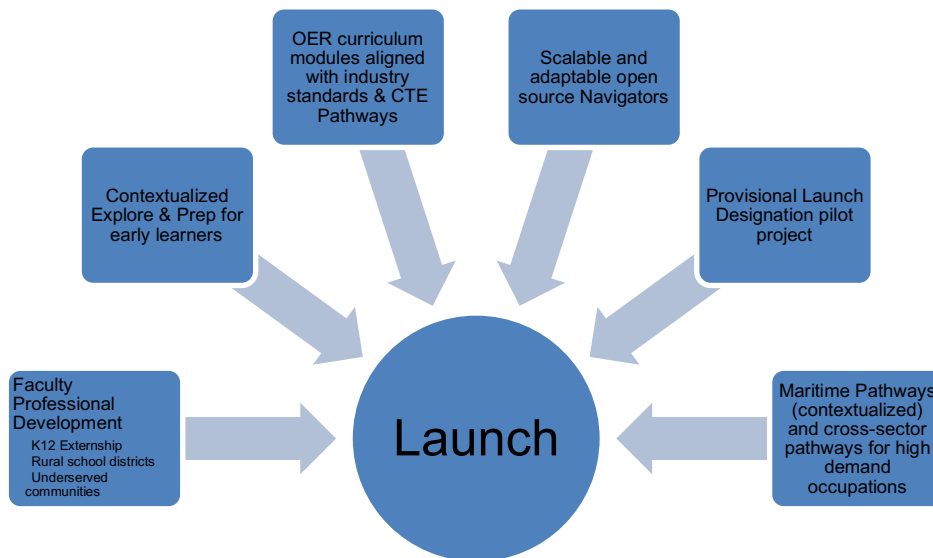


Faculty professional development

- Externships
- Experiential/project opportunities
- OER resources
- Direct connection to regional and stateside maritime industry partners

Between now and June of 2025, how will you prioritize your time, attention, and resources as a sector leader to support regional pathway development and advance the recommendations above? What specific actions will you take?

The core project approach is to support sustainable strategic initiatives designed to lead to launch programming. The relationship graphic below maps strategies and activities designed to support an actionable progression from awareness, explore and prep to launch programming, when and where applicable. Project and focus titles in blue font are underway. Project titles in orange font are in development and have partner alignment.



Faculty Professional Development

- K12 Externship Project – this project is fully underway and will place up to eight 11th & 12th grade CTE, comprehensive high school and skill center faculty (statewide) with a regional maritime industry partner this summer (2024). Developed in response to direct industry input, and in collaboration with ESD 113 and WASAC. Faculty will receive STEM clock hours, and a stipend. They will also create an open resource experiential module (following a standardized template) for delivery to their students. The project will collect evaluative data from the faculty cohort, industry partners and students. Long range planning will include advanced professional development for faculty to include credential attainment.
- Working with subject matter experts, develop and deliver professional development for faculty with a particular focus on rural and underserved communities.
- Full project description available via the following link: [K12 Maritime](#)

113 Project

- This project is a collaboration with the Construction, Ag/Natural Resource and Capital STEM Alliance to develop a cross-sector framework for welding and fabrication.
- The project planning is underway and will occur in a phased format, with the initial scope of work and high-level activities identified and documented.

- The project will emphasize professional development for faculty to ‘professionalize’ the aluminum and steel welding/fabrication pathway.

Provisional Launch Endorsement Pilot

- Develop pilot to address challenges to attaining full Launch designation, thereby, increasing the number of industry-aligned Launch programs.
- Collaborative effort with the Agriculture & Natural Resource and Construction Sector Leads.
- Create a Provisional Career Launch Endorsement as a proof of concept.
- Maritime employers want launch programming – not all educational programs are able to pursue this opportunity.
- Will require multiple employers for sustainability.
- Program applies for funding to support milestone-based activities leading to full Launch.
- Provisional program will work with Sector Leads, Regional Networks and other appropriate entities to meet milestones.
- The pilot will support programmatic sustainability, address equity and access challenges.
- **NOTE:** a full and detailed concept has been written, not included in this draft to accommodate space requirements.

Maritime and Cross-Sector Pathway Development

- Using the six high demand occupations identified in the strategic plan, continue development of interactive maritime career pathway maps.
- Working with regional networks and other CCL partners develop cross-sector pathway maps. Initial occupational focus will be electrical, aluminum welding/fabrication and diesel technology.

Washington Jobs Initiative

- As Maritime Sector Lead, the Center is working directly with the Machinists Institute on the Aerospace and Manufacturing Sectoral Partnership. The role of the Center is to conduct industry outreach, specifically with aluminum vessel manufacturing, to link them with this project and address the workforce challenges faced by industry in the aluminum welding and fabrication space.
- This project will support expansion of and access to maritime registered apprenticeship and pre-apprenticeship programming.

Open Resource Navigators

- Develop a scalable and adaptable multi-generation awareness and activity guide.
- Develop a scalable and adaptable guide for the utilization of regional data to inform and drive maritime workforce development efforts and initiatives.

Outreach/Support/Grant Efforts

- Continued direct engagement with employers
- Continued engagement with CCL network partners
- Sector Lead Stakeholder Group engagement
- Support for ABA and Program Builder funding – registered apprenticeship and pre-apprenticeship
- Direct outreach to new and existing programs to provide encouragement and

mentorship to apply for Launch designation – this will include active engagement with new and established registered apprenticeship programs to support expansion efforts, where feasible. And support for the development of new maritime pre-apprenticeship programming aligned with existing registered apprenticeship programs.

Summary of Project Values

- All projects and initiatives should be actionable, measurable and observable.
- All products created (modules, frameworks, curriculum, best practices, Navigators, etc.) will be open source and readily accessible.
- Faculty professional development is imperative.
- Projects should and will be adaptable and replicable by regions statewide.
- The project works across all communities statewide, supporting access and the empowerment of local/regional leadership.