NYC/EDC

NYC's Working Waterfront: A Blueprint for Blue Highways

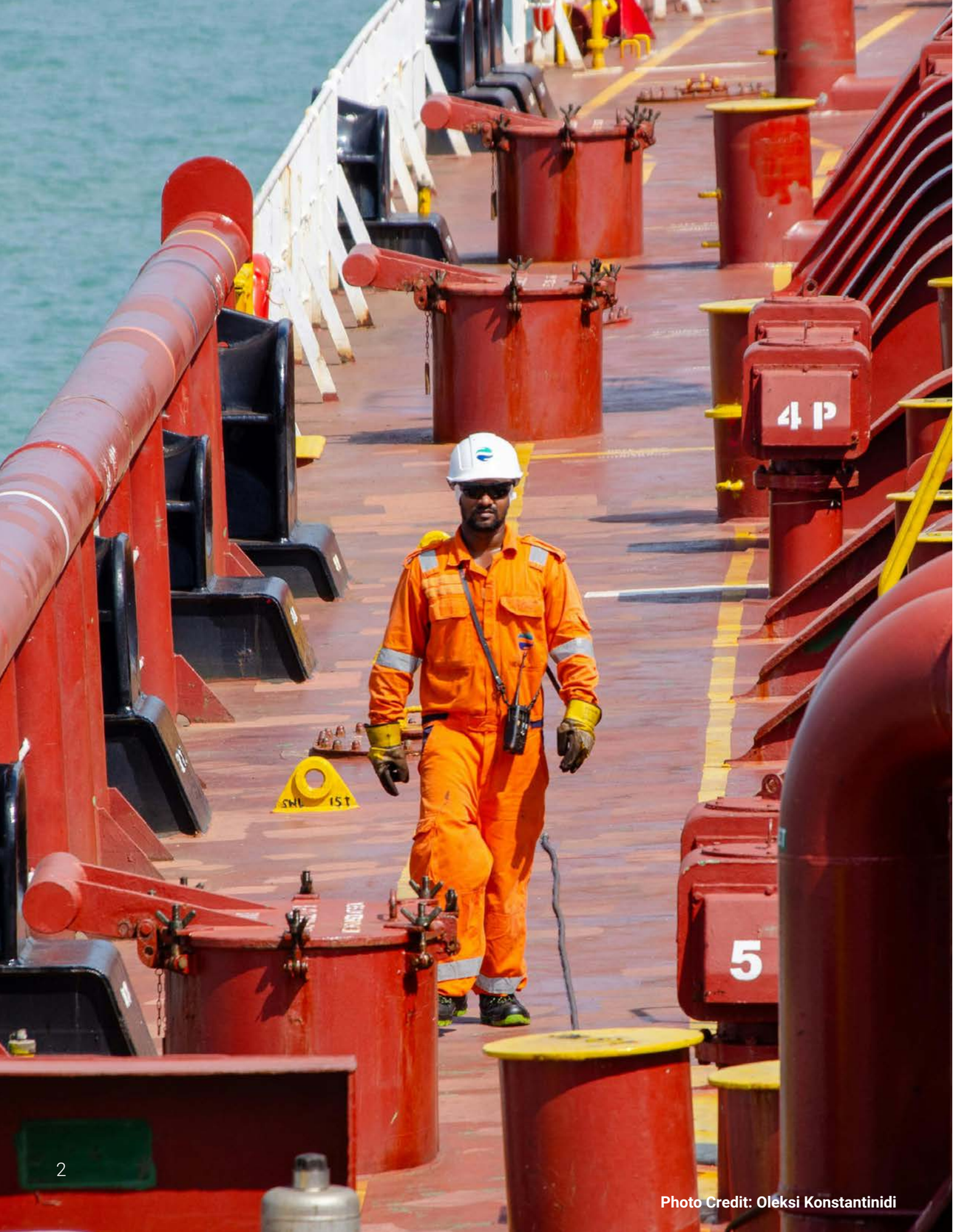

Photo Credit: Oleksi Konstantinidi

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Letter from Andrew Kimball

Dear Fellow New Yorkers,

New York City was born on the waterfront. From the first Lenape canoes to the tall-masted schooners and mighty steamships of centuries past, our harbor was always more than a place – it symbolized boundless opportunity and prosperity. Armies of longshoremen used to line our piers, unloading the cargo that built new neighborhoods, soaring skyscrapers, and good careers for generations of New Yorkers.

Today's vision for New York City's Blue Highways – to put our waterways and waterfronts back to work – is in many ways, a return to our past. It will revitalize long-neglected waterfront sites as it reinvents how our cargo, from the biggest shipping container to the smallest e-commerce package, moves throughout our city.

It's a bold response to an increasingly urgent environmental and climate crisis — one that will also improve our local economy. Instead of diesel trucks polluting our air or clogging our streets, vessels could move cargo on our waterways, seamlessly handing off goods to electric e-cargo bikes for last mile deliveries to storefronts and doorsteps. Work is already underway to make this vision a reality, from a micro-mobility facility at Manhattan's Downtown Skyport to a new Hunts Point Marine Terminal in the Bronx to a redeveloped Brooklyn Marine Terminal. The Partnership for NYC estimates that traffic congestion costs the city $20 billion every year – resources that could be unlocked, in part, by building Blue Highways.

But infrastructure alone isn't enough. We need a workforce as dynamic as the harbor itself.

This new Blue Highways Workforce Study gives us the blueprint to build it. The report brings rigorous analysis and concrete recommendations to what has sometimes felt like an intangible aspiration. It includes:

- The first-ever comprehensive definition of the Blue Highways workforce, by industry and occupation
- A new analysis projecting approximately 8,000 net new jobs in Blue Highways industries by 2035, part of an overall workforce that could grow to approximately 117,000, assuming NYCEDC, the City and the State continue to prioritize Blue Highways
- Career pathway maps for the 20 priority occupations that have low barriers to entry and high wage growth
- 10 recommendations for how New York City elected officials and industry leaders can help New Yorkers prepare for Blue Highways jobs

NYC's Working Waterfront: A Blueprint for Blue Highways builds on the Adams Administration's Harbor of the Future vision for New York City, from the Green Economy Action Plan to the nation's largest offshore wind port in Sunset Park, to the new life sciences hub at SPARC Kips Bay. Across our economy, we are investing in tomorrow's industries – and today's workers.

I invite you to join us in this important work. Just like our maritime past, our Blue Highways future can power our economy as it provides opportunity for thriving families and communities. Whether you're an elected leader, a port operator, or a future ferry pilot, freight agent, or longshoreman – all New Yorkers have a role to play in shaping our reimagined blue economy.

New York City's Blue Highways need you.

Andrew Kimball
President & CEO
NYCEDC

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Executive Summary

Photo Credit: Laura Tancredi

Executive Summary

Reimagining New York's Maritime & Mobility Workforce

The Blue Highways Workforce Study outlines how reactivating New York City's waterways for the movement of urban freight could create an approximate 8,000 net new jobs over the next decade, part of a Blue Highways workforce that could grow to up to 117,000 New Yorkers by 2035. This report presents 10 Strategic Recommendations on how to prepare the city's workforce to support the Blue Highways, while ensuring that a broad range of New Yorkers have access to the good jobs it will create.

Defining & Sizing the Blue Highways Workforce – 117,000 Jobs by 2035

New York City's Blue Highways support 68,000 jobs today, and the sector is projected to grow by 72% to 117,000 jobs by 2035. In the broader metropolitan area, there are 173,000 jobs today, with 60% projected growth to 278,000 jobs by 2035. This Blue Highways workforce includes 98 occupations across maritime, transportation and logistics, and support industries. Projected job growth includes net new jobs, or jobs that would not exist if not for Blue Highways investments, as well as job transitions, or transitions from other industries to Blue Highways roles. Blue Highways investments could create up to 8,000 net new jobs in NYC and up to 13,000 net new jobs in the broader metropolitan area by 2035.

The Blue Highways Workforce

	Today – 2024	Tomorrow – 2035
NYC	68,000 jobs	117,000 jobs + 8,000 net new jobs ⬆ 72% growth
Metro Area	173,000 jobs	278,000 jobs + 13,000 net new jobs ⬆ 60% growth

Priority Occupations & Characteristics – Low Barriers, High Growth, and Room for Broad Range of New Yorkers

From the 98 occupations identified as part of the Blue Highways, this report highlights 20 priority occupations that present the biggest opportunities for a broad range of New Yorkers to find meaningful careers. These priority occupations – from longshoremen, to cargo and freight agents, to vessel captains – account for 85% of the current Blue Highways workforce, and will grow by approximately 43,000 jobs by 2035. More than half of these positions have low barriers to entry – requiring only a high school diploma or no formal credential whatsoever – and have a median hourly wage of $29 with clear pathways for career advancement and wage growth over time.

The projected growth and accessibility of Blue Highways priority occupations provides a chance to open doors for a broader group of New Yorkers than exists today. This report finds that today's Blue Highways workers are less diverse than NYC's population overall: women are 52% of the city's population, but represent only 21% of Blue Highways workers; people of color are 69% of the population, but only 58% of these workers.

More than half of the priority occupations are classified as "Typically Unionized" or "May Be Unionized," indicating that once New Yorkers enter these roles, they can start on paths to sustainable, long-term careers. Creating more accessible entry points to these jobs will likely result in a bigger, more diverse, upwardly mobile Blue Highways workforce.

Stakeholder Landscape – Student, Apprentice, Worker

Today's Blue Highways workforce is shaped by a diverse set of stakeholders, from universities and technical schools providing degrees and certifications, to labor unions offering apprenticeships, to employers like logistics companies and government agencies. To meet tomorrow's demand for these workers, these stakeholders must act to open and expand the talent pipeline. Stakeholders include:

Academic Institutions: Educational organizations that provide specialized maritime, transportation and logistics curricula through degree programs, technical certifications, and research initiatives that establish foundational knowledge for Blue Highways careers. An impactful example is the P-TECH program, a partnership between SUNY Maritime College, the Urban Assembly Harbor School, and the Billion Oyster Project that trains 10th grade students through class and hands-on experience to earn an associate's degree and a boat license.

Workforce Providers: Organizations that connect people to industry opportunities through targeted training programs, career coaching, and comprehensive support services that address barriers to employment. Emerging models include Brooklyn Workforce Innovation's Deckhand program with Hornblower, which prepares participants for entry-level positions as NYC Ferry deckhands and dispatchers.

Industry Associations and Unions: Organizations that advocate for sector interests, establish standards, and deliver structured training and apprenticeship programs that create pathways to well-paying jobs with benefits. The International Longshoremen's Association, for example, supports more than 150 well-paid, highly-skilled workers at the Red Hook Container Terminal.

Employers: Companies spanning maritime, terminal operations, shipping, logistics, and specialized delivery services that form the operational backbone of the Blue Highways distribution chain, implementing the infrastructure and technology that enable goods movement. This includes micro-mobility startups like Dutch X, which deploys fleets of electric cargo bikes, as well as port operators like Red Hook Terminals, which handles high volumes of shipping container traffic.

Photo Credit: Adobe Stock

Gaps & Challenges – Key Barriers to Break

Blue Highways stakeholders face a range of challenges. Through a thorough literature review and interviews with nearly 50 Blue Highways stakeholders, key themes emerged across the maritime, transportation and logistics, and support industries.

Maritime
Insights from research and stakeholder engagement reveal 6 interconnected issues affecting both recruitment and retention in the maritime industry:

- NYC youth, despite our maritime history and long shorelines, have **limited exposure** to maritime careers and lack basic water familiarity.
- **Unstable demand** for bulk commodities like grain or iron ore creates unstable demand for maritime workers.
- Maritime careers can have **complex pathways**, with varying certifications and sea time requirements depending on vessel type and occupation.
- There is a **tugboat operator shortage** due to sea time, endorsements, and other requirements for U.S. Coast Guard licensing.
- The process to obtain a **Transportation Worker Identification Credential** (TWIC), required to access secure areas of maritime facilities and vessels, suffers from chronic, unpredictable delays.
- Maritime jobs can be **physically demanding**, often requiring irregular shifts, heavy lifting, and work outdoors during inclement weather.

Transportation and Logistics
There are 3 key gaps in the transportation and logistics industries:

- A **shortage of skilled automotive and diesel mechanics** as the city accelerates its transition toward electric vehicles and sustainable transportation infrastructure.
- There is **inadequate support for delivery workers**, who need standardized safety training, real career paths, and basic infrastructure like rest areas and parking stations.
- A **knowledge and skills gap in advanced analytics** is limiting the growth of specialized roles using data to optimize delivery routes or reduce operating costs.

Cross Industry
Beyond the industry-specific challenges in maritime and transportation and logistics, the report identifies 3 barriers across the entire Blue Highways workforce:

- **Foundational skill gaps** in math, reading, digital literacy, and driving are baseline barriers to entry for new workers.
- Informal referral systems and challenging entrance exams limit who has **access to good, stable union jobs.**
- **Inadequate wraparound supports** like access to public transit or money to pay for uniforms and safety gear prevent many New Yorkers from starting Blue Highways careers, particularly those from low-income and disadvantaged communities.

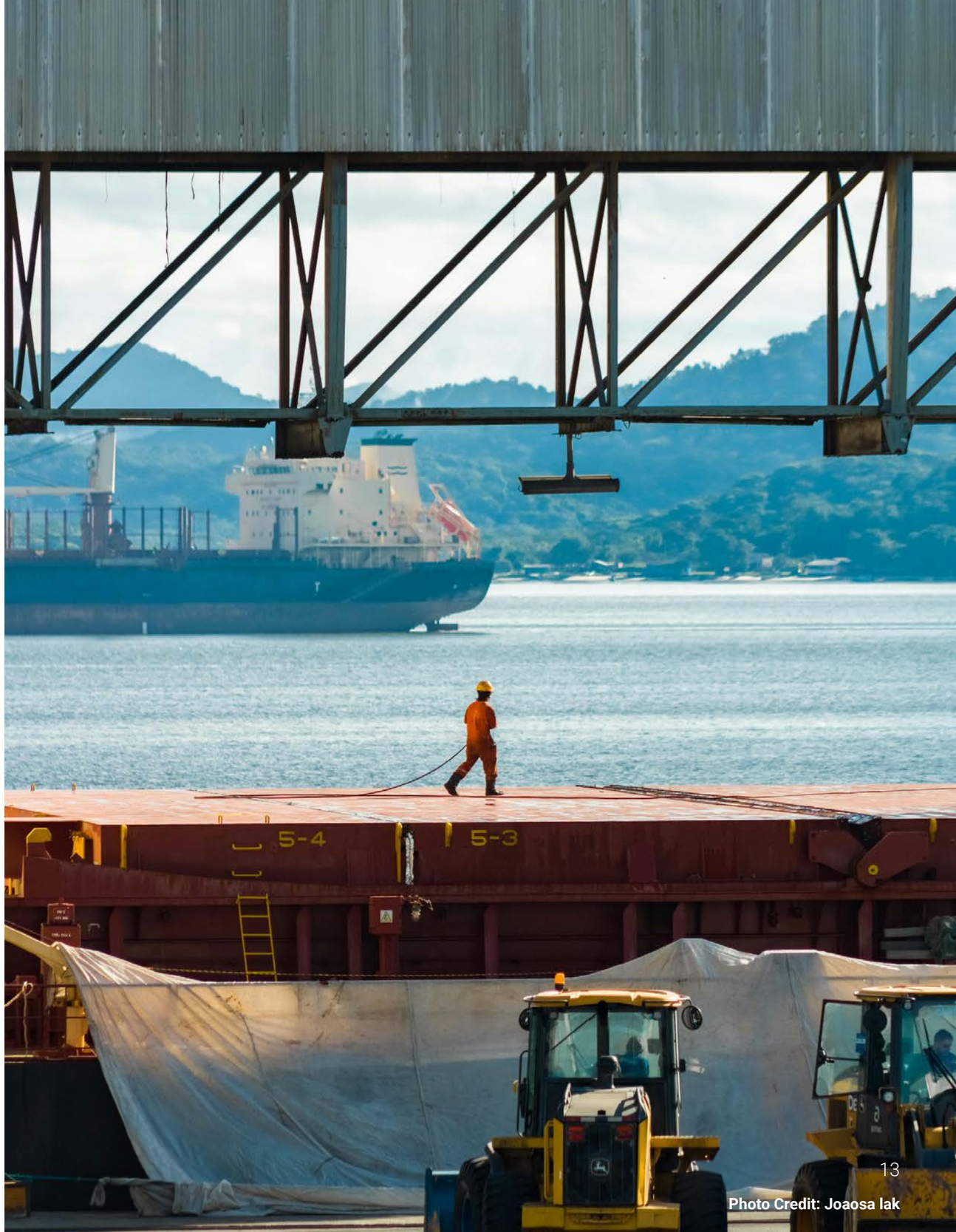

Photo Credit: Joaosa Iak

Recommendations

This Blue Highways Workforce Study presents **10 Strategic Recommendations** for the New York City Economic Development Corporation (NYCEDC) and NYC to address these gaps and challenges, organized around **3 core objectives**:

1. Scale education and training pathways that prepare workers for both current demands and emerging roles
2. Drive awareness of Blue Highways careers in communities adjacent to Blue Highways operations
3. Broaden the Blue Highways workforce talent pool by removing barriers to entry and creating inclusive pathways for underrepresented New Yorkers

Photo Credit: Candid Flaneur

Scale Education & Training to Meet Blue Highways Demand

1. Develop a fund to **scale existing training programs**
2. Establish a Blue Highways **reservist corps**
3. Expand **existing logistics curricula** to include maritime applications

Drive Awareness of Blue Highways Careers

4. Build a Blue Highways **experiential learning center**
5. Launch a multi-stage Blue Highways **career readiness program** for NYCHA residents
6. Develop a **Blue Highways for Kids** program
7. Build a Blue Highways **career pathways website**
8. Develop a **Blue Highways Young Ports Association** program

Broaden the Blue Highways Workforce Talent Pool

9. Create a new **ILA apprenticeship program**
10. **Leverage the WF1 system** to connect jobseekers to Blue Highways industries

Photo Credit: Karina Dashkin

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Introduction

New York City's Commitment to Blue Highways

New York City is at the forefront of a transformative shift in urban freight transportation, leveraging its 520 miles of coastline to create a more sustainable, resilient, and efficient distribution network. The Blue Highways initiative, led by NYCEDC in partnership with New York City Department of Transportation (NYC DOT), aims to establish a Blue Highways marine-based freight distribution system to move goods through the city, while reducing dependency on traditional trucking, alleviating truck congestion, and supporting the city's environmental and economic goals.

Photo Credit: Kelly Lacy

In recent years, the City has solidified its commitment to redevelop its industrial waterfront and port infrastructure, revitalize its marine highways, invest in an expansion of sustainable transportation systems, and connect diverse talent to the opportunities generated by these investments across the 5 boroughs. Initiatives focused on meeting these objectives include:

- **Freight NYC,** which is a $100 million NYCEDC-led initiative to modernize the city's freight system by investing in maritime, rail, and urban distribution infrastructure to reduce truck congestion, lower emissions, and create quality jobs.

- **New York City's Brooklyn Marine Terminal (BMT) initiative,** which aims to restore 122 acres of waterfront in Red Hook and the Columbia Street Waterfront District into a modern, sustainable maritime hub. With over $350 million secured in City, State, and federal funding, the plan includes repairing aging piers, introducing electric cargo cranes, and including mixed-use development with housing, public spaces, and job creation, all guided by a community-led task force to ensure inclusive growth.

- **The Harbor of the Future,** which focuses on revitalizing the city's waterfronts by investing in climate innovation hubs, clean technology manufacturing, and sustainable maritime infrastructure across key sites like the Brooklyn Navy Yard, Governors Island, and the Sunset Park District.

- **NYC's Green Economy Action Plan (GEAP)** developed by NYCEDC and the Mayor's Office of Talent and Workforce Development, which proposes a progressive strategy to position the city as a leader in sustainability and grow the green economy industry to more than 400,000 jobs by 2040. The Blue Highways initiative supports the environmental, economic, and social objectives of the GEAP.

- **The Urban Assembly New York Harbor School,** a public school founded in 2003 and located on Governors Island, is a one-of-a-kind high school focused on maritime education and environmental stewardship. The curriculum combines college-preparatory academics with immersive, career-connected learning. In 2024, the school broke ground on a $140 million expansion to double its capacity and better prepare young New Yorkers for careers in the green economy.

- **The Hunts Point Marine Terminal** is a vision for a future Blue Highways facility that could be built on the site of the decommissioned Vernon C. Bain Correctional Center barge, adjacent to the Hunts Point Food Distribution Center, to receive cargo by barge and transfer it onto other vessels for last-mile deliveries throughout New York City. This initiative would support a cleaner, more efficient supply chain for the city's food system.

- **Downtown Skyport,** formerly known as the Downtown Manhattan Heliport, is undergoing a bold transformation into a cutting-edge multimodal transportation hub for the 21st century. This reimagined hub will facilitate the integration of ferries equipped to carry cargo bike containers, streamlining last-mile distribution and signaling a forward-thinking approach to urban logistics. The project is poised to meet surging industry demand for regional connectivity — particularly between New Jersey, South Brooklyn, and Hunts Point.

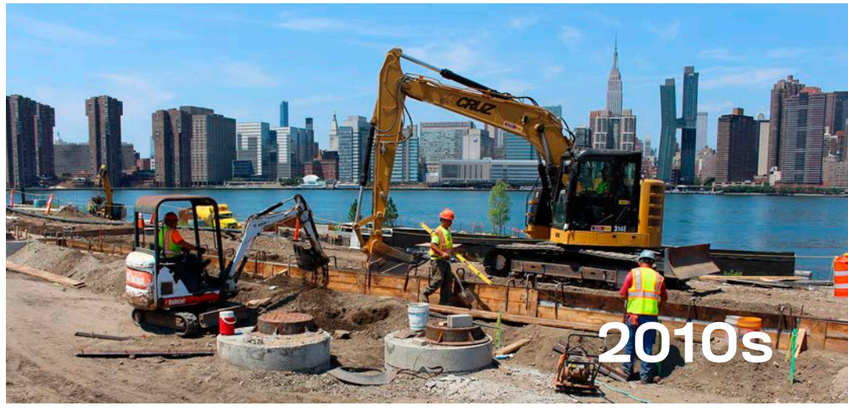

1600s


1960s


2000s


1890s

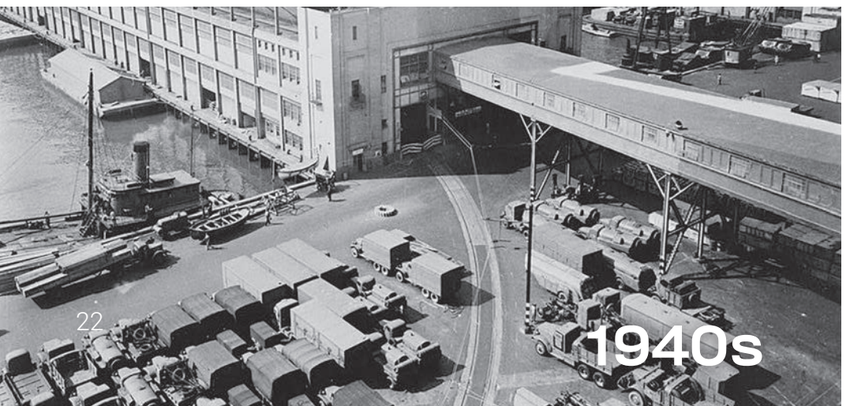

1970s


2010s


1920s


1980s


2020s


1940s


1990s


Today

Map of Anticipated Blue Highways Network

Photo Credit: Getty Images

These initiatives have ushered in a new era for the city's "working waterfront" – a cross section of industries enabled by diverse maritime activities. To advance these initiatives, NYCEDC has secured key investments for Blue Highways development. Federal funding, combined with funds from the City's FreightNYC initiative, have catalyzed the development of a Blue Highways network. This network will span numerous waterfront sites, recently identified through a feasibility analysis.

In 2023, NYCEDC and NYC DOT launched the Blue Highways Request for Information and Expressions of Interest (RFEI) to engage the private sector and explore marine freight opportunities to reduce land-based transportation reliance. As a result of this RFEI, NYCEDC and NYC DOT have conducted pilot programs in collaboration with private sector partners, including logistics companies like UPS and Prologis, which focused on utilizing marine terminals for freight movement and integrating sustainable last-mile delivery methods, such as cargo bicycles and electric vehicles.

The Blue Highways Workforce: Today & Tomorrow

This report provides an in-depth analysis of the types and scale of occupations NYC's Blue Highways distribution chain will grow and create for New Yorkers and identifies gaps and barriers that have historically prevented a broad range of residents from entering these types of jobs. Finally, this report outlines 10 strategic recommendations for NYCEDC and New York City to cultivate the Blue Highways workforce and make these opportunities available to all New Yorkers.

The Blue Highways Workforce

	Today – 2024	Tomorrow – 2035
NYC	**68,000** jobs	**117,000** jobs + 8,000 net new jobs ⬆ 72% growth
Metro Area	**173,000** jobs	**278,000** jobs + 13,000 net new jobs ⬆ 60% growth

The Blue Highways Workforce includes jobs across maritime, transportation and logistics, and support (including administration, management, and operations) industries. New York City's Blue Highways distribution chain today is comprised of 68,000 jobs and is projected to grow by 72% to 117,000 jobs by 2035. In the broader metropolitan area, today's Blue Highways distribution chain consists of 173,000 jobs, with 60% projected growth to 278,000 jobs by 2035. Future projected job growth includes both net new jobs, or jobs that would not exist if it were not Blue Highways investments, and job transitions, which are direct transitions from non-Blue Highways to Blue Highways roles. If the full impact of Blue Highways investments is realized, there are projected to be 8,000 net new jobs in NYC and 13,000 net new jobs in the broader metropolitan area by 2035. Recent shifts in macroeconomic factors, such as international trade flows and supply chain realignment, and policies such as tariffs, may change the volume and type of good flowing through local ports, which could ultimately impact the growth of Blue Highways networks. Given that only a portion of the overall port volume would be moved via the Blue Highways distribution chain, the degree of impact of these changes remains unclear.

The Blue Highways distribution chain is comprised of 98 total occupations; 20 of these occupations have been defined as priority occupations as they have high projected growth, will be critical to enabling Blue Highways, and have high earning potential or career mobility. These priority occupations are the focus for the recommendations outlined in this report.

Opportunities for Broad and Lasting Impact

The Blue Highways initiative presents an important opportunity to create workforce pathways and drive economic mobility for a broad range of New Yorkers. By leveraging the city's maritime assets, Blue Highways has the potential to create quality jobs in maritime, transportation and logistics, and support industries in the neighborhoods in which Blue Highways sites are being developed, such as Red Hook, Sunset Park, and Hunts Point.

The 10 strategic recommendations outlined in this Study focus on fostering pathways for local community members and other New Yorkers into high-wage, high-growth occupations. The report outlines how the City can advance the Blue Highways initiative equitably by engaging historically underserved and underrepresented populations in accessing apprenticeships, credentialing programs, and union pathways, strengthening career prospects and long-term economic stability for New Yorkers.

Photo Credit: Billeasy

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Defining & Sizing the Blue Highways Workforce

Photo Credit: Tom Fisk

Defining & Sizing Approach Overview

A primary goal of this Study was to understand the type and scale of the occupations in NYC's Blue Highways distribution chain.

To arrive at that analysis, a multi-step process was followed:

- **Define** the segments of the distribution chain impacted by Blue Highways investments along with the associated occupations.
- **Size** the current number of jobs in NYC and forecast future job growth.
- **Prioritize**[1] occupations within the Blue Highways distribution chain to inform targeted workforce development initiatives.

1. The prioritization methodology is discussed in the next chapter.

Figure 1: Methodology Overview

Define

1	**Identify Impacted Distribution Chain Segments**	Identify segments of the distribution chain impacted by Blue Highways investments
2	**Identify Occupations**	Identify total pool of existing and emerging occupations

Size

3	**Identify Industries**	Identify relevant Blue Highways industries leveraging NAICS codes and cross reference with occupational data
4	**Isolate Relevant Industry Portion**	Apply proportional reductions to NAICS industries to exclude segments of the workforce that contribute to industries and sectors not included within the Blue Highways distribution chain
5	**Size Net New Jobs**	Determine which future jobs are net new versus those shifting from non-Blue Highways jobs to Blue Highways roles
6	**Size Core and Non-Core Occupations**	Develop current and future size estimates of core and non-core Blue Highways workforce based on projected cargo volume and industry-occupation data.

Prioritize

7	**Identify Priority Occupations**	Identify 20 priority occupations, based on occupational characteristics, that will be the focus for analysis and recommendations

Proposed Downtown Skyport eVTOL landing site and Blue Highways micro-hub

1. Identify Impacted Distribution Chain Segments

Identifying the workforce implications of the Blue Highways initiative starts with having a clear picture of how goods currently move through NYC's waterways and the impacts of planned infrastructure investments. Distribution chains are commonly divided into 3 segments – first, middle, and last mile. In NYC's current distribution chain, goods are primarily transported by water in the first mile, and by truck in the middle and last miles.

First mile: Involves loading goods onto container ships for maritime transport, unloading goods at the destination port, and warehousing. This stage includes manufacturing, maritime shipping, logistics, and port operations.

Middle mile: Focuses on the transportation from warehouse to regional distribution, typically via tractor trailer.

Last mile: Deliver goods from regional distribution hubs to the customer's doorstep. In the current state dominant distribution chain, goods are moved via box truck to a customer's home.

The Blue Highways initiative envisions leveraging NYC's waterways to create distribution chain that is sustainable, resilient, and efficient. This future shift will particularly impact the middle and last miles of the distribution chain, as outlined below:

- **First Mile**: There will be minimal changes to activities in the first mile, as goods will continue to arrive to the destination port via maritime transport.

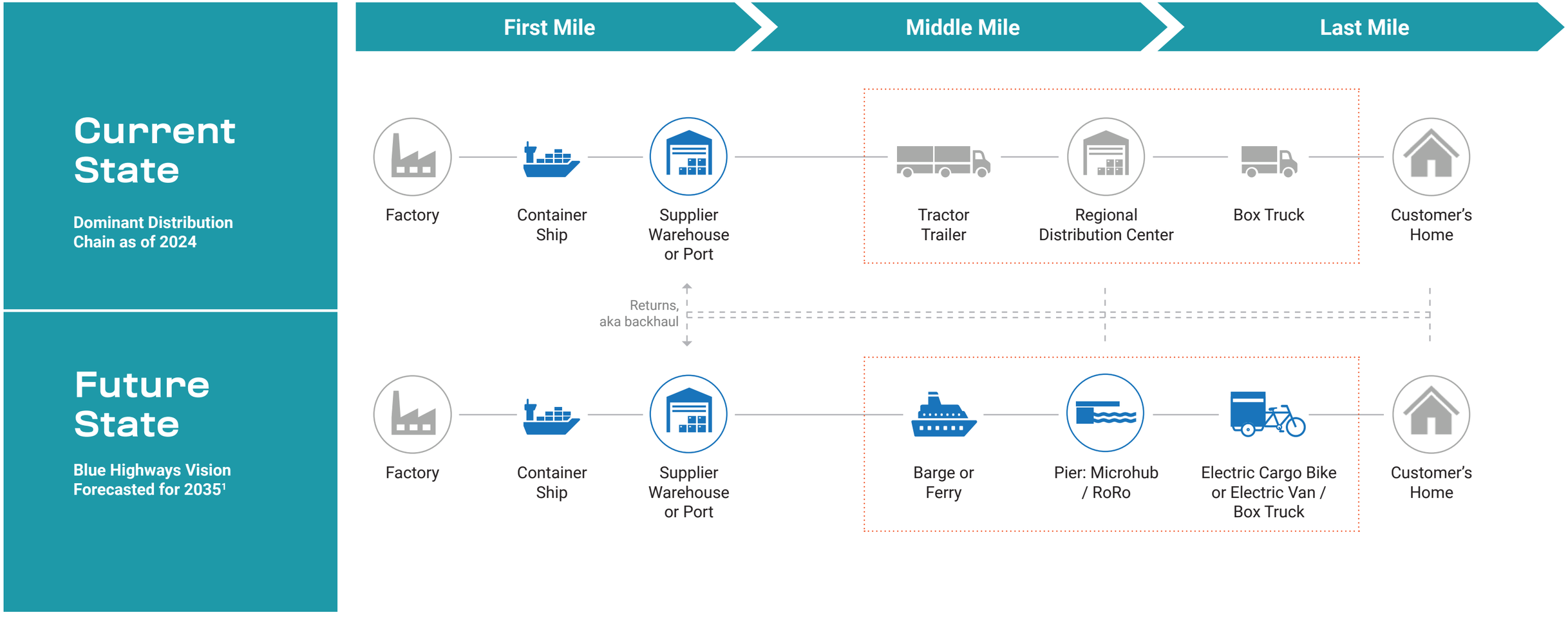
- **Middle mile:** The middle mile will focus on the transportation of goods via barges or ferries to piers, using urban microhubs for short-term storage and distribution to other transportation modes for further delivery. This stage emphasizes maritime shipping, inland waterways, and warehousing and distribution; including reconfiguring and repacking goods for transport.

- **Last mile:** The last mile segment of the distribution chain will focus on delivering goods from distribution hubs, including microhubs, to customers' doorsteps or retail locations via sustainable transportation modes like electric vehicles (EVs) and micro-mobility solutions, serving industries such as e-commerce and freight & courier deliveries.

Modernizing marine terminals, integrating inland waterway transport, and promoting sustainable last-mile logistics will have implications for the associated workforce, which will be explored in subsequent sections.

Figure 2 demonstrates how planned infrastructure investments will impact the distribution chain.

Figure 2: Blue Highways Distribution Chain: Current & Future State



Key:

- **Core Distribution Chain Nodes:** These icons represent distribution chain nodes that transport cargo via water or handle cargo that touches water in previous or next step of the distribution chain. These nodes will be most impacted in the shift to Blue Highways.
- **Non-Core Distribution Chain Nodes:** These icons represent distribution chain nodes that do not transport cargo via water nor handle cargo that touches water in previous or next step of distribution chain. These nodes will not be directly impacted by Blue Highways but play critical roles in overall distribution chain operations.
- **Distribution Chain Segments that will be most impacted in the shift to Blue Highways.**

1. Future State vision assumes full realization of Blue Highways plans and investments

2. Identify Blue Highways Occupations

There are 98 existing occupations that comprise the Blue Highways distribution chain and 27 emerging occupations that will be critical for the future of Blue Highways.

Existing occupations are defined as core or non-core:

- Core occupations transport cargo via water, handle cargo that touches water in the previous or next immediate step of the distribution chain, and associated support occupations. Examples of core occupations include boat captains and longshoremen.
- Non-core occupations are other distribution chain occupations, including occupations that transport cargo via non-water methods, handle cargo that does not touch water in the previous or next immediate step of the distribution chain, and associated support occupations. Examples of non-core occupations include truck drivers and maintenance workers.

This classification framework focused the analysis on the occupations most directly connected to Blue Highways operations (core occupations) while maintaining a comprehensive view of the broader distribution chain (non-core occupations). Of the 98 existing occupations identified, 48 are classified as core, and 50 are classified as non-core.

Existing Occupations

Blue Highways occupations are categorized either as existing – those critical to the distribution chain today, or emerging – those expected to come online in the future. Many of these existing occupations[1] will continue to be critical to the distribution chain even with the shift to Blue Highways.

1. Desktop research and industry reports were utilized to map the occupational landscape and identify relevant occupations within the Blue Highways distribution chain. The identified occupations were vetted with industry stakeholders such as employers, industry associations, and unions to verify that all relevant Blue Highways occupations were captured.

Emerging Opportunities

There are 27 “emerging” occupations[1] that encompass skillsets[2] required for the future state Blue Highways distribution chain but are not currently represented by existing occupations. These emerging occupations are driven by shifting trends, such as the transition to alternative fuel sources and the rise of zero-emission freight logistics.

Figure 3 displays Blue Highways occupations and their corresponding distribution chain segment. The full list of existing occupations can be found in Appendix A.

Figure 3: Blue Highways Distribution Chain Segments and Sample Corresponding Occupations

First Mile	Middle Mile	Last Mile
Select Existing Occupations		
Laborers and Freight, Stock, and Material Movers; Sailors and Marine Oilers; Captains, Mates, and Pilots of Water Vessels; Ship Engineer; Compliance Officers; Cargo and Freight Agents; Motorboat Operators	Heavy and Tractor-Trailer Truck Drivers; Transportation, Storage, and Distribution Managers; Facilities Managers; Logisticians; Crane and Tower Operators; Dredge Operators; Packers and Packagers; Hand, Hoist and Winch Operators	Light Truck Drivers; Driver/ Sales Worker; Couriers & Messengers; Shipping, Receiving, and Inventory Clerks; Stockers and Order Fillers
Select Emerging Occupations		
Alternative Fuel Technicians; Energy Efficiency Officers; Offshore Wind Integration Engineers; Environmental Compliance Managers; Sustainable Port Infr Development Managers; Circular Economy Specialists	Microhub Managers; Microhub Technicians; Transloading Supervisors; Micromobility Coordinators	Cargo Bike and EV Drivers & Mechanics; Data Analysts; EV Technicians; EV Fleet Managers; Zero-Emission Truck Technicians; EV Charging Network Planners; Sustainability Managers

1. Emerging skills were identified by analyzing a combination of industry reports, articles, and white papers to identify key trends that will impact the future state Blue Highways distribution chain. These emerging skill requirements were vetted with employers, industry associations, and unions to ensure accuracy and comprehensiveness. Evolving skillsets were then mapped to existing occupations, thereby developing proxy occupations that helped define new and emerging roles in the Blue Highways sector.

2. Details on emerging trends across the maritime, transportation, logistics, and support industries, the skillsets required to address these trends, and their associated Blue Highways emerging occupations can be found in Appendix A.

Sizing & Forecasting the Blue Highways Workforce

3. Identify Blue Highway Industries

Each Blue Highways occupation is classified within one of the following industries:

- **Maritime:** focuses on transport of freight via waterways.
- **Transportation and logistics:** focuses on transport of freight via other methods such as truck, van, or cargo bike.
- **Support:** includes all other supporting industries not directly involved in the direct handling of freight.

While maritime occupations represent an important piece of the Blue Highways distribution chain, only 9 of the 98 occupations identified are classified as maritime. Nearly half of the occupations are classified as transportation and logistics and 47 are classified as support. While creating pathways to maritime jobs needs to be part of a workforce strategy, the larger opportunity for engaging the community in Blue Highways work will center around transportation and logistics and support jobs.

4. Isolate Relevant Industry Portion

Once the universe of relevant Blue Highways occupations was defined, the current and future size of the workforce was estimated. This section outlines the approach used to understand both current job numbers and future workforce needs over the next decade. The process involved:

- **Leveraging Industry Data:** The analysis used Lightcast's industry-occupation data to establish baseline employment across maritime, transportation and logistics, and support industries.
- **Adjusting for Current Workforce:** Proportional reductions were applied to reflect only the share of jobs directly supporting Blue Highways operations, based on cargo volume assumptions and sector-specific insights.[1]
- **Adjusting for Future Projected Workforce:** Future workforce needs were estimated by combining baseline growth projections with anticipated increases in port volume and refining estimates for key occupations through targeted research.[2]

1. Adjustments were applied based on cargo volume assumptions as follows:
   - Maritime industries were reduced to 85% of jobs, based on assumption that 85% of cargo that enters Port Authority of New York and New Jersey (PANYNJ) facilities stays local to NY metro region.
   - Most transportation and logistics industries were reduced to 29% of distribution chain jobs, based on assumption that approximately 29% of NYC's total cargo volume enters through PANYNJ port facilities and enters the city via truck; except rail-related industries that were reduced to 15% of distribution chain jobs, based on assumptions provided NYCEDC Ports, Waterfront & Transportation team; and waste management industries, which were reduced to 30% based on the fact that 30% of DSNY's solid waste is currently moved via barge.
   - Each support industry was reduced based on input from a literature review to estimate the number of jobs needed to support the distribution chain.

2. Adjustments were applied based on cargo volume assumptions as follows:
   - First, baseline "existing conditions" trends for projected occupation growth were aggregated, assuming no Blue Highways-related changes were made to the industry (using Lightcast workforce projections).
   - Next, the additional growth required for related occupations beyond baseline projections was determined based on the Port Authority of NY/NJ's forecast of a 25% increase in total port volume by 2035. This served as the counterfactual size estimate for the future state of the distribution chain workforce if the Blue Highways vision was not realized.
   - Finally, in cases where specific occupations will be needed to grow the Blue Highways distribution chain, such as large growth in EV mechanics, data from desk research was leveraged to further refine occupation-specific growth projections.

Additional detail on Blue Highways industries used in this analysis can be found in Appendix C.

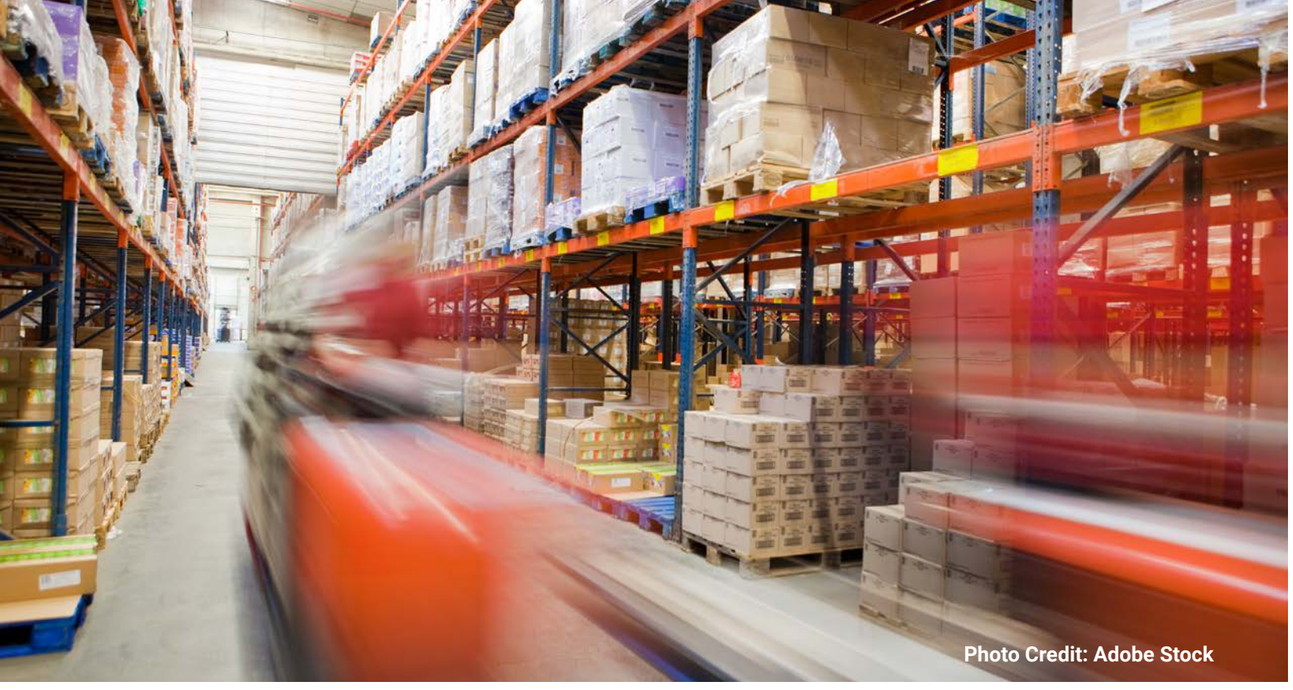


Photo Credit: Adobe Stock

5. Size Net New Jobs

The analysis isolates net new jobs which would not exist but for the Blue Highways system and investments. Job transitions on the other hand, represent jobs which are direct transitions from dominant supply chain jobs (or non-Blue Highways jobs) to Blue Highways roles.

The following steps were taken to identify net new jobs for each segment of the distribution chain:

First mile: It was assumed that no net new jobs will be created as a direct result of Blue Highways, except for emerging occupations with high growth potential, such as Sustainable Port Infrastructure Development Managers.

Middle mile: Similarly, no net new jobs are anticipated in the near term, as barging is expected to slow the growth of truck traffic — which is currently increasing by 2.5% annually — rather than replace existing trucking jobs outright. However, some emerging occupations — such as Robotics Technicians — are expected to contribute to net new employment due to their high growth potential and the increasing demand for advanced automation across industries.

Last mile: Cargo Bike and Electric Van Drivers are expected to represent mostly net new jobs, as they replace Box Truck Drivers. According to conversion estimates from NYCEDC, 1 trailer truck is equivalent to 2.5 box trucks, 10 cargo vans, or 30 cargo bikes. No net new jobs are anticipated from microhubs and last-mile piers, based on the assumption that they will replace functions previously performed at regional distribution hubs. However, emerging occupations such as Electric Vehicle (EV) Technicians are assumed to contribute to net new employment.

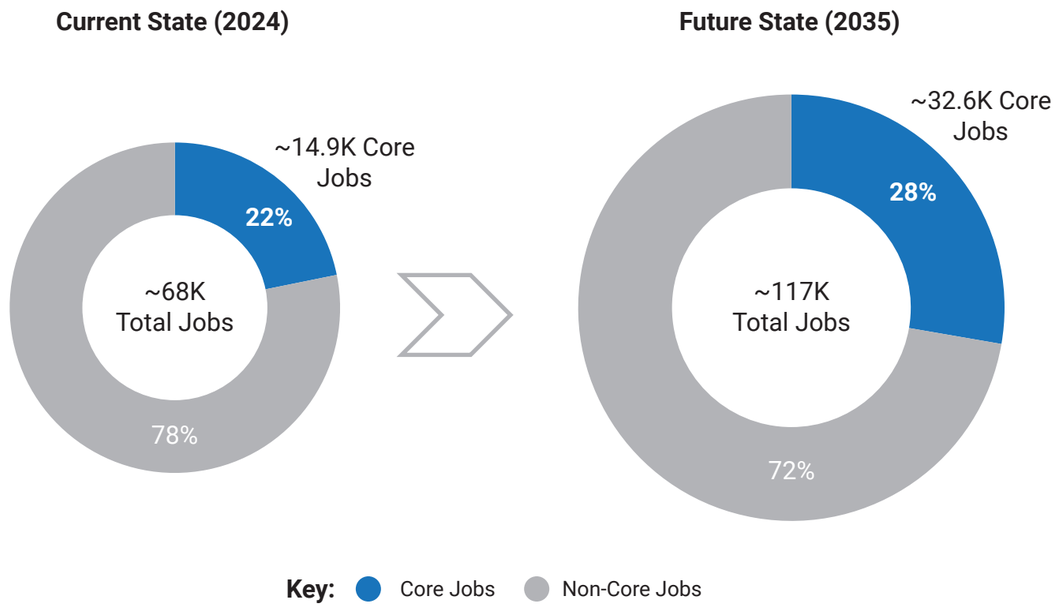
6. Size Core and Non-Core Occupations

Leveraging the methodology and assumptions outlined previously in this section, the following Blue Highways workforce sizing and forecast for NYC was determined:

- **Today: There are 68,000 total jobs in the Blue Highways distribution chain; this consists of:**
  - 14,900 core jobs
  - 53,100 non-core jobs
- **2035: There are projected to be 117,000 total jobs in the Blue Highways ecosystem, representing 72% growth over the next 10 years. Analysis projects the following breakdown:**
  - 32,600 core jobs
  - 84,400 non-core jobs

The analysis on the following page focuses specifically on core occupations, as these roles will be most influenced by the shift to Blue Highways. This focus helps clarify which roles are most affected, guiding the selection of priority occupations and the development of strategic workforce recommendations.

Figure 4: Blue Highways Jobs: Core and Non-Core



Detailed methodology for sizing and forecasting the Blue Highways workforce can be found in Appendix C.

Core Jobs: Industry Composition

Today, core jobs represent approximately 22% of Blue Highways jobs in NYC and 24% of jobs across the New York-Newark metropolitan statistical area (MSA). Core jobs today are comprised primarily of maritime occupations in the first mile of the distribution chain but also include jobs in the middle and last miles related to barging services such as the existing segment between Red Hook and Newark, Blue Highways pilot programs, and the New York City Department of Sanitation (DSNY) waste barge service.

Looking ahead to 2035, a dramatic shift in the composition of core jobs is expected. The total number of core jobs in NYC is projected to increase to approximately 32,600, more than double the current amount. Some of this growth is driven by baseline increases in total port volume and occupational growth trends, neither of which are directly related to Blue Highways. However, a sizeable portion of these jobs are roles that will transition from non-core to core functions, for example, couriers that currently do not handle goods that touch water will transition to be core occupations in the future as they will deliver goods that were transported via barge in the middle mile. Core jobs across all Blue Highways industries will be impacted.

Photo Credit: NYCEDC

Maritime:

- Core maritime jobs will increase moderately to about 4,400; fewer than 100 of these jobs will be net new. The number of net new maritime jobs is low because barging is expected to slow the projected growth of truck traffic rather than directly replace existing trucking jobs.

Transportation and Logistics:

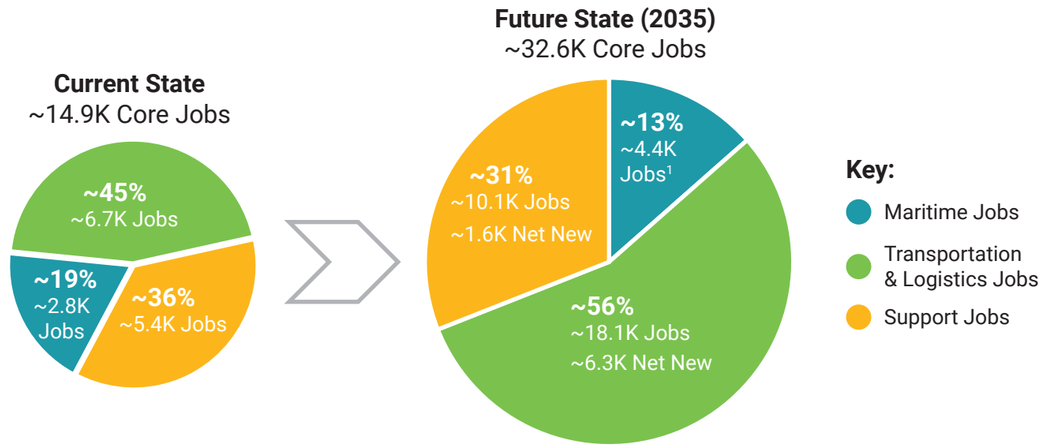
- Core transportation and logistics positions will nearly triple to 18,100 jobs, representing 56% of all core Blue Highways jobs in 2035. This growth centers primarily on last mile delivery, transporting products from ports to final destinations.
- The expansion of microhubs and delivery services will create approximately 6,300 net new core transportation jobs. These jobs will come to fruition specifically due to Blue Highways investments and the need for more last mile delivery workers on smaller transportation vehicles such as cargo bikes and vans to replace the cargo volume previously transported by trucks.

Support:

- Core support jobs will increase by 87%, from 5,400 jobs in 2024 to 10,100 jobs in 2035. A large portion of future core support jobs will be comprised of 2 occupations, General and Operations Managers and Management Analysts, which will represent 46% of all core support jobs in 2035.
- 1,600 of the total core support jobs in 2035 will be net new; including 130 net new jobs for Automotive Service Technicians and Mechanics and 120 net new jobs for Bus and Truck Mechanics and Diesel Engine Specialist, primarily due to their mapping to emerging occupations such as Electric Vehicle (EV) Technicians and the projected growth needs for those occupations.

The projected shift in core occupations provides a baseline of the future workforce composition and how occupations will be impacted by Blue Highways investments.

Figure 5: Core Jobs: Industry Composition



1. There are <100 net new maritime jobs forecasted because maritime jobs will primarily be job transitions (i.e., truck driving/warehouse jobs to barge/port jobs)

4

Priority Occupations and Characteristics

Defining & Selecting Priority Occupations

A set of priority occupations were identified to develop targeted Blue Highways workforce recommendations. Priority occupations represent the jobs in the ecosystem across the 4 types of criteria, outlined in detail on the following page.

Collectively, these 20 priority occupations account for 85% of the current Blue Highways workforce and are projected to comprise 86% of all Blue Highways jobs by 2035, underscoring their critical role in enabling NYC's future Blue Highways vision. They also represent 88% of the total projected workforce growth through 2035 — approximately 43,000 jobs.

Photo Credit: Frans van Heerden

Blue Highways Priority Occupation Selection Criteria

To identify the priority occupations, a weighted average was conducted across 4 criteria. Criteria included:

- **Demand factors**, including current number of jobs and 10-year forecasted growth. These factors indicate current and future job market size and represent occupations that are projected to experience the most growth over the next decade.
- **Accessibility factors**, including workforce experience and typical entry level education requirements. These factors focus on low barriers to entry, including attainability for those without advanced education.
- **Mobility & stability factors**, including median wages and automation risk. These factors indicate long-term employment and economic stability and prioritize roles with advancement potential that reduce the risk of layoff or job obsolescence.
- **Policy priorities**, including alignment with the City's sustainability and diversity goals. Occupations were analyzed against policy priorities to make sure they align with the City's broad goals related to sustainability, resilience, and expanding employment for underrepresented communities.

Priority occupations were vetted with key industry stakeholders, including employers, industry associations, and unions, to ensure they captured critical occupations required for the growth of Blue Highways. Ten core and 10 non-core priority occupations were identified. These fall across the first, middle, and last mile segments of the distribution chain and represent occupations in maritime, transportation and logistics, and support industries.

Photo Credit: Tim Punt

Figure 6: Blue Highways Priority Occupations

Priority Core Blue Highways Occupations

- General and Operations Manager
- Transportation, Storage, and Distribution Managers
- Laborers and Freight, Stock, and Material Movers (includes Longshoreman)
- Driver/Sales Workers
- Cargo and Freight Agents (includes Dispatchers)
- Sailors and Marine Oilers (includes Deckhands)
- Maintenance and Repair Workers
- Captains, Mates, and Pilots of Water Vessels (includes Barge/Ferry/Tugboat/ Vessel Operators)
- Ship Engineers
- Facilities Managers

Priority Non-Core Blue Highways Occupations

- Heavy and Tracker-Trailer Truck Drivers
- Bus and Truck Mechanics and Diesel Engine Specialists
- Light Truck Drivers Package Delivery Driver
- Automotive Service Technicians and Mechanics
- Stockers and Order Fillers
- Shipping, Receiving and Inventory Clerks
- Couriers and Messengers
- Logisticians
- Management Analysts
- First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors

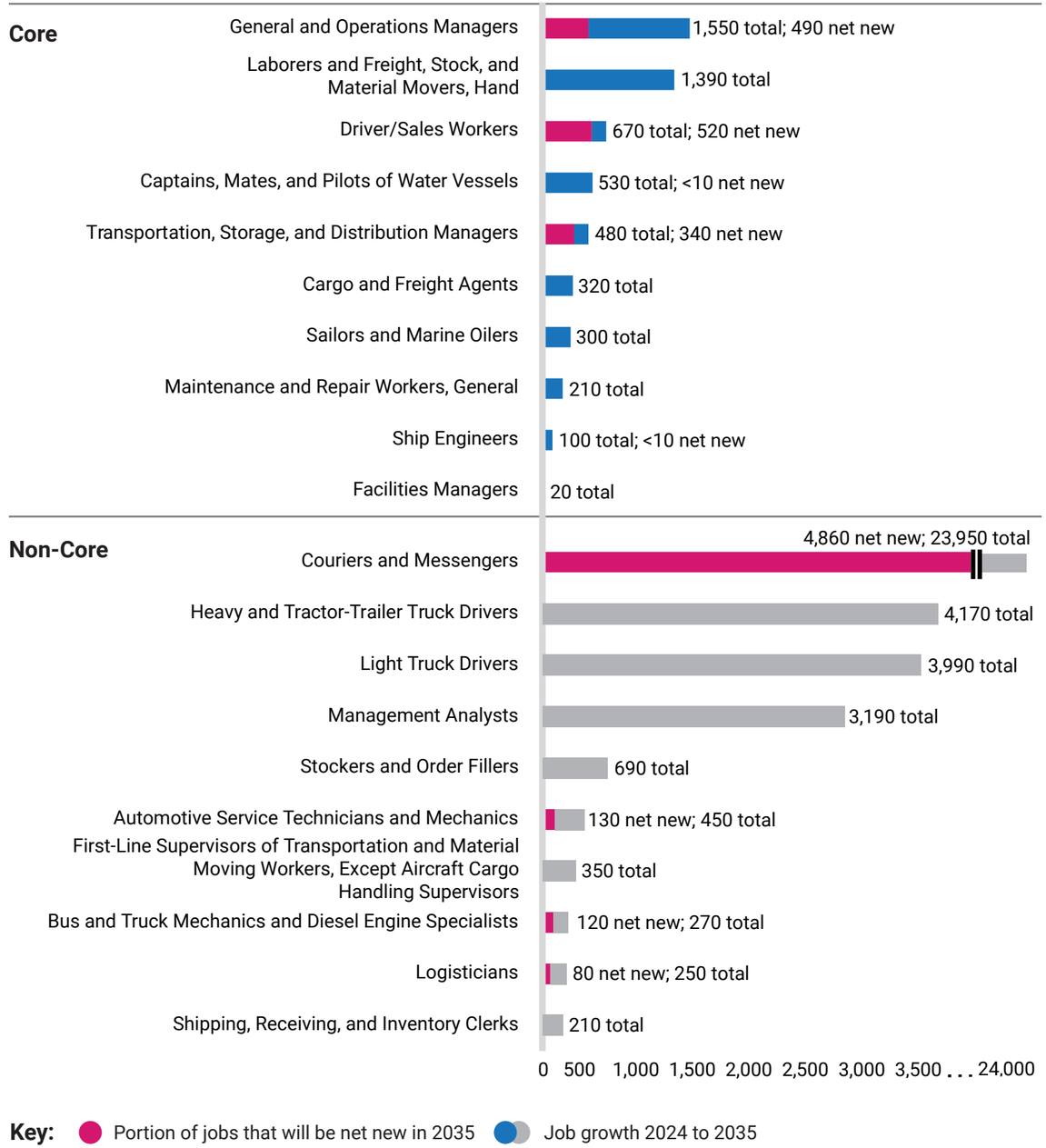
Analyzing & Understanding Priority Occupations

Occupational characteristics for the 20 priority occupations were analyzed, including demographics (age, gender, race and ethnicity), educational requirements, average wages, unionization status, and career pathways. Since Blue Highways is an emerging sector, understanding these occupational characteristics will provide insight into the training and skilling requirements, demographic disparities, and workforce barriers for specific Blue Highways occupations.

Priority occupations will experience total job growth of approximately 43,000 jobs, a 74% increase from 2024 to 2035, slightly outpacing the 72% projected growth rate for all Blue Highways occupations overall. As seen in Figure 7, more than half of the approximately 6,500 net new jobs for priority occupations are for transportation and logistics occupations, including Couriers and Messengers; Drivers/Sales Workers; and management and mechanic positions. Couriers and Messengers alone make up roughly 75% of projected net new jobs in 2035. This highlights the critical role that the transportation and logistics workforce, particularly in the last mile segment of the distribution chain, will play in Blue Highways.

Maritime priority occupations, which include Captains, Mates, and Pilots of Water Vessels, Sailors and Marine Oilers, Ship Engineers, and a portion of Laborers and Freight, Stock and Material Movers (longshoremen) are projected to grow by 67%, from 1,400 jobs today to 2,340 jobs in 2035.

Figure 7: Projected Job Growth and Net New Jobs for Priority Occupations (2024-2035)



Demographics

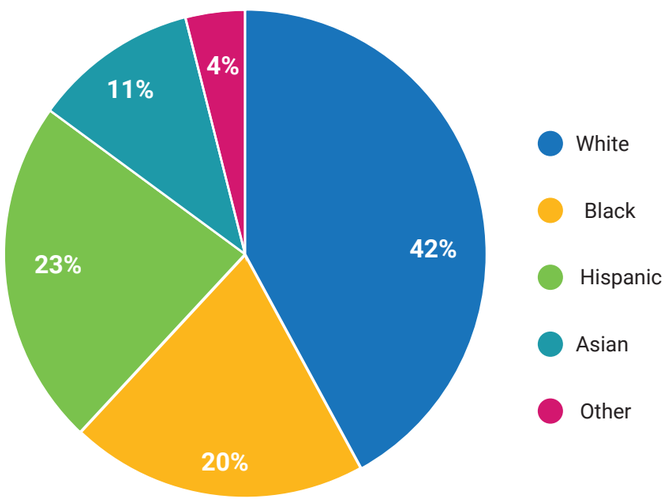
Analyzing and understanding demographic representation and gaps helps ensure that recommendations are targeted and tailored to reach a broad range of New Yorkers. For example, understanding the age distribution of Blue Highways workers can help inform recommendations that may be required around attracting a younger workforce that could power the Blue Highways ecosystem for decades to come.

Blue Highways occupations demonstrate 3 clear patterns when compared to NYC as a whole. First, these jobs have fewer women, especially in maritime roles where women make up just 11% of workers. Second, the workforce is centered in the middle age (35-54) range, with fewer young workers under 35 and fewer older workers over 55 than typical for NYC. Third, Blue Highways occupations are less diverse than the NYC population overall, with 49% white representation versus 31% for the NYC population overall.

Race/Ethnicity

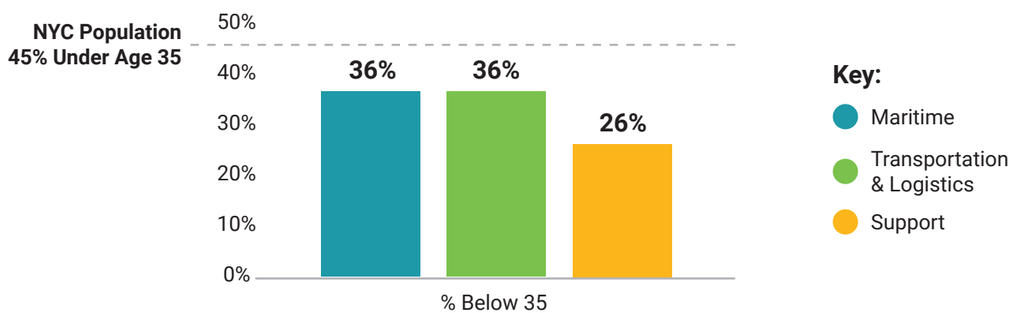
Figure 8: Priority Occupations: Race/Ethnicity (2024)
Blue Highways priority occupations are more diverse than Blue Highways occupations overall, which have 42% white representation compared to 49% for Blue Highways overall, but less diverse than the NYC population overall, which has 31% white representation.

White workers are particularly overrepresented in maritime and support occupations with 60% and 59% of representation in priority occupations, respectively.



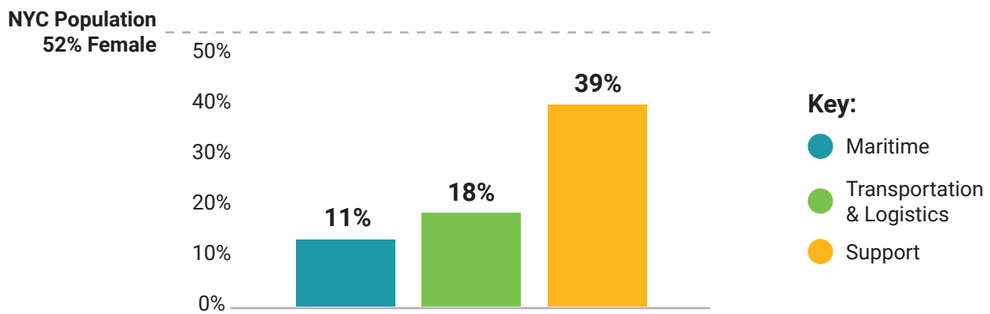
Age

Figure 9: Priority Occupations: Age by Industry (2024)
Workers in Blue Highways priority occupations are on average more middle-aged than the NYC population overall, with 35% of the Blue Highways priority occupation workforce below age 35 compared with 45% of the NYC population overall. This overrepresentation of middle-aged workers compared highlights the need to ensure a robust pipeline of new workers entering Blue Highways fields to support projected growth.



Gender

Figure 10: Priority Occupations: % Female by Industry (2024)
Blue Highways Priority Occupations are 21% female overall, compared to 26% for Blue Highways occupations overall and 52% for the NYC population. As seen in the figure above, for some Blue Highways industries, the gender disparities are particularly vast. Maritime occupations have the lowest portion of female workers, with only 11% of the maritime workforce for priority occupations being female. Support jobs are the most gender diverse, with 39% of the workforce being female.



1. Net new jobs isolate specifically those positions which would not exist if it were not for the Blue Highways system and investments, compared to a counterfactual future where port volume continues to grow without any Blue Highways interventions.

Unionization Status

Unions define critical entry points and career pathways and are key workforce partners for Blue Highways. There are 4 primary unions that represent workers across Blue Highways jobs: the International Longshoremen's Association (ILA), Seafarers International Union (SIU), International Organization of Masters, Mates & Pilots (MM&P), and Teamsters.

Each priority occupation has been classified as either "typically unionized," "may be unionized", or "typically not unionized". This exercise provided insight into the landscape of union opportunities for priority occupations. As shown in Table 5, one quarter of union occupations are typically unionized, and more than one third may be unionized.

Typically Unionized:
- Union websites explicitly listed the occupation
- Multiple interview participants identified the role as unionized
- Cross-reference between these sources confirmed unionization status

May Be Unionized
- Unionization varied by employer, location, or specific workplace
- The occupation was unionized in related industries, such as construction and public transportation, but not consistently in Blue Highways target industries
- Research of NYC-specific union landscape showed partial coverage
- Job postings indicated some unionized positions exist, but not universally

Typically Not Unionized
- Comprehensive research revealed no evidence of unionization for the occupation
- BLS data confirmed low unionization rates for the occupational category
- Specific searches within NYC and Blue Highways contexts showed no significant union presence
- Industry stakeholder interviews corroborated non-union status
- Employers posting jobs do not hire unionized labor

Figure 11: Unionization Status for Priority Occupations

Typically Unionized	May be Unionized	Typically Not Unionized
• Laborers and Freight, Stock, and Material Movers (includes Longshoremen) • Maintenance and Repair Workers • Sailors and Marine Oilers (includes Deckhands) • Captains, Mates, and Pilots of Water Vessels (Barges, Ferry, and Tugboat Vessel Operators) • Heavy and Tractor-Trailer Truck Drivers	• Ship Engineers • Drivers/Sales Workers • Light Truck Drivers (includes Package Delivery Drivers) • Stockers and Order Fillers • Bus and Truck Mechanics and Diesel Engine Specialists • Automotive Service Technicians and Mechanics • Shipping, Receiving, and Inventory Clerks	• General and Operations Managers • Cargo and Freight Agents (includes Dispatchers) • Transportation, Storage, and Distribution Managers • Facilities Managers • Management Analysts • Couriers and Messengers • Logisticians • First Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors

Entry-Level Educational Requirements

Many Blue Highways occupations have low barriers to entry, specifically characterized by entry-level educational requirements, making them more accessible to a broader set of New Yorkers. Table 6 below illustrates the typical education requirements for entry-level positions across core and non-core occupations.

Three-quarters of Blue Highways priority occupations do not typically require a bachelor's degree. This includes all maritime jobs — such as Captains, Mates, and Pilots of Water Vessels; Sailors and Marine Oilers; Ship Engineers; and certain longshoremen. While many captains graduate from maritime academies, many others enter the maritime industry as sailors and work their way up to captain through a process known as "hawsepiping." In this process, mariners advance from unlicensed positions (such as seaman) to licensed officer roles (such as third mates or engineers) through sea service, training, and passing required exams, rather than attending a formal maritime academy.

The low barriers to entry and the opportunity to progress through the ranks to higher-paying positions underscore the potential of Blue Highways occupations to promote economic mobility.

Figure 12: Typical Entry-Level Education Requirements for Priority Occupations

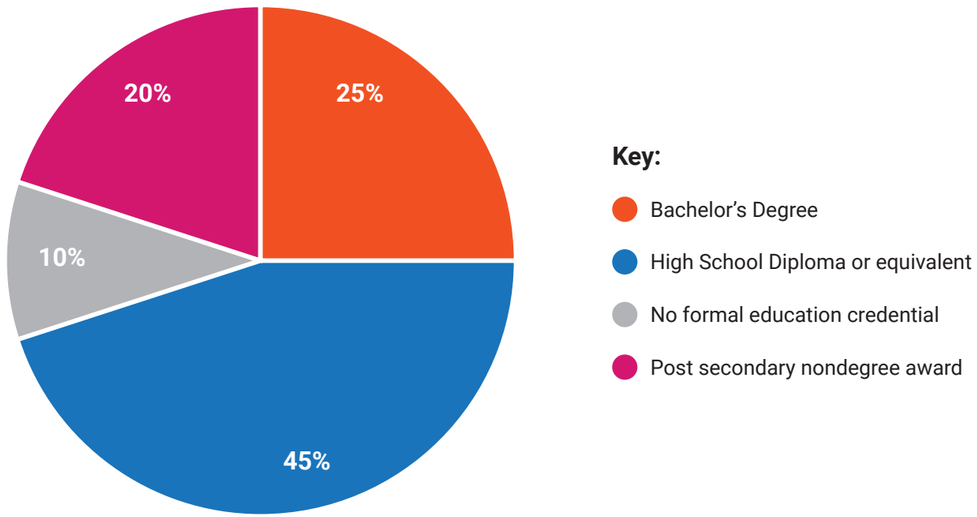


Figure 13: Typical Entry-Level Education Requirements for Priority Occupations

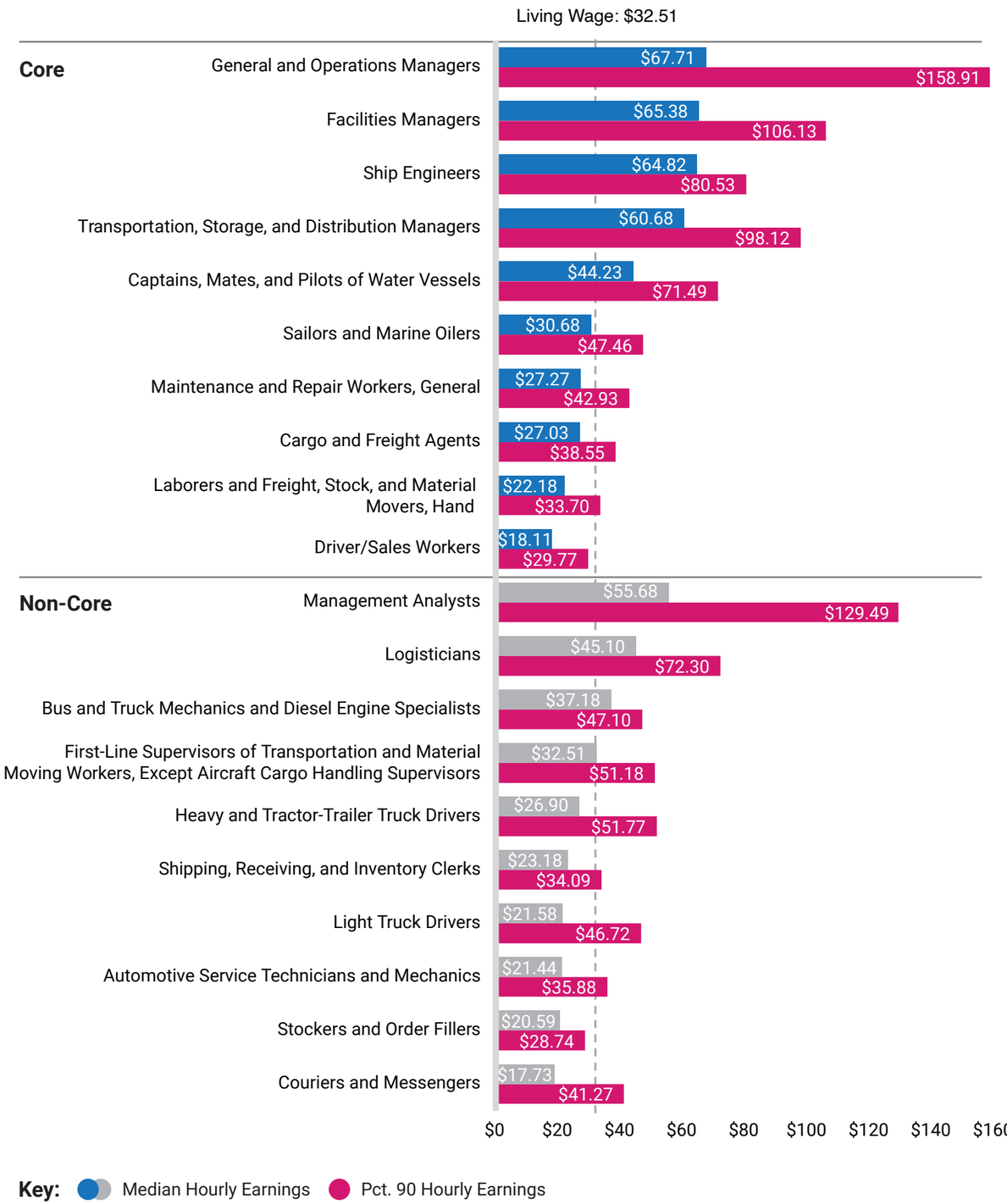
	Core	Non-Core
Bachelor's Degree	• General and Operations Managers • Transportation, Storage, and Distribution Managers • Facilities Managers	• Management Analysts • Logisticians
Post-secondary nondegree award	• Captains, Mates, and Pilots of Water Vessels (includes Barge, Ferry, and Tugboat Vessel Operators) • Ship Engineers	• Heavy and Tractor-Trailer Truck Drivers • Automotive Service Technicians and Mechanics
High school diploma or equivalent	• Cargo and Freight Agents (includes Dispatchers) • Drivers/Sales Workers • Maintenance and Repair Workers	• First Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors • Couriers and Messengers • Light Truck Drivers (includes Package Delivery Drivers) • Stockers and Order Fillers • Shipping, Receiving, and Inventory Clerks • Bus and Truck Mechanics and Diesel Engine Specialists
No formal educational credential	• Sailors and Marine Oilers (includes Deckhands) • Laborers and Freight, Stock, and Material Movers (Includes Longshoremen)	• N/A

Wages

The median hourly wage for the 20 Blue Highways priority occupations is $28.98. While this falls below the NYC Living Wage of $32.51, Blue Highways occupations offer potential for wage growth over time, as reflected in the 90th percentile hourly earnings for each occupation, shown in Figure 12. The 90th percentile hourly earnings represent the amount earned by the top 10% of workers in a given occupation, highlighting the high-end wage potential for experienced or top-performing individuals in those roles. Although the median wages for 11 of the 20 priority occupations fall below the living wage, the 90th percentile earnings underscore the opportunity for wage growth as individuals gain experience and advance in their careers.

Several priority occupations are particularly noteworthy in terms of wage growth potential. General and Operations Managers, for example, have growth potential of more than double the median hourly earnings. This is also true for Management Analysts, Couriers and Messengers, and Light Truck Drivers. Longshoremen (part of Laborers and Freight, Stock, and Material Movers), which are unionized under the International Longshoremen's Association, are expected to experience notable wage growth in the coming years. The union recently voted to approve a contract that will raise dockworkers' wages by 62% over 6 years, increasing from approximately $39 per hour to $63.[ii] This wage increase will markedly elevate the 90th percentile hourly earning potential for this occupation.

Figure 14: Median Hourly Wages for Priority Occupations



Career Pathways

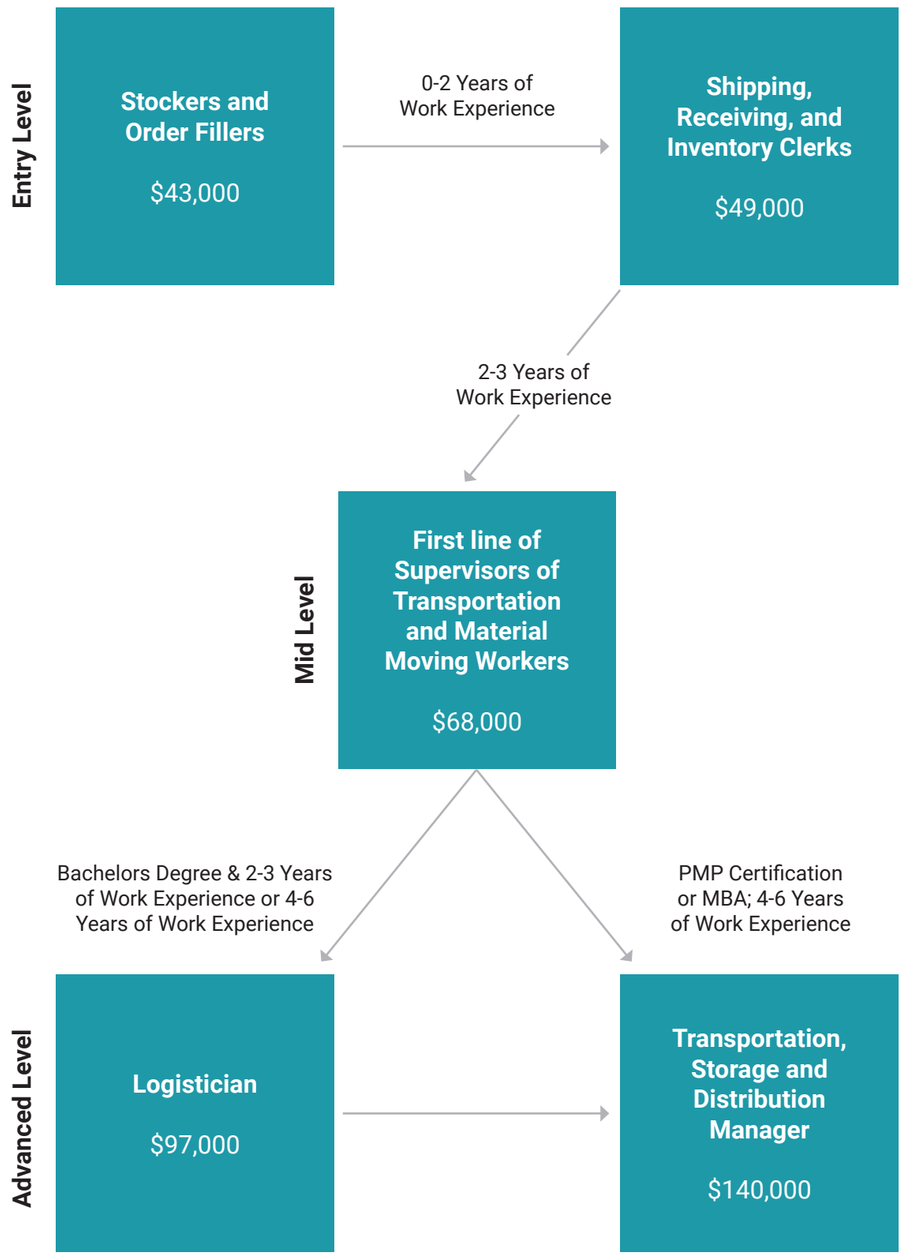
Career pathways for priority occupations illustrate the standard trajectory that workers follow, including skills and credentials required for career advancement. By defining these career pathways, the Study identified occupations that provide low barriers to entry but also offer opportunities for advancement to higher-paying Blue Highways jobs. The mapping of the career pathways informed Blue Highways workforce recommendations, ensuring focus on occupations that provide opportunities for career progression and increased wages.

Transportation and Logistics Career Pathways

The career pathway from Stocker and Order Filler to Transportation, Storage, and Distribution Manager showcases how entry-level logistics roles can lead to leadership positions through experience, skill-building, and credentialing. Workers in Stocker and Order Filler roles gain firsthand exposure to warehouse operations, inventory systems, and product handling. Over time, many transition to shipping, receiving, and inventory clerk positions, where they take on more specialized tasks such as tracking shipments, managing documentation, and verifying inventory accuracy.

Progressing into First line Supervisor roles, individuals begin overseeing teams, coordinating workflow, and ensuring safety and efficiency in warehouse or transportation environments. Supervisors often develop strong communication and organizational skills, which are essential for managing people and responding to real-time operational challenges. The final leap to logistician or transportation, storage, and distribution manager involves strategic oversight of supply chain functions, budget management, vendor relationships, and compliance with federal and industry regulations. From First Line Supervisors of Transportation and Material Moving Worker, individuals may also become Logisticians before advancing to Transportation, Storage and Distribution Manager. This demonstrates the flexibility and various opportunities for advancement, providing workers an array of opportunities, depending on their work experience, credentials, and education.

Figure 15: Sample Transportation and Logistics Career Pathways



Appendix E outlines detailed career pathways for the 20 priority occupations.

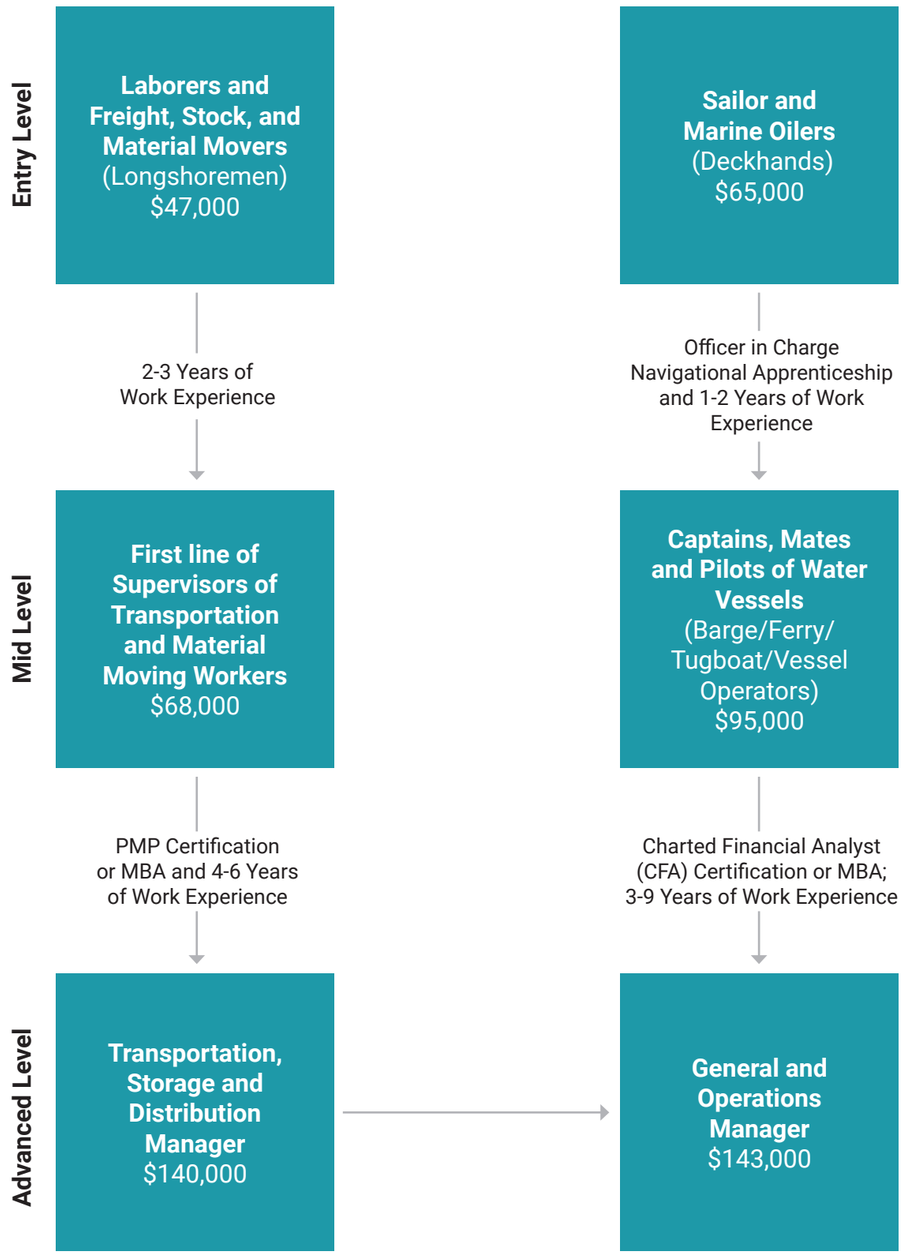
Maritime Career Pathways

Maritime careers, whether they start on the water or on the shore, provide numerous opportunities for advancement to higher-paying or advanced-level managerial roles. For example, Sailors and Marine Oilers begin their careers by developing foundational skills such as seamanship, safety compliance, and vessel maintenance, often under the guidance of senior officers. As they progress to the role of captain, they assume greater responsibility for navigation, crew leadership, and regulatory oversight. This transition marks a shift from task execution to greater strategic thinking and decision-making. Captains must also manage communication with port authorities, shipping companies, and international regulatory bodies – skills that are highly transferable to broader leadership roles in operations and logistics.

Similarly, the career progression from Longshoreman to Transportation, Storage, and Distribution Manager illustrates how hands-on, unionized maritime experience can serve as a steppingstone to supervisory and strategic leadership roles in the logistics sector. These progressions demonstrate how maritime roles can serve as a pipeline into executive positions in transportation and logistics industries, especially when supplemented by additional education or certifications in business, project management, or operations strategy.

The cross-over opportunities between maritime and transportation and industries is especially noteworthy, given the oftentimes unstable demand for maritime work. These career pathways demonstrate that maritime workers may be well-positioned for other Blue Highways industries, providing additional employment options for when there is a lull in demand for maritime work.

Figure 16: Sample Maritime Career Pathways

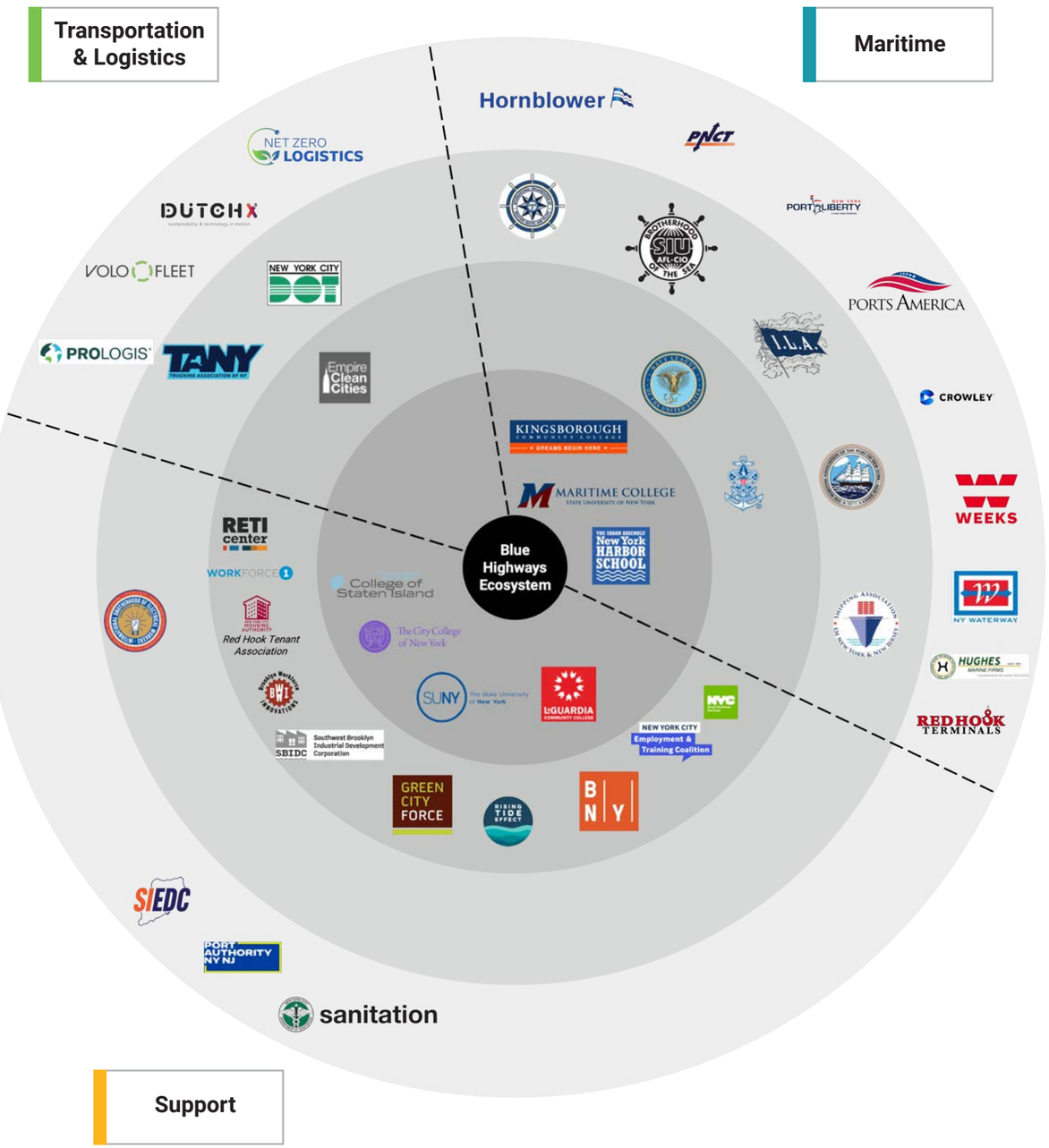


Appendix E outlines detailed career pathways for the 20 priority occupations.

5

Stakeholder Landscape

Figure 17: Landscape of Blue Highways Stakeholders



Key: Academic Institutions · Workforce Providers · Industry Associations & Unions · Employers

Blue Highways Stakeholders

The success of the Blue Highways initiative relies on a broad and interconnected network of stakeholders spanning maritime, transportation and logistics, and related support sectors. This includes academic institutions, workforce development providers, industry associations, unions, and employers — all of whom play a critical role in shaping the talent pipeline. Figure 15 highlights key players who are actively supporting the Blue Highways workforce ecosystem.

Academic Institutions: New York City is home to a variety of universities and high schools that offer educational curricula for Blue Highways skill sets, including specialized maritime schools and academic institutions with specialized logistics programs.

Workforce Providers: Nonprofit workforce providers play a crucial role in preparing individuals for industry-specific careers through targeted training and education programs. Many of these organizations also offer comprehensive wraparound services, expanding opportunities for a broad range of New Yorkers.

Industry Associations: Industry associations are organized groups of businesses and professionals within a specific industry that collaborate to promote common interests, set standards, and influence policy. Industry associations in NYC play a critical role in advocacy, workforce development, and policy shaping. They bring together stakeholders from across the distribution chain – such as port operators, shipping lines, tugboat companies, and freight forwarders – to collaborate on infrastructure improvements, environmental initiatives, and safety standards. These associations also provide training, networking, and career development opportunities, helping to sustain a skilled and competitive regional workforce.

Unions: Organized labor unions offer comprehensive training opportunities and pathways to well-paying jobs and play a vital role in preparing workers for Blue Highways careers.

Employers: Blue Highways employers across the region are increasingly investing in workforce development initiatives to address industry-specific skill gaps. Several companies have established in-house training programs and apprenticeship models and others have formed strategic partnerships with educational institutions to develop customized curricula aligned with operational needs.


Photo Credit: Michael Burrows

Academic Institutions

New York City's academic institutions offer programs applicable to a variety of Blue Highways settings, from on-ship maritime training that prepares New Yorkers for careers as sailors and captains, to logistics courses that provide foundational skills for careers in logistics and supply chain management, giving students of all ages access to industry-specific training.

SUNY Maritime

SUNY Maritime College, established in 1874, is the oldest institution of its kind in the United States dedicated to maritime education and training. Located at Fort Schuyler on the Throggs Neck peninsula in the Bronx, New York City, the college offers a range of undergraduate and graduate programs, including Bachelor of Engineering degrees in fields such as Electrical Engineering, Facilities Engineering, Marine Engineering, Mechanical Engineering, and Naval Architecture. Students can also pursue Bachelor of Science degrees in disciplines like International Transportation & Trade, Marine Environmental Science, Maritime Studies, Marine Operations, and Marine Transportation. Many of these programs provide pathways to obtaining U.S. Coast Guard licenses, qualifying graduates to serve as officers in the U.S. Merchant Marine.

SUNY provides extensive resources tailored to prepare students to succeed in the maritime industry. SUNY Maritime's Career Services Office connects students with employers through annual career fairs, networking events, and a dedicated job placement platform that leverages strong relationships with shipping companies, terminal operators, and maritime agencies. This industry integration contributes to an impressive 98% job placement rate for graduates. Academic support services include maritime-specific tutoring, sea-term preparation assistance, and license exam coaching that addresses the unique technical requirements of maritime education. The Student Affairs division complements these efforts with counseling services, health programs, and leadership development opportunities designed for the distinctive challenges of maritime careers.

SUNY Maritime Tugboat and Towing Training

SUNY Maritime leads the region in specialized tugboat and towing operations education, providing various opportunities for students to pursue careers in the tugboat industry. The institution offers an Associate in Applied Science (A.A.S.) degree administered through its Maritime Technology and Operations Department, from which students graduate with a limited United States Coast Guard (USCG) license for Near Coastal or Oceans. The institution operates a towing simulator, which provides students hands-on experience with various tugboat types and configurations. It also has dedicated faculty who support students in obtaining the TOAR endorsement, if desired.

The institution has demonstrated responsiveness to industry needs by forging strategic partnership with the Harbor School to support the P-Tech program, creating new pathways to attract diverse talent into the maritime industry. These forward-thinking collaborations are beginning to yield results, with the first cohort of P-Tech students joining SUNY's program in fall 2025.

SUNY Maritime is also experiencing positive momentum in industry engagement, with major tugboat operators increasingly offering student placement opportunities. The institution is actively working to enhance its certification capabilities through Coast Guard approval for TOAR assessments, which would represent a considerable advancement in addressing the examiner shortage.

SUNY Maritime's Industry Awareness Programming

SUNY Maritime also supports programming to increase youth awareness of maritime careers. The institution partners with programs like Sea Scouts and the Harbor School to expand access to maritime careers, and collaborates with nonprofits to help broaden outreach, particularly to underserved communities. The institution actively engages with industry organizations focused on underserved populations, including the Women's Offshore Association and organizations supporting Black maritime professionals that have historically maintained strong connections with diverse communities worldwide.

Their community engagement extends to the Bronx through student-focused STEM days and field trips to campus. SUNY Maritime's outreach also includes practical opportunities like their afterschool sailing program, which runs approximately 1 month long with sessions twice weekly, providing hands-on maritime experience to young people who might otherwise lack access to such opportunities.


Photo Credit: Getty Images

CUNY's Kingsborough Community College

Kingsborough Community College (KCC), is one of the few CUNY institutions offering specialized maritime education. Serving approximately 15,000 degree-seeking students, KCC's waterfront campus provides direct access to Jamaica Bay, creating an ideal environment for maritime training. The Maritime Technology program offers an Associate in Applied Science (A.A.S.) degree with comprehensive training for diverse maritime careers both at sea and ashore. Students benefit from hands-on experience with the college's own vessels, marina, and specialized workshops while earning industry-recognized certifications in marine electronics, electrical systems, vessel operations, and marina management.

KCC students have access to robust support services tailored to maritime career pathways. Kingsborough's Maritime Center provides specialized advisement on licensing requirements and certification pathways specific to New York Harbor operations. The program maintains strong relationships with local maritime employers including ferry services, tugboat operators, dinner boats, and private yacht companies, facilitating direct employment opportunities for graduates. Many alumni also transition to maritime roles within the NYC Police and Fire Departments. KCC offers valuable assistance with Transportation Worker Identification Credential (TWIC) card applications, helping students navigate this critical security credential process to minimize processing delays. Additionally, the college creates accessible transfer pathways for students continuing to 4-year institutions like SUNY Maritime, with over 70% of KCC graduates pursuing baccalaureate degrees after completion.

Kingsborough Community College & Seafarers International Union (SIU) Pre Apprenticeship Program

KCC has partnered with SIU to provide vocational training designed to prepare individuals for careers in the U.S. Merchant Marine. Enrolled students take part in16 weeks of training, after which eligible program graduates can be a member of SIU and start receiving $5,000-$6,000 per month in pay and benefits. Requirements for prospective participants include: must be over 18 years old, must hold a valid U.S. passport, must be able to obtain a Transportation Workers Identification Credential (TWIC) card, ability to pass a TABE test with 9th-grade reading level, ability to pass drug, medical, and dental screenings.

Maritime Technology A.A.S. Degree

The Associate in Applied Science (A.A.S.) in Maritime Technology is a 60-credit, 2-year program that blends 50% classroom instruction with 50% practical training. As a U.S. Coast Guard-approved program, graduates earn 225 days of sea-time applicable toward a captain's license or United States Merchant Marine Officers license. Additionally, 30 credits from the program are transferable to 4-year colleges. Over the course of the program, students take courses covering oceanography, navigation, seamanship, marine electronics, ship handling, sailing, marina operations, vessel repair, welding, diesel and outboard engines, safety and survival, first aid, CPR, firefighting, and STCW certification.

Marine Technician Apprenticeship Program (MTAP)

The Marine Technician Apprenticeship Program is a 4-year program that combines paid on-the-job training with part-time coursework. Participants earn an A.A.S. degree in Maritime Technology and receive the title of journeyman from the New York State Department of Labor. The program is designed to meet the needs of employers in the maritime industry, providing comprehensive training in areas such as diesel and gasoline engines, electrical systems, welding, vessel systems, marina operations, and basic boat handling.

Deckhand Training Program

In response to employer demand for the NYC Ferry service system, KCC offers an accelerated 12-day intensive Deckhand Training program. This hands-on program has successfully prepared participants for immediate employment as entry-level deckhands in the maritime industry. It includes Deckhand Technical Training and Basic Shipboard Firefighting for professional mariners, and provides opportunities to earn additional credentials, such as CPR/Basic First Aid, as well as NYC Department of Health Food Handler Test Prep and Exam, positioning participants for other employment opportunities during the off-season.


Photo Credit: ajay_suresh

The City University of New York (CUNY)

The City University of New York (CUNY) is the largest urban public university system in the United States, serving over 225,000 degree-seeking students and more than 150,000 continuing education learners across 25 campuses located throughout New York City's 5 boroughs. CUNY includes 11 senior colleges, 7 community colleges, and 7 graduate, honors, and professional schools, offering a wide range of associate, bachelor's, master's, and doctoral degrees. The university plays a vital role as the city's economic mobility engine, especially for first-generation college students and students from low-income families. CUNY is a critical partner in workforce development, collaborating with employers and City agencies to align academic programs with in-demand skills across industries such as healthcare, technology, education, logistics, and the green economy.

Several CUNY schools offer or are considering developing programming that could be updated to support the emerging Blue Highways workforce. These programs, which provide foundational supply chain and logistics skills, can be enhanced with maritime and micromobility-specific elements to better prepare a pipeline of workers for Blue Highways jobs. Examples of specific schools with the CUNY network that offer specific academic opportunities related to Blue Highways include:

- **College of Staten Island (CSI)**: CSI is currently exploring the development of a supply chain and logistics course. Though this program is in very early stages, this presents a critical opportunity for Blue Highways stakeholders to provide industry-relevant input that could shape course curriculum. Blue Highways stakeholders could provide input related to Blue Highways-specific skillsets, such as operating microhub in maritime settings, preparing the next generation of supply chain and logistics workers to work across Blue Highways settings.

- **LaGuardia Community College (LCC)**: LCC, as part of its Continuing Education has supply chain and logistics curriculum and programming that it has developed in the past 5 years. This curriculum provides foundational skills related to supply chain and logistics operations, such as inventory forecasting and management, operations planning, and people management. While the program is not currently being offered to students, the curriculum provides a strong foundation for logistics and supply chain roles, should there be industry demand.

- **The City College of New York (CCNY)**: CCNY currently offers online Supply Chain and Logistics classes through a third party, as part of its Continuing and Professional Studies offerings. The online program was created in collaboration with the Association for Supply Chain Management (APICS), is taught by an APICS certified instruction, and provides students an understanding of the foundations of supply chain management and it qualifies them for entry level positions in the supply chain industry. This programming could provide the baseline curriculum to incorporate maritime and micromobility content, preparing students for Blue Highways roles.

The Urban Assembly Harbor School

The Urban Assembly New York Harbor School, located on Governors Island, is a public high school specializing in marine science, technology, and policy. The school offers a unique curriculum that integrates traditional academics with hands-on maritime experiences, preparing students for both college and careers in the maritime industry.

The Harbor School serves approximately 520 students annually through 8 Career and Technical Education (CTE) programs, including vessel operations, marine systems technology, marine biology research, ocean engineering, professional diving, and aquaculture, leading to industry-recognized certifications. Additionally, the Harbor School maintains extensive partnerships with maritime organizations including the Port Authority of New York and New Jersey, Hornblower Cruises, NYC Ferry, and the U.S. Coast Guard. Its strategic location on Governors Island provides unparalleled access to New York Harbor, with students commuting by ferry daily – an experience that reinforces their connection to the waterfront. Through its founding partnership with the Billion Oyster Project, students actively restore New York Harbor's oyster reefs while developing professional skills. These industry connections create direct employment pathways, with graduates securing positions across the maritime sector from vessel operations to environmental monitoring or matriculating into university programs.

The Urban Assembly Harbor School and SUNY Maritime: P-TECH Program

The P-TECH program links students from the Harbor School to maritime careers through dual enrollment with SUNY Maritime, offering the opportunity to earn both college credits and industry credentials. Over the course of 6 years, the program is expected to graduate 125 skilled maritime professionals. Supported by a $2.6 million NYS P-TECH grant, this partnership between the Urban Assembly New York Harbor School, SUNY Maritime College, and the Billion Oyster Project combines high school education, college coursework, and career training to equip students for the maritime industry. Starting in 10th grade, students gain hands-on maritime experience and transition to dual enrollment at SUNY Maritime by 12th grade. Upon graduation, students earn both an associate degree and a small boat license, with each cohort consisting of approximately 25 students.

Workforce Providers

New York City's workforce providers and nonprofit community-based organizations offer some nascent workforce programming relevant to Blue Highways. This includes occupation-specific training and youth career awareness programs that provide early exposure to the industry.

Brooklyn Workforce Innovations

Brooklyn Workforce Innovations (BWI) is a nonprofit organization dedicated to providing free job training and employment opportunities to unemployed and low-income New Yorkers. BWI offers 8 specialized programs tailored to high-demand industries. BWI's programs combine hands-on training with industry-recognized certifications, followed by up to 2 years of job placement assistance and career counseling. BWI also offers supportive services, including benefits access and financial coaching, to address challenges such as housing instability and hunger, reinforcing their mission to help trainees access promising careers.

BWI serves nearly 1,000 students annually through comprehensive programs that combine technical training with targeted support services. While maintaining rigorous candidate screening, BWI offers crucial financial assistance through a dedicated fund providing flexible cash resources to address immediate barriers like transportation costs, work attire, and credential fees. Though they primarily focus on job readiness, their support extends well beyond training completion, with graduates receiving intensive post-placement guidance for over 2 years – a critical period for career establishment. For their maritime initiatives, including a new deckhand training program, BWI coordinates with employers like Hornblower to ensure their support services align with industry-specific needs, helping participants navigate the unique challenges of waterfront employment.

Brooklyn Workforce Innovation (BWI) and Hornblower Deckhand Program

An innovative workforce partnership between BWI and Hornblower is helping New Yorkers enter maritime careers through short-term, employer-driven training. This collaboration between BWI and Hornblower, a major maritime transportation company operating NYC Ferry, will pilot a deckhand training program in Fall 2025 to strengthen maritime workforce development and support the green economy. The program features a 3-week intensive curriculum designed to prepare individuals for entry-level maritime roles like deckhands and dispatchers, with a direct employment pathway at Hornblower. Participants will gain hands-on experience through site tours at the Brooklyn Navy Yard, offering real-world exposure to maritime operations. The program is accessible to individuals 18 and older, including career-changers from other industries.

Photo Credit: Cottonbro Studios

Photo Credit: Adobe Stock

The Consortium for Worker Education (CWE)

The Consortium for Worker Education (CWE) collaborates with over 40 job training and placement providers across the city's 5 boroughs. It serves more than 70,000 individuals, including union members, immigrants, and dislocated workers, offering services such as workforce preparation, industry-specific training, and employment assistance. CWE's programs span various industries, including healthcare, construction, transportation, civil service, education, childcare, retail, and tourism.

CWE's initiatives are supported by partnerships with entities like the New York City Council, the New York State Department of Education, and the New York State Legislature. Notable programs include Jobs to Build On, which focuses on job creation in underserved neighborhoods, and the Immigrant Protection Group, which offers resources for immigrant workers. Additionally, CWE provides facilitated childcare enrollment to assist working families. Through its comprehensive approach, CWE continues to address the evolving needs of New York City's diverse workforce.

Particularly relevant to Blue Highways is CWE's focus on the public and private transportation sector. CWE will partner with unions, including Teamsters Joint Council 16 and International Association of Machinists District 15 to train and place individuals into driver and mechanic jobs across New York's unionized truck and logistics fleet operators. CWE's initiative represents highlights opportunities, for workers especially as the City's Blue Highways transportation industry transitions from diesel to electric engines.

New York Mechanic's Apprenticeship Program (NYMAP) Pre-Apprenticeship Program

Since 2016, CWE has partnered with Bronx Community College and the International Association of Machinists to offer a 60-hour pre-apprenticeship course for individuals with automotive experience. This 2-week program covers fleet technician fundamentals, including electric vehicle safety, diesel engines, and alternative fuel systems. Graduates can apply to the 3-year NYS-registered NYMAP apprenticeship, which combines full-time unionized employment with major logistics companies (UPS, Ryder, Penske, Salem), competitive wages and benefits, on-the-job training, and college-credited instruction while becoming members of the International Association of Machinists and Aerospace Workers union.

NYC Pathways to Industrial and Construction Careers (PINCC)

Launched in 2022, PINCC is a workforce development program backed by an $18.6 million grant from the U.S. Economic Development Administration's Good Jobs Challenge that aims to place 2,300 individuals into stable careers within the industrial, transportation, and construction industries in NYC over 3 years at no cost to participants. Spearheaded by the NYC Mayor's Office of Talent and Workforce Development in partnership with CWE and the NYC Human Resources Administration, PINCC specifically targets cash assistance recipients, SNAP beneficiaries, public housing residents, and other low-income New Yorkers while addressing critical labor shortages and fostering economic mobility for historically marginalized communities. The program creates a seamless pipeline from training to employment through partnerships with unions, educational institutions, and private employers, preparing participants for in-demand roles such as diesel mechanics, general utility workers, and construction project managers while providing comprehensive wraparound support services including career navigation, financial counseling, job readiness coaching, and employment placement support.

Sea Scouts

Sea Scouts is a youth development program that introduces young men and women ages 14-20 to maritime skills, teamwork, and leadership through hands-on sailing and boating experiences. Participants are immersed in various water-based activities, from navigation and sailing to boat maintenance and engine work.

At the core of Sea Scouts is experiential learning. Unlike traditional classroom education, the program enables participants to develop practical skills through real-world exposure to sailing, motor boating, and navigation. Each member plays a critical role onboard, taking turns as helmsman, navigator, lookout, cook, and engineer. The highlight of the program is the annual summer cruise. Outside of sailing season, Sea Scouts maintains year-round engagement by involving participants in yard work at the Harlem Yacht Club during winter months. Youth who participate in Sea Scouts may also have access to scholarships and academic opportunities, such as the Excellence In Scouting Scholarship, which provides high-achieving Scouts financial assistance towards post-secondary school education. As of July 2023, across the country, Sea Scouts had ~3,300 Sea Scouts registered across 320 Ships (locations) with a goal of reaching 5,000.

New York Council Navy League

Established in 1902, the New York Council Navy League supports maritime service members through various initiatives. It organizes Fleet Week New York, bringing thousands of Sailors, Marines, and Coast Guardsmen to the city to engage with the community and showcase maritime capabilities. The League collaborates on transition fairs connecting service members with civilian maritime employers, such as the Transition Connection Hiring Event at the annual Sea-Air-Space Exposition. It also hosts industry conferences like the 2024 New York Maritime Security Conference. The League supports programs including Naval Sea Cadet Corps and Junior ROTC initiatives that provide training, mentorship, and financial aid for over 1,800 NYC youth. Membership is open to all (no military service required) with various term options ranging from 1-5 years. Benefits include training resources, exclusive events, volunteer opportunities, advocacy influence, committee participation, retail discounts, and PenFed credit union access.

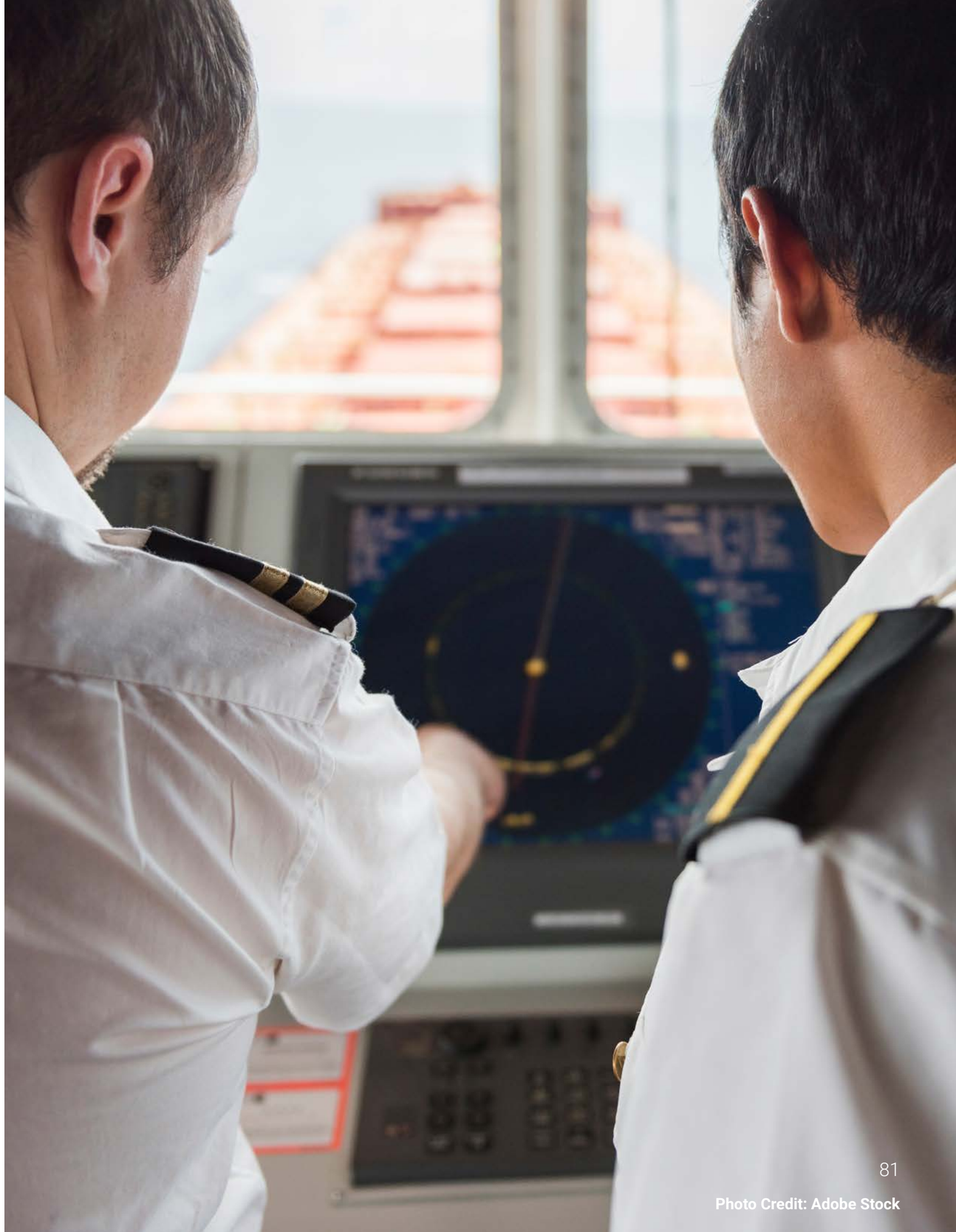


Photo Credit: Adobe Stock

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Rising Tide Effect's NYCHA Swim Corps

In collaboration with the Public Housing Community Fund, this pilot program employs youth residing in New York City Housing Authority (NYCHA) communities. RTE operates the Swim Corps program, an innovative "earn-while-you-learn" initiative creating pathways to water safety and the emerging blue economy. Targeting youth residents aged 16-24 from flood-vulnerable neighborhoods, the program operates through NYC's Summer Youth Employment Program (SYEP), offering a comprehensive 6-week paid training experience. Participants attend sessions Tuesday through Thursday from 9am to 5pm during July and August at Long Island University in Brooklyn, receiving 150 hours of training across a variety of focus areas. The curriculum encompasses swimming and water safety, health and wellness education including mindfulness practices, nutrition coaching, CPR/AED certification, and professional development. Participants also explore water-based activities like surfing and kayaking while learning about blue economy career opportunities and storm resilience strategies. With capacity for 100 participants in the 2025 season, Swim Corps represents a unique intersection of climate resilience training, wellness education, and workforce development.

Rising Tide Effect (RTE)

Rising Tide Effect is dedicated to empowering underserved and at-risk communities through transformative aquatic experiences. The organization operates on a 3-pillar approach: providing free swimming lessons that enhance water competence through innovative techniques in a supportive environment; delivering comprehensive water safety education tailored to local waterways and drowning prevention; and creating pathways to blue economy careers through mentorship and hands-on training.

Green City Force (GCF)

Green City Force operates a social enterprise model aimed at preparing young residents of public housing for careers in the green economy. Established in 2009, GCF integrates service, training, and employment to foster environmental sustainability and economic opportunity within underserved communities. GCF's Service Corps is GCF's AmeriCorps service program that focuses on sustainability skills, including site safety, OSHA certifications, pre-apprenticeships for environmental ambassadors, and hands-on projects. Corps members serve full time to gain experience required to pursue sustainable career pathways while serving NYC's public housing communities. GCF's graduates have gone into careers that will be particularly relevant for emerging occupations in the Blue Highways ecosystem, including energy efficiency, building operations and maintenance, infrastructure and resiliency, renewables, and union careers.

Pathways to Apprenticeship (P2A)

Pathways to Apprenticeship provides individuals from low-income and justice-involved backgrounds with access to unionized construction careers through comprehensive pre-apprenticeship training. Founded in 2013, P2A has assisted over 300 people from low-income communities with placement into building trades apprenticeship programs — 66% of whom were formerly incarcerated. P2A supports individuals from underrepresented communities to learn about, prepare for, apply to, and be accepted into union apprenticeship programs that lead to steady careers. P2A's direct entry pre-apprenticeship program is 5 weeks, full time. After program completion, participants are provided opportunities to interview with many of the building trades unions in NYC such as Laborers, Ironworkers, Plumbers, Painters, and Electricians.

Industry Associations

New York City's industry associations serve as vital connectors between employers and workforce development, creating critical pathways through strategic partnerships and specialized training programs. By aligning industry needs with workforce initiatives, these associations help ensure that training is relevant, coordinated, and geared toward long-term career success.

Trucking Association of New York (TANY)

The Trucking Association of New York represents the interests of the trucking and transportation industry across New York State. Serving companies of all sizes from small family-owned operations to large fleets, TANY advocates on behalf of its members through legislative efforts, regulatory engagement, and public policy development while maintaining a strong presence in Albany. The association provides essential resources including safety training, compliance assistance, and networking opportunities to promote a safe, efficient, and sustainable trucking industry. While supporting workers in traditional transportation and trucking jobs, TANY has increasingly focused on modern mobility challenges and opportunities, helping members navigate technological transitions, environmental sustainability requirements, and workforce development needs in an evolving industry landscape.

TANY/CALSTART's Electric Vehicles (EV) Mechanic Program

TANY, in partnership with CALSTART, a nonprofit organization that supports the advancement of clean transportation, is piloting an EV Mechanic training program that is paving the way for a skilled EV workforce by providing hands-on training and career pathways in sustainable transportation. The program runs for 60 hours over a 2-week period at Bronx Community College, with participants focusing on EV safety protocols, service techniques, diesel engines, and alternate fuel systems. The EV Mechanic Program addresses 2 critical challenges in the transportation industry: workforce shortages and the transition to sustainable technology. As New York accelerates its adoption of electric and zero-emission vehicles, the demand for mechanics with expertise in EV technology is growing rapidly. By offering specialized training in EV maintenance, the program encourages participants to gain hands-on skills that align with industry needs. Graduates become eligible for the New York Mechanic's Apprenticeship Program, a 3-year registered apprenticeship that provides unionized employment with wages, benefits, and continued education.

Shipping Association of New York and New Jersey (SANYNJ)

The Shipping Association of New York and New Jersey is a maritime trade association that represents terminal operators, stevedores, and shipping companies operating in the Port of New York and New Jersey. SANYNJ serves as the collective bargaining representative for its members in negotiations with the ILA. The association also oversees the hiring and allocation of approximately 4,500 longshoremen between New York and New Jersey ports based on demand from terminal operators. The association plays a crucial role in labor relations, port operations policy, and workforce development initiatives.

SANYNJ manages an extensive workforce development operation through the SANYNJ-ILA-PPGU, a collaboration between the Shipping Association, the ILA, and the Port Police and Guards Union (PPGU). This partnership is centered around the SANYNJ-ILA-PPGU Training Center, a state-of-the-art facility, located in Elizabeth, New Jersey. The center is dedicated to training and workforce development for maritime and port security personnel in the Port of New York and New Jersey and serves as the foundation for both developing existing employees and integrating new workers. It provides training programs covering HAZMAT certification, equipment operation, and specialized terminal functions through on-the-job training. This modernized training facility supports employers in meeting OSHA, USCG, and other regulatory requirements while delivering essential instruction in areas such as security awareness and vessel operations.

Maritime Association of the Port of New York and New Jersey (MAPONYNJ)

The Maritime Association of the Port of New York and New Jersey serves as a forum for the maritime business community, representing a diverse membership including vessel operators, terminal operators, stevedores, agents, brokers, cargo interests, and supporting service providers. The association focuses on promoting commerce, addressing industry challenges, and advocating for the overall health and competitiveness of the port.

MAPONYNJ serves as a critical operational hub for the port community through several key functions. The association administers the Harbor Safety, Navigation and Operations Committee, coordinating efforts to maintain safe vessel movements throughout the complex New York Harbor system. Their information services provide essential intelligence to maritime stakeholders through daily vessel traffic reports, event notifications, and timely updates on regulatory developments. MAPONYNJ partners with the International Association of Maritime Port Executives to deliver specialized certification programs for port professionals. The organization actively supports workforce development through annual scholarships for maritime academy students and participation in the Council on Port Performance Workforce Development Implementation Team, helping address the port's evolving talent needs. MAPONYNJ also partners with unions and training providers to sponsor courses to address workforce gaps.

Unions

Unions in the city's maritime and transportation and logistics industries offer well-established apprenticeship programs and training infrastructure, providing career advancement opportunities. These programs not only equip workers with the technical skills necessary to excel in high-demand roles but also offer pathways for long-term career growth.

Seafarers International Union (SIU)

The Seafarers International Union of North America is the largest maritime labor union in the United States, representing merchant mariners who work aboard U.S.-flagged vessels in a variety of roles, including deck, engine, and steward departments. SIU represents mariners in the deep-sea, Great Lakes, and inland waterways sectors. Its members crew commercial vessels, government-contracted ships, tugboats, barges, tankers, and containerships, among others. The union works to protect the rights, wages, working conditions, and benefits of its members through collective bargaining, grievance support, and legislative advocacy on both domestic and international maritime policy.

A key component of SIU's infrastructure is the Paul Hall Center for Maritime Training and Education in Piney Point, Maryland, which offers entry-level training, upgrading courses for advanced maritime licenses, and U.S. Coast Guard certification programs.

SIU's Entry Level Unlicensed Apprentice (UA)1 Program

SIU's Unlicensed Apprentice (UA) Program sets a benchmark in maritime workforce development by combining structured training, financial accessibility, and guaranteed job placement, ensuring long-term career growth for aspiring seafarers. The Unlicensed Apprentice (UA) Program, operated by the Seafarers International Union (SIU), provides comprehensive training for entry-level mariners seeking non-officer positions on a maritime vessel. Based at SIU's Paul Hall Training Center in Maryland, this structured program equips aspiring seafarers with essential skills for both deep-sea merchant vessels and inland waterways. What sets the UA Program apart is its accessibility. The program provides apprentices with free tuition, free housing in on-site dormitories, and a weekly stipend to cover basic expenses. For individuals without a high school diploma, the program even provides an opportunity to earn a Maryland High School diploma while enrolled. By integrating vocational training, academic enrichment, and hands-on learning experiences, the UA Program creates accessible pathways for individuals to enter the maritime workforce and establish long-term careers in the industry.

International Longshoremen's Association (ILA)

The International Longshoremen's Association represents approximately 65,000 longshoremen on the Atlantic and Gulf Coasts, Great Lakes, major U.S. rivers, Puerto Rico, and Eastern Canada. The ILA negotiates labor agreements, advocates for member rights, and establishes working conditions for dockworkers who load and unload cargo vessels. In the Port of New York and New Jersey, the ILA maintains significant influence over port operations through its collective bargaining agreements with terminal operators and shipping companies. In New York City, ILA Locals 824, 920, and 1814 represent longshoremen across Brooklyn, Staten Island, and New Jersey facilities. The ILA negotiates with the New York Shipping Association to establish wage scales, benefits, and working conditions for NYC port workers.

International Organization of Masters, Mates & Pilots (MM&P)

The International Organization of Masters, Mates & Pilots represents licensed maritime officers working on U.S.-flagged vessels in the deep sea, Great Lakes, and inland waters. MM&P represents approximately 5,500 members including ship captains, deck officers, pilots, and other maritime professionals. The union negotiates contracts, promotes safety standards, and advocates for the U.S. maritime industry and the Jones Act, which requires that goods shipped between U.S. ports be transported on ships built, owned, and operated by U.S. citizens.

MM&P maintains a strong presence in New York City through its Atlantic Maritime Group, which represents captains and deck officers on New York Harbor vessels, including Staten Island Ferry officers, tugboat captains, and pilots. MM&P's New York/New Jersey Hall, located in Jersey City, serves maritime officers working throughout the Port of New York and New Jersey, including those navigating the critical Hudson River, East River, and New York Harbor shipping lanes.

International Brotherhood of Electrical Workers (IBEW) Local 3

IBEW Local 3 represents over 27,000 electrical workers across New York City's 5 boroughs, with its Marine Division specifically serving electricians at critical maritime facilities including the Brooklyn Marine Terminal, Staten Island terminals, and Brooklyn Navy Yard. These specialized members install and maintain essential electrical infrastructure throughout New York Harbor, ensuring efficient port operations.

The union operates a comprehensive 5.5-year state-registered apprenticeship program with 900-1,200 apprentices enrolled at any given time. Training occurs at their $40 million Long Island City facility, where apprentices receive hands-on skills training and 240 hours of annual full-time instruction. The curriculum employs advanced technologies including virtual reality simulations and covers emerging specialties like alternative power systems (batteries, wind, solar) and green building practices. Local 3 has responded to industry evolution by implementing the Electric Vehicle Infrastructure Training Program (EVITP), which has certified several hundred members.

Photo Credit: Quang Vuong

Employers

Blue Highways employers across the region are increasingly investing in workforce development initiatives to address industry-specific skill gaps. Several companies have established in-house training programs and apprenticeship models and others have formed strategic partnerships with educational institutions to develop customized curricula aligned with operational needs.

Dutch X

DutchX is a New York City-based delivery solutions company operating as a 98% zero-emissions enterprise, primarily utilizing e-bikes, e-quads, and light electric vehicles for last-mile deliveries. DutchX specializes in sustainable logistics solutions, serving notable clients like Eataly, Amazon Fresh, and Whole Foods. DutchX employs a full-time workforce rather than independent contractors, providing career stability.

The company's workforce development approach features a clear career progression system where most employees start as delivery associates and advance to dispatchers, operations managers, or fleet supervisors through on-the-job training. DutchX employs gamified training methods through their proprietary "Zadar" software system, while emphasizing retention through competitive wages, an inclusive work culture, and strong safety protocols including daily vehicle inspections and incentivized safe riding practices.

Port Liberty

Port Liberty is a major maritime terminal operator in the New York/New Jersey harbor area, specializing in efficient cargo handling and port logistics services. The company plays a critical role in the Blue Highways distribution chain, processing significant volumes of containerized and bulk cargo while maintaining stringent safety and operational standards.

Port Liberty implements a comprehensive, multi-tiered training approach for all personnel, beginning with structured in-house programs that cover essential port operations, safety protocols, and equipment handling. New hires progress through supervised, hands-on experience phases where they apply classroom knowledge in real-world settings under experienced mentorship. Training is conducted in collaboration with SANYNJ, placing particular emphasis on practical decision-making skills and operational independence. This union-backed training system creates a standardized qualification pathway.

Hornblower

Hornblower operates the NYC Ferry service, providing essential commuter connections across New York City. In line with its commitment to local employment, Hornblower prioritizes hiring from within the five boroughs - 90% of its crew members are city residents. The company also focuses on creating accessible, entry-level roles with clear pathways for career advancement. Notably, around half of its captains began their careers as deckhands, and approximately 90% of all new hires come from non-maritime backgrounds.

To support workforce development, Hornblower offers a two-week on-the-job training program covering key skills such as personal safety, firefighting, line handling, and customer service. The company partners with educational institutions like the Harbor School, SUNY Maritime, LaGuardia Community College, and Manhattan Borough Community College, and it works closely with Workforce1 and NYCHA to recruit local talent. As part of its investment in employee growth, Hornblower also reimburses training costs for staff pursuing advanced maritime certifications.

6

Gaps & Challenges

Gaps & Challenges

This chapter identifies key workforce challenges across the maritime, transportation and logistics, and support industries, highlighting consistent themes and persistent barriers within the emerging sector.

To surface these insights, a comprehensive literature review was paired with direct stakeholder engagement. Industry reports and workforce projections were analyzed at the global, national, and local levels to identify emerging trends and anticipated labor needs. Crucially, in-depth interviews were conducted with more than 45 stakeholders across the full spectrum of the Blue Highways stakeholder landscape.

Together, findings reveal both the promise of growth in Blue Highways employment and the structural challenges that must be addressed to ensure equitable, accessible, and sustainable workforce pathways.

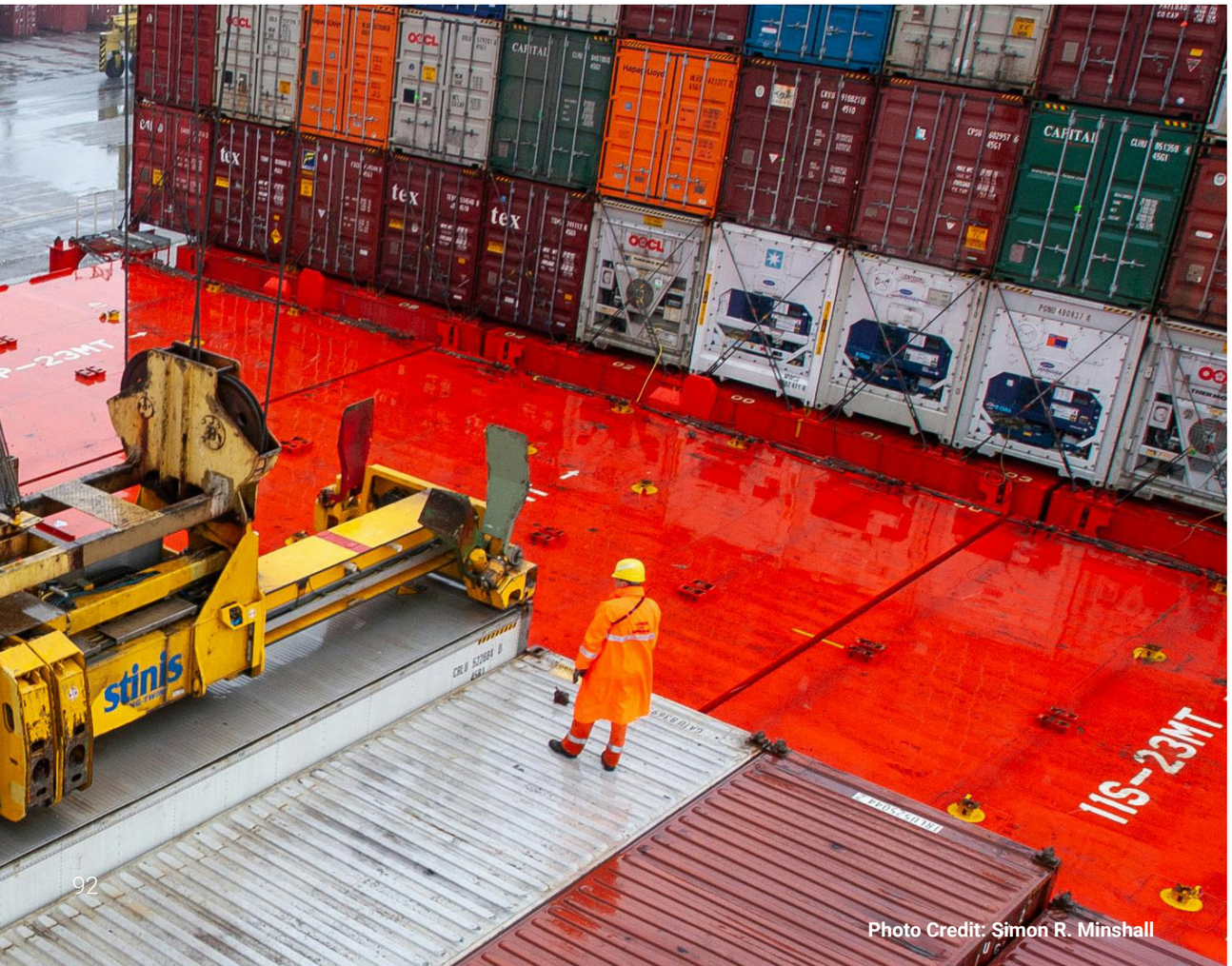


Photo Credit: Simon R. Minshall

Maritime

Insights from research and stakeholder engagement revealed 6 interconnected barriers affecting both recruitment and retention in the maritime industry.

- NYC youth, despite our maritime history and long shorelines, have limited exposure to maritime careers and lack basic water familiarity.
- Unstable demand for bulk commodities like grain or iron ore creates unstable demand for maritime workers.
- Maritime careers can have complex pathways, with varying certifications and sea time requirements depending on vessel type and occupation.
- There is a tugboat operator shortage due to sea time, endorsements, and other requirements for U.S. Coast Guard licensing.
- The process to obtain a Transportation Worker Identification Credential (TWIC), required to access secure areas of maritime facilities and vessels, suffers from chronic, unpredictable delays.
- Maritime jobs can be physically demanding, often requiring irregular shifts, heavy lifting, and work outdoors during inclement weather.

Limited Youth Exposure to Blue Highways Careers

Young people in New York City have limited awareness of and exposure to maritime career opportunities. In today's modern world, maritime roles are often overlooked or misunderstood, with few clear examples of what these careers entail or how to access them. As a result, early interest in the field remains low. Industry stakeholders have observed significant knowledge gaps — many local residents who have lived near the city's port facilities their entire lives have never considered maritime work simply because it was never presented as an option. This lack of visibility can discourage young people from viewing maritime careers as viable paths, especially as traditional career counseling tends to prioritize college-track professions, with maritime roles rarely featured at school career fairs or in exploration programs.

The challenge extends beyond career awareness to basic water familiarity. Community advocates have pointed out that individuals with limited exposure to being on the water or in boats are often less likely to consider maritime careers.

These challenges also present opportunities. Building stronger connections between communities, schools, and maritime industry stakeholders can help bridge these gaps. Strategic partnerships can expand career visibility, introduce hands-on exposure to water-based activities, and address foundational barriers such as swimming proficiency and marine safety knowledge.

Unstable Demand for Maritime Work

The maritime workforce experiences substantial demand fluctuations that require strategic workforce planning approaches. According to the Bureau of Labor Statistics, fluctuations in the demand for bulk commodities, such as iron ore and grain, is a key factor influencing employment of water transportation workers. When demand for these commodities is high, the need for maritime workers increases; when demand slows, so does the need for workers.[iv] Beyond seasonal shifts, global business cycles and unfolding changes in the global supply chain create additional volatility in

maritime employment. Insight from maritime employers alluded to the challenge that many maritime professionals must regularly relocate between different ports to maintain consistent employment, creating logistical challenges for job stability and worker retention. Employers also highlighted the prevalence of this issue especially for union positions, for which additional complexity exists in facilitating worker movement between employers while respecting union agreements and seniority systems.

Demand volatility is exacerbated by workers' lack of awareness of how their skills are transferable to complementary roles during off-peak periods, which leads to unnecessary unemployment cycles and lost income. Workers face these cyclical employment patterns without adequate preparation for adaptability, contributing to talent retention challenges and creating a workforce ecosystem that struggles to attract new entrants. Workers who develop cross-functional capabilities can position themselves to flex between related jobs as commodity demands evolve.

Complex Maritime Career Navigation

Maritime career advancement follows complex pathways requiring specific certifications and varying sea time requirements that differ based on vessel type and operational role. Stakeholders report that maritime career pathways could be clearer regarding certifications, experience required, and progression details. This complexity contributes to minimal understanding of the benefits of maritime careers and creates workforce gaps in entry-level positions which in turn prevents progression for individuals currently in those roles.

Stakeholders also noted the lack of clarity regarding next steps in maritime careers once individuals complete apprenticeship and pre-apprenticeship programs. Without clear visibility into certification requirements and experience needed for advancement in maritime occupations, workers struggle to navigate their career development effectively.

These challenges present opportunities to develop more transparent career mapping resources and navigation tools. Strategic partnerships between regulatory bodies, educational institutions, and industry employers are necessary to transform these complex advancement requirements into more navigable career journeys.

Workforce Shortages for Tugboat Operators

Specialized maritime roles, particularly those central to tugboat operations, present valuable career pathways that can be further developed through enhanced training access and streamlined endorsement processes. Tugboat operators require both USCG licensing and specific endorsements such as the Towing Officer Assessment Record (TOAR), creating opportunities for targeted workforce development initiatives.

Projections indicate a need for approximately 130 tugboat operators in Blue Highways middle mile operations in NYC by 2035. While a relatively low total volume, this occupation is critical to effective harbor services, and a shortage of qualified mariners who can fill these jobs threatens Blue Highways middle mile operations. Maritime graduates typically pursue licenses for unlimited tonnage vessels, with SUNY Maritime reporting that approximately two-thirds of its students in the limited tonnage program switch to the unlimited track during their education.

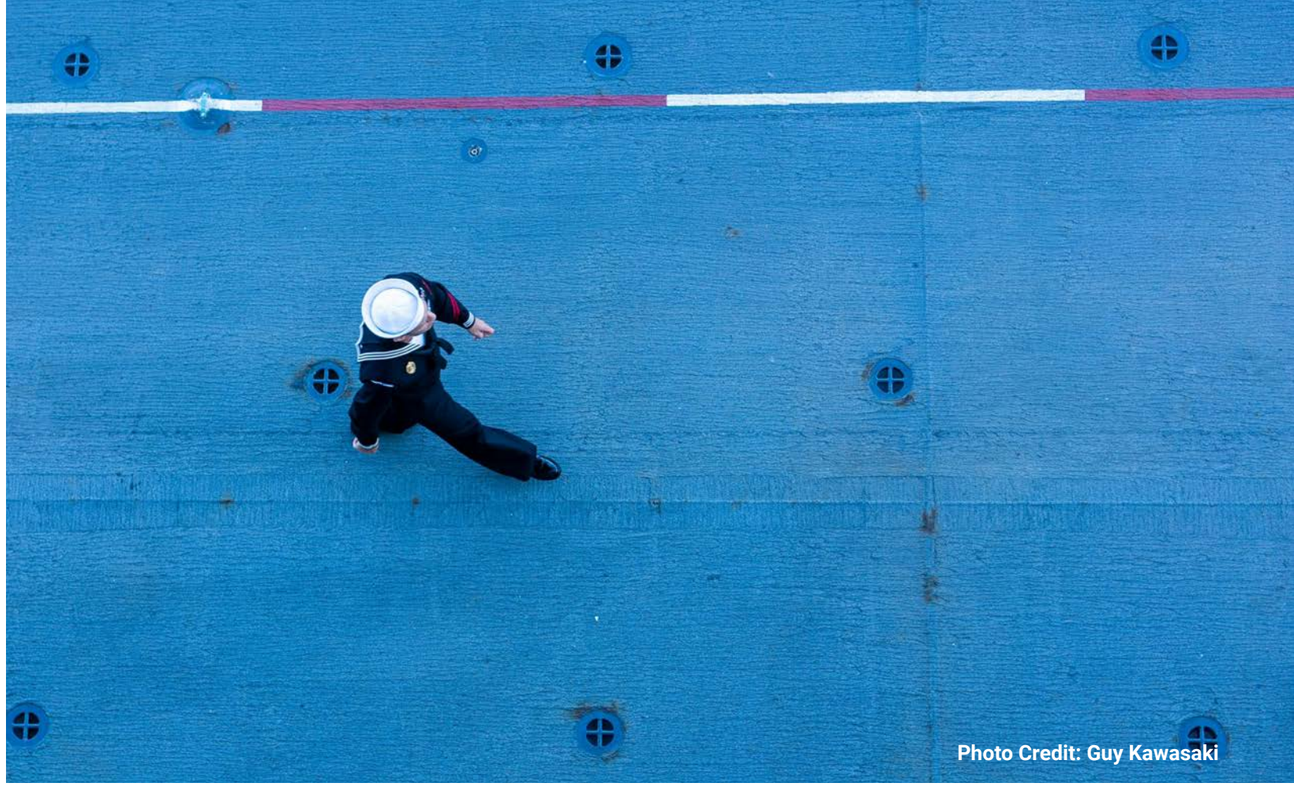


Photo Credit: Guy Kawasaki

2 bottlenecks constrain the tugboat operator pipeline:

- **Sea Time Requirements:** Students must accumulate the required sea time (30 days for Great Lakes & Inland TOAR, which includes New York Harbor) necessary for TOAR assessment
- **Designated Examiner (DE) Shortage:** The scarcity of qualified TOAR endorsers, with only 3 Designated Examiners in New York state as of early 2025,[v] severely limits certification capacity. These DEs are formally approved by the USCG to assess and sign off on specific tasks in the TOAR and are the only individuals who can legally validate and sign the TOAR for submission.

NYC should look to continue to attract and retain new entrants through strengthened approaches that facilitate the accumulation of required sea time and career advancement structures that highlight the essential role these professionals play in maintaining efficient harbor operations. Industry stakeholders note shifting work-life priorities among today's maritime workforce creating challenges in staffing for both the vessels that sail long distances and the fleet of high-end tugs. However, recent industry shifts show promise, with major tug companies offering more opportunities to supplement their in-house training programs to meet demand.

Delayed Security Credential Timelines

Maritime occupations present unique administrative considerations including processing times for required credentials. Many stakeholders indicated that mandatory background checks and delayed security processing for the Transportation Worker Identification Credential (TWIC), a security card required for workers to obtain unescorted access to secure areas of maritime facilities and vessels, affects job start dates for maritime positions. While federal agencies aim to complete TWIC applications within 60 days of submission, variations and delays in processing times have been emphasized by unions and other employers.[vi] Similarly, regional background check processes involve thorough verification procedures that can extend timelines by several months to up to a year.

These administrative processes create practical considerations for job seekers needing timely income, potentially directing talented candidates toward more immediately accessible employment. By creating transparent timeline expectations and providing interim support resources while workers await their TWIC and background check approvals, the maritime industry could improve conversion rates from initial interest to successful placement.

Maritime Career Retention Challenges Due to Difficult Working Conditions

The maritime industry faces workforce retention challenges stemming from demanding working conditions on vessels and waterfront operations. Deckhands, longshoremen, and sailors endure physically demanding work in all weather conditions, managing heavy equipment while standing for entire shifts. Longshoremen navigate dangerous loading environments, while deckhands work in confined spaces and handle challenging docking procedures. Blue Highways workers face irregular scheduling with early mornings, overnight shifts, and weekend work that disrupts family routines. Workers cite inadequate work-life balance as primary reasons for leaving the maritime industry. These unpredictable schedules and physical demands create work-life balance challenges that heavily impact retention.

Stakeholders also identified that the legalization and widespread use of marijuana pose challenges for maritime job retention, as the industry maintains strict federal drug testing requirements despite changing social norms and state-level legalization. There is a need to develop clearer messaging in career guidance and supportive transition programs for candidates to expand the qualified applicant pool while maintaining mandatory safety standards.

Photo Credit: Adobe Stock

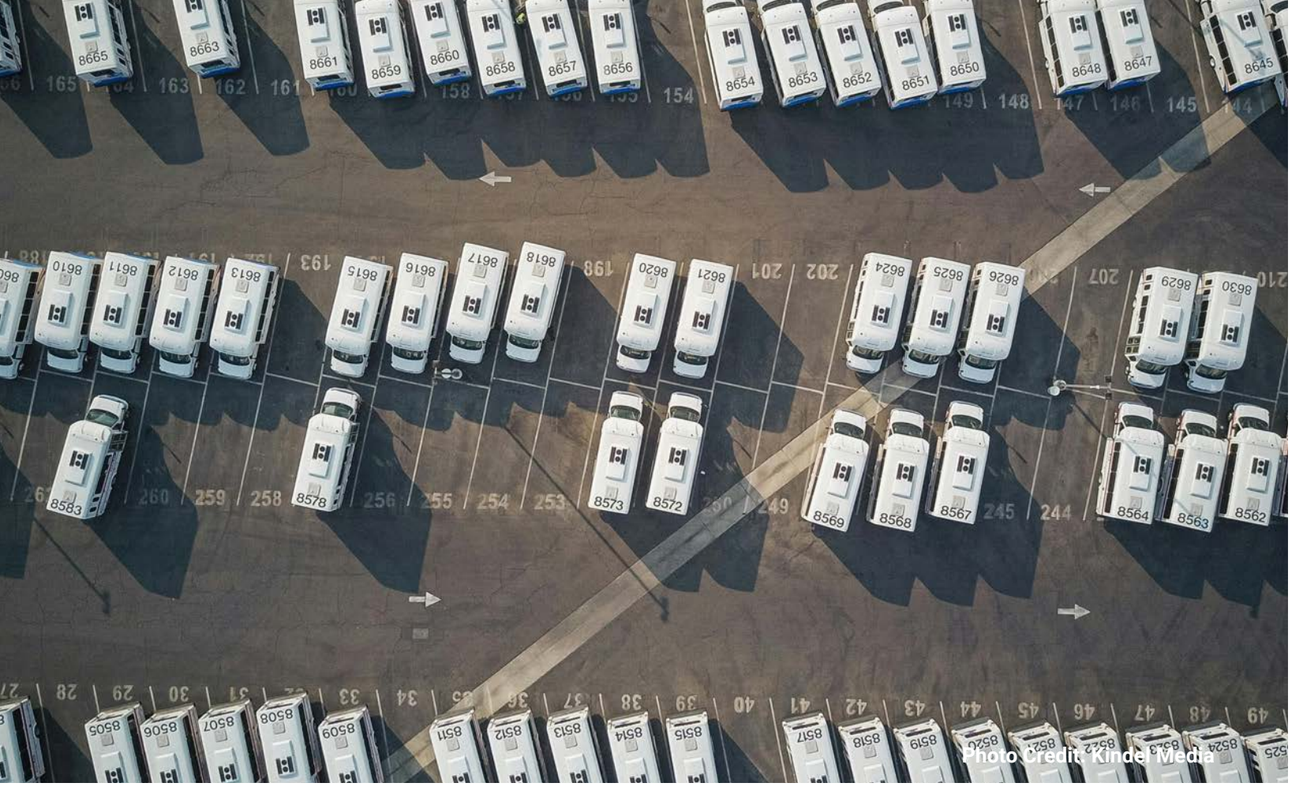


Photo Credit: Kinder Media

Transportation and Logistics

The transportation and logistics industry is facing 3 main challenges:

Shortage of Automotive and Diesel Mechanics with Anticipated Demand for Electric Vehicle (EV) Mechanics

The transportation sector faces a severe shortage of skilled mechanics, particularly for EV maintenance. Data from the National Automobile Dealers Association reveals a critical workforce gap, with approximately 76,000 auto mechanic positions opening nationwide annually while only 39,000 workers graduate from relevant technical colleges or training programs.[vii]

New York City's Green Economy Action Plan, which outlines the city's steps to build a sustainable economy and double green jobs, projects growth in EV-related employment in the City from 4,800 jobs in 2021 to 32,000 jobs by 2040, representing nearly sevenfold increase.[viii] For NYC's Blue Highways ecosystem specifically, analysis forecasts an almost 50% growth in combined demand for Automotive Service Technicians and Mechanics, Bus and Truck Mechanics, and Diesel Engine Specialists from approximately 1,500 in 2024 to approximately 2,250 in 2035. Both maritime and transportation stakeholders confirmed this workforce need, noting a severe shortage of diesel and automotive mechanics and cited challenges recruiting qualified NYC residents.

According to industry stakeholders, addressing the immediate need for diesel and automotive mechanics will also position the current workforce to meet demand for emerging occupations such as Zero-Emission Truck Technicians, Cargo Bike and EV Mechanics, and E-Technicians. While some promising training programs exist to address these workforce gaps, they remain small in scale and will not produce enough skilled workers to address industry demand without efforts to grow.

Inadequate Last-Mile Worker Support, Including Safety Training, Career Mobility Support, and Basic Infrastructure

Last-mile delivery workers face several workforce challenges that impact the industry's operational capacity. NYC DOT's Cargo Bike program is slated to expand from 400+ bikes to 2,500+ by 2026, creating a increased demand for qualified operators. However, safety training for cargo bike operators lacks standardization across the industry, with sustainable logistics companies developing their own internal programs that require 2-3 days of instruction time and vary in content and quality.

The last-mile delivery sector also lacks established career mobility pathways for workers, making it difficult for individuals to advance beyond entry-level roles or transition into higher-paying, long-term positions. Additionally, basic infrastructure deficiencies exist throughout the system — including insufficient secure parking facilities, inadequate rest areas, and limited maintenance. These infrastructure gaps contribute to operational inefficiencies, increased safety incidents, and workforce retention challenges that collectively impact service delivery across the last-mile logistics ecosystem.

Advanced Analytics Knowledge Gap

Sustainable logistics companies are actively seeking personnel who understand key logistics metrics. They indicated that there are challenges in training specialized roles like microhub managers, who require expertise in data-driven logistics and microhub management, because employees often lack understanding of logistics metrics related to cost measurement.

According to the World Economic Forum's The Future of the Last-Mile Ecosystem, data analytics capabilities are fundamental to next-generation logistics operations. These skills enable route optimization, resulting in reduced delivery times, lower emissions, and decreased congestion.[ix] Logistics and micromobility managers within the Blue Highways distribution chain must develop proficiency in data-driven decision-making to implement sustainable, efficient, and cost-effective operations.

Growth in the Blue Highways industry also presents opportunities for logistics professionals to combine maritime expertise with advanced analytics capabilities. These complementary skill sets are increasingly valuable for emerging roles such as micromobility coordinators and transloading supervisors, which are occupations that will be critical to supporting the Blue Highways distribution chain.

Cross Industry

Beyond the industry-specific challenges in maritime and transportation and logistics, research identified 3 cross-cutting barriers that affect workforce development across the entire Blue Highways distribution chain:

Skill Gaps in Math, Reading Comprehension, Digital Literacy, and Driver's License Requirements

Blue Highways careers require specific foundational skills that present unique challenges. Maritime workers must apply practical mathematics daily when calculating tide tables, managing cargo weight distribution, or navigating using nautical measurements. Reading comprehension is critical for interpreting complex safety regulations, Coast Guard notices, and technical manuals for specialized equipment. Unlike many office settings, digital literacy in maritime environments involves navigating vessel management systems and specialized navigation technology in constantly changing physical conditions.

While New York City has many workforce programs focused on teaching these foundational skills, these programs lack the maritime context needed for Blue Highways careers. Traditional education rarely incorporates nautical applications or introduces students to specialized maritime technology. Contextualizing existing training programs to include maritime-specific content would help bridge this gap and better prepare New Yorkers for opportunities in the Blue Highways workforce.

Unrestricted driver's licenses are also essential for accessing remote terminals and switching between work locations across waterways – a requirement that, according to stakeholders, disproportionately affects urban residents who primarily rely on public transportation. This creates a barrier for otherwise qualified candidates who may lack the means or opportunity to obtain a license.

Barriers to Access for Union Jobs

Union jobs in the Blue Highways sector offer stability and strong compensation, offering valuable career pathways for workers. Unions represent a substantial portion of the Blue Highways workforce, with 1 quarter of Blue Highways Priority Occupations categorized as typically unionized. These jobs cover essential roles from longshoremen, ship engineers, and tugboat operators to mechanics and truck drivers. They are highly desirable because of the myriad of benefits they provide, such as industry-leading wages, healthcare benefits, pension plans, and comprehensive and enforced safety standards.

Access to desirable union positions is often limited by reliance on word-of-mouth referrals and challenging entrance examinations. Industry stakeholders note many referrals currently do not advance to registration due to difficulties passing qualifying exams or navigating background verification processes. Blue Highways industry stakeholders have opportunities to build on existing referral systems to broaden hiring pools and provide targeted preparation programs that could improve candidate success rates.

Inadequate Wraparound Support Services

Blue Highways industries have requirements that highlight the need for comprehensive wraparound support services — far beyond what is currently available. Without these holistic resources, many individuals, particularly those from low-income communities, face significant barriers to entering or advancing in Blue Highways careers.

Workforce training and full-time employment in Blue Highways industries often require upfront financial investments for items such as uniforms, safety gear, dental exams, and drug testing. Additionally, training and job sites are frequently located in port areas within New York City that have limited access to public transit, making transportation support essential. The irregular hours and non-traditional shift work typical in this sector also create a critical need for affordable, flexible childcare for working parents.

These challenges highlight the importance of designing sector-specific wraparound services that can address the multifaceted needs of workers entering these industries.

7

Recommendations

Recommendations

The following section presents 10 high-impact initiatives structured across 3 key objectives designed to transform New York City's Blue Highways talent pool.

- **Scale Education and Training:** Expand high-quality training programs to equip New Yorkers with the skills needed for Blue Highways careers.

- **Drive Awareness of Blue Highways Careers:** Increase visibility and understanding of career pathways in maritime, logistics, and transportation.

- **Broaden the Blue Highways Talent Pool:** Remove structural barriers to entry, foster inclusive hiring pathways, and expand recruitment to underrepresented communities.

These actionable recommendations provide a comprehensive strategy for building the workforce necessary to realize the full potential of the Blue Highways vision. Each recommendation has been carefully designed to deliver measurable impact while fostering sustainable mobility pathways for residents in areas where Blue Highways infrastructure investments are being made. This approach strikes a balance between addressing immediate labor needs and creating long-term economic opportunities.

Rooted in replicable models drawn from successful case studies both within New York City and globally, these recommendations offer a roadmap for workforce development that is both ambitious and achievable. By adapting these proven strategies to the unique context of NYC's Blue Highways, we aim to create a sustainable, impactful framework for the city's workforce.

The integration of our guiding principles ensures that these initiatives will collectively build a skilled workforce ready to power the future of NYC's Blue Highways economy.

Guiding Principles

Balance Local Access with Authentic Training Environments

Delivering training with local access points is essential to address workforce barriers in Blue Highways neighborhoods, while ensuring training occurs in authentic workplace settings. Community-based programs should minimize transportation challenges and ensure equitable access for historically underserved communities, while connecting participants to on-water and contextualized experiences and industry-standard equipment.

Do It Right the First Time

Successful Blue Highways workforce pilot programs will build trust and credibility within the community, fostering engagement and long-term support. Demonstrating pilot success can also attract investment and support from stakeholders, enabling broader implementation and potential for significant social and economic returns.

Ground in Industry Demand

Programming and curriculum should be developed in partnership with Blue Highways employers, industry leaders, and workforce practitioners to ensure participants acquire relevant skills, credentials, and experience required to be positioned for immediate workforce entry and long-term career advancement.

Create Integrated Pathways from Communities to Careers

Training design should start with community needs, creating programs that connect neighborhood access points with industry-relevant learning. Local training centers should offer direct pathways to specialized facilities without disrupting community ties. Programs should provide industry-recognized credentials alongside practical support services that address real barriers faced by local residents.

Recommendations Summary

Scale Education & Training to Meet Blue Highways Demand

1. Develop a fund to **scale existing training programs**
2. Establish a Blue Highways **reservist corps**
3. Expand **existing logistics curricula** to include maritime applications

Drive Awareness of Blue Highways Careers

4. Build a Blue Highways **experiential learning center**
5. Launch a multi-stage Blue Highways **career readiness program** for NYCHA residents
6. Develop a **Blue Highways for Kids** program
7. Build a Blue Highways **career pathways website**
8. Develop a **Blue Highways Young Ports Association** program

Broaden the Blue Highways Workforce Talent Pool

9. Create a new **ILA apprenticeship program**
10. **Leverage the WF1 system** to connect jobseekers to Blue Highways industries

Photo Credit: Getty Images

Recommendation 1

Develop a fund to scale existing training programs

Photo Credit: Adobe Stock

Challenge Addressed

The Blue Highways distribution chain faces **substantial workforce shortages** in critical operational, maintenance, and management occupations. Current training initiatives often remain at pilot scale, limiting workforce pipeline development. Specialized programs have demonstrated effectiveness but reached a small number of participants in initial cohorts, which is insufficient to meet industry demand. Without scaled investment in promising programs, quantifiable gaps between workforce supply and demand will likely continue, potentially affecting Blue Highways growth. Many existing programs require sustainable funding structures to expand capacity and integrate evolving technological requirements.

Overview

NYCEDC should establish and manage a dedicated grant fund to strategically scale high-performing training programs operated by community-based organizations, educational institutions, and industry partnerships that address workforce training needs and skills gaps across critical Blue Highways occupations. By scaling existing successful programs rather than creating new ones, this approach leverages institutional knowledge and established employer relationships to rapidly expand the talent pipeline for Blue Highways occupations. The fund would prioritize programs that can demonstrate sustainability beyond the grant period through employer partnerships, public funding streams, or other revenue-generating activities. The fund will scale specialized technical training programs to expand cohort sizes from pilot levels to industry-meaningful scales. Additionally, it will expand work-based learning opportunities by growing existing internship programs with key employers.

Relevant Occupations

All Blue Highways Occupations

Implementation & Next Steps

- **Identify and evaluate existing training programs** with proven track records in training for Blue Highways occupations, prioritizing those with strong job placement rates and employer partnerships. Programs selected should provide relevant wraparound services to ensure participants are supported in addressing barriers to program participation and completion, including but not limited to financial support, counseling, and childcare.
- **Develop a competitive grant application process** with clear evaluation criteria focused on program quality, scalability, and industry alignment.
- **Monitor and evaluate program impact** to track the success of scaled programs and measure outcomes such as job placement rates, participant retention, career advancement, and more.

Photo Credit: Victoria Kubiaki

Case Study: New York State's Workforce Development Initiative (WDI)

New York State's Workforce Development Initiative exemplifies a government-led approach to workforce training, leveraging strategic funding and partnerships to address labor shortages, upskill workers, and align training with industry needs.

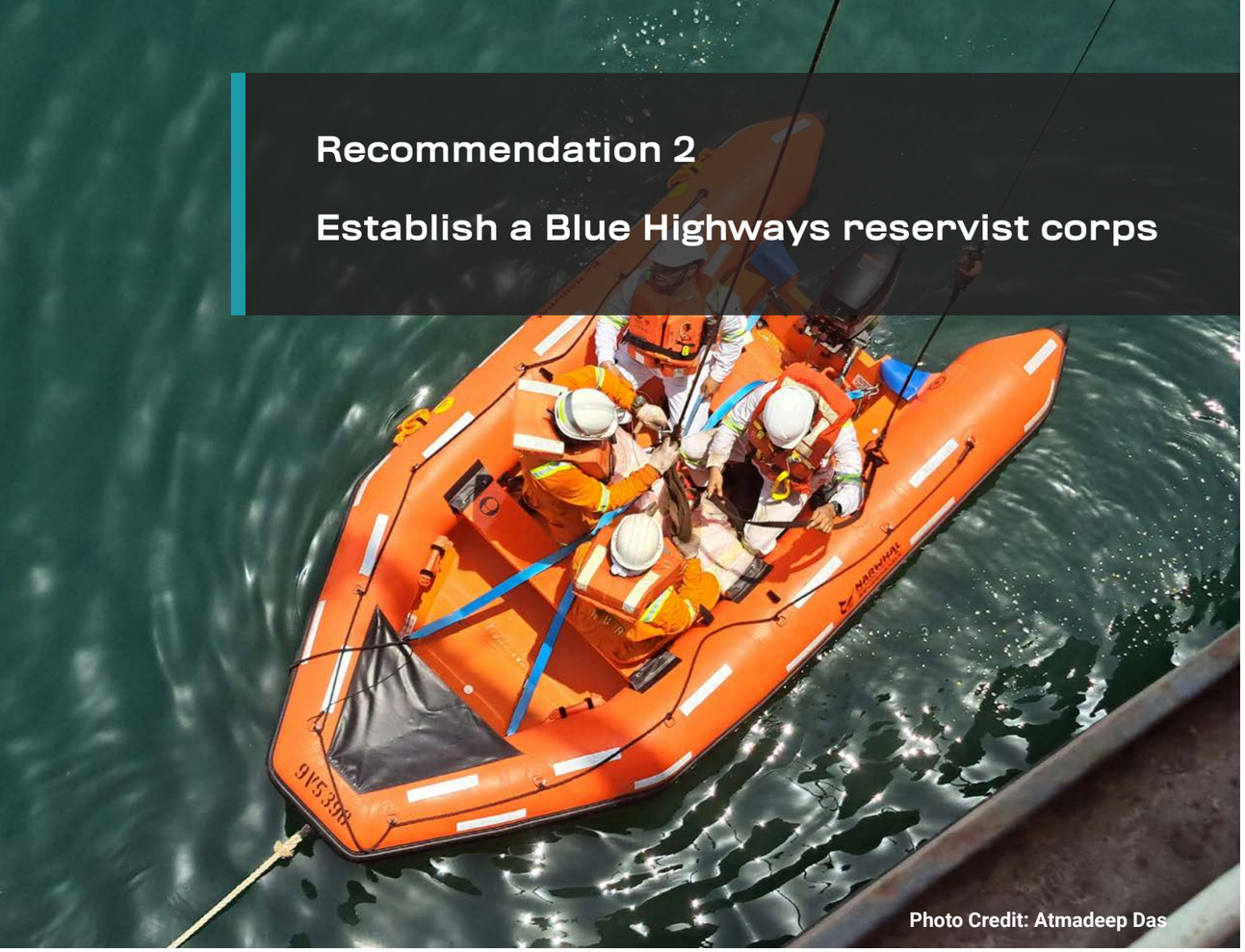
Governor Hochul's **$350 million investment** in workforce development through WDI takes a regionally tailored, employer-driven approach. Administered by the Office of Strategic Workforce Development, the initiative identifies growing industries in need of skilled workers while prioritizing equitable access to career opportunities. A distinguished component of this effort is the $150 million multi-year grant program supporting high-skill training programs in partnership with employers, education providers, and community organizations.

A key aspect of WDI is the **Regional Economic Development Councils (REDCs)**, which guide funding allocation through a competitive, community-based approach to meet regional workforce needs. The REDC Workforce Development Challenge is a flagship initiative under WDI, enabling educational institutions and nonprofits to upgrade training programs in high-demand industries through public-private collaboration.

An important feature of WDI is i**ts Two-stage project identification and funding process**, designed to streamline the allocation of resources while ensuring alignment with regional workforce priorities. In Stage One, applicants submit a general project plan to their REDC. Each proposal is evaluated by the REDC Workforce Development Committee, ensuring feasibility, stakeholder alignment, and conformity with regional workforce strategies. In Stage Two, applicants receive guidance from the Office of Workforce Development and complete a full Consolidated Funding Application (CFA). A multi-agency review panel assesses proposals based on their economic impact, alignment with industry needs, and long-term sustainability.

Lessons for NYC's Blue Highways

New York State's WDI offers a model for NYC's Blue Highways workforce development by demonstrating how a structured funding initiative can scale existing training programs and bridge skill gaps in critical industries. By establishing a dedicated fund for maritime and logistics workforce training, NYC Blue Highways can replicate WDI's success in securing long-term financial support for employer-driven training programs. Additionally, a competitive, regionally guided grant process like the REDC model could incentivize innovation in maritime and logistics workforce training, ensuring that programs remain adaptive to industry shifts and evolving labor market needs.



Challenge Addressed

Many Blue Highways occupations experience **seasonal fluctuations in labor demand,** creating employment instability for workers and staffing challenges for employers. Workers are often unaware of how their skills could transfer to complementary roles during off-peak periods, leading to unnecessary unemployment cycles and lost income. Meanwhile, employers struggle to maintain a reliable workforce through these demand fluctuations, resulting in inefficient hiring practices, higher training costs, and potential operational disruptions. For unionized positions, additional complexity exists in facilitating worker movement between employers while respecting union agreements and seniority systems. Without a coordinated approach to managing these workforce fluctuations, both workers and employers will continue to face instability. The industry can transform these challenges into advantages by creating more transparent hiring forecasts, establishing stronger communication channels between stakeholders, and developing programs that bridge employment gaps during market transitions. By proactively addressing these realities, the maritime industry can build a more resilient workforce ecosystem that attracts talent through its adaptability rather than despite its variability.

Overview

Create a structured Blue Highways reservist corps to transform seasonal volatility from a challenge into a strategic advantage for Blue Highways. This innovative approach will establish a coordinated system enabling workers to move between complementary Blue Highways roles throughout the year, maintaining continuous employment while helping employers address fluctuating workforce demands. By formalizing connections between related occupations that experience different peak seasons, the program will create more stable career pathways for workers while providing employers with reliable access to pre-vetted, experienced personnel during high-demand periods. The reservist model will help stabilize the maritime workforce, reduce unemployment gaps, lower recruitment costs, and strengthen the overall resilience of New York's Blue Highways employment ecosystem.

Relevant Occupations

Captains, Mates, and Pilots of Water Vessels; Sailors and Marine Oilers; Laborers and Freight, Stock, and Material Movers, Hand (Longshoreman); Ship Engineers; Shipping, Receiving, and Inventory Clerks; Stockers and Order Fillers

Implementation & Next Steps

- **Create a formal employer network** for participating companies to communicate about seasonal workforce needs, share candidate information, and coordinate hiring cycles to minimize workforce disruptions.
- **Facilitate conversation among employers and unions** that protect seniority rights while identifying transferable skills and credentials across Blue Highways occupations, creating clear pathways for workers to maintain year-round employment by moving between related maritime roles.
- **Establish a digital platform or system** to facilitate worker sharing among participating employers, including streamlined application processes, skills and credential verification, and scheduling coordination.

Photo Credit: Adobe Stock

Case Study: New York City Medical Reserve Corps

The New York City Medical Reserve Corps demonstrates how a centralized, two-tier system can effectively verify credentials, match skills to opportunities, and deploy qualified personnel across settings, providing a blueprint for creating flexible Blue Highways workforce pathways.

The NYC Medical Reserve Corps (MRC) maintains a pool of over 15,000 medical and non-medical volunteers who respond to public health emergencies and participate in health-related community activities. The NYC MRC's success stems from its ability to identify qualified personnel across disciplines and deploy them effectively. The program documents credentials, matches skills to opportunities, and provides training, creating a flexible model where professionals can volunteer alongside their primary jobs. 2 key systems enable this: the ServNY database (the central verification hub administered by NY State) and the NYC MRC Volunteer Portal (the deployment mechanism where volunteers select shifts matching their availability and qualifications). The MRC is a national HHS initiative to pre-register, manage and mobilize volunteers for disaster response, enhancing local preparedness and supporting health professionals in acquiring relevant volunteer skills.

Lessons for NYC's Blue Highways

The NYC MRC provides a model for Blue Highways' maritime workforce development through its two-tier system. A maritime skills registry (like ServNY) could document workers' qualifications and their transferability across vessel types and waterfront roles, paired with a comprehensive talent matching system that connects maritime employers with qualified personnel for various employment needs. This would create an integrated ecosystem matching qualified workers to immediate needs while identifying credential gaps and training pathways to expand employability. Similar to how the MRC maintains emergency readiness through volunteers, a Blue Highways Reservist model could build workforce resilience throughout NYC's maritime ecosystem.

Photo Credit: Getty Images

Recommendation 3

Expand existing logistics curricula to include maritime applications

Challenge Addressed

The Blue Highways ecosystem faces **workforce skills gaps** at the intersection of traditional logistics knowledge and specialized maritime operations. Employers across the distribution chain, from port operations to last-mile delivery, report difficulty finding candidates who understand maritime logistics networks' unique requirements. The emerging maritime micromobility sector particularly struggles to recruit workers with the necessary combination of data analysis capabilities and maritime-specific knowledge needed for efficient operations.

Overview

Enhance CUNY institutions' existing logistics curricula by integrating maritime-specific training components to create a specialized talent pipeline for Blue Highways. This initiative will target key programs including LaGuardia Community College's Supply Chain and Logistics Management Program, The City College of New York's graduate course on Urban Freight and City Logistics, and the College of Staten Island's Certified Supply Chain Professional (CSCP) program. The curriculum will incorporate maritime operations knowledge alongside data analytics capabilities. Students will learn specialized maritime components including dock loading/unloading operations, safety protocols for cargo handling, and compliance requirements for maritime security zones. By offering hands-on learning through industry partnerships, graduates will gain the specialized skills needed to fill critical roles in New York's growing Blue Highways ecosystem.

Relevant Occupations

Logisticians (Micromobility Coordinators, Microhub Managers); Transportation, Storage, and Distribution Managers (Micromobility Coordinators); Facilities Managers (Microhub Managers); General and Operations Managers (Microhub Managers; Micromobility Coordinators); Cargo and Freight Agents; Shipping, Receiving and Inventory Clerks; First Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors; Stockers and Order Fillers; Management Analysts

Implementation & Next Steps

- **Identify existing logistics curricula** at CUNY institutions with potential for maritime enhancement, focusing on programs with strong supply chain management foundations that can be efficiently adapted without complete redesign.
- **Identify specialized maritime curriculum components** that can be integrated into existing course structures.
- **Broker strategic conversations** between CUNY leadership and maritime industry partners to establish collaborative frameworks for curriculum development, internship opportunities, and practitioner involvement in classroom instruction.
- **Establish partnerships with industry organizations** to provide practical, hands-on experience that directly connects students to the working waterfront environment.
- **Design pilot implementation programs at select CUNY institutions** with existing related curricula, creating a phased approach that allows for assessment and refinement before system-wide expansion.

Photo Credit: Adobe Stock

Case Study: Old Dominion University's International Maritime, Ports, and Logistics Institute

Old Dominion University's International Maritime, Ports, and Logistics Institute serves as a collaborative hub for industry stakeholders, faculty, and community to develop maritime and logistics solutions through its School of Supply Chain, Logistics, and Maritime Operations.

Recognized as a pioneer in maritime education, ODU established the School of Supply Chain, Logistics, and Maritime Operations to address critical workforce needs in the industry. The program stands out as the one of few universities in the United States offering an undergraduate major in maritime and supply chain management. The program's strategic location in Hampton Roads – home to a major East Coast port complex – provides students with exceptional access to industry partners and hands-on training opportunities. Graduates consistently secure positions with leading maritime employers including The Port of Virginia, Maersk, Colonna's Shipyard, and others.

ODU offers a Maritime and Supply Chain Management undergraduate major and a Maritime undergraduate major. Courses include curriculum that blend maritime and supply chain elements, such as:

- **International Maritime Transport**, which examines the international business of shipping, commercial processes, maritime-related organizations,
- **Maritime Security and Risk Analysis,** which provides an overview of international and U.S. initiatives to ensure the security of vessels, cargo, people, and infrastructure within the maritime domain
- **Port Operations and Management**, which covers the role, functions, and types of international terminals and ports, including design and operation of general and specialized cargo handling facilities and offshore systems, port authorities, operational structures, and labor
- **Inland Waterway and Intermodal Transportation**, which explores and analyzes the current condition of inland waterways both throughout the United States and around the globe with an emphasis on the creation of intermodal transportation networks

ODU's annual Maritime Symposium attracted nearly 150 attendees from academia, industry, and government, highlighting the importance of pairing classroom education with exposure and networking opportunities.

Lessons for NYC's Blue Highways

As a first step toward building a pipeline of supply chain experts with a maritime focus, NYC can explore integrating maritime-focused coursework within logistics curricula, ensuring that students gain exposure to careers in ports, logistics, and maritime operations. ODU's courses could provide a model for the type of content that should be integrated into existing logistics courses. Additionally, NYC could replicate ODU's industry engagement model by organizing an annual maritime and logistics conference that brings together industry leaders, government agencies, and academic institutions, providing students with opportunities to interact with current workers in maritime supply chain roles and learn about pressing industry issues.

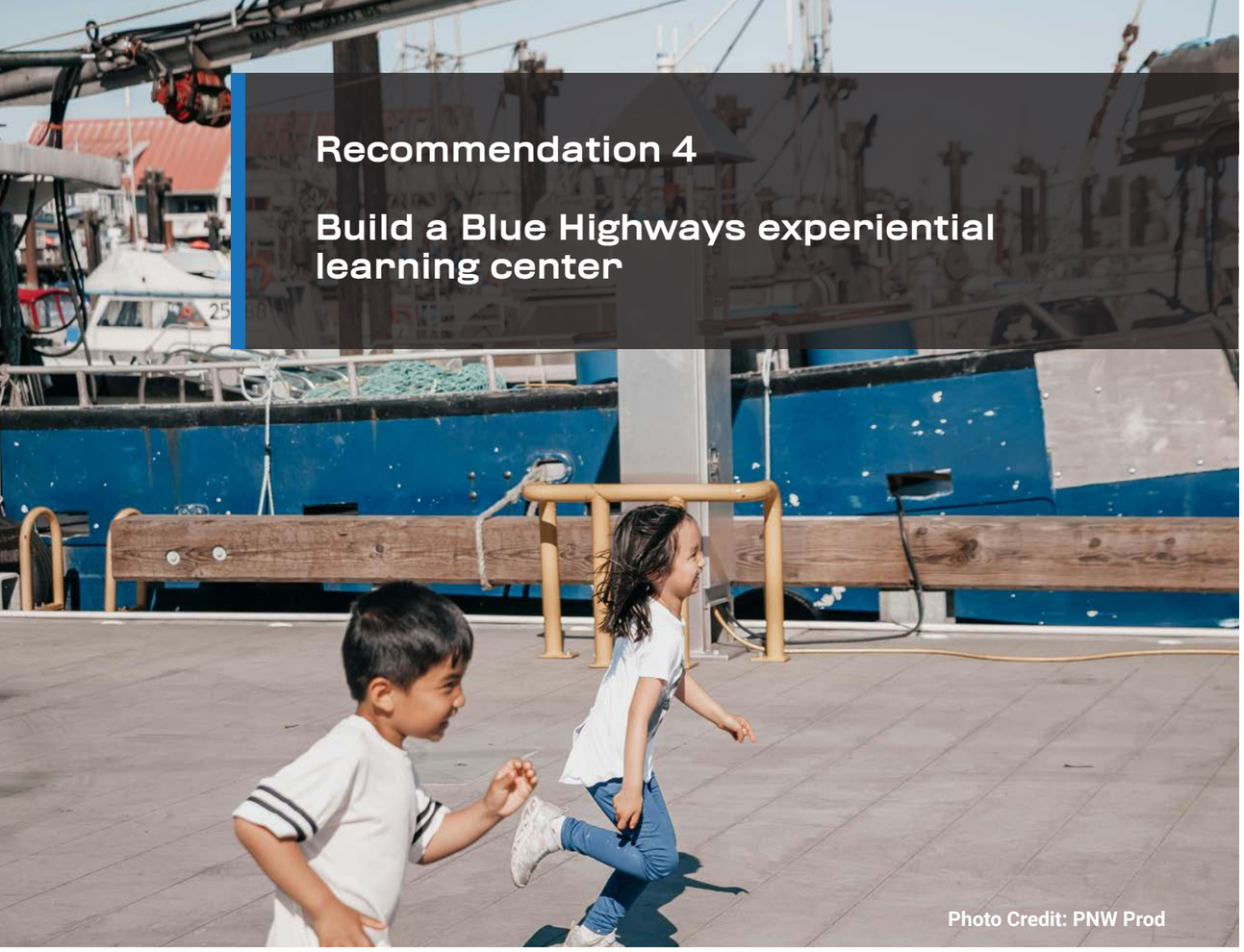


Photo Credit: PNW Prod

Recommendation 4

Build a Blue Highways experiential learning center

Challenge Addressed

The physical disconnect between working port operations and surrounding neighborhoods creates a barrier to engagement, as many residents never get to see or experience these vital maritime operations firsthand. There is a **need to increase public awareness and understanding of Blue Highways careers,** particularly among local communities that could benefit most from these employment opportunities. Without accessible spaces for exposure and hands-on learning, potential workers remain unaware of viable Blue Highways career pathways. This visibility gap is especially pronounced for young people and families who might otherwise develop early interest in these career paths.

Overview

If the Brooklyn Marine Terminal redevelopment advances, NYCEDC should build a Blue Highways experiential learning center. This immersive center will feature interactive exhibits, simulators, and observation areas where visitors can witness vessel movements and cargo handling in real time. Designed as a community hub, the center will host public events that build stronger connections between the port and neighboring residents. By partnering with industry associations, employers, labor unions, and academic institutions like Kingsborough Community College, the center will also support workforce development through educational programs that blend virtual learning with hands-on practicums. Dedicated K-12 programming — including field trips and family weekend activities — will introduce young people to maritime careers and make the industry more accessible. Ultimately, the center will seek to transform public perception of Blue Highways operations, diversify the maritime workforce, and strengthen community ties to New York's working waterfront.

Relevant Occupations

All Blue Highways Occupations

Implementation & Next Steps

- **Reserve dedicated space for the center** within the future mixed-use development plans at Brooklyn Marine Terminal, ensuring optimal positioning for views of active port operations while maintaining community accessibility.
- **Develop facility specifications** including space allocation for exhibits, classrooms, observation areas, and community gathering spaces within allocated footprint.
- **Research successful precedent models** for maritime experiential learning centers, documenting best practices in operating models, financial sustainability approaches, and educational programming.
- **Conduct a competitive RFP process** to select a qualified operator with experience managing educational facilities, community programming, and maritime industry connections.
- **Create a community engagement strategy** to ensure the facility serves as an inclusive and welcoming neighborhood resource.

Case Studies: Experiential Learning Centers

Portlantis (Rotterdam, Netherlands)

Portlantis is an interactive visitor center that connects the community to Europe's largest port, fostering education and career awareness in maritime industries

Portlantis is a state-of-the-art visitor center at the Port of Rotterdam, designed to educate and engage the public in maritime industries. Home to the EIC Mainport Rotterdam, it offers school excursions, interactive exhibitions, and immersive VR experiences. With panoramic views of the port and hands-on learning opportunities, Portlantis strengthens public awareness of maritime careers and the port's role in the economy.

Lessons for NYC's Blue Highways:

Portlantis highlights the value of placing educational centers directly within active port environments, allowing visitors to experience maritime industries firsthand. Its integration with school programs and interactive learning approach can inform NYC's Blue Highways initiative, ensuring that waterfront career pathways are visible and accessible.

Up and Coming Center in NYC: WindScape Brooklyn (Brooklyn, NY)

WindScape Brooklyn is an immersive public space designed to educate the community on offshore wind energy while fostering career awareness and workforce development

WindScape Brooklyn, set to open in June 2025 at Industry City, is an interactive learning center focused on providing hands-on exhibits, VR simulations, and guided tours to connect residents with offshore wind careers and allow visits to explore career pathways. Overlooking the South Brooklyn Marine Terminal, the space will be free to Brooklyn residents and offer multilingual programs ensuring equitable access to workforce development in the growing green economy.
career pathways are visible and accessible.

Lessons for NYC's Blue Highways:

WindScape Brooklyn shows how accessible, port-adjacent learning centers can engage communities in maritime careers. By combining interactive exhibits with targeted youth programming and open public access, it offers a model for connecting NYC residents to maritime and waterfront careers.

Cohen Soundwater Harbor Center (Stamford, CT)

12,000-square-foot maritime education and research center that focuses on sailing education, maritime job skills training, and marine research for youth and adults.

The Cohen Soundwater Harbor Center is the home base for programs like Young Mariners, Harbor Corps, and Research Intensive. Focuses on sailing education, maritime job skills training, and marine research for youth and adults. The center features specialized classrooms, labs, and direct harbor access with a fleet of sailboats and kayaks

Lessons for NYC's Blue Highways:

SoundWaters demonstrates how waterfront facilities can combine education with practical maritime skills in an accessible community setting, creating clear pathways to Blue Highways careers while strengthening connections to local waterways.

National Maritime Museum of the Gulf of Mexico (Mobile, AL)

A highly immersive maritime museum that brings the Gulf's maritime industry to life through hands-on simulations and interactive exhibits

The National Maritime Museum of the Gulf of Mexico offers interactive exhibits that explore the region's maritime history, trade, and navigation. Visitors can pilot virtual ships, operate a tugboat, and engage with augmented reality displays of port operations. The museum's educational programs provide hands-on learning about maritime careers and trade logistics, making complex concepts accessible to all ages.

Lessons for NYC's Blue Highways:

The museum demonstrates the power of experiential learning in maritime education. NYC's Blue Highways can incorporate interactive simulations, navigation tools, and digital displays to engage visitors in maritime careers.

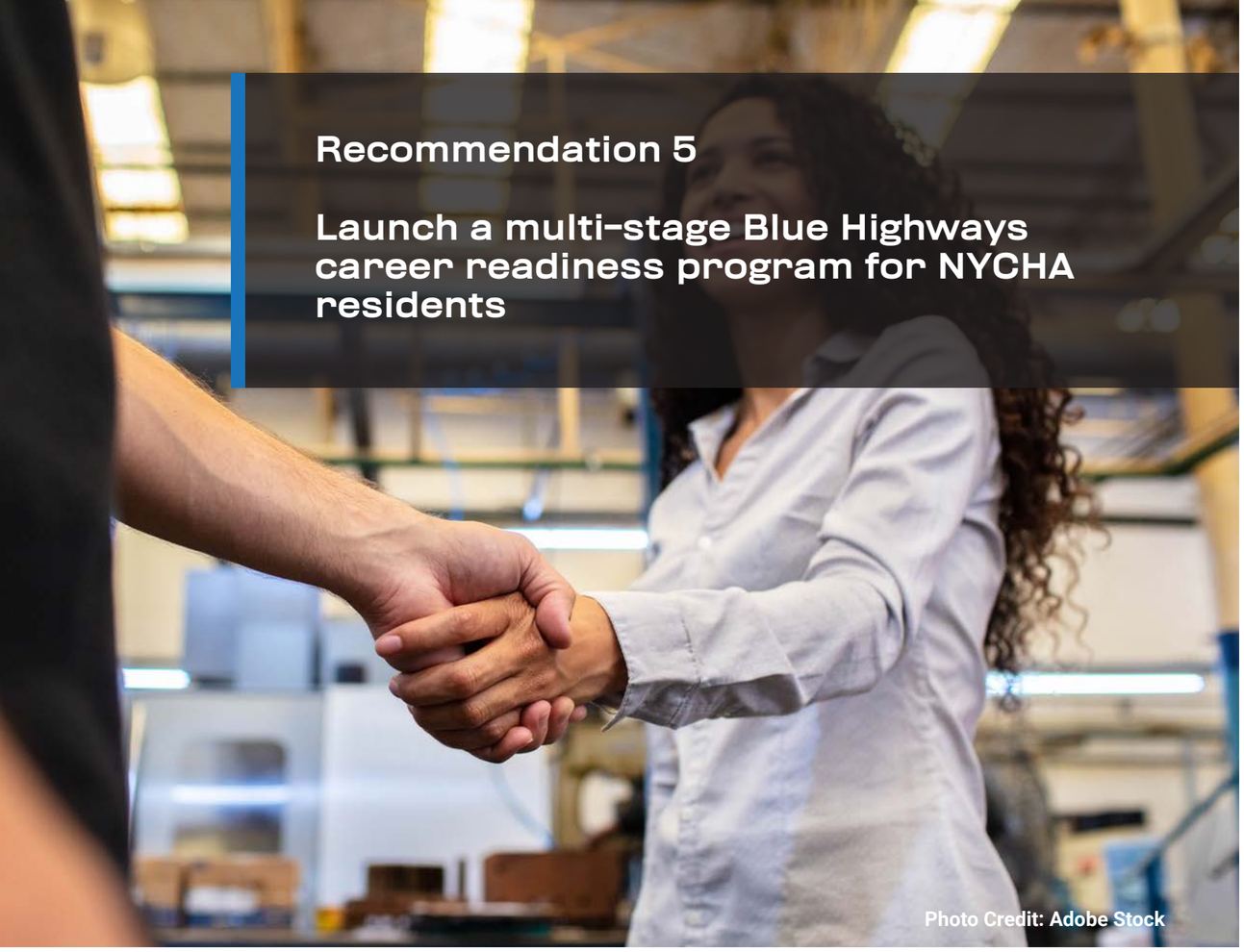


Photo Credit: Adobe Stock

Recommendation 5

Launch a multi-stage Blue Highways career readiness program for NYCHA residents

Challenge Addressed

Young people in communities adjacent to major Blue Highways operations often have **limited awareness of the viable career opportunities** in their backyards. Despite living near maritime activities, many youth lack exposure to the range of occupations, career pathways, and entry requirements for these jobs. This disconnect represents a missed opportunity for both local youth seeking meaningful employment and employers needing to build diverse talent pipelines. Additionally, some youth may not be aware of specific industry requirements, such as mandatory Transportation Worker Identity Credential (TWIC card), drug compliance policies for maritime occupations, which can create barriers to successful career entry without early awareness and preparation.

Overview

Launch a comprehensive, multi-stage maritime career readiness and preparation program for young people in neighborhoods benefiting from Blue Highways investments. This initiative will introduce participants to Blue Highways career opportunities while providing foundational support for maritime career entry.

The program will engage middle and high school students through targeted exposure including site visits, job shadowing, and hands-on activities at maritime facilities, supported by age-appropriate materials explaining career pathways and requirements. For young adults (18-25), foundational training will build essential skills including math, reading comprehension, digital literacy, and driver's license acquisition which are prerequisites for entry-level Blue Highways positions. This program would help participants both meet the requirements for and understand specific opportunities to pursue Blue Highways employment opportunities in NYC and/or pursue advanced degrees or further training at academic institutions like SUNY Maritime.

Essential water-based programming, including swimming lessons, will be provided since it is a fundamental requirement for all maritime careers. Partnerships with entities such as the NYC Parks Department can also provide youths these skills with pathways to near-term employment, such as through lifeguard training. Participants will receive comprehensive support services including case management, industry mentorship, and assistance navigating requirements like TWIC card security clearances. The program aims to create streamlined pathways for participants to transition from awareness to skill development to employment. As new Blue Highways sites develop, the program will scale to additional neighborhoods based on demonstrated impact and community interest.

Relevant Occupations

All Blue Highways Occupations

Implementation & Next Steps

- **Further research precedent maritime readiness programs** to identify best practices and operational models that can be adapted for the Red Hook pilot program.
- **Finalize program design and curriculum** in partnership with Red Hook Houses community including residents, local schools, and community organizations to ensure alignment with both industry needs and community interests.
- **Conduct a competitive RFP process** to select a qualified program operator with experience in youth workforce development and maritime industry connections.
- **Secure resources and establish partnerships** with industry schools and employers to create clear advancement pathways for participants.

Photo Credit: Adobe Stock

Case Study: Rocking the Boat

Rocking the Boat is a Bronx-based nonprofit that empowers youth through hands-on experiences in boatbuilding, sailing, and environmental science.

Rocking the Boat offers a structured, multi-staged approach to youth development across 3 specialized tracks: boatbuilding, sailing, and environmental science. Serving approximately 200 youth annually, the program creates clear pathways from initial engagement as early as 6th grade through the Apprenticeship Program for high school juniors and seniors. Year-round programming includes spring and fall/winter sessions (2 afterschool days weekly) and intensive summer sessions (4 full days weekly for 1.5 months), with academic credit available through partnerships with local schools. The curriculum develops both technical skills — such as reading boat plans, using shop tools, navigation, and ecological monitoring — and essential soft skills including leadership, teamwork, and problem-solving. Cross-track collaboration is encouraged, with boats built by students being used by those in the sailing track.

What distinguishes Rocking the Boat is its robust support system featuring 3 licensed social workers and career consultants who provide wraparound services addressing participants' academic, emotional, and professional development needs. This integrated approach has yielded remarkable outcomes: a 94% high school graduation rate (compared to 57% in the surrounding community) and 92% of alumni pursuing higher education or certification programs. The organization maintains an active alumni network of approximately 200 graduates, providing ongoing mentorship and career guidance. Through strategic partnerships with regional yacht clubs and maritime organizations, Rocking the Boat connects youth from underserved communities with broader sailing and maritime networks, promoting accessible pathways to Blue Highways careers while transforming participants' relationship with their local waterfront.

Lessons for NYC's Blue Highways

Rocking the Boat's multi-stage approach, in which youth enter the program and progress through structured development phases, is particularly relevant for workforce strategies in waterfront communities like Red Hook. This program could serve as a model for the NYC Blue Highways program for young people at NYCHA Red Hook Houses, introducing maritime awareness early and providing integrated wraparound supports to ensure students are positioned for long-term success and career development opportunities.

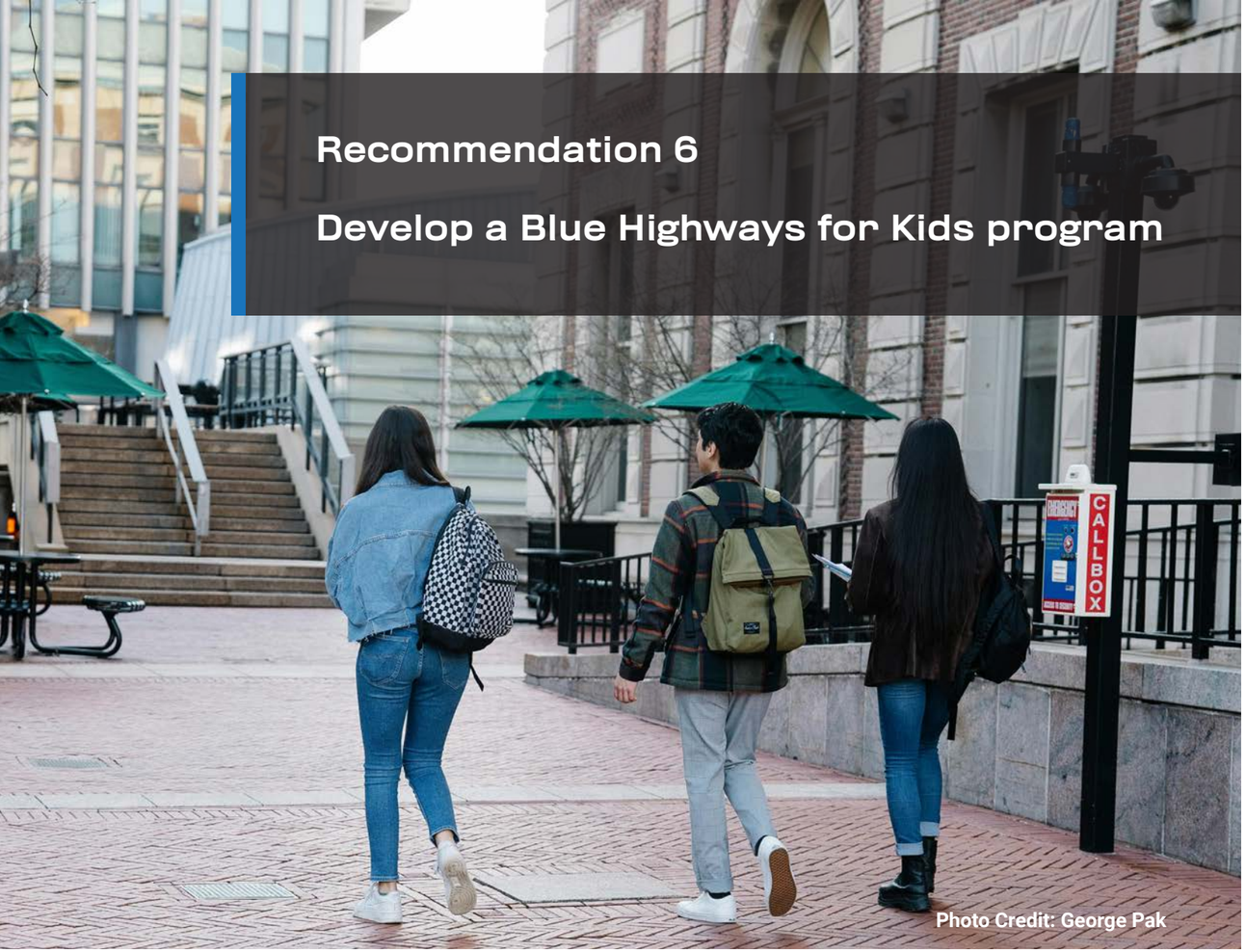


Photo Credit: George Pak

Recommendation 6

Develop a Blue Highways for Kids program

Challenge Addressed

Children are rarely exposed to Blue Highways careers during their formative educational years, creating a **gap in awareness that affects long-term career exploration** and interest. Without early, engaging exposure to maritime and transportation and logistics occupations, students are unlikely to consider these pathways when making educational and career decisions. This lack of early awareness particularly impacts students in communities near waterfront operations, who could benefit most from this exposure. Traditional educational curricula rarely incorporates meaningful content about these essential industries, missing a critical window to spark interest and curiosity about Blue Highways careers.

Overview

Develop a comprehensive 'Blue Highways for Kids' program to provide age-appropriate, engaging experiences that spark early awareness and interest in Blue Highways careers. The program will develop curriculum modules that integrate maritime themes into standard subjects like science, math, social studies, and language arts, making Blue Highways content relevant to required educational outcomes. Regular hands-on learning experiences will be created both in the classroom and through field trips to active maritime facilities, allowing students to directly observe and participate in age-appropriate activities related to port operations.

Family engagement components will extend learning beyond the classroom, encouraging parents and guardians to participate in Blue Highways exploration with their children. Additionally, partnerships with organizations that currently offer youth programming could provide extended experiential learning opportunities on the water, building maritime skills and confidence while cultivating appreciation for harbor environments.

Relevant Occupations

All Blue Highways Occupations

Implementation & Next Steps

- **Research successful educational models** that integrate maritime themes into elementary and middle school education, studying existing programs nationwide that effectively connect young students to port operations and maritime careers using age-appropriate approaches.
- **Develop comprehensive program design** including curriculum modules for each grade level, field trip frameworks, family engagement activities, with clear learning objectives aligned to educational standards.
- **Convene key stakeholders** including school administrators, teachers, maritime industry representatives, and community organizations to refine the program design, ensure community ownership, and establish implementation partnerships.

Photo Credit: Ekaterina Bolovtsova

Case Study: Port Rotterdam's Port Ranger Program

An innovative educational program introduces students (ages 9-12) to port operations, sustainability, and maritime careers through classroom learning and hands-on experiences.

Port Rangers, established in 2013 by the Port of Rotterdam in collaboration with local elementary schools, introduces students ages 9-12 to the maritime industry through experiential learning. The program has grown from 28 to approximately 110 schools, now serving over 5,000 primary students annually. The structured initiative offers 2 complementary tracks: Sturgeon through the Port, which focuses on sustainability and environmental awareness, and the Port Language Tour, which develops maritime vocabulary through contextual learning. The experience begins with preparatory classroom lessons, followed by field trips to the Port's Educational Information Center (EIC) Mainport where students participate in exhibitions, experiments, and outdoor assignments.

Current port employees serve as guest lecturers and tour guides, providing students with industry role models while creating meaningful connections between education and maritime career pathways. The program provides free teaching materials, transportation, and supplementary interactive digital learning modules covering topics like Ports Overview, Port Professions, Clean Energy, and Ports and Nature. These resources include teacher manuals, "digital word walls" for maritime terminology, and student workbooks. Once back in the classroom, students complete group assignments culminating in short presentations about port professions. Port Rangers helps build curiosity that can lead to future maritime careers through fostering early exposure to port operations and sustainability at a formative age.

Lessons for NYC's Blue Highways

Port Rotterdam's success with Port Rangers offers a compelling blueprint for NYC's Blue Highways early awareness initiatives, specifically the initiative of developing a Blue Highways for Kids program. Its scale and easy to access materials could be widely replicated in New York City schools for maximum impact and engagement. By engaging elementary and middle school students through Blue Highways-focused curriculum and firsthand port experiences, NYC could spark early interest in waterfront careers while building foundational knowledge of Blue Highways opportunities. Such early interventions would address NYC's maritime workforce challenges at their root, cultivating curiosity that naturally evolves into career interest as students progress through their education.

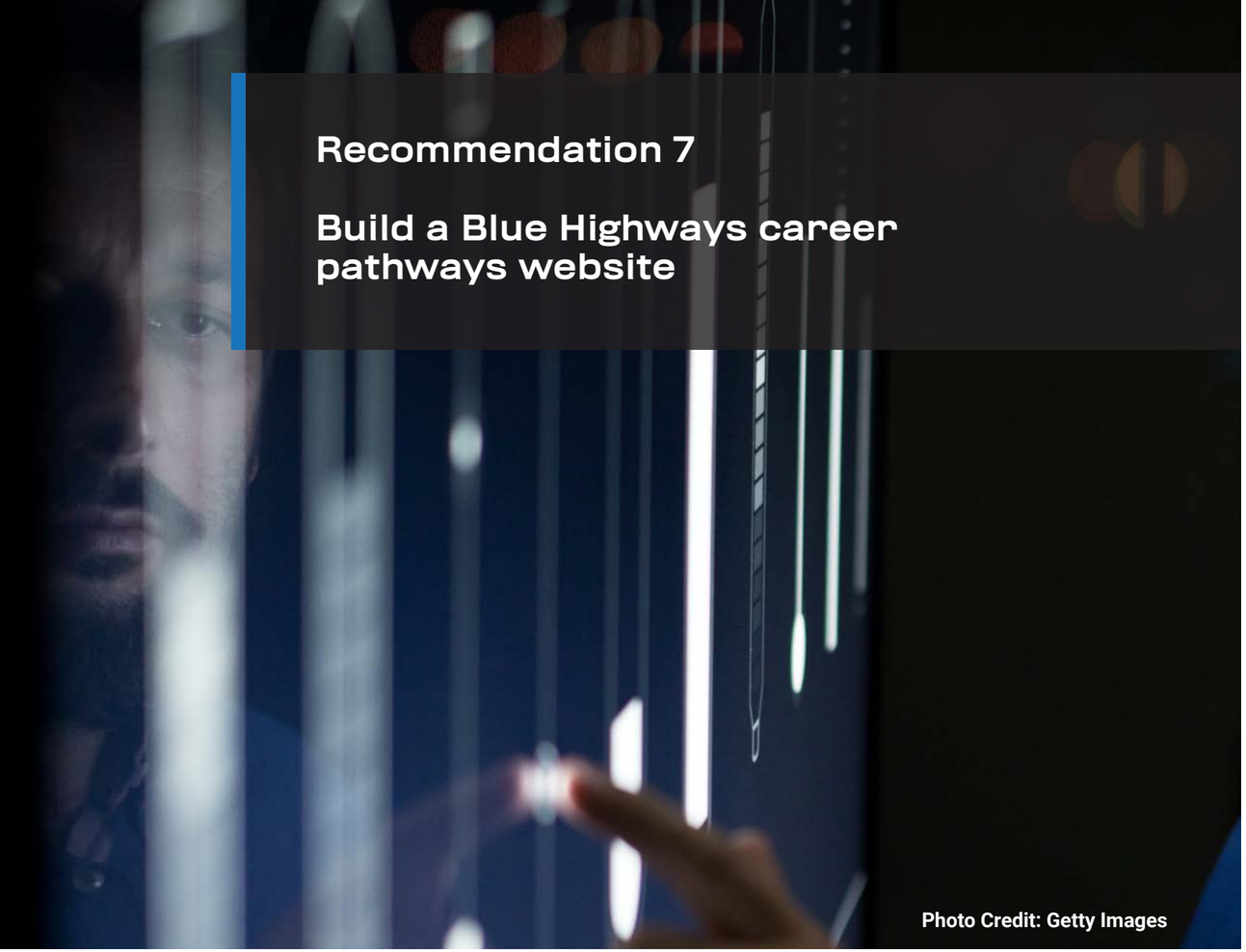


Photo Credit: Getty Images

Recommendation 7

Build a Blue Highways career pathways website

Challenge Addressed

Blue Highways career advancement can follow complex pathways requiring specific certifications and varying requirements, including sea time requirements depending on vessel type, and driver's licenses depending on vehicle type. Without clear visibility into certification requirements and experience needed for advancement, **workers struggle to navigate their career development effectively,** creating barriers to growth and mobility in Blue Highways careers. This complexity contributes to limited awareness about the benefits of maritime and transportation and logistics careers and creates workforce gaps in entry-level positions. The website would serve as a central hub for Blue Highways career information, making complex pathways more accessible to all New Yorkers and supporting more effective recruitment and preparation for these vital occupations. By providing NYC-specific information in an engaging, interactive format, the platform would help remove information barriers that currently limit entry into these career fields, especially for underrepresented communities.

Overview

Develop a career pathways website to directly assist workers with navigating the job landscape in this emerging field, as well as enable workforce providers and employers to help workers obtain required certifications and gain the experience necessary for career progression. Centralizing information for the career pathways for all priority Blue Highways occupations in 1 accessible location will ensure workers understand the connections among various Blue Highways careers, and equip them with the knowledge to progress to other, potentially higher-paying roles.

Relevant Occupations

All Blue Highways Priority Occupations

Implementation & Next Steps

- **Create comprehensive career pathways** adding detailed information about entry requirements, advancement opportunities, and NYC-specific certification processes for priority occupations. Ensure that the pathways create clear roadmaps to obtaining necessary certifications, trainings, and qualifications through local resources.
- **Validate pathway information with local employers** to ensure accuracy and alignment with actual hiring practices, retention strategies, and advancement opportunities in the New York region.
- **Design an interactive, user-friendly website** that allows users to explore various Blue Highways careers based on interests, skills, and educational background.
- **Raise awareness among CBOs and workforce providers** to use the website to support recruitment, career counseling, and training program development in communities throughout New York City.

Photo Credit: Peter Burdon

Case Study: Offshore Wind Career Pathways

New York State Energy Research & Development Authority (NYSERDA) and NJEDA (New Jersey Economic Development Authority) have partnered to create a website detailing the wide range of workforce opportunities related to offshore wind.

In December 2022, NYSERDA launched *offshorewindtraining.ny.gov*, a dedicated website designed to support individuals pursuing offshore wind training and career opportunities. Over the following 2 years, the site was actively maintained and enhanced – noting new training locations across New York State and the various program offerings at these facilities.

Due to the website's success, the New Jersey Economic Development Authority (NJEDA) expressed interest in expanding the platform's reach. In early 2024, NJEDA and NYSERDA signed a Memorandum of Understanding (MOU) to integrate New Jersey-based training institutions into the site and extend the same services to both states. As a result of this collaboration, the enhanced and rebranded platform, *offshorewindtraining.org* was officially launched in October 2024.

The new site features comprehensive information on offshore wind training facilities, events, and funding opportunities available in both New York and New Jersey. Users can access current funding opportunities, industry events, and navigate an interactive map featuring over 450 training facilities – including universities, unions, and nonprofit organizations – with specific details on related trades and program outcomes.

Lessons for NYC's Blue Highways

The *offshorewindtraining.org* website serves as a strong model for developing a Blue Highways career pathways platform that highlights opportunities essential to building a robust regional maritime workforce. It demonstrates how a centralized hub can effectively guide workers by consolidating training opportunities, certifications, and related resources in 1 accessible location. Similarly, a Blue Highways career pathways website could outline clear entry points into the maritime industry, clarify career progression, and connect users with relevant programs and support services. This type of platform would improve workforce visibility, promote equitable access to maritime careers, and better align educational offerings with evolving industry needs.

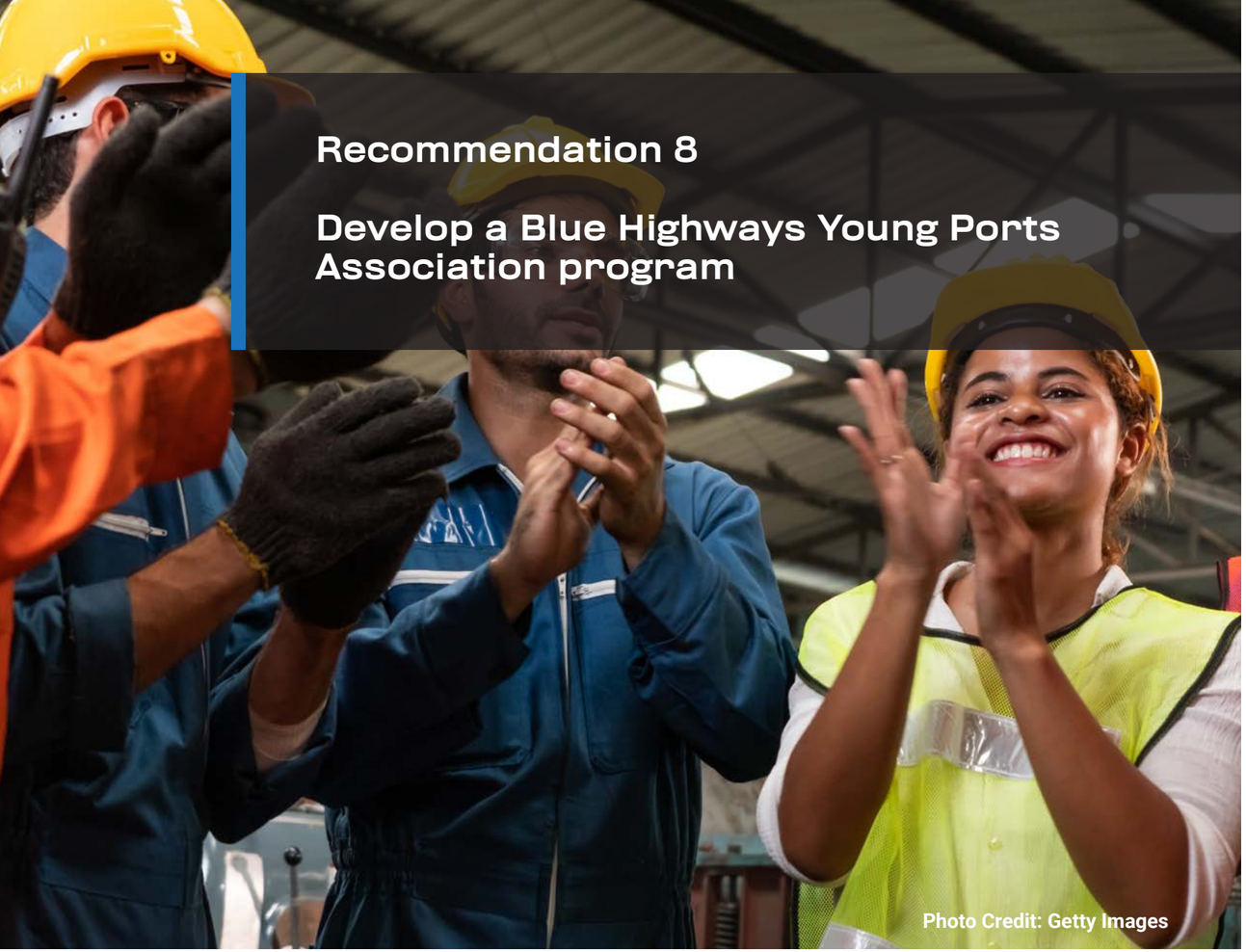


Photo Credit: Getty Images

Recommendation 8

Develop a Blue Highways Young Ports Association program

Challenge Addressed

The Blue Highways maritime sector seeks to **attract, engage, and retain a new generation of workers.** However, the lack of peer networks, professional development opportunities, and clear career progression pathways contributes to higher turnover rates among maritime workers. This retention challenge threatens the industry's ability to preserve institutional knowledge and develop future leadership.

Overview

Create a Blue Highways Young Ports Association to connect, engage, and support young professionals working in NYC's maritime, transportation, and logistics industries. This initiative will establish a formal membership structure for young professionals across the New York region, with meetings and activities. The association will organize company visits and facility tours exposing members to different aspects of Blue Highways, broadening their understanding of the industry and potential career paths.

A regular calendar of networking events will foster connections between peers, senior industry leaders, and professionals across different Blue Highways industries, complemented by informational sessions and professional development workshops addressing topics relevant to early-career professionals. Mentorship opportunities will pair young professionals with experienced industry leaders to provide guidance and support for career advancement. A dedicated Young Ports Association will help address key retention challenges and foster a community-oriented industry culture. By providing valuable support during the critical early career stage, the association will strengthen workforce stability while simultaneously developing the next generation of Blue Highways leadership.

Relevant Occupations

All Blue Highways Occupations

Implementation & Next Steps

- **Further research successful young professional organizations** in Blue Highways relevant industries, that have proven effective in supporting early-career development and improving retention.
- **Develop comprehensive program design** including membership criteria, governance structure, event calendar, and professional development offerings tailored to the specific needs and interests of the Blue Highways workforce.
- **Identify potential program operators** with experience in professional network management and maritime industry connections.

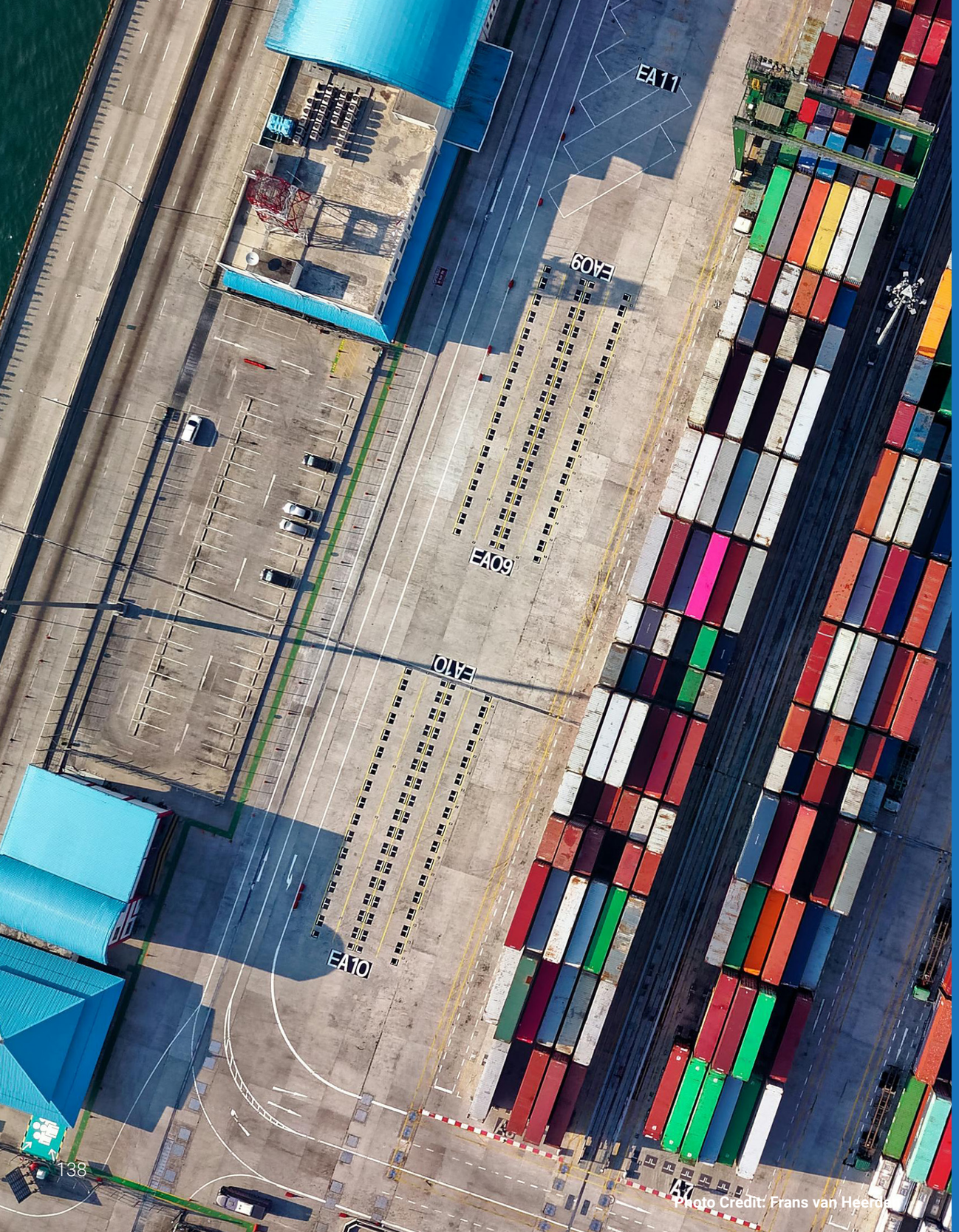


Photo Credit: Frans van Heerde

Case Study: Port of Rotterdam's Young Ports Association (YPA)

YPA cultivates young talent through mentorship, networking, and hands-on industry exposure, ensuring a strong and innovative future for the maritime sector.

YPA is a workforce development program by the Port of Rotterdam and other industry partners, which aims to engage young professionals (ranging from early 20's to 35 years old) and young adult students in maritime and port-related careers. YPA provides members with the skills, connections, and industry insights needed to thrive in port operations, logistics, and related industries.

The Young Ports Association serves as a dynamic platform where college students and early-career professionals can explore the breadth of opportunities in port operations. YPA integrates port-focused topics through interactive workshops and educational tours of port facilities. These efforts help demystify the port industry for young people while showcasing the range of careers available.

YPA fosters professional growth by creating opportunities for young talent to connect with industry leaders. Networking events, mentorship programs, and professional development workshops allow participants to learn directly from seasoned professionals. The association also hosts an annual conference, bringing together young port professionals from across Europe to discuss industry challenges and innovations. A unique feature of the program is the Young Port Talent Ambassador initiative, where 1 promising individual is selected each year to represent YPA, advocate for young professionals in the industry, and promote careers in the maritime sector.

YPA is overseen by a board of young professionals who guide its strategic direction, coordinate events, and foster industry partnerships. Through networking, mentorship, and professional development opportunities, YPA provides young professionals with the skills, connections, and industry insights needed to thrive in port operations, logistics, and related sectors. As of 2024, YPA had ~500 members.

Lessons for NYC's Blue Highways

A Young Blue Highways Ports Association specifically for NYC's young professionals can be modeled after Port of Rotterdam's successful program. This formal organization could engage young talent through structured mentorship and networking pairing industry veterans with emerging professionals, leadership development workshops, technical skills training, and career advancement resources. The Association could also conduct outreach through educational partnerships with colleges, offering industry-focused workshops and site visits to continue to expose students to maritime careers. Interested members could serve as a Young Blue Highways Ambassador, advocating for the industry at career fairs and community events, helping to build awareness and strengthen the workforce pipeline.

Recommendation 9

Create a new ILA apprenticeship program

Photo Credit: Simon R Minshall

Challenge Addressed

Union jobs offer competitive, family-sustaining wages and benefits, presenting opportunity for individuals from underrepresented communities. While some pre-apprenticeship and apprenticeship programs exist in the maritime industry, **there is currently no dedicated pathway for longshoreman positions, creating a significant gap in access to one of the port's most visible and well-paying union roles.** Without structured entry points and dedicated community access initiatives, these high-value union careers remain out of reach for many qualified workers who could greatly benefit from them. At the same time, the industry misses out on opportunities to broaden workforce diversity and strengthen ties with local communities.

Overview

Establish an ILA apprenticeship Program with a designated percentage of positions reserved for local community members, creating a structured pathway for underrepresented candidates to enter and advance in family-sustaining union careers within the maritime sector. The program will design comprehensive training components focused on equipment operation, such as cranes, and material moving, such as loading and unloading vessels by hand, combining classroom instruction with supervised on-the-job experience. Strong partnerships with community-based organizations will facilitate recruitment, screening, and preparation of local candidates. Support services including transportation assistance, childcare support, and supplemental academic preparation will address barriers to completion. This structured apprenticeship will create a transparent, accessible pathway into union maritime careers for community members who have historically faced barriers to these opportunities, helping broaden the longshoreman workforce while providing valuable career opportunities for local residents.

Relevant Occupations

Laborers and Freight, Stock, and Material Movers, Hand (Longshoremen)

Implementation & Next Steps

- **Research successful maritime union apprenticeship models,** particularly those with effective community access components, to identify best practices, potential challenges, and implementation strategies.
- **Develop detailed program design** identifying specific union roles the apprenticeship will pipeline into, required skills and competencies, training curriculum components, and program duration and structure.
- **Convene strategic planning sessions** with ILA leadership to establish formal participation agreements, and determine specific community hiring targets and implementation timelines.
- **Identify and engage community-based organizations** to develop recruitment strategies and support service frameworks tailored to local workforce needs.

Photo Credit: Mikhail Nilov

Case Study: Washington State Ferries (WSF) Apprenticeship Program by MITAGS

The WSF Apprenticeship in partnership with the Maritime Institute of Technology and Graduate Studies (MITAGS), provides a fully funded, fast-track pathway for aspiring mariners to become licensed deck officers, addressing workforce shortages in the maritime industry.

The WSF Apprenticeship Program, offered in partnership with the MITAGS, is an intensive 2-year program designed to train the next generation of maritime professionals. Launched as part of the MITAGS Maritime Apprenticeship Program (MAP), this initiative provides hands-on experience aboard WSF vessels combined with classroom instruction at MITAGS-West in Seattle. The program creates a fully funded, fast-track pathway for aspiring mariners to become licensed deck officers, directly addressing critical workforce shortages in the maritime industry.

Fully funded through a scholarship, the program eliminates financial barriers by covering over $61,000 in tuition costs and providing apprentices with a $200 per day stipend during their 360 days of onboard training. The apprenticeship follows a carefully structured format where participants split their time between MITAGS' state-of-the-art simulator and classroom training and practical experience aboard WSF vessels. Over 24 months, apprentices gain the skills and credentials necessary to obtain an Unlimited Tonnage Mate – Inland license from the U.S. Coast Guard. Upon completion, graduates can apply for deck officer positions within Washington State Ferries, earning competitive salaries ranging from $96,408 to $103,292 per year. The program has generated significant interest since its launch. In January 2025, a new cohort of 12 apprentices began their training at MITAGS-West, selected from a competitive pool of over 300 candidates.

Lessons for NYC's Blue Highways

A key takeaway is the importance of structured, hands-on training combined with academic instruction to ensure a steady pipeline of skilled mariners. NYC could replicate WSF's fully funded apprenticeship model to attract and train candidates, removing financial barriers and making maritime careers more accessible. NYC could benefit from partnerships with local training institutions, unions, and terminal operators to create a similar apprenticeship model. Furthermore, offering stipends during training, as WSF does, would provide financial stability to apprentices, increasing program accessibility and retention.

Photo Credit: Adobe Stock

Recommendation 10

Leverage the WF1 system to connect jobseekers to Blue Highways industries

Challenge Addressed

Job seekers interested in Blue Highways careers face significant barriers navigating the complex requirements and application processes, especially for maritime occupations. Additionally, there is often **limited visibility into available job openings or career pathways,** making it difficult for qualified candidates — particularly those from underserved communities — to gain a foothold. A partnerships with the Workforce1 Career Center network addresses those challenges by embedding maritime career access into New York City's existing, trusted workforce infrastructure. It ensures jobseekers receive tailored guidance and can more easily connect with maritime opportunities through familiar, neighborhood-based channels.

Overview

Partner with NYC Small Business Services (SBS) and its Workforce1 Career Center network to ensure jobseekers accessing these City resources can be connected to Blue Highways occupations. Each Workforce1 location is governed by an operating agreements that defines the specific industry sectors they are authorized to support, making it essential to include Blue Highways NAICS codes within those agreements. These designations will determine the types of maritime-related roles Workforce1 centers can actively recruit for and refer candidates to. This alignment is especially critical for locations near Blue Highways sites, including Sunset Park Workforce1, Downtown Brooklyn Workforce1, and Hunts Point Workforce1. Staff at these centers should receive an orientation to the Blue Highways industry, including key occupations and career pathways, so they can effectively guide jobseekers toward relevant maritime opportunities and services.

Relevant Occupations

Automotive Service Technicians and Mechanics; Bus and Truck Mechanics and Diesel Engine Specialists; Cargo and Freight Agents; Couriers and Messengers; Driver/Sales Workers; First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors; Heavy and Tractor-Trailer Truck Drivers; Laborers and Freight, Stock, and Material Movers, Hand Light Truck Drivers; Maintenance and Repair Workers, General; Sailors and Marine Oilers; Shipping, Receiving, and Inventory Clerks Stockers and Order Fillers

Implementation & Next Steps

- **Coordinate with NYC Small Business Services (SBS) leadership** to secure necessary operator agreement modifications, and establish implementation timelines.
- **Establish referral protocols** that connect WF1 jobseekers interested in Blue Highways careers with appropriate training providers, employers, and support services based on their specific career goals and skill levels.
- **Develop and deliver specialized training for WF1 staff** across all centers to provide them with baseline knowledge of maritime occupations, career pathways, and industry requirements.

Photo Credit: Adobe Stock

Case Study: Workforce1

The NYC Department of Small Business Services (SBS) Workforce1 Centers creates economic opportunity for New Yorkers through free career services that connect residents to family-sustaining jobs with advancement potential across high-demand industries.

The NYC Department of Small Business Services (SBS) helps unlock economic potential and create economic security for all New Yorkers by connecting residents to good jobs, supporting the growth of local businesses, and advancing a more inclusive economy across the 5 boroughs. Through its network of Workforce1 Career Centers, SBS offers free services to connect New Yorkers to jobs, including interview preparation, resume updates, employer connections, and access to training and credentialing essential for career advancement.

Workforce1's services are designed to match jobseekers to full-time positions with long-term career growth. Guided by employer demand and industry partnerships, SBS focuses on high-growth sectors such as healthcare, technology, industrial and transportation, construction, food service, hospitality, and media and entertainment. With a citywide network of neighborhood-based centers, Workforce1 remains one of the most accessible and trusted career development resources available to New Yorkers — completely free of charge.

Certain Workforce1 Centers throughout the city may also assist workers in accessing credentials required for certain sectors. For example, Workforce1 Industrial & Transportation Careers, which focus on connecting workers to jobs in the transportation sector, may assist workers in obtaining Commercial Driver's Licenses (CDL) and HAZMAT endorsements. This targeted assistance demonstrates how, when equipped with targeted industry focus areas, employer connections, and sector-specific knowledge, Workforce1 centers can effectively connect New Yorkers to specialized career pathways and in-demand occupations.

Lessons for NYC's Blue Highways

Workforce1 Career Centers have successfully referred thousands of candidates to employment opportunities across other priority sectors, demonstrating the strength of their citywide system and neighborhood-based approach. By leveraging this existing infrastructure, Workforce1 can apply the same model to connect jobseekers with Blue Highways careers. This would provide a trusted, accessible entry point for local residents to explore maritime occupations, access training, and navigate the unique requirements of the industry with direct support.

8

Conclusion

Conclusion

New York City stands at a pivotal moment in reimagining its maritime and transportation and logistics workforce. The City has a historic opportunity to transform its waterways into a modern, efficient, and resilient distribution chain that not only strengthens the city's distribution system but also creates thousands of well-paying jobs. NYC's Working Waterfront: A Blueprint for Blue Highways provides recommendations to achieve this vision by identifying workforce needs, addressing training gaps, and supporting equitable access to maritime and transportation and logistics careers. With 520 miles of coastline, major port terminals, and growing investment in marine-based freight movement, NYC is well-positioned to lead the nation in modern mobility innovation while creating long-term economic opportunity for its residents.

Today, New York City's Blue Highways distribution chain supports approximately 68,000 jobs, with employment projected to grow by 72% to reach 117,000 jobs by 2035. The report highlights 98 key occupations, with a focus on 20 priority occupations that will drive job creation and economic mobility. The recommendations in this report are the first steps to guaranteeing that NYC's maritime, transportation and logistics workforce is equipped with the skills and resources to thrive. These efforts will prepare an expansive, skilled workforce to meet the evolving needs of Blue Highways industries while ensuring equitable access to well-paying, family-sustaining careers. To realize this vision, NYCEDC and its partners must take bold steps to:

- **Scale Education and Training:** Expand high-quality training programs to equip New Yorkers with the skills needed for Blue Highways careers.
- **Drive Awareness of Blue Highways Careers:** Increase visibility and understanding of career pathways in maritime, logistics, and transportation.
- **Broaden the Blue Highways Talent Pool:** Remove structural barriers to entry, foster inclusive hiring pathways, and expand recruitment to underrepresented communities.

These strategies require deep collaboration among government, industry, labor unions, workforce providers, and community organizations. Securing alignment between workforce supply and industry demand will be critical as the City continues to invest in sustainable freight, port infrastructure, and workforce development.

As NYCEDC and its partners work to implement these strategies, the collective effort will create a stronger, more connected Blue Highways workforce – one that positions New York City as a leader in sustainable transportation systems and modern mobility while delivering long-term economic opportunity for all New Yorkers.

NYC / EDC

Photo Credit: Adobe Stock

9

Appendix

Appendix: Table of Contents

Appendix A: Blue Highways Existing Occupations

There are 49 existing occupations that fall in the first mile of the Blue Highways distribution chain.

	SOC	2018 SOC Title
First Mile	11-1011	Chief Executives
	11-3021	Computer and Information Systems Managers
	11-3051	Industrial Production Managers
	11-3131	Training and Development Managers
	11-9041	Architectural and Engineering Managers
	13-1041	Compliance Officers
	13-1151	Training and Development Specialists
	17-2041	Chemical Engineers
	17-2081	Environmental Engineers
	17-2121	Marine Engineers and Naval Architects
	17-2131	Materials Engineers
	17-2141	Mechanical Engineers
	17-2171	Petroleum Engineers
	17-2199	Engineers, All Other
	17-3012	Electrical and Electronics Drafters
	17-3013	Mechanical Drafters
	17-3023	Electrical and Electronic Engineering Technologists and Technicians
	17-3025	Environmental Engineering Technologists and Technicians
	17-3026	Industrial Engineering Technologists and Technicians
	17-3027	Mechanical Engineering Technologists and Technicians
	19-2041	Environmental Scientists and Specialists, Including Health
	19-4042	Environmental Science and Protection Technicians, Including Health
	27-1021	Commercial and Industrial Designers
	43-5011	Cargo and Freight Agents
	43-5061	Production, Planning, and Expediting Clerks
	47-2231	Solar Photovoltaic Installers
	49-2092	Electric Motor, Power Tool, and Related Repairers
	49-2094	Electrical and Electronics Installers and Repairers, Commercial and Industrial Equipment
	49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay
	49-3011	Aircraft Mechanics and Service Technicians

	SOC	2018 SOC Title
First Mile	49-9041	Industrial Machinery Mechanics
	49-9043	Maintenance Workers, Machinery
	49-9044	Millwrights
	49-9051	Electrical Power-Line Installers and Repairers
	49-9071	Maintenance and Repair Workers, General
	49-9081	Wind Turbine Service Technicians
	49-9098	Helpers--Installation, Maintenance, and Repair Workers
	51-8021	Stationary Engineers and Boiler Operators
	51-8099	Plant and System Operators
	51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers
	53-2012	Commercial Pilots
	53-5011	Sailors and Marine Oilers
	53-5021	Captains, Mates, and Pilots of Water Vessels
	53-5022	Motorboat Operators
	53-5031	Ship Engineers
	53-7062	Laborers and Freight, Stock, and Material Movers, Hand
	53-7063	Machine Feeders and Offbearers
	53-7081	Refuse and Recyclable Material Collectors
	53-7199	Material Moving Workers, All Others

There are 31 existing occupations that fall in the middle mile of the Blue Highways distribution chain.

	SOC	2018 SOC Title
Middle Mile	11-1021	General and Operations Managers
	11-3013	Facilities Managers
	11-3071	Transportation, Storage, and Distribution Managers
	13-1075	Labor Relations Specialists
	13-1081	Logisticians
	13-1111	Management Analysts
	17-2051	Civil Engineers
	17-2112	Industrial Engineers
	49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers
	49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment
	49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles
	49-3023	Automotive Service Technicians and Mechanics
	49-3031	Bus and Truck Mechanics and Diesel Engine Specialists
	49-3051	Motorboat Mechanics and Service Technicians
	49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers
	51-9111	Packaging and Filling Machine Operators and Tenders
	53-1047	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors
	53-3032	Heavy and Tractor-Trailer Truck Drivers
	53-3099	Motor Vehicle Operators, All Other
	53-4011	Locomotive Engineers
	53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers
	53-4031	Railroad Conductors and Yardmasters
	53-6031	Automotive and Watercraft Service Attendants
	53-7011	Conveyor Operators and Tenders
	53-7021	Crane and Tower Operators
	53-7031	Dredge Operators
	53-7041	Hoist and Winch Operators
	53-7051	Industrial Truck and Tractor Operators
	53-7061	Cleaners of Vehicles and Equipment
	53-7064	Packers and Packagers, Hand
	53-7121	Tank Car, Truck, and Ship Loaders

There are 18 existing occupations that fall in the last mile of the Blue Highways distribution chain.

	SOC	2018 SOC Title
Last Mile	13-1082	Project Management Specialists
	13-1199	Business Operations Specialists, All Other
	15-1251	Computer Programmers
	15-1252	Software Developers
	15-2051	Data Scientists
	17-2071	Electrical Engineers
	17-3022	Civil Engineering Technologists and Technicians
	17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians
	19-2099	Physical Scientists, All Other
	19-3051	Urban and Regional Planners
	43-5021	Couriers and Messengers
	43-5071	Shipping, Receiving, and Inventory Clerks
	47-2111	Electricians
	49-3052	Motorcycle Mechanics
	49-3091	Bicycle Repairers
	53-3031	Driver/Sales Workers
	53-3033	Light Truck Drivers
	53-7065	Stockers and Order Fillers

Tables 1-3: Emerging Trends, Skills Requirements, and Associated Emerging Occupations

Table 1 Trend: Micromobility in last-mile delivery requires new modes of transit, including electric and hydrogen vehicles, drones, cargo bikes, and autonomous vehicles.

Skills Requirements	Emerging Occupation
Oversee the operations of microhubs, ensuring efficient handling and transfer of goods	Microhub Managers
Maintain and repair equipment and infrastructure at microhubs	Microhub Technicians
Manage the efficient transfer of goods from larger freight vehicles to smaller, sustainable modes of transport	Transloading Supervisors
Manage the use of EV bikes, scooters, and other small vehicles for deliveries	Micromobility Coordinators
Oversee use of data analytics for optimizing port processes; implement and oversee data collection and monitoring of microhub operations; or analyze last-mile delivery data to improve efficiency and customer satisfaction	Data Analysts
Oversee the operation and maintenance of a fleet of electric trucks, ensuring optimal performance and efficiency	EV Fleet Managers
Install, maintain, and repair charging stations for electric trucks, ensuring they are operational and efficient	Charging Infrastructure Technicians
Operate electric trucks for the transportation of goods, requiring specialized training to handle EV-specific features	Electric Truck Drivers (including e-cargo vans)
Perform maintenance and repairs on zero-emission trucks, including battery and fuel cell electric vehicles	Zero-Emission Truck Technicians
Plan and develop the network of charging stations required to support a fleet of electric trucks	EV Charging Network Planners
Specialize in the repair and maintenance of cargo bikes and electric vans used in microhub delivery systems	Cargo Bike and E-Vehicle Mechanics
Operate cargo bikes and e-vehicles to transport goods from microhubs and/or other facilities to final delivery points	Cargo Bike and E-Vehicle Drivers
Oversee and manage autonomous delivery vehicles.	Autonomous Vehicle Operators
Operate drones for package delivery	Drone Pilots
Implement and manage sustainable practices within the last-mile delivery process	Sustainability Managers
Maintain and repair robots used in warehouses and for delivery	Robotics Technicians
Specialize in the maintenance and repair of electric delivery vehicles	Electric Vehicle (EV) Technicians
Design and implement infrastructure to support advanced last-mile delivery technologies, such as smart lockers and charging stations for EVs	Smart Infrastructure Developers

Table 2 Trend: Decarbonization and green ports focus on reducing emissions and enhancing sustainability in port operations.

Skills Requirements	Emerging Occupation
Ensure that shipping companies adhere to international environmental standards and regulations	Environmental Compliance Managers
Lead initiatives to develop and upgrade port infrastructure to support green shipping practices and accommodate new technologies	Sustainable Port Infrastructure Development Managers
Develop and implement strategies for recycling and reusing materials within the maritime industry, for example, managing the scrappage and recycling of ships	Circular Economy Specialists
Oversee the integration of digital technologies in maritime operations to enhance efficiency, reduce emissions, and improve overall sustainability	Digital Transformation Managers
Deliver training programs for the existing maritime workforce on green skills, including handling alternative fuels and zero-emission technologies	Energy Transition Trainers
Facilitate integration of offshore wind energy into port operations, enabling renewable-powered maritime logistics	Offshore Wind Integration Engineers
Maintain and operate of ships powered by alternative fuels such as LNG, hydrogen, and biofuels	Alternative Fuel Technicians
Monitor and optimize the energy consumption of vessels	Energy Efficiency Officers
Design and manage battery-electric propulsion systems for ships	Battery System Engineers

Table 3 Trend: Shift to alternative fuels and energy-efficient vessels includes an increasing use of hydrogen, ammonia, biofuels, and the development of energy-efficient shipping technologies.

Skills Requirements	Emerging Occupation
Ensure that shipping companies adhere to international environmental standards and regulations	Environmental Compliance Managers
Lead initiatives to develop and upgrade port infrastructure to support green shipping practices and accommodate new technologies	Sustainable Port Infrastructure Development Managers
Develop and implement strategies for recycling and reusing materials within the maritime industry, for example, managing the scrappage and recycling of ships	Circular Economy Specialists
Oversee the integration of digital technologies in maritime operations to enhance efficiency, reduce emissions, and improve overall sustainability	Digital Transformation Managers
Deliver training programs for the existing maritime workforce on green skills, including handling alternative fuels and zero-emission technologies	Energy Transition Trainers
Facilitate integration of offshore wind energy into port operations, enabling renewable-powered maritime logistics	Offshore Wind Integration Engineers
Maintain and operate of ships powered by alternative fuels such as LNG, hydrogen, and biofuels	Alternative Fuel Technicians
Monitor and optimize the energy consumption of vessels	Energy Efficiency Officers
Design and manage battery-electric propulsion systems for ships	Battery System Engineers

Appendix B: NAICS Industries Used for Occupation Sizing & Forecasting Analysis

Relevant NAICS codes (North American Industry Classification System), which are classifications used by government and businesses to categorize companies by their primary type of economic activity, were identified for each of the 3 industries.

Industry	NAICS Code (2022 Vintage)	Industry Description	Sub-Industries Included (6-Digit NAICS)	Sub-Industries Excluded (6-Digit NAICS)
Maritime	3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	333611	333612, 333613, 333618
	3366	Ship and Boat Building	All	None
	4831	Deep Sea, Coastal, and Great Lakes Water Transportation	All	None
	4832	Inland Water Transportation	All	None
	4872	Scenic and Sightseeing Transportation, Water	All	None
	4883	Support Activities for Water Transportation	All	None
	4885	Freight Transportation Arrangement	All	None
	8112	Electronic and Precision Equipment Repair and Maintenance	All	None

Industry	NAICS Code (2022 Vintage)	Industry Description	Sub-Industries Included (6-Digit NAICS)	Sub-Industries Excluded (6-Digit NAICS)
Transportation & Logistics	4821	Rail Transportation	All	None
	4841	General Freight Trucking	All	None
	4842	Specialized Freight Trucking	All	None
	4882	Support Activities for Rail Transportation	All	None
	4884	Support Activities for Road Transportation	All	None
	4889	Other Support Activities for Transportation	All	None
	4921	Couriers and Express Delivery Services	All	None
	4922	Local Messengers and Local Delivery	All	None
	4931	Warehousing and Storage	All	None
	5321	Automotive Equipment Rental and Leasing	532120	532111, 532112
	5621	Waste Collection	All	None
	5622	Waste Treatment and Disposal	562211, 562212, 562219	562213
	8111	Automotive Repair and Maintenance	811111, 811114, 811121, 811122, 811191, 811198	811192
	8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	All	None
	8114	Other Personal and Household Goods Repair and Maintenance	811490	811411, 811412, 811420, 811430

Industry	NAICS Code (2022 Vintage)	Industry Description	Sub-Industries Included (6-Digit NAICS)	Sub-Industries Excluded (6-Digit NAICS)
Support	5611	Office Administrative Services	All	None
	5612	Facilities Support Services	All	None
	5614	Business Support Services	561431, 561499	561410, 561421, 561422, 561439, 561440, 561450, 561491, 561492
	5617	Services to Buildings and Dwellings	561790	561710, 561720, 561730, 561740
	5629	Remediation and Other Waste Management Services	562910	562920, 562991, 562998
	4251	Wholesale Trade Agents and Brokers	All	None
	5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	532411, 532412, 532490	532420
	5413	Architectural, Engineering, and Related Services	All	None
	5414	Specialized Design Services	541420	541410, 541430, 541490
	5416	Management, Scientific, and Technical Consulting Services	541611, 541614, 541618, 541620, 541690	541612, 541613
	5417	Scientific Research and Development Services	541715	541713, 541714, 541720
	5419	Other Professional, Scientific, and Technical Services	541990	541910, 541921, 541922, 541930, 541940
	5511	Management of Companies and Enterprises	551114	551111, 551112

Appendix C: Detailed Methodology and Assumptions for Occupation Sizing & Forecasting Analysis

To assess the workforce opportunities within the Blue Highways distribution chain, we employed a structured approach to capture historical growth trends, current workforce concentration, and 10-year projected growth. This methodology combined labor market data, industry segmentation, and workforce classification techniques to generate a comprehensive picture of the sector's labor dynamics.

Data Collection and Workforce Segmentation: The analysis began with an extensive data extraction process using Lightcast, a leading labor market analytics platform. Lightcast collects, aggregates, and analyzes occupational and industry-level data across multiple geographic scales, providing insights into workforce demographics, employment trends, job postings, and career pathways. For this study, we focused on occupations within relevant NAICS industries at two geographic levels: the New York-Newark metropolitan statistical area (MSA) and New York City (5 boroughs). We first categorized workforce data into key occupational characteristics and staffing patterns:

- **Occupation Characteristics:** This dataset provided detailed information about each SOC occupation, including number of workers, growth, wages, demographics, automation risk, and workforce concentration.
- **Staffing Patterns:** By examining the distribution of workers by SOC occupation across NAICS industries, the team identified key labor pools supporting the Blue Highways ecosystem.

Refining Industry Focus: To ensure workforce projections accurately reflected Blue Highways' economic activities, we excluded workforce segments unrelated to the Blue Highways distribution chain by adjusting industry employment figures based on proportional relevance.

To do this, we first examined each relevant 4-digit NAICS industry code and researched its sub-codes to identify which occupations are essential to Blue Highways. For example, within NAICS industry 5414 (Specialized Design Services), we included sub-code 541420 (Industrial Design Services) because it involved designing industrial spaces and machinery relevant to Blue Highways. However, other sub-codes, such as 541410 (Interior Design Services) and 541430 (Graphic Design Services), were excluded as they do not pertain to this sector. For each 4-digit and 6-digit NAICS code identified, we developed assumptions, based on literature review and desk research, related to the percent of each NAICS that falls within the Blue Highways distribution chain.

Next, each industry was classified under 1 of 3 areas: Maritime (waterborne freight transport), Logistics (transport of freight via other methods such as truck, van, cargo bike), or Support (supporting industries not involved in the direct handling of freight).
Industry-Specific Adjustments included:

- Maritime industries, responsible for freight transport via waterways, retained 85% of their employment figures, aligning with estimates from the Port Authority of New York and New Jersey (PANYNJ).
- Most transportation and logistics industries were reduced to 29%, reflecting the portion of NYC's total cargo volume entering through PANYNJ ports; except rail-related industries, which were reduce to 15% (based on assumption provided by the NYCEDC's Ports, Waterfront, & Transportation team) and waste management industries, which were reduced to 30% (approximately 30% of DSNY's solid waste is moved via barge today).
- Support industries underwent literature-based adjustments to estimate their workforce contribution to the Blue Highways distribution chain.

Distribution Chain Mapping and Occupational Classifications: To further refine the workforce model, occupations were distributed along the distribution chain, segmenting them into first mile, middle mile, and last mile roles. Each occupation was assigned a percentage distribution across these segments based on extensive desk research.

Occupations were also classified as core, non-core, or both; with core occupations defined as occupations that transport cargo via water, handle cargo that touches water in the previous or next immediate step of the distribution chain, and associated support occupations, such as boat captains and longshoremen, and non-core occupations defined as other supply chain occupations, including occupations that transport cargo via non-water methods, handle cargo that does not touch water in the previous or next immediate step of the distribution chain, and associated support occupations, such as truck drivers and maintenance workers. These classifications were applied to both the **current state** of the industry and a **future-state** projection based on anticipated port volume growth. Key assumptions guiding these classifications included:

- All first-mile and maritime roles were categorized as core.
- In the current state, only 0.5% of middle-mile transportation and logistics jobs were considered core, based on assumption that the Blue Highways pilot programs move ~0.5% of NYC's cargo volume.
- In the future state, 2% of middle-mile and last-mile jobs were classified as core to account for projected expansion in barge networks and pier-based microhubs, based on the assumption that NYC's total port volume will increase by 25% by 2035.

Workforce Growth Modeling and Future Projections: To assess the workforce implications of the Blue Highways initiative, we began by estimating the current and future size of the workforce involved in core and non-core Blue Highways occupations across both New York City (covering all 5 boroughs) & the broader metro region (New York-Newark MSA).

For the **current-state workforce**, we identified existing occupations by referencing insights from literature review and analyzed O*NET job descriptions linked to specific SOC codes. Additionally, we examined emerging occupations by conducting further desk research to determine what percentage of the existing workforce was already performing the functions of these roles.

Next, we projected the **future-state workforce** for the Blue Highways distribution chain. We established a baseline projection for workforce growth using Lightcast workforce projections, assuming no industry changes related to Blue Highways. Then, incorporating the Port Authority of NY/NJ's forecast of a 25% increase in total port volume by 2035, we estimated the additional workforce growth required across all relevant occupations. This projection served as a counterfactual estimate, representing the workforce size needed if Blue Highways were not introduced. In cases where certain occupations such as EV mechanics are expected to see substantial growth due to Blue Highways, we refined these projections further using insights from literature reviews and desk research.

A critical part of the analysis involved distinguishing between new jobs created due to Blue Highways and jobs transitioning from dominant (i.e., non-Blue Highways jobs) to Blue Highways roles in the logistics industry. This evaluation spanned across 3 key segments of the distribution chain:

- **First mile:** In general, we assumed that Blue Highways would not generate net new jobs at this stage, except for cases in which emerging occupations, such as Sustainable Port Infrastructure Development Managers, experienced significant growth.
- **Middle mile:** Jobs within this segment were expected to shift directly from trucking to barging, with no major net job creation. However, certain emerging roles, such as Robotics Technicians, may drive additional workforce demand.
- **Last mile:** This segment was likely to experience the most significant job creation, particularly for cargo bike and electric van drivers. Given the anticipated shift from trailer trucks to smaller, more sustainable delivery modes (with estimated job multipliers of 1 Trailer Truck = 2.5 Box Trucks = 10 Cargo Vans = 30 Cargo Bikes), many of these roles were new jobs. However, other last-mile jobs, such as those at microhubs and last-mile piers, were expected to transition from traditional regional distribution hubs rather than creating new employment opportunities. Emerging high-growth roles, such as EV Technicians, may contribute additional net job creation.

Final Workforce Estimates and Validation: By conducting the steps outlined above, we developed a detailed current state size and future state forecast analysis for NYC's Blue Highways Ecosystem. To ensure the accuracy of our workforce estimates, we conducted a validation and refinement process. This involved comparing our occupation sizing outputs with insights from existing literature and relevant prior analyses, such as the GEAP and Freight NYC plan. Additionally, we incorporated feedback from stakeholder interviews, updating assumptions where necessary to reflect industry expertise and real-world perspectives.

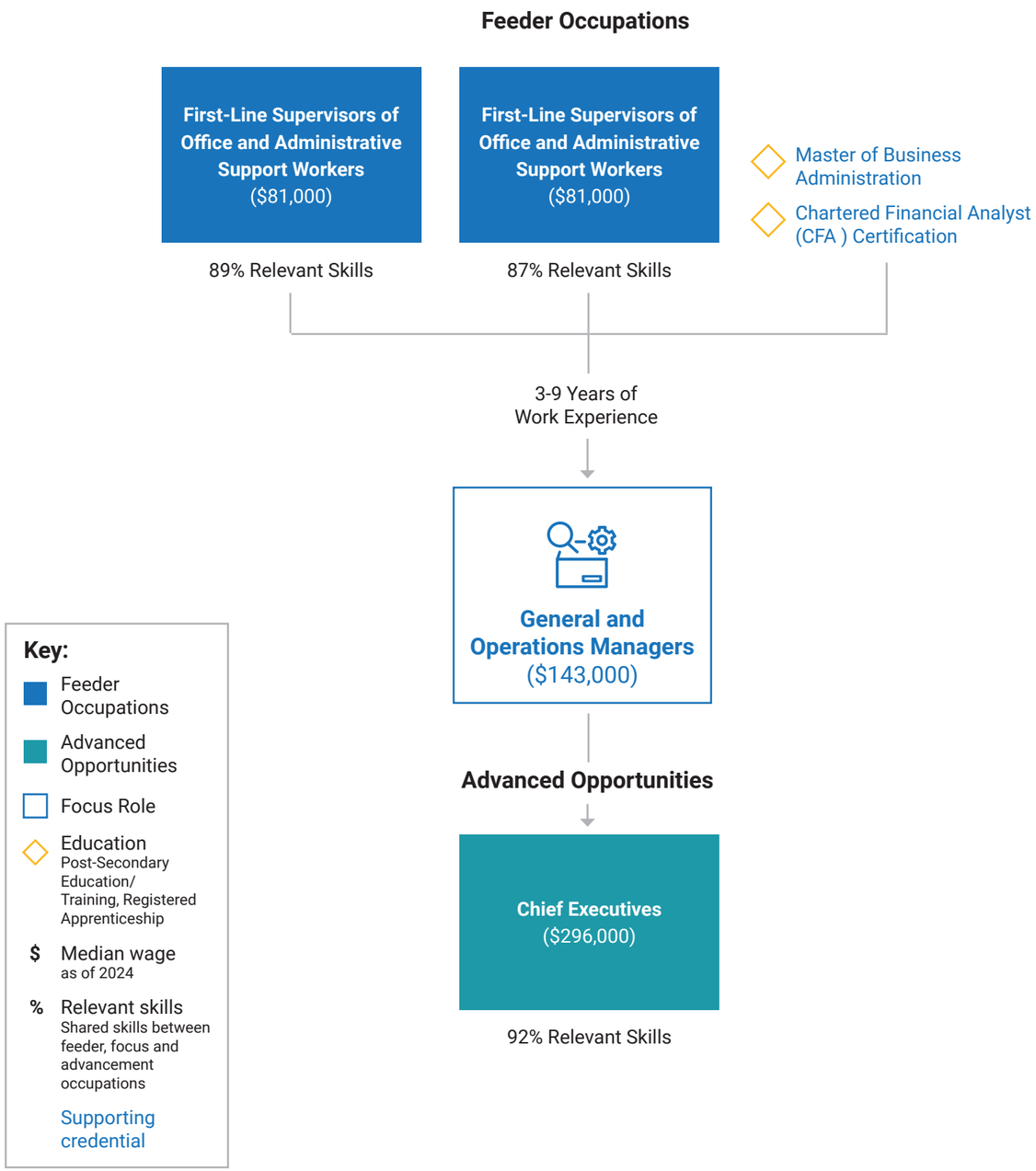
Appendix D: Detailed Occupational Characteristics for Priority Occupations

Type	Occupation	2024 Workforce Size	2035 Workforce Size	Projected Growth (2024-2035)	Hourly Wage	Typical Entry Level Education Requirements	% Female	% Black	% Hispanic	Union Status	Associated emerging occupations
Core	Captains, Mates, and Pilots of Water Vessels	783	1,312	68%	$44.23	Postsecondary nondegree award	5%	8%	12%	Typically unionized	Alternative Fuel Technicians; Energy Efficiency Officers
	Cargo and Freight Agents	1,543	1,865	21%	$27.03	High school diploma or equivalent	37%	19%	23%	Typically not unionized	N/A
	Driver/Sales Workers	307	978	218%	$18.11	High school diploma or equivalent	7%	15%	29%	May be unionized	Electric Truck Drivers (including e-cargo vans); Cargo Bike and E-Vehicle Drivers; Autonomous Vehicle Operators
	Facilities Managers	53	76	43%	$65.38	Bachelor's degree	27%	11%	14%	Typically not unionized	Sustainable Port Infra Development Managers; Circular Economy Specialists; Offshore Wind Integration Engineers; Microhub Managers
	General and Operations Managers	2,484	4,037	63%	$67.71	Bachelor's degree	32%	9%	15%	Typically not unionized	Digital Transformation Managers; Offshore Wind Integration Engineers; EV Fleet Managers; EV Charging Network Planners; Microhub Managers; Micromobility Coordinators
	Laborers and Freight, Stock, and Material Movers, Hand	3,452	4,841	40%	$22.18	No formal educational credential	21%	28%	28%	Typically unionized	N/A
	Maintenance and Repair Workers, General	472	684	45%	$27.27	High school diploma or equivalent	3%	15%	31%	Typically unionized	N/A
	Sailors and Marine Oilers	456	755	66%	$30.68	No formal educational credential	7%	16%	15%	Typically unionized	Alternative Fuel Technicians
	Ship Engineers	160	265	65%	$64.82	Postsecondary nondegree award	5%	17%	13%	May be unionized	Alternative Fuel Technicians; Energy Efficiency Officers
	Transportation, Storage, and Distribution Managers	347	829	139%	$60.68	Bachelor's degree or equivalent	22%	16%	21%	Typically not unionized	Sustainable Port Infra Development Managers; EV Fleet Managers; EV Charging Network Planners; Microhub Managers; Transloading Supervisors; Sustainability Managers; Micromobility Coordinators

Type	Occupation	2024 Workforce Size	2035 Workforce Size	Projected Growth (2024-2035)	Hourly Wage	Typical Entry Level Education Requirements	% Female	% Black	% Hispanic	Union Status	Associated emerging occupations
Non-Core	Automotive Service Technicians and Mechanics	924	1,370	48%	$21.44	Postsecondary nondegree award	2%	16%	27%	May be unionized	Zero-Emission Truck Technicians; Cargo Bike and E-Vehicle Mechanics; Electric Vehicle (EV) Technicians
	Bus and Truck Mechanics and Diesel Engine Specialists	612	881	44%	$37.18	High school diploma or equivalent	1%	13%	26%	May be unionized	Zero-Emission Truck Technicians; Electric Vehicle (EV) Technicians
	Couriers and Messengers	20,432	44,392	117%	$17.73	High school diploma or equivalent	23%	23%	23%	Typically not unionized	N/A
	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	967	1,319	36%	$32.51	High school diploma or equivalent	20%	22%	26%	Typically not unionized	N/A
	Heavy and Tractor-Trailer Truck Drivers	8,224	12,393	51%	$26.90	Postsecondary nondegree award	6%	22%	30%	Typically unionized	Electric Truck Drivers (including e-cargo vans); Cargo Bike and E-Vehicle Drivers
	Light Truck Drivers	7,444	11,429	54%	$21.58	High school diploma or equivalent	9%	25%	29%	May be unionized	Electric Truck Drivers (including e-cargo vans); Cargo Bike and E-Vehicle Drivers
	Logisticians	284	536	89%	$45.10	Bachelor's degree	35%	20%	20%	Typically not unionized	Micromobility Coordinators
	Management Analysts	6,737	9,924	47%	$55.68	Bachelor's degree	45%	8%	8%	Typically not unionized	Digital Transformation Managers
	Shipping, Receiving, and Inventory Clerks	679	891	31%	$23.18	High school diploma or equivalent	34%	21%	31%	May be unionized	N/A
	Stockers and Order Fillers	1,666	2,353	41%	$20.59	High school diploma or equivalent	35%	22%	29%	May be unionized	N/A

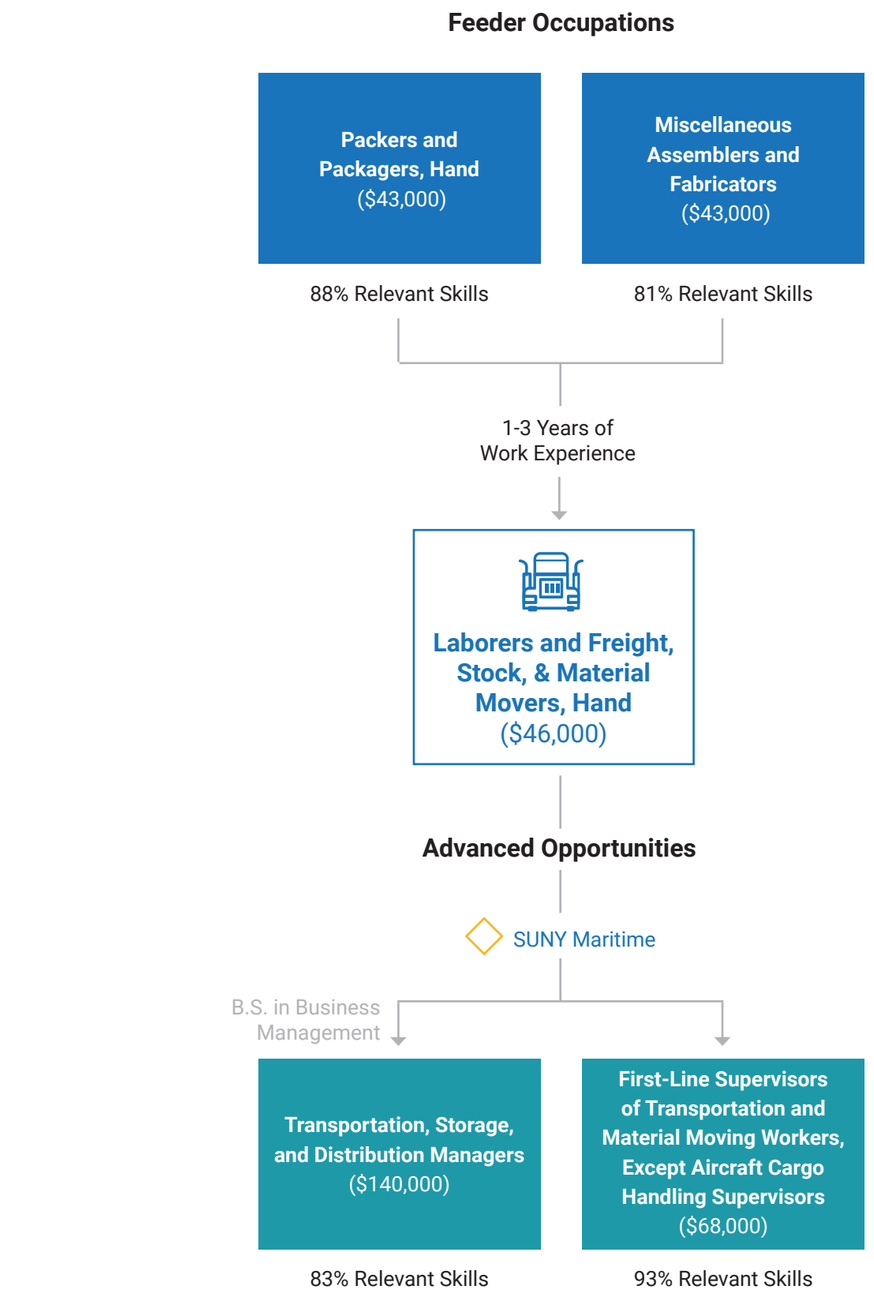
General and Operations Managers

(11-1021)



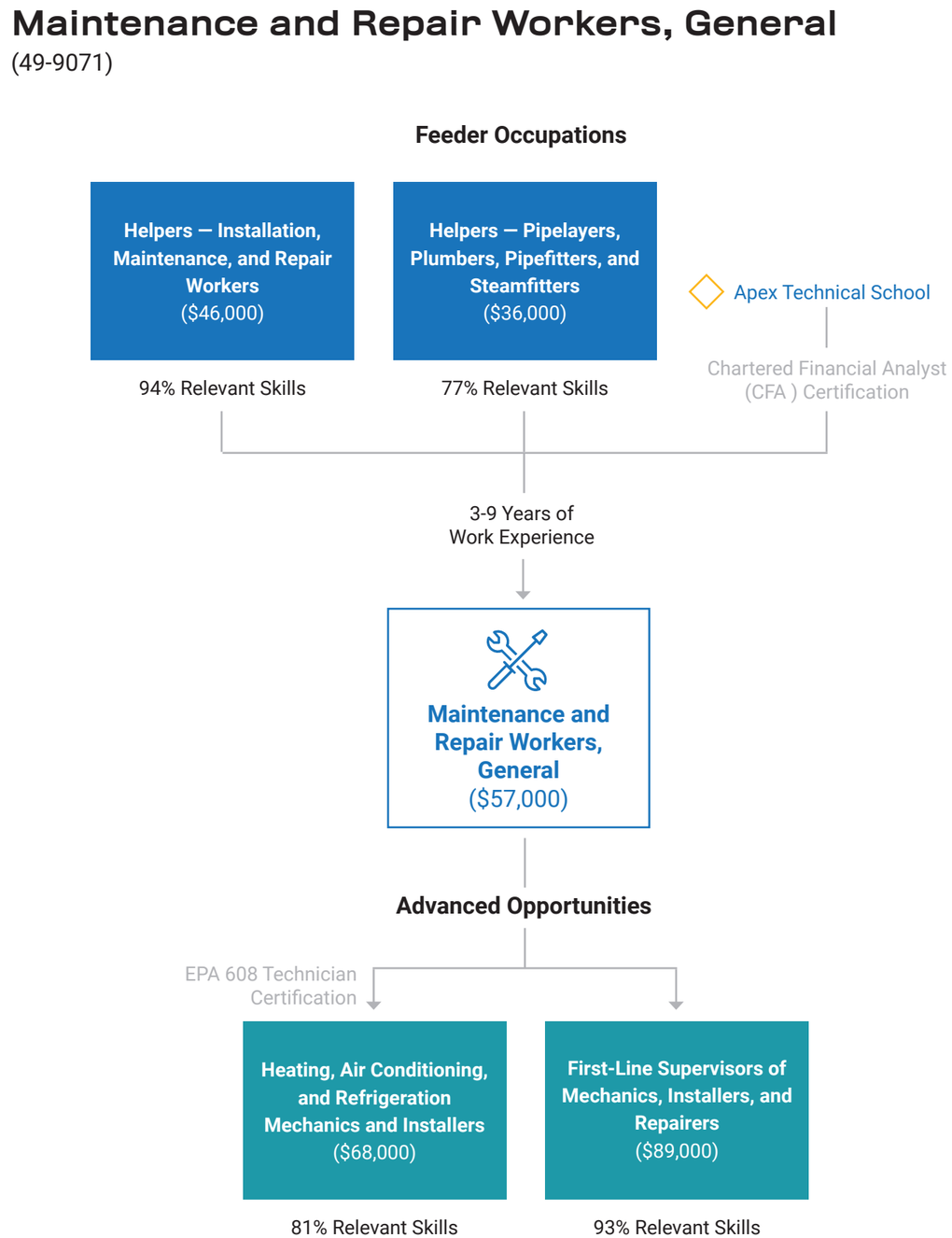
Laborers and Freight, Stock, and Material Movers, Hand

(53-7062)



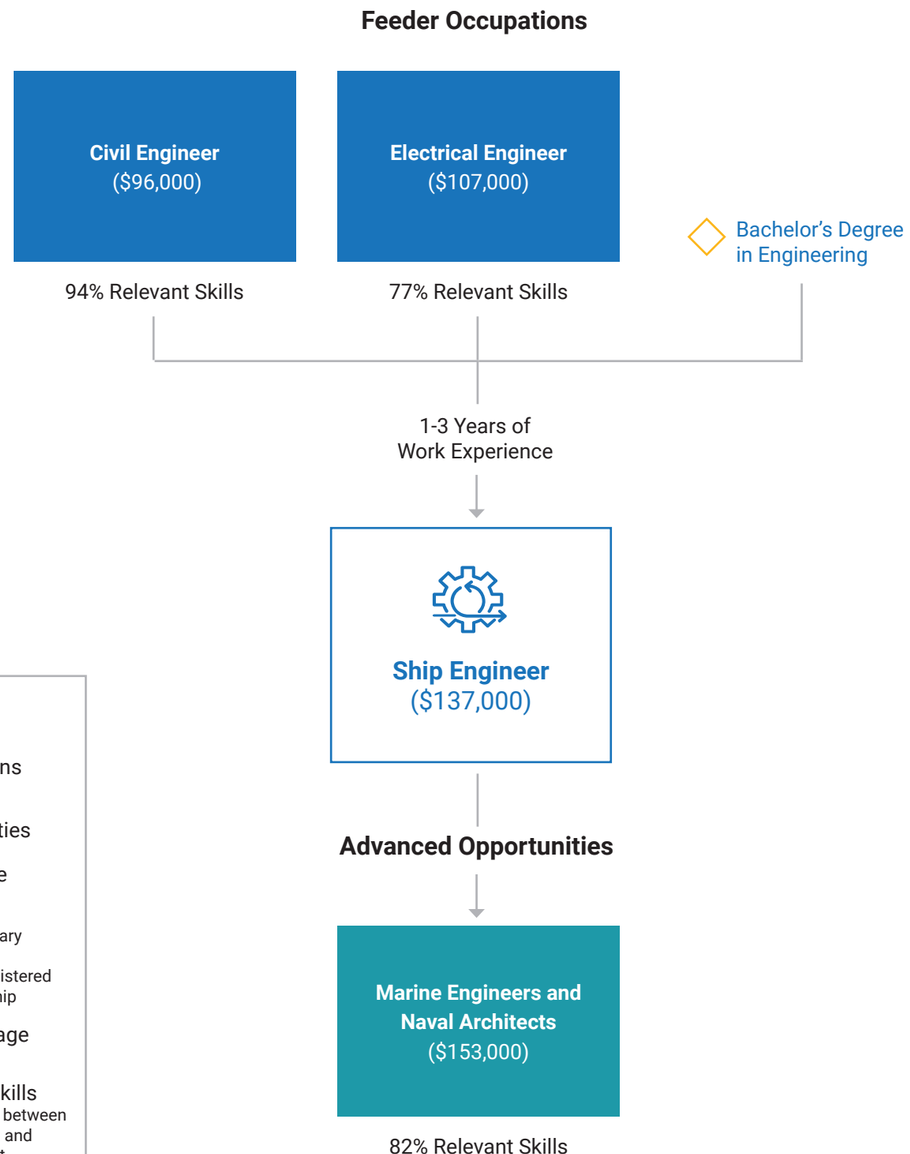
Cargo and Freight Agents
(43-5011)

Maintenance and Repair Workers, General
(49-9071)



Ship Engineers

(53-5031)



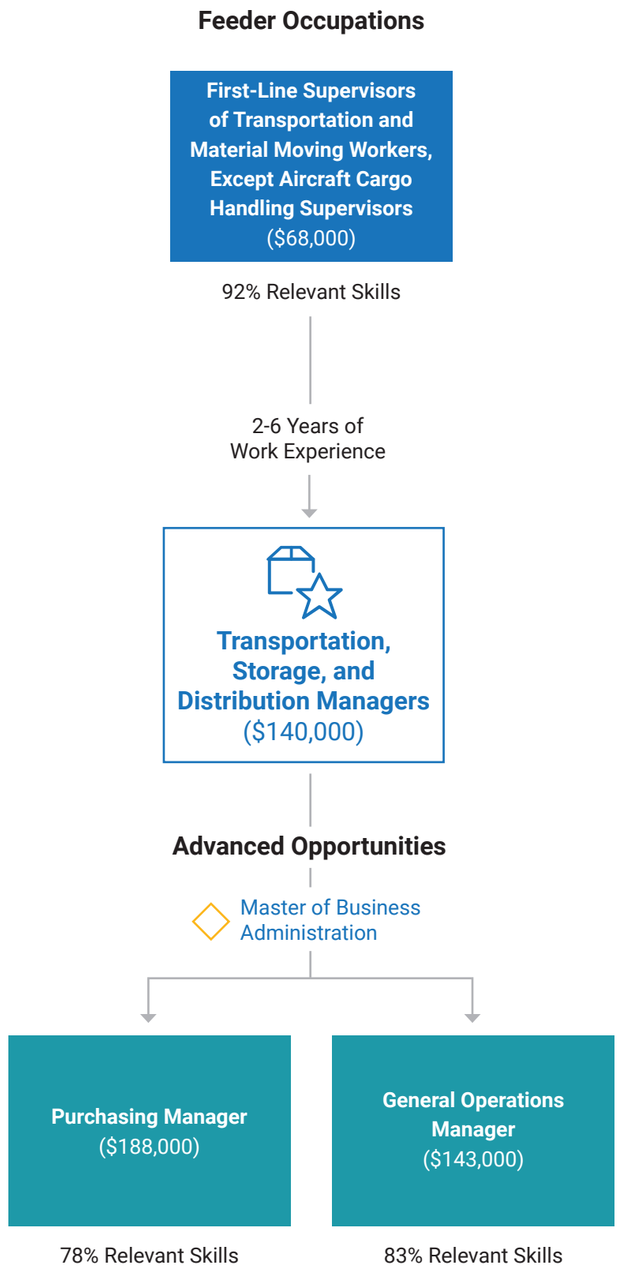
Key:

- Feeder Occupations
- Advanced Opportunities
- Focus Role
- Education
  Post-Secondary Education/ Training, Registered Apprenticeship
- $ Median wage
  as of 2024
- % Relevant skills
  Shared skills between feeder, focus and advancement occupations

Supporting credential

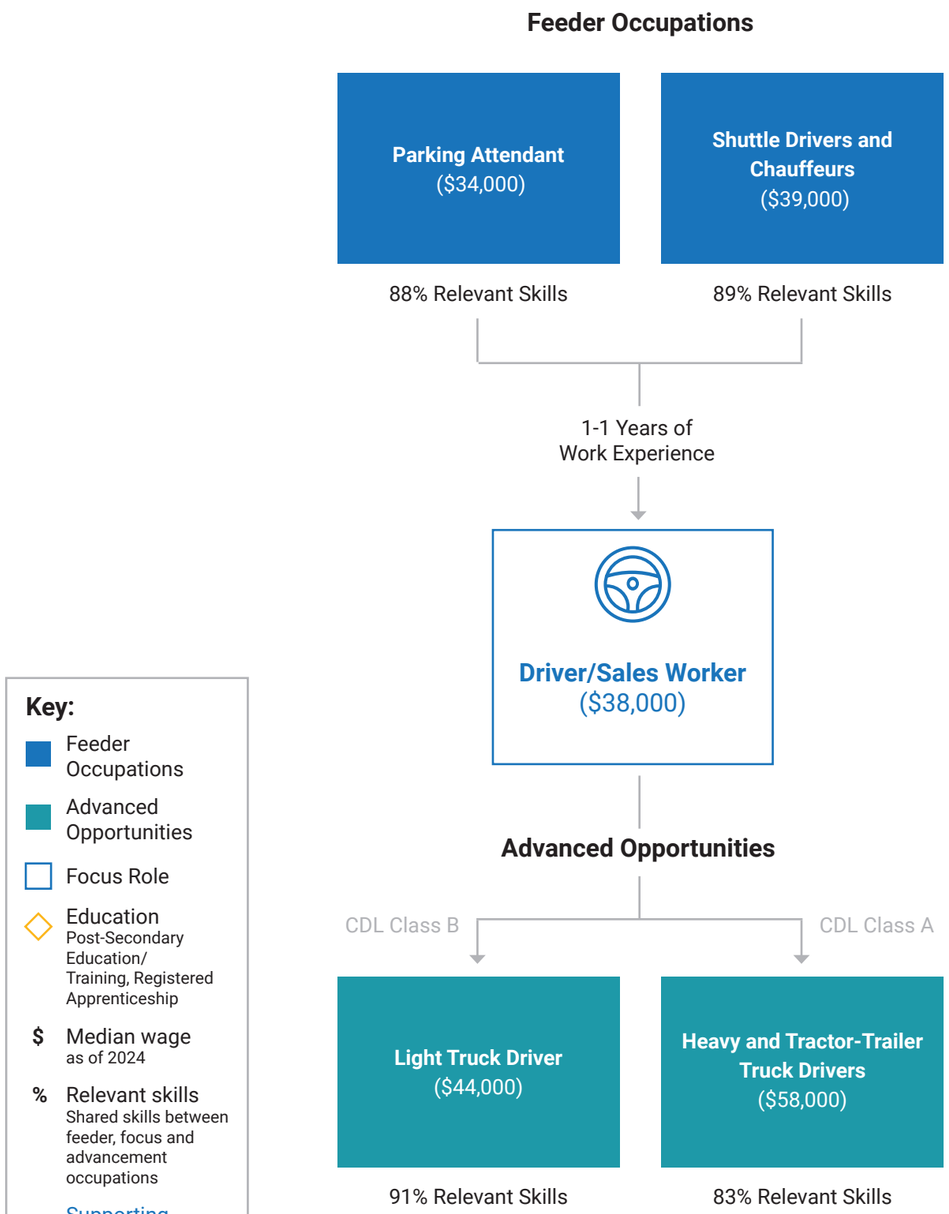
Transportation, Storage, and Distribution Managers

(11-3071)



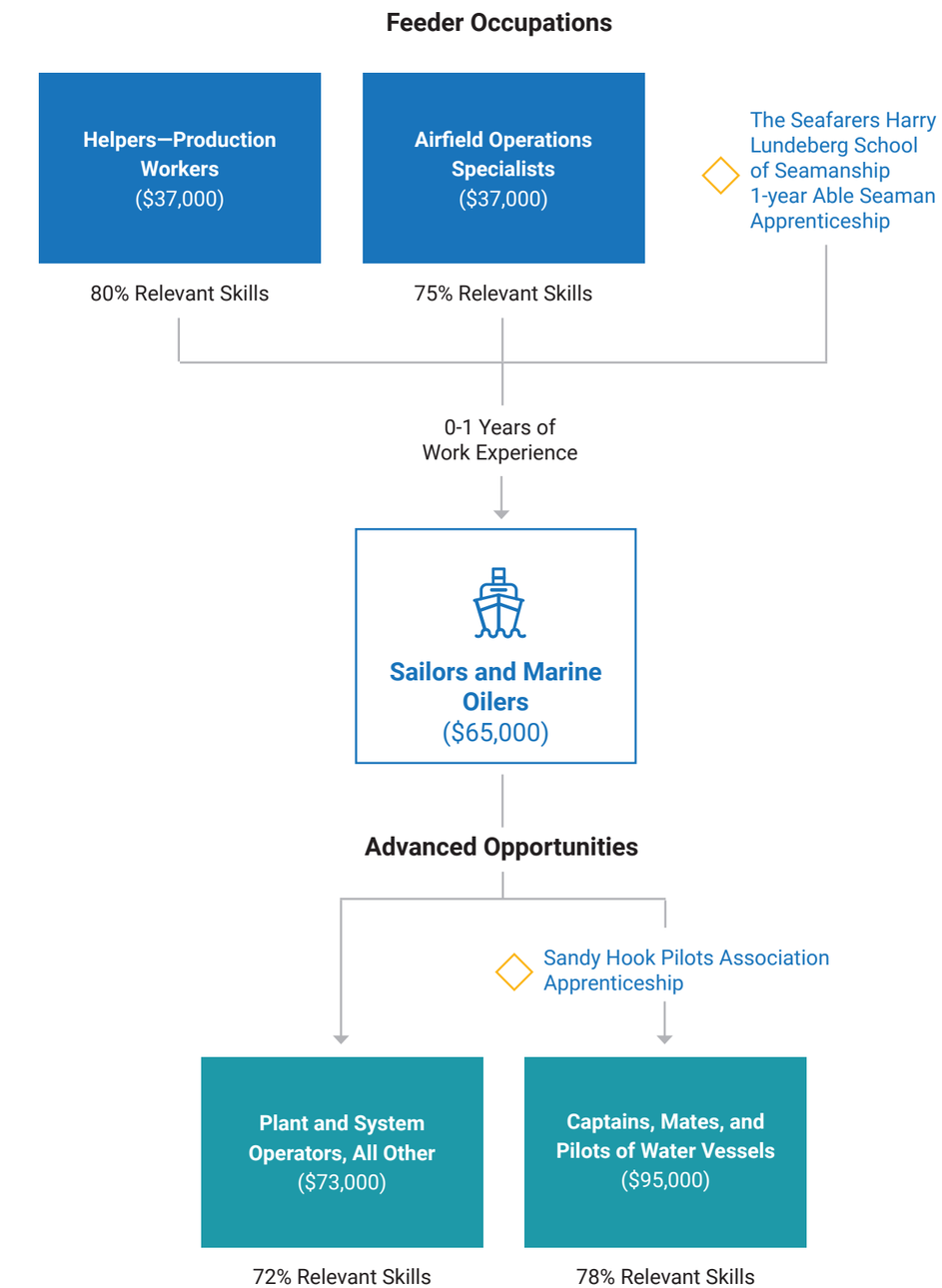
Driver/Sales Workers

(53-3031)



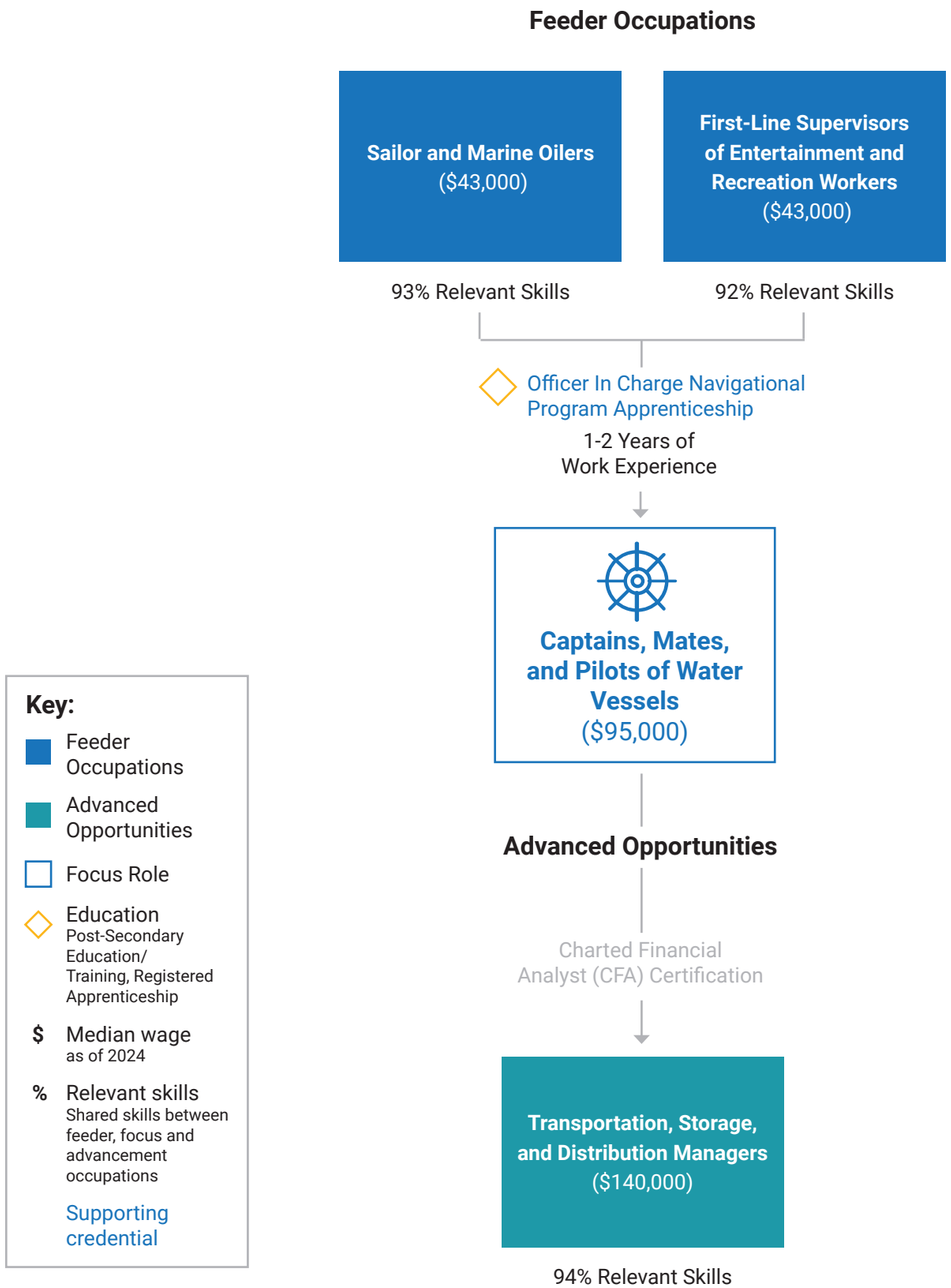
Sailors and Marine Oilers

(53-5011)



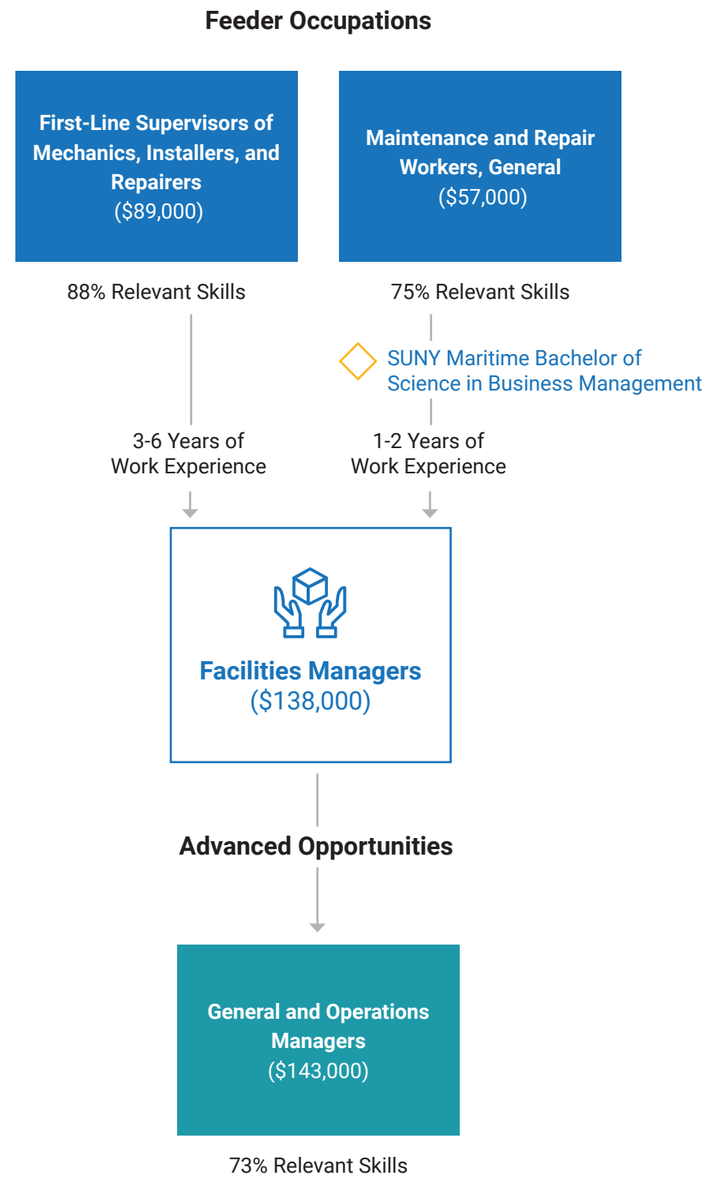
Captains, Mates, and Pilots of Water Vessels

(53-5021)



Facilities Managers

(11-3013)



Heavy and Tractor-Trailer Truck Drivers

(53-3032)

Feeder Occupations

Light Truck Driver
($44,000)

71% Relevant Skills

Driver/Sales Worker
($38,000)

74% Relevant Skills

CDL Class A License

0-1 Years of Work Experience

Heavy and Tractor-Trailer Truck Drivers
($58,000)

Advanced Opportunities

Subway and Streetcar Operators
($93,000)

78% Relevant Skills

Key:

- Feeder Occupations
- Advanced Opportunities
- Focus Role
- Education
  Post-Secondary Education/ Training, Registered Apprenticeship
- $ Median wage as of 2024
- % Relevant skills
  Shared skills between feeder, focus and advancement occupations

Supporting credential

Light Truck Drivers

(53-3033)

Feeder Occupations

Laborers and Freight, Stock, and Material Movers, Hand
($47,000)

93% Relevant Skills

Shipping, Receiving, and Inventory Clerks
($49,000)

92% Relevant Skills

CDL Class B License

Light Truck Drivers
($44,000)

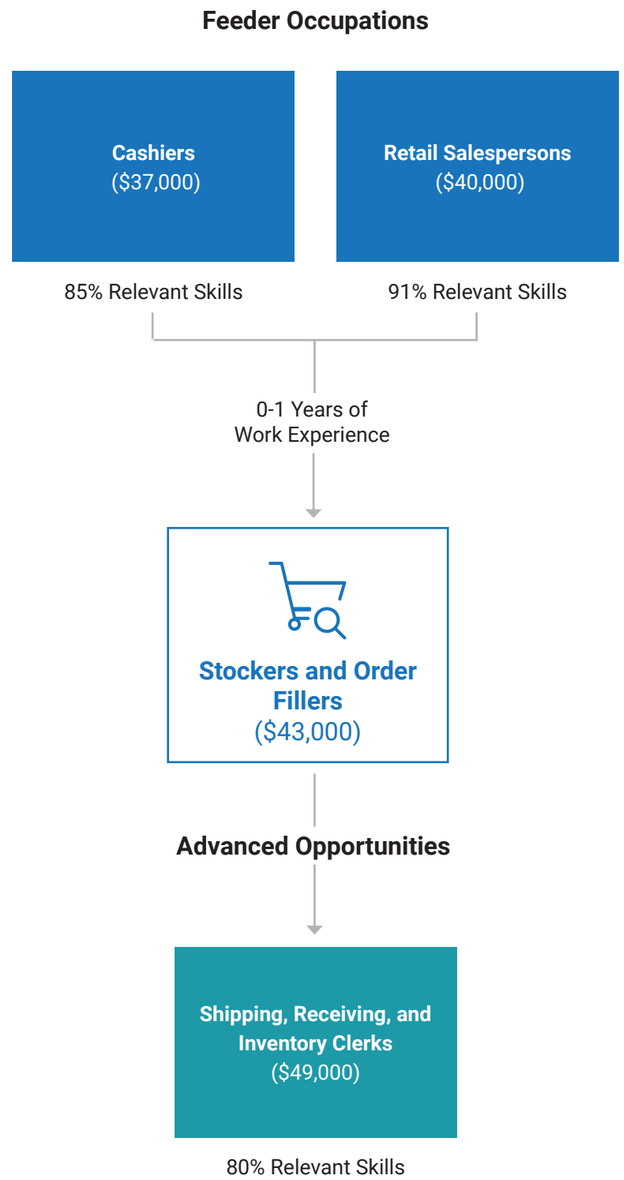
Advanced Opportunities

CDL Class A License

Heavy and Tractor-Trailer Truck Drivers
($58,000)

71% Relevant Skills

Stockers and Order Fillers
(53-7065)

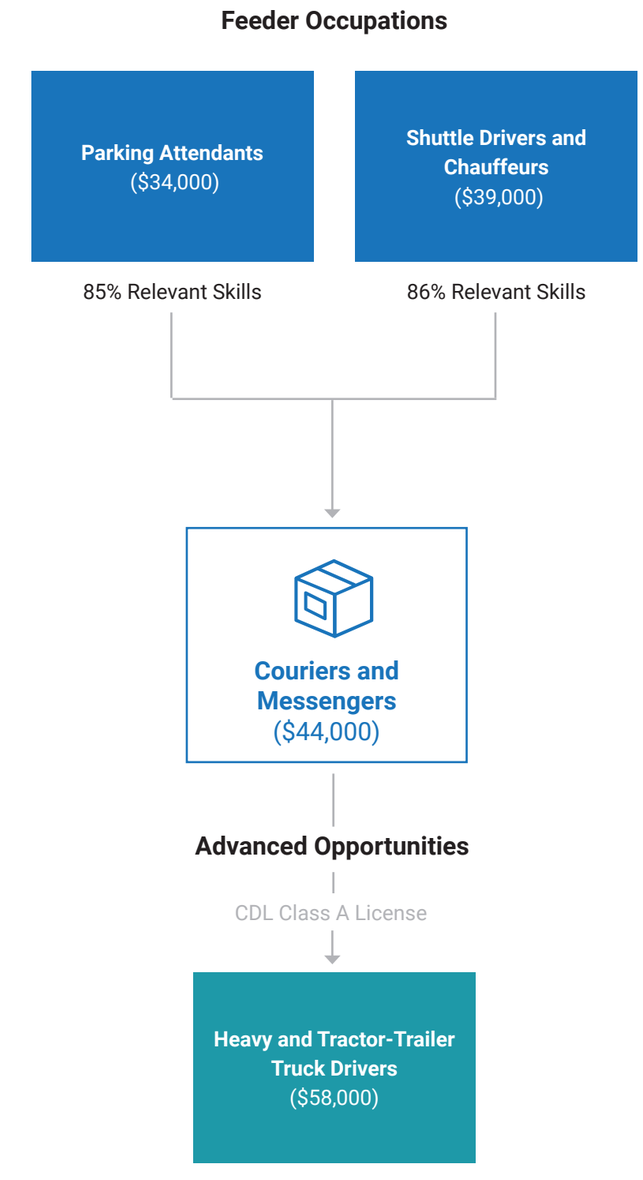


Key:

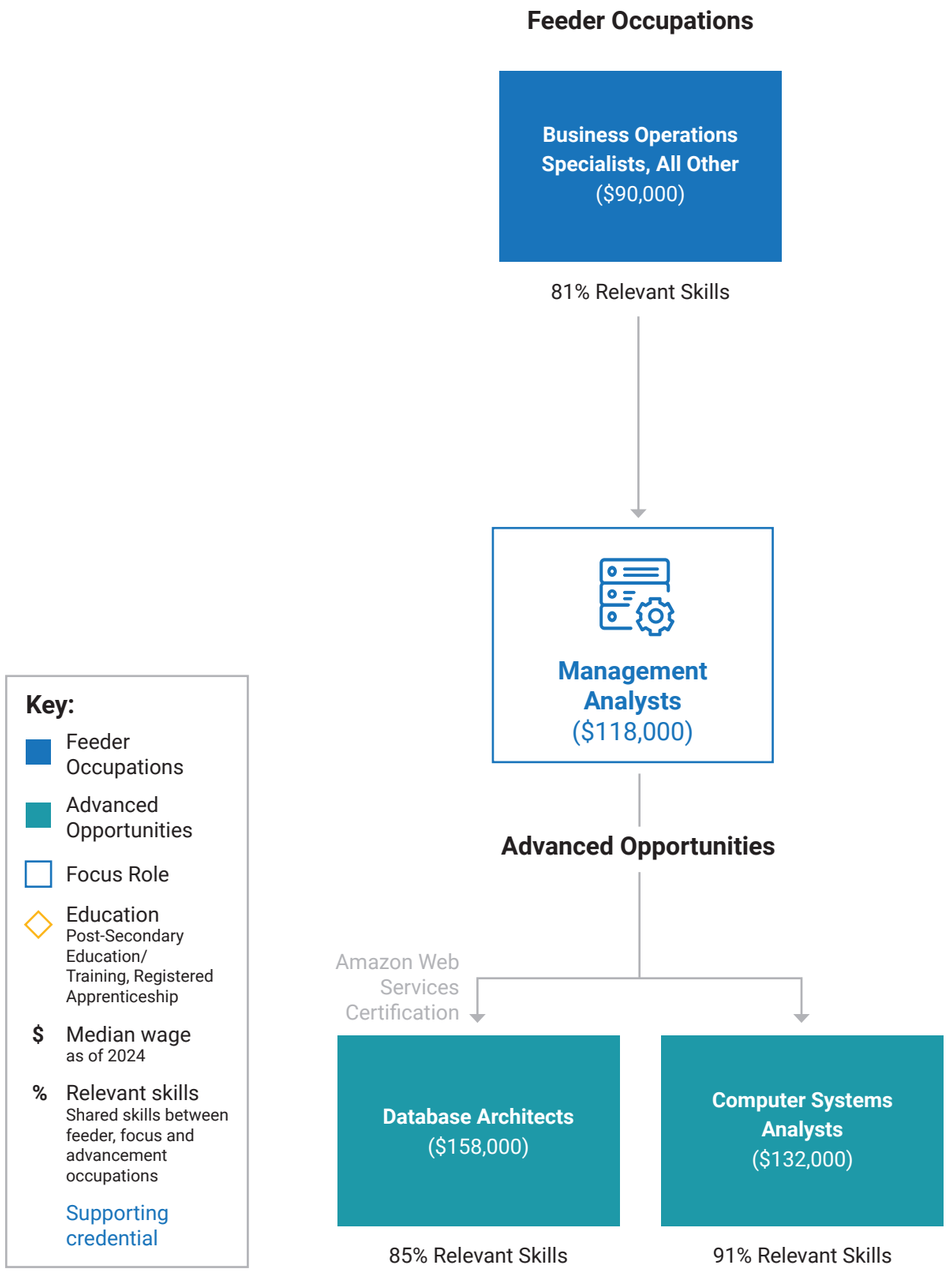
- Feeder Occupations
- Advanced Opportunities
- Focus Role
- Education
  Post-Secondary Education/ Training, Registered Apprenticeship
- $ Median wage
  as of 2024
- % Relevant skills
  Shared skills between feeder, focus and advancement occupations

Supporting credential

Couriers and Messengers
(43-5021)



Management Analysts
(13-1111)



Bus and Truck Mechanics and Diesel Engine Specialists
(49-3031)

Automotive Service Technicians and Mechanics

(49-3023)

Feeder Occupations

Tire Repairers and Changers
($46,000)

88% Relevant Skills

Shuttle Drivers and Chauffeurs
($39,000)

68% Relevant Skills

Automotive Service Excellence (ASE) Certificate

2 Years of Work Experience

Automotive Service Technicians and Mechanics
($51,000)

Advanced Opportunities

Bus and Truck Mechanics and Diesel Engine
($79,000)

79% Relevant Skills

Key:

- Feeder Occupations
- Advanced Opportunities
- Focus Role
- Education
  Post-Secondary Education/ Training, Registered Apprenticeship
- $ Median wage
  as of 2024
- % Relevant skills
  Shared skills between feeder, focus and advancement occupations

Supporting credential

Shipping, Receiving, and Inventory Clerks

(43-5071)

Feeder Occupations

Packers and Packagers, Hand
($43,000)

81% Relevant Skills

Stockers and Order Fillers
($43,000)

80% Relevant Skills

0-2 Years of Work Experience

Shipping, Receiving, and Inventory Clerks
($49,000)

Advanced Opportunities

Forklift Certification

First-Line Supervisors of Transportation and Material Moving Workers
($68,000)

92% Relevant Skills

Industrial Truck and Tractor Operators
($55,000)

84% Relevant Skills

Logisticians

(13-1081)

Feeder Occupations

First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors
($62,000)

76% Relevant Skills

Shipping, Receiving, and Inventory Clerks
($67,000)

72% Relevant Skills

CUNY LaGuardia Community College's Data Analytics micro-pathway

2-3 Years of Work Experience

Logistician
($97,000)

Advanced Opportunities

Transportation, Storage, and Distribution Managers
($140,000)

66% Relevant Skills

Key:

- Feeder Occupations
- Advanced Opportunities
- Focus Role
- Education
  Post-Secondary Education/ Training, Registered Apprenticeship
- $ Median wage as of 2024
- % Relevant skills
  Shared skills between feeder, focus and advancement occupations

Supporting credential

First-Line Supervisor of Transportation and Material Moving Workers

(53-1047)

Feeder Occupations

Laborers and Freight, Stock, and Material Movers, Hand
($47,000)

93% Relevant Skills

Shipping, Receiving, and Inventory Clerks
($49,000)

92% Relevant Skills

2-3 Years of Work Experience

First-Line Supervisors of Transportation and Material Moving Workers
($68,000)

Advanced Opportunities

Project Management Professional Certification OR Master of Business Administration

Transportation, Storage, and Distribution Managers
($140,000)

94% Relevant Skills

Photo Credit: Adobe Stock

Key Reports Analyzed to Support This Report

- Green Economy Action Plan | NYCEDC
- 2023 SANYNJ Economic Impact Study | SANYNJ
- Maritime Administration Mariner Workforce Strategic Plan FY 2023 to FY 2027 | U.S Department of Transportation
- Assessing the Shortage of United States Mariners and Recruitment and Retention in the United States Coast Guard | U.S Department of Transportation
- Supply Chain Assessment of the Transportation Industrial Base: Freight and Logistics | U.S Department of Transportation
- Deep Dive on the Workforce of the Future in the Maritime Industry | Marsh
- Burning Need for Transformation of Seafarers: The Pillars of Maritime 2050 | Global Maritime Forum
- Global Maritime Trends 2050 Report | Economist
- NYS DOT Freight Plan 2024 | NY State Department of Transportation
- NYCEDC Freight NYC Digital Book | NYCEDC
- World Maritime University: Transport 2024: Automation Technology Employment, The Future of Work | World Maritime University
- USDOT: Assessing the Shortage of United States Mariners and Recruitment and Retention in the United States Coast Guard | U.S Department of Transportation
- Supply Chain Assessment of the Transportation Industrial Base: Freight and Logistics; February 2022 | U.S Department of Transportation
- Marine Industry Skill Gaps & Job Vacancy Survey 2018 | Florida Department of Economic Opportunity & CareerSource Florida
- Essential but Unprotected: App-based Food Couriers in New York City | Cornell Workers Institute

End Notes

i. Port of New York & New Jersey: Truckers Resource Guidebook | PANYNJ
ii. Dockworkers accept new contract | LinkedIn
iii. Fleetweek Navy League New York Council Reception | U.S Fleet Forces Command
iv. Water Transportation Workers : Occupational Outlook Handbook | U.S. Bureau of Labor Statistics
v. USCG Designated Examiner List | USCG
vi. How long does it take to process my TWIC application? What if I don't receive a response? | Transportation Security Administration
vii. Service Technicians | NADA
viii. Green Economy Action Plan | NYCEDC
ix. The Future of the Last-Mile Ecosystem | World Economic Forum

Photo Credit: Bernd Dittrich

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CUNY Kingsborough

Downtown Alliance

DutchX

Global Container Terminals New York/Port Liberty (formerly known as New York Container Terminal)

Green City Force

Harlem River Yard

Hughes Marine

International Brotherhood of Electrical Workers

International Longshoremen's Association

International Organization of Masters, Mates, & Pilots

LaGuardia Community College

Maritime Association of NYNJ

Net Zero Logistics

New York City Department of Sanitation (DSNY)

New York City Housing Authority (NYCHA)

New York Waterway

NYC Department of Transportation (NYCDOT)

NYC Employment Training Coalition

NYC Talent

Port Authority of NY and NJ (PANYNJ)

Port Newark Container Terminal

Ports America

Prologis

Red Hook Tenant Association

Red Hook Terminals

RETI Center

Seafarers International Union

Shipping Association of NY/NJ (SANYNJ)

Southwest Brooklyn Industrial Development Corporation

Staten Island EDC

SUNY Maritime

The Urban Assembly New York Harbor School

Trucking Association of NY (TANY)

UPROSE

Volofleet Logistics Holdings

Weeks Marine

NYC / EDC

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