SIZING THE U.S. AND CALIFORNIA HARBOR CRAFT MARKET

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Ports are a major source of greenhouse gas emissions and air pollution. This unfortunately leads to elevated levels of air pollution in the surrounding communities, which has negative impacts on public health. Marine vessels, many of which burn marine diesel oil, are responsible for a large portion of these emissions. In promoting the overall goal of creating cleaner air and lower greenhouse gas emissions, **it is clear that commercial harbor craft and inland and nearshore vessels represent an important sector—and one that has begun to move to zero-emission operations.**

To support this transition, CALSTART, in partnership with Intelatus Global Partners, developed the ***Sizing the U.S. and California Harbor Craft Market*** report. This work is an inventory of commercial harbor craft and inland and nearshore vessel fleets above 600 kilowatts (kW) or 805 brake horsepower. This inventory helps us understand the size of the potential market for zero-emission harbor craft and identifies the vessels that are most suitable for transitioning to zero-emission technology. This report is funded in part by the **Clean Off-Road Equipment Voucher Incentive Project (CORE)**. CORE is part of California Climate Investments, a statewide initiative that puts billions of Cap-and-Trade dollars to work reducing greenhouse gas emissions, strengthening the economy, and improving public health and the environment—particularly in disadvantaged communities.
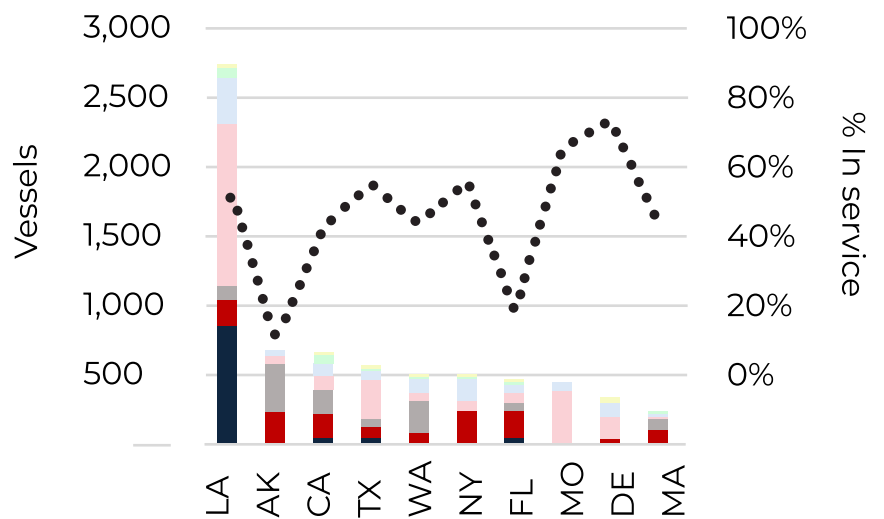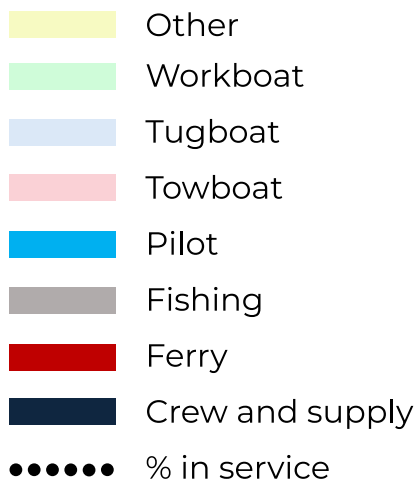
In this work, vessels were classified according to their suitability for zero-emission operations, and the commercial harbor craft market was classified into service categories including crew and supply boats, ferries and excursion vessels, fishing vessels, pilot vessels, tugboats, towboats, workboats, and other vessels. Based on this framework, the **project team identified approximately 10,000 harbor craft above 600 kW in the United States, with 4,405 vessels being considered as highly suitable for zero-emission technology.** California has 676 registered harbor craft, with 244 being identified as highly suitable for zero-emission technology.

Ten states contain **73 percent** of harbor craft deployed in the United States:

1. Alaska
2. California
3. Delaware
4. Florida
5. Louisiana
6. Massachusetts
7. Missouri
8. New York
9. Texas
10. Washington

Louisiana is the single largest state for harbor craft, with approximately one-third of U.S. harbor craft registrations—this reflects the concentration of harbor craft in the Mississippi River system and the Gulf of Mexico ports.

Top 10 States by Harbor Craft Number and Type

Legend:
- Other
- Workboat
- Tugboat
- Towboat
- Pilot
- Fishing
- Ferry
- Crew and supply
- •••••• % in service

States (x-axis): LA, AK, CA, TX, WA, NY, FL, MO, DE, MA

Left axis (Vessels): 3,000 / 2,500 / 2,000 / 1,500 / 1,000 / 500

Right axis (% In service): 100% / 80% / 60% / 40% / 20% / 0%

Source: Intelatus Global Partners

The research also uncovered **several important lessons** for deploying zero-emission harbor craft:

- Zero-emission harbor craft will need access to electrical charging and fueling infrastructure. Hydrogen production will also need to increase to meet future demand from the harbor craft sector.

- Well-to-wake emissions are an important consideration for maximizing the environmental benefits of these vessels. Although the vessels do not produce point-source emissions, there are upstream emissions from production of their fuels. Ensuring that these vessels use low- or zero-carbon electricity and hydrogen is vital for reducing greenhouse gas emissions.

- Certification schemes will be important for identifying low- and zero-carbon electricity and hydrogen.

- There are 4,000+ commercial harbor craft that could be transitioned to zero-emission technologies today and still maintain their duty cycles. As technology continues to improve, that number will continue to grow and potential emissions reductions will follow along with it.

CALSTART research is continuing with the aim to enhance available market readiness and acceleration information. This work should illuminate how the energy transition is transforming the marine vessel industry. If you would like to stay up-to-date on current research, please subscribe to **https://californiacore.org/contact-outreach/**.

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