Seattle Department of Transportation

SEATTLE CASE STUDY FOR C40 CITIES

Business input and data analysis show how cities can support zero emissions curbside management

Freight and commercial goods are an important and growing part of the economy, but also a significant contributor to emissions and poor air quality. Cities are working to address this challenge by supporting zero emission urban goods movement, but there are barriers including policy, costs, route planning, and infrastructure. The City of Seattle set out on a research study to understand how to overcome these challenges to chart a path forward in support of zero emission freight, with a focus on zero emission loading zones and e-cargo bikes.

Background: Seattle's Climate Goals

The City of Seattle's Transportation Electrification Blueprint identifies an ambitious goal that 30 percent of all commercial goods delivery be zero-emission by 2030. The City also adopted a Climate Executive Order (EO) in 2022 that sets forth key actions to equitably reduce or eliminate greenhouse gas emissions.

To understand the structures necessary for freight decarbonization, the Seattle Department of Transportation partnered with C40 Cities and Walker Consultants to develop an implementation plan for zero emission loading zones and e-cargo bike delivery.

Zero Emissions Loading Zones and E-Cargo Bike Delivery

Opportunities	Challenges
There is an appetite from businesses and large freight companies to electrify their fleets, and some already use EVs for delivery.	Cost barriers for purchasing EVs are a top issue, especially for small delivery companies or personal delivery drivers contracted or employed with companies like Uber, Lyft, or independent restaurants.
Pricing and other local government support to create partnerships and educate businesses can "move the needle."	Small and medium businesses will need financial assistance, and large companies need to see an operational benefit.
Many deliveries from local businesses originate from less than 5 miles away, which eliminates range anxiety.	There are not enough electric vehicles available to purchase and those on the market do not cover all fleet needs; this may be due to current supply chain issues.
It is unlikely that urban freight vehicles need en-route charging; overnight charging can cover needs.	Labor costs and agreements contribute a significant portion of delivery costs and requirements, so smaller electric vehicles may be inefficient.
Many freight vehicles are not full during their delivery runs, creating an opportunity for efficiency improvements with smaller electric vehicles and e-cargo bikes for delivery.	Enforcing loading zones can be costly and complicated. The State of Washington also prohibits curb regulations enforcement via video recording and mailed citations.
Many of the packages delivered today in trucks could be delivered by e-cargo bikes.	Many businesses contract with third-party delivery companies and do not have control over the type of vehicles or the delivery process.
Unused (privately owned) off-street parking can be repurposed for e-cargo bike delivery, storage and goods hubs.	Companies are reluctant to co-locate at delivery hubs over concerns regarding data, privacy, and intellectual property.
Lessons from other cities show a path forward.	Bulky goods or long trips may not be a good fit for e-cargo bike delivery.

Study Methodology and Tips

01 Step 1: Policy Analysis and Research

- Review existing state and local regulations, past pilot data, and build on our team's knowledge.

02 Step 2: Outreach and Engagement

- Better to focus on 1:1 interviews; email surveys did not produce many responses.
- It took more time than expected to schedule interviews. Challenges with finding the right person at the company to interview and receiving a response.

03 Step 3: Peer Review

- Interviews with staff in Santa Monica, Los Angeles, Boston, New York, and Montreal.
- City of Seattle participated in C40's Curbside Management Working Group to share learnings with other cities leading on zero emissions freight.

04 Step 4: Data Collection

- A team of four conducted manual field observations of delivery and loading activity in four neighborhoods over two days from early morning to late evening.
- The team tracked vehicle types, the goods being delivered, the location of the stopped vehicle, dwell time, and other observations.
- Data collection was also an opportunity to conduct intercept surveys with businesses and delivery drivers, providing useful feedback.

Recommendations

The recommendations provide an incremental process, starting with lower-cost changes that can be implemented sooner to more expensive and impactful pilots. Each recommendation could potentially eliminate between 10 and 30 million pounds of carbon dioxide emissions by 2030. These changes will also reduce air pollution from delivery trucks, which will have an immediate positive health impact.

Support zero-emission commercial delivery and incentivize companies to electrify their fleets:

- Liaise with Seattle companies to encourage fleet right-sizing and electrification; identify key delivery routes where new load zones would create efficiency.
- Develop new loading zone standards and pilot Zero Emission Commercial Vehicle Loading Zones.
- Develop a tiered Commercial Vehicle Loading Zone permit pricing structure that encourages electric vehicle transition.
- Implement enhanced enforcement practices.

Support e-cargo bike delivery:

- Launch the Commercial E-Cargo Bike Program, with associated new permitting structures and loading/parking infrastructure at the curb.
- Facilitate the development of zero emission neighborhood delivery hubs.
- Pilot small-medium business e-cargo bike lending library, where businesses can rent e-cargo bikes for delivery.

Key Takeaways

- ✓ **Dense residential land uses seemed to drive commercial delivery activity. It was important to survey a range of neighborhoods that vary by density and commercial/residential makeup.**
  - Areas with dense residential multi-story apartment and office buildings had higher levels of delivery activity, except for areas where the population is older and lower-income and residents may purchase fewer products online.
  - Areas with a bustling commercial street that were surrounded by single-family homes had low delivery counts. Delivery drivers to residences can easily park on a residential street.
- ✓ **Enforcement is critical to the success of zero emissions loading zones, but is costly. Video or other tracking technology could support, but state laws that prohibit enforcing curb regulations through mailed citations would need to be amended.**
- ✓ **There are a limited number of companies currently operating using electric vehicles, which raises concerns that dedicated EV load zones would benefit a single company. This conflicts with the City's regulations that do not allow a single private business dedicated access or reservations to the public right-of-way.**
- ✓ **Aligning standards and regulations with other cities creates consistency for businesses and bike manufacturers to expedite timelines.**
- ✓ **Accomplishing a 30 percent reduction in delivery emissions in the next seven years will require major moves beyond these recommendations such as commercial delivery curb access fees based on day/time.**

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