City of Pittsburgh

Planning for mobility for all: Why now is the time to talk about personal delivery devices

Department of Mobility & Infrastructure

June 16, 2021
City of Pittsburgh

Personal Delivery Devices (PDDs)
What are they and why are we talking about them?

Personal delivery devices (PDDs) are ground delivery robots that are remotely operated, self-driving, or both.

PDDs primarily operate in pedestrian areas, but at times operate on the street.

Due to the Covid-19 pandemic, people are travelling less and ordering more goods for delivery, which has accelerated the research, development, testing, and deployment of PDDs.

This trend is expected to continue and large companies like Amazon and FedEx are currently testing PDDs.
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Act 106/Senate Bill 1199

In November 2020, the PA General Assembly passed SB1199, authorizing ground delivery devices and giving sole authority to PennDOT to permit and regulate these devices.

The law’s effective date was January 30, 2021.
U.S. e-commerce grew 313% in the decade before coronavirus

Estimated Quarterly U.S. Retail E-commerce Sales as a Percent of Total Quarterly Retail Sales:
1st Quarter 2011 – 3rd Quarter 2020

Percent of Total

Meet Roxo™, the FedEx SameDay Bot

Meet Scout: Amazon is taking its Prime Delivery Robots to the South

Uber planning to spin out Postmates’ delivery robot arm

The future is knocking
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What do we do now?

- PA municipalities are now prohibited from regulating the operation of PDDs.
- We anticipate “big player” PDD operators to enter the Pittsburgh market in the next 1-3 years.
- The Knight Foundation grant has allocated funding for a pilot project designed to engage local residents around new mobility technology.
The goal of the initiative is to bring residents to the center of autonomous mobility pilot projects.

The grant requires pilot projects to be designed to engage local residents around new mobility technology to ensure that they reflect community input and meet local needs.
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Desired Outcomes of Pilot

Primary Outcomes:

➔ Identify areas in which we can improve our right-of-way management to prepare for emerging technology and the future of deliveries

➔ Create informed local policies

➔ Allow for a controlled demonstration of the safety and accessibility of PDDs

Secondary Benefits:

➔ Support small businesses
➔ Engage with Rec to Tech program
➔ Connect library books and educational materials to youth and older adults
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PDD Pilot

Why Bloomfield?
● Diverse demographics (age and income)
● Wide sidewalks in commercial district (Liberty Ave)
● Engaged community groups
● Small, locally owned businesses interested in delivery services

Why Kiwibot?
● Operates small, slow, remotely-operated PDDs
● Willingness to have a collaborative relationship with municipalities
● Willingness to share data and work to share via MDS
● Willingness to participate in public education/engagement
  ○ Let residents see “behind the tech”
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April 2021 Community Meeting
What we heard from the community

Most asked questions:

● Why is a pilot necessary/What is the benefit of a pilot?
● What data will be collected during the pilot? How will it be used?
● How will the City and Kiwibot address concerns, respond to incidents, and answer questions during the pilot?
● What are the specifications of the Kiwibots?

Greatest concerns:

● Safety and accessibility
● Job implications of automation
● Privacy
● Liability
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### Research Plan – KPIs and Data Collection

<table>
<thead>
<tr>
<th>Question</th>
<th>KPI</th>
<th>Specific Data Needed</th>
<th>Party Responsible</th>
<th>Data Collection Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can PDDs be deployed in pedestrian areas without diminishing safety or accessibility?</td>
<td>Number of reported device related injuries and severity</td>
<td>Location of conflict Description of conflict Injury details</td>
<td>Kiwibot</td>
<td>PDDs collecting routes and conflict information</td>
</tr>
<tr>
<td></td>
<td>Number of complaints filed</td>
<td>311 reports Comments submitted through Kiwibot or City platforms</td>
<td>City Kiwibot</td>
<td>Reports/Comments submitted directly to City or Kiwibot</td>
</tr>
<tr>
<td></td>
<td>Number of near misses</td>
<td>Volume, location, and description of near misses</td>
<td>City CMU</td>
<td>Observation of PDDs</td>
</tr>
<tr>
<td></td>
<td>Public perception of safety around routes</td>
<td>Reported feeling of safety Public’s interaction with PDDs</td>
<td>City CMU</td>
<td>Intercept surveys Observation of PDD interactions</td>
</tr>
</tbody>
</table>
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Research Plan - Populations to Reach

Sidewalk Users

Small Businesses and Nonprofits

PDD Users
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Research Plan – Method

**Sidewalk Users**
- Intercept Surveys
- Observation
- Focus Groups
- Interviews

**Small Businesses and Nonprofits**
- Interviews

**PDD Users**
- Online Survey
  - Interviews
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Response Plan

**Non-emergency** reports/calls will be routed through 3-1-1, even if initial report/call is made to 9-1-1.

**Emergency** reports/calls will be routed through 3-1-1, even if initial report/call is made to 9-1-1.

An **emergency** means a human injury or immediate threat to public safety.

**Significant Damage to Kiwibots**

1. Kiwibot will first notify DOMI and consult with DOMI regarding the appropriate response or reporting.

2. If DOMI deems damage was done intentionally, Kiwibot may file a police report.

3. If DOMI deems the damage was done unintentionally or in response to an obstruction creating a safety hazard, a violation of the governing operating policy, or an emergency, Kiwibot will be responsible for repairing the device.
DOMI is committed to responding to questions within 5 business days during the pilot.
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Evaluation/Response

Safety and Accessibility incidents, complaints, or other reports will be addressed immediately. This includes pausing PDD service, if necessary. DOMI will work with Kiwibot, Public Safety, ADA Coordinator, and Steering Committee to review incidents, complaints, or other reports.

A mid-pilot evaluation will be completed by reviewing:
- Feedback and survey responses
- Documented observations
- Complaints through 3-1-1, EngagePGH, and email
- KPIs including crash reports
- Steering committee meeting minutes

At the mid-pilot point, adjustments to use cases, routes, reporting, response, or any other element of the pilot can be made.

A final evaluation report will be completed by reviewing:
- Feedback and survey responses
- Documented observations
- Complaints through 3-1-1, EngagePGH, and email
- KPIs including crash reports
- Steering committee meeting minutes

The final evaluation report will be made public and provided to State regulators.
The current state law and operating policy do not include data or privacy provisions.

Kiwibot does not store video footage collected during operations.

Except in the event of intentional, severe damage to a delivery device, Kiwibot will not share any personally identifiable information with the City or any other party.
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Kiwibot Specifications

- Kiwibots are **fully electric**
- Kiwibots operate at **maximum** speeds of 4mph (roughly the speed of a brisk walk)
- Kiwibots are **18” x 18” x 12”** and weigh **34 pounds** without cargo.
- Kiwibots can deliver within a **1.5 mile radius** of a central “hub” location that will be located in Bloomfield (exact location will depend on local partners).
- No more than 10 Kiwibots will be deployed during the pilot
We need your input and participation!

Interested in participating as a project evaluator and advisor?

Contact Erin Clark at erin.clark@pittsburghpa.gov

Other questions?