



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

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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.

Pennsylvania legalizes autonomous delivery robots, classifies them as pedestrians

By Ryan Deto



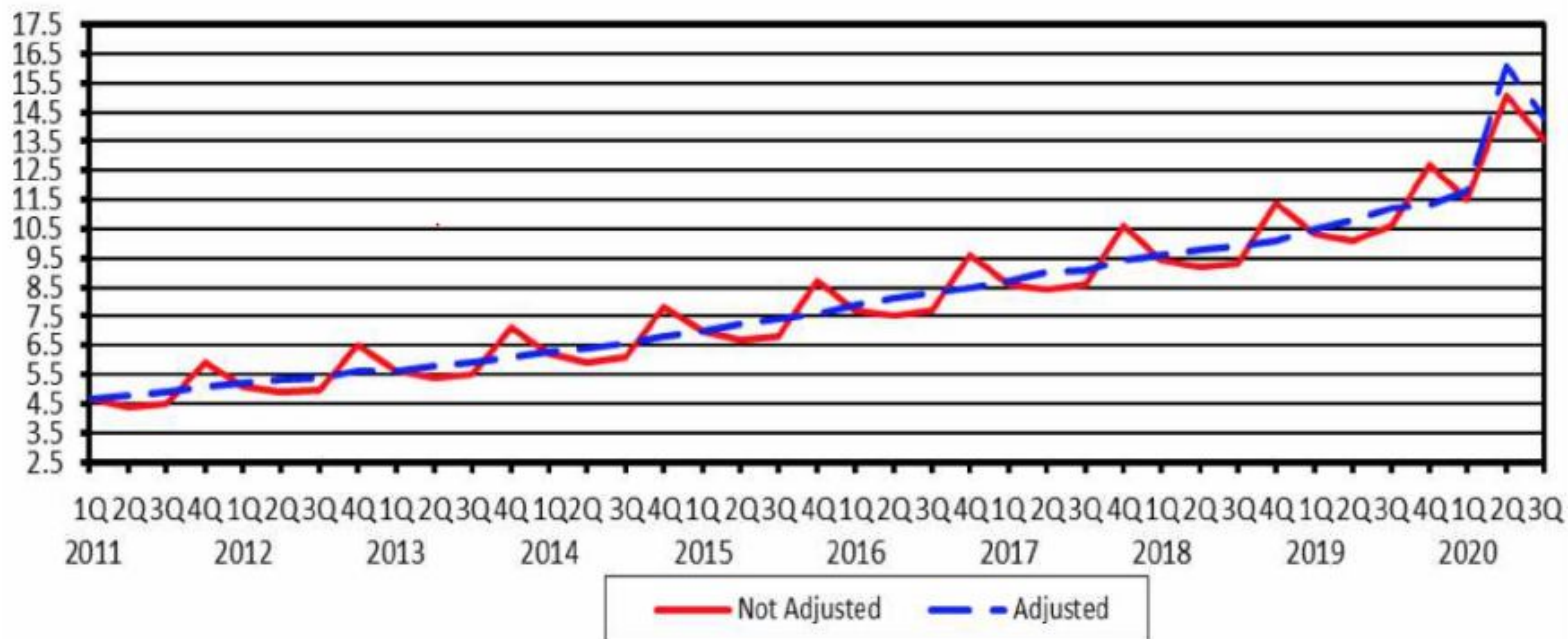
CP Photo: Jared Wickerham

A Starship food delivery robot is seen along Liberty Avenue in Bloomfield in March 27.

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



https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf?

Meet Roxo™, the FedEx SameDay Bot



TECH

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

Dalvin Brown USA TODAY
Published 8:11 a.m. ET Jul. 22, 2020



Amazon is adding its robot delivery option to more cities. Hybrid Angle LLC | Ashton Stanis, Ashton Stan

The future is knocking

Uber planning to spin out Postmates' delivery robot arm

Kirsten Korosec @kirstenkorosec / 11:39 AM EST • January 15, 2021

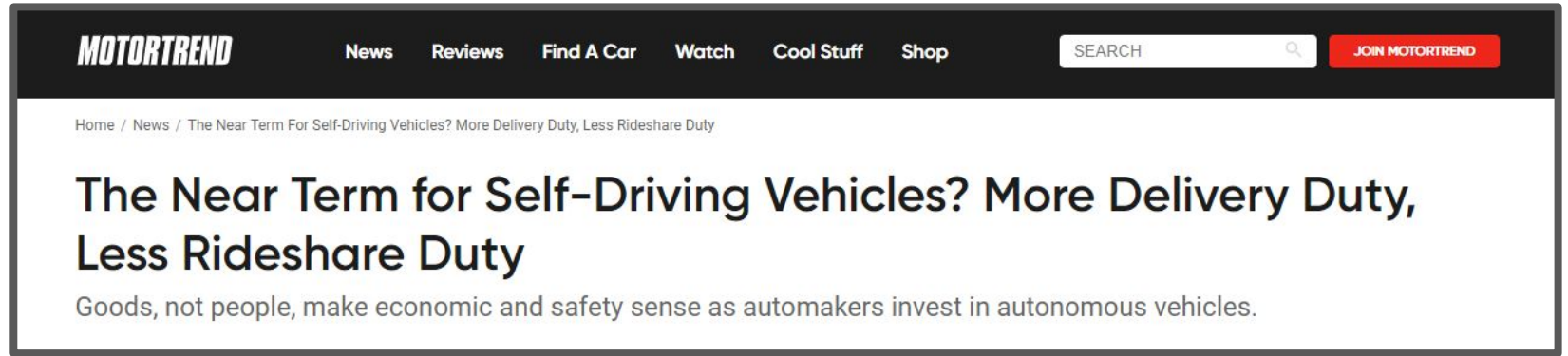
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Image Credits: Cluster

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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.

COMMUNITIES

Major \$5.25 million Knight Foundation initiative puts people at the center of local self-driving vehicle programs

New investment will support pilot projects in Detroit; Long Beach, California; Miami; San Jose, California; and Pittsburgh

PUBLISHED SEPTEMBER 18, 2018 BY KNIGHT FOUNDATION

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

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

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Research Plan – Populations to Reach

Sidewalk Users



Small Businesses and Nonprofits



PDD Users



City of Pittsburgh Research Plan – Method



Sidewalk Users



Intercept Surveys



Observation



Focus Groups



Interviews



Online Survey



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.

City of Pittsburgh Feedback Collection

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Engage PGH



Comments

Surveys

Questions

Email us at: AV@pittsburghpa.gov

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.

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The current state law and operating policy do not include data or privacy provisions.

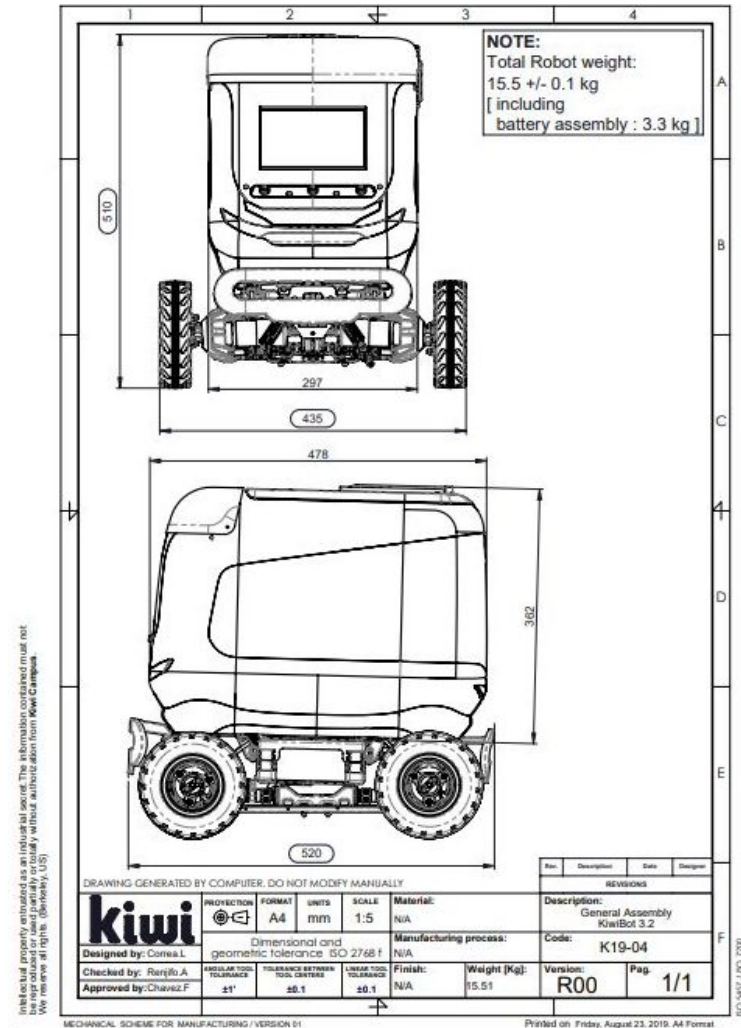
Kiwibot does not store video footage collected during operations.

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.



City of Pittsburgh 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?