

# Personal Delivery Device (PDD) Operations Policy



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## 1 INTRODUCTION

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On November 1, 2020, Act 106 of 2020 was enacted and permitted the operation of Personal Delivery Devices (PDD) in pedestrian areas, on select shoulders or berms of roadways, and on select roadways. By default, all roadways and shoulders and berms on a roadway posted at or under 25mph are eligible for operations. Prior to operating, an applicant must receive a PDD Authorization from the Pennsylvania Department of Transportation (PennDOT). Per Act 106, PennDOT is charged with establishing policies and guidelines to administer the authorization of PDDs. Per Act 106, PDD are classified as pedestrians.

The policy does not apply to PDDs operated on private property.

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## 2 RESPONSIBILITIES AND POWERS

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Title 75, Chapter 85, Subpart C establishes the following responsibilities and powers.

### **PennDOT**

- Issue, approve, renew, revoke, suspend, condition or deny issuance or renewal of PDD authorizations for Phase 1 or Phase 2 operations.
- Authorize transition from Phase 1 to Phase 2 operations prior to 180 days.
- Establish policies and guidelines to administer PDD authorizations and ensure ongoing compliance.
- By order of the Secretary, prohibit the use of a PDD on any roadway, or shoulder or berm of a roadway, under the jurisdiction of PennDOT where the Secretary determines that the operation of the PDD could constitute a hazard.
- By order of the Secretary, authorize the use of PDDs on roadways, shoulders or berms with posted speed limits greater than 25 mph but no greater than 35 mph.
- Display the following information on the PennDOT website:
  - o A list of authorized entities that includes the authorized operational phase of each authorized entity.
  - o Any order issued by the Secretary regarding PDDs.
  - o Policies or guidelines issued by PennDOT consistent with 75 Pa.C.S. §8513.
- Notify applicable authorized entities when PennDOT determines conditions constitute a weather emergency or hazardous event.

### **Applicant/Authorized Entity**

- Apply for or renew a PDD authorization. An authorized entity shall have the right to appeal PDD authorization suspensions or revocations.
- Notify the governing body of the municipality of the authorized entity's intent to operate PDD within the municipality no less than 30 days prior to the date on which the authorized entity commences PDD operations within the municipality.
- Self-report to the PennDOT and the law enforcement agency of the municipality governing the right-of-way containing the pedestrian area or roadway, or shoulder or berm of the roadway, a crash involving any of the authorized entity's PDDs that resulted in bodily injury, death or damage to property within 24 hours of the crash.
- Develop and maintain a list of unique identification numbers assigned to each of the PDDs, which shall be updated prior to an authorized entity operating a PDD not listed in the application.
- Provide any information or records on an ongoing basis that may be required by PennDOT and is reasonably necessary for the administration and enforcement as identified in this policy.

- Only operate a PDD according to the operational phase for which the authorized entity has been authorized by PennDOT.
- Only operate a PDD according to the operational plan authorized by PennDOT.
- Maintain an insurance policy that includes general liability coverage of not less than \$100,000 per incident for damages arising from the operation of the PDD.
- Ensure a PDD will yield the right-of-way to, or safely navigate around, all pedestrians and pedalcyclists in a pedestrian area.

### **Municipalities**

- May create an ordinance or resolution to do the following:
  - Permit the use of a PDD on a roadway or shoulder or berm of a roadway, under the jurisdiction of the municipality where the posted speed limit is greater than 25 miles per hour but not greater than 35 miles per hour
  - Prohibit the use of a PDD on any roadway, or shoulder or berm of a roadway, or pedestrian area under the jurisdiction of the municipality where the municipality, after consultation with the authorized entity, determines that the operation of the PDD would constitute a hazard.
- Enforce any law, rule or regulation as it relates to the operation of the PDD in this Commonwealth via local law enforcement.
- Notify applicable authorized entities when the municipality determines conditions constitute a weather emergency or hazardous event.

Municipalities are prohibited, except as identified above, from regulating the operation of a PDD operated in a pedestrian area, roadway, or shoulder or berm of a roadway, under the jurisdiction of the municipality.

### **Law Enforcement**

- Enforce compliance in accordance to 75 Pa. C.S. § 8521 (Criminal penalties).

## **3 AUTHORIZATION**

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### **3.1 APPLICATION**

Prior to submitting an application to PennDOT, the applicant should contact the municipality that they plan to operate in and inform the municipality IOO of their intent to apply for PDD authorization.

PennDOT will engage applicable Infrastructure Owner Operators (IOO) as necessary in the review. After consulting with the municipality, the applicant shall submit an application available on the [www.penndot.gov/pdd](http://www.penndot.gov/pdd) webpage.

#### **3.1.1 Application Elements**

##### **1. Applicant Information**

- a. Applicant's name
- b. Address
- c. Mailing address (if different)

- d. Principal Point of Contact
    - i. Name
    - ii. Title
    - iii. Telephone Number
    - iv. Email Address
  - e. Emergency Contact (if different from Principal Point of Contact)
    - i. Name
    - ii. Title
    - iii. Telephone Number
    - iv. Email Address
  - f. Proof of insurance
  - g. Phone number that will be listed on the PDD per 75 Pa. C.S. § 8518
- 2. Information on the municipality the applicant contacted, if applicable, including:**
- a. Name of Municipality
  - b. Name of Municipality representative
  - c. Date of contact
  - d. Method of contact
  - e. Concerns or benefits raised by the municipality, if any
- 3. PDD Information**
- a. Manufacturer, Model and Generation
  - b. Power Type
  - c. Dimensions (L, W, H)
  - d. Approximate weight without cargo
  - e. Maximum weight with cargo
  - f. Unique Identification Number(s)
  - g. Picture of the PDD
  - h. Intended operating phase
  - i. Maximum range of the PDD
- 4. PDD Operator Information**
- a. Name (Last, First, MI)
  - b. Training completion date
  - c. Type of Operator (field, remote, or both)

**5. Operational Design Domain (ODD)**

- a. A general overview of the intended ODD including:
  - i. Physical Infrastructure (e.g., roadway types)
  - ii. Operational Constraints (e.g., speed limit or traffic conditions)
  - iii. Objects/ impediments (e.g., obstacles/objects, roadway users and non-roadway users)
  - iv. Connectivity (e.g., remote fleet management system).
  - v. Environmental Conditions (e.g., weather, particulate matter, and illumination)
  - vi. Zones (e.g., geo-fencing)

**6. Operation Information**

- a. Operating Area Information
  - i. Description of Operating Area
    1. List of the anticipated roadways, shoulders of a roadway, and pedestrian areas that the applicant's personal delivery devices will utilize.<sup>1</sup>
    2. State if the PDD will be operating in a pedestrian area, on the shoulder or berm of a roadway.
    3. State if the PDD will operate on a roadway.
      - ii. Municipality
      - iii. Acknowledgement if the PDD will be operating on any bridges, overhead pedestrian crossing, or in pedestrian tunnels.
  - b. Operating Speed
    - i. Maximum operating speed
    - ii. Intended operating speed (pedestrian area)
    - iii. Intended operating speed (shoulder or berm of a roadway)
    - iv. Intended operating speed (roadway)
  - c. Description of the cargo the PDD intends to transport
  - d. Intended hours of operation
  - e. A description of where the PDD will be stored between deliveries

**7. Emergency Responder Information**

- a. A description of how to stop or disable a PDD.
- b. A description of post-crash considerations.
- c. A description of considerations for moving the PDD, in the event an emergency responder must do so.
- d. Any additional considerations, if applicable.

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<sup>1</sup> An applicant may opt to provide this information in Geographic Information System (GIS) format approved by PennDOT.

## 8. Acknowledgements

- a. The applicant has taken reasonable steps (e.g., controlled testing in simulation, closed track or on-road) to ensure the PDD is capable of operation within the parameters of the Operational Design Domain (ODD).
- b. A field visit was performed and the anticipated roadways, shoulders of a roadway, and pedestrian areas are within the PDD's ODD.
- c. That the PDD will yield the right-of-way to, or safely navigate around, all pedestrians and pedalcyclists in a pedestrian area.
- d. That PDD is capable of operating in compliance with all applicable laws and regulations
- e. The PDD can obey traffic control devices within its ODD.
- f. During Phase 1, the PDD operator will always stay within 30 feet and line of sight of the PDD.
- g. The PDD operator has the skills, knowledge, and ability to take over control of the PDD.
- h. The PDD can safely alert the PDD operator, when applicable, that the PDD operator must take control back of the PDD.
- i. That the PDD is equipped with software, equipment or technologies that allows a police officer or other emergency responder to stop or disable the PDD.
- j. That, in the event of a crash, the authorized entity has the ability inform law enforcement and PennDOT of what the PDD observed and how the PDD reacted to the information.
- k. That the applicant has considered and implemented reasonable measures, which may include industry standards, best practices, company policies, or other methods, to mitigate cybersecurity risk.
- l. That quality controls are deployed and monitored to ensure the acknowledgements checked above are implemented, adhered to and measured to ensure safe operation.
- m. The PDD will comply with all PennDOT policies and guidelines related to the authorization and operation of PDDs.
- n. The applicant maintains an insurance policy that includes general liability coverage of not less than \$100,000 per incident for damages arising from the operation of the PDD.
- o. All PDD operators possess a valid driver's license from a licensing authority in the United States.
- p. The PDD is equipped with a braking system that brings the PDD to a complete stop from an initial speed of 25 miles an hour or less.

## 9. Safety Questions

- a. A description of how a PDD transition between a pedestrian area, shoulder or berm of a roadway, and roadway, including how the device and/or operator determines it is safe to perform the action.
- b. A description of how the applicant ensures remote operations has no impact on the safe operations of the PDD, including, but not limited to:
  - i. The planned ratio of operators to PDDs in Phase 2.
  - ii. The anticipated time for a PDD operator to intervene when automated system encounters an issue that requires human intervention.

- c. A description of how the PDD operates when around pedestrians, pedalcycles, and animals.
- d. A description of all accommodations made for pedestrians with disabilities.
- e. A description of the actions that a PDD and/or PDD operator will take if they are unable to yield the right-of-way to, or navigate around, a pedestrian, pedalcyclist, or motor vehicle.
- f. A description of the proposed schedule for safety and maintenance inspections of PDDs.
- g. A description of the training procedures for PDD operators.
- h. A description how the applicant will ensure the PDD operator skills remain at the appropriate level after their initial training (e.g., refresher training).
- i. Details, and copies if available, of the educational campaign to be employed by the applicant to educate and bring awareness of PDDs to municipalities, motorists and the general public.
- j. A description of steps taken to ensure the autonomous operations align with industry best practices and/or standards (e.g., compliance with standards such as UL 4600).
- k. A description of crash procedures in the event of a crash involving injury to a person or damage to property or a crash causing damage to the PDD.
- l. A description of steps taken if a PDD becomes disabled or immobilized.
- m. If applicable, a description of how the PDD will safely operate between sunset and sunrise or other times with reduced sunlight (e.g., rainstorms).
- n. Any additional information the applicant feels PennDOT should know when evaluating the PDD application.

## 3.2 REVIEW

Upon receipt of the application, PennDOT will initiate the review process and engage the applicable IOOs.

Throughout the review process, PennDOT reserves the right to ask for clarification and additional information where needed to properly evaluate the application. PennDOT will have the sole authority to issue, approve, renew, revoke, suspend, condition or deny issuance or renewal a PDD authorization.

PennDOT will notify the applicant in writing of the status of their application within 30 days of submission (e.g., approved or denied). If no action is taken within 30 days of application, the PDD application shall be deemed approved. Authorization shall be valid for one (1) year.

## 3.3 OPERATING PHASES

Phase 1 - The operation of a PDD through a driving system that allows remote or autonomous operation by an authorized entity where the device is controlled remotely and a PDD operator is within 30 feet of the PDD and within the line of sight of the PDD. Upon the initial issuance of a PDD authorization, an authorized entity shall be limited to Phase 1 operation to demonstrate safe operation of PDDs by the authorized entity and its PDD operators.

Phase 2 - The operation of a PDD through a driving system that allows remote or autonomous operation by an authorized entity where the device is monitored remotely by a PDD operator and the driving system is capable of being controlled and overridden remotely by the PDD operator.

### 3.3.1 Transition from Phase 1 to Phase 2 (at 180 days)

Phase 1 may not be less than 90 days and not more than 180 days from the issuance of PDD authorization, unless the authorized entity and the department agree to a different period of time, or unless the authorization is revoked. If an authorized entity is in Phase 2, the Phase 2

authorization may be revoked by the department, and the authorized entity may operate in Phase 1 if permitted by PennDOT for no less than 90 days and no more than 180 days from the date of revocation, unless the authorized entity and the department agree to a different period of time. PennDOT may exempt an authorized entity from Phase 1 operations upon initial issuance of a PDD authorization if the authorized entity can certify, to PennDOT's satisfaction, safe PDD operations in the Commonwealth or other jurisdictions.

The authorized entity shall notify PennDOT and the applicable municipalities 30 days prior to the transition from Phase 1 to Phase 2. The notice should include:

- Acknowledgement that the PDDs is capable of safely operating in Phase 2 and that the PDD manufacturer, model, generation, and software is the same or similar to the PDD that was used in Phase 1.
- Number of crashes or violations in the last 180 days. The authorized entity should not transition to Phase 2 until it can successfully operate a consecutive 180 days without a crash or violation.
- Acknowledgement that any applicable municipality supports the transition to Phase 2.
- Description of how, if at all, the operations of the PDD will differ in Phase 2 compared to Phase 1. The ODD and general operations of the PDD should not differ from Phase 1 to Phase 2.
- Total miles traveled during Phase 1 operations in the last 180 days.
- Total number of deliveries during Phase 1 operations in the last 180 days.
- Total number of occurrences when the PDD operator had to override autonomous operations during Phase 1 operations in the last 180 days.
- Any additional information that demonstrates the PDD's ability to safely operate in Phase 2.

### 3.3.2 Early Transition from Phase 1 to Phase 2

If the authorized entity wishes to transition to Phase 2 prior to 180 days, the authorized entity shall notify PennDOT and the applicable municipalities 45 days prior to the desired date for the transition from Phase 1 to Phase 2. The notice shall include:

- Acknowledgement that the PDDs is capable of safely operating in Phase 2 and that the PDD manufacturer, model, generation, and software is the same or similar to the PDD that was used in Phase 1.
- Number of crashes or violations in the last 180 days. The authorized entity shall not transition early to Phase 2 if the PDD was at fault for any crash or committed a violation.
- Acknowledgement that any applicable municipality supports the early transition to Phase 2.
- Description of how, if at all, the operations of the PDD will differ in Phase 2 compared to Phase 1. The ODD and general operations of the PDD should not differ from Phase 1 to Phase 2.
- Total miles traveled in the last 180 days.
- Total number of deliveries in the last 180 days.
- Total number of occurrences when the PDD operator had to override autonomous operations in the last 180 days.
- Any additional information that demonstrates the PDD's ability to safely operate in Phase 2.

### 3.4 MODIFICATION

After receiving PDD authorization, the authorized entity shall notify PennDOT if there are material changes in the submission or if there are material modifications to the ODD such that the submission no longer accurately or adequately describes the scope of operations.

### 3.5 RENEWAL

An application for the renewal of a PDD authorization shall be submitted at least 45 days prior to the expiration of the PDD authorization and include an update of the information contained in the initial application. In addition, the applicant shall provide:

- The total number of trips each personal delivery device performed within the previous 12 months; and
- A list of crashes resulting in personal injury or property damage and any violations of this subchapter issued to the authorized entity for a personal delivery device operated by the authorized entity within Pennsylvania in the previous 12 months.

### 3.6 SUSPENSION AND REVOCATION

#### 3.6.1 Suspension of Authorization

PennDOT may suspend PDD authorization if operations are deemed unsafe or if the authorized entity violates aspects of the PDD authorization.

#### 3.6.2 Revocation of Authorization

Following notice and an opportunity for an administrative hearing, PennDOT may revoke a PDD authorization where a knowing and willful violation of Title 75, Chapter 85, Subpart C occurred that resulted in death, serious bodily injury or property damage or when the authorized entity has demonstrated an inability to operate safely in accordance with Title 75, Chapter 85, Subpart C.

#### 3.6.3 Appeal

An authorized entity shall have the right to appeal PDD authorization suspensions or revocations in accordance with 2 Pa.C.S. Chs. 5 Subch. A (relating to practice and procedure of Commonwealth agencies) and 7 Subch. A (relating to judicial review of Commonwealth agency action).

#### 3.6.4 Prohibition

PennDOT may not suspend or revoke the PDD authorization of an authorized entity that self-reports a crash involving an authorized entity's PDD where the crash was not the fault of the authorized entity or the authorized entity's PDD operator.

#### 3.6.5 Reinstatement of Authorization

Upon the suspension or revocation of authorization, the authorized entity shall be entitled to request reinstatement. PennDOT may consider any actions taken by the authorized entity to correct deficiencies, if any, that caused the suspension or revocation.

#### 3.6.6 Condition

PennDOT has the authority to condition the authorization based on safety and operational concerns per 75 Pa. C.S. § 8513 (b)(1) to prevent a hazard.

#### 3.6.7 Ongoing Compliance

To ensure ongoing compliance, the authorized entity shall provide a quarterly performance report. The report shall contain the following information regarding the quarter:

- Roadway segments where operations occurred
- Total miles traveled

- Total number of trips by hour/day of the week (example: 20 trips on Mondays between 1-2pm)<sup>2</sup>
- Approximate average speed when operating on in a pedestrian area
- Approximate average speed when operating on a shoulder or berm of a roadway
- Approximate average speed when operating on a roadway
- Total number of occurrences when the PDD operator had to override autonomous operations
- Total number of violations<sup>3</sup>
- Total number of crashes<sup>4</sup>
- Approximate peak number of devices simultaneously operating (by municipality)

The report shall be submitted to PennDOT as prescribed on the [www.pennndot.gov/pdd](http://www.pennndot.gov/pdd) webpage.

### 3.7 ENFORCEMENT/CRIMINAL PENALTIES

Per 75 Pa.C.S. §8521, the following criminal penalties are applicable.

1. Penalty - An authorized entity that violates a provision of Title 75, Chapter 85, Subpart C shall be guilty of a summary offense and shall, upon conviction, be sentenced to pay a fine of not less than \$25 and no more than \$1,000.
2. Unauthorized operation - A person that violates 75 Pa.C.S. §8512 (relating to general prohibition) shall be guilty of a summary offense and shall, upon conviction, be sentenced to pay a fine of not less than \$500.
3. Suspended or revoked authorization - A person that knowingly violates 75 Pa.C.S. §8512 (relating to general prohibition) and whose authorization was suspended or revoked by PennDOT shall be guilty of a summary offense and shall, upon conviction, be sentenced to pay a fine of not less than \$1,000.

### 3.8 RIGHT-TO-KNOW LAW

Per 75 Pa.C.S. §8515:

1. Applicability - Except as provided in subsection (b), the following shall not be subject to the act of February 14, 2008 (P.L.6, No.3), known as the Right-to-Know Law:
  - a. Information contained in an application for a PDD authorization or renewal application submitted to PennDOT by an applicant under 75 Pa.C.S. §8515 and §8514 (relating to application).
  - b. Additional information requested by PennDOT and submitted by an applicant as part of the review of the applicant's application for a PDD authorization or renewal application under 75 Pa.C.S. §8515 or §8514.
  - c. Information and records submitted by an authorized entity to PennDOT under 75 Pa.C.S. §8515 or §8514.
2. Applicability exception - Subsection (a) above shall not apply to the following:
  - a. Information or records submitted to PennDOT under 75 Pa.C.S. §8514 (b)(2)(i), (ii) or (iv), (4), (8) or (9)(ii).
  - b. Information or records required to be posted on PennDOT's publicly accessible Internet website under 75 Pa.C.S. §8513 (b)(3)(ii) (relating to powers of department).

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<sup>2</sup> Based on the start time of the trip

<sup>3</sup> Provided details if a violation occurred.

<sup>4</sup> Document which crashes the PDD or PDD operator was deemed at fault.

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## 4 OPERATING REQUIREMENTS AND RECOMMENDATIONS

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### 4.1 EQUIPMENT

#### 4.1.1 Requirements

1. The PDD shall be equipped with a driving system that allows remote or autonomous operation, or both.
2. The PDD shall have a maximum width of 32 inches.
3. The PDD shall have a maximum length of 42 inches
4. The PDD shall have a maximum height of 72 inches.
5. The PDD shall have a maximum weight 550 pounds (not including cargo or goods).
6. The PDD shall be equipped with a braking system that brings the PDD to a complete stop from an initial speed of 25 miles an hour or less<sup>5</sup>.
7. The PDD shall be equipped with a lamp that emits a beam of white light intended to illuminate a PDD's path and is visible from a distance of at least 500 feet to the front and a lamp emitting a red flashing light, light emitting diode or device visible from a distance of 500 feet to the rear. An authorized entity may supplement the required front lamp with a white flashing lamp, light- emitting diode or similar device to enhance its visibility to other traffic. At a minimum, the lights shall be on:
  - a. Between sunset and sunrise.
  - b. Any time when the PDD cannot discern a person or vehicle upon the highway from a distance of 1,000 feet due to insufficient light or unfavorable atmospheric conditions, including rain, snow, sleet, hail, fog, smoke or smog.
8. The PDD shall be equipped with software, equipment or technologies that allows a police officer or other emergency responder to stop or disable the PDD.
9. The PDD shall be capable of reverting to a minimum risk condition if an error occurs.

#### 4.1.2 Recommendations

1. The PDD should emit warning sounds designated to alert pedestrians to the presence of the PDD.
2. A PDD shorter than 3 feet should have an attachment, such as a flag or antennae, extending at least 2 feet above the PDD.
3. The PDD shall be equipped with retroreflective material on the left and right side of the PDD if operating between sunset and sunrise<sup>6</sup>.

### 4.2 FLEET SIZE

#### 4.2.1 Recommendation

1. Fleet size and deployment should be based on a use case, the ability to ensure the fleet size will not create any mobility or safety impacts, and the concurrence of the municipality in which the PDDs will operate.

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<sup>5</sup> Based on the weight of the PDD and the weight of the intended cargo.

<sup>6</sup> The retroreflective material shall meet the requirements specified in Federal Motor Vehicle Safety Standards - 49 CFR § 571.108 (Standard No. 108; Lamps, reflective devices, and associated equipment).

## 4.3 PDD OPERATOR

### 4.3.1 Requirements

1. PDD operators shall possess a valid driver's license from a licensing authority in the United States.
2. A PDD operator shall have the ability to remotely control, monitor or otherwise operate the PDD.
3. A PDD operator shall be within 30 feet and line of sight of the PDD during Phase 1.
4. PDD operators shall have successfully completed training prescribed in the PDD application. Unless the PDD applicant can provide an acceptable justification otherwise, the training shall include, at a minimum:
  - a. Confirmation of basic operating skills including, but not limited to,
    - i. Basic PDD operation
    - ii. Visual search
    - iii. Night operations, if applicable
    - iv. Hazard perception
    - v. Responses to PDD malfunctions
    - vi. Responses to sudden emergencies
    - vii. Responses to distractions
    - viii. Responses to aggressive road users
    - ix. Responses to adverse weather conditions
    - x. Post-crash procedures
    - xi. Interactions with road users (e.g., strollers, wheelchairs, children, bicycles, outdoor dining)
  - b. Basic knowledge of PDD controls, instruments, and safety components
  - c. Basic trip procedures, including, but not limited to:
    - i. Pre-trip inspection of the PDD
    - ii. Trip planning
    - iii. Post-trip procedure
  - d. Divided visual and mental attention tasks for the PDD Operator
5. A PDD operator shall be responsible for monitoring one (1) PDD during Phase 1 (i.e. 1:1 ratio).
6. If a PDD operator will be responsible for monitoring more than one (1) PDD during Phase 2, the PDD applicant shall provide a description of how the expanded responsibility will not impact operational safety including the time it takes to intervene.
7. A PDD operator shall only be permitted to operate a PDD for which they are aware of the parameter of the PDD authorization.

## 4.4 OPERATIONS

### 4.4.1 Requirements

1. The PDD shall only operate according to the operational phase for which the authorized entity has been authorized by PennDOT.
2. The PDD shall be prohibited from operating outside of the submitted ODD.
3. The PDD shall utilize the shoulder or berm of a roadway as far as practicable from the edge of the roadway whenever a shoulder or berm is available, and its use is practicable. The PDD shall utilize a pedestrian area when a shoulder or berm of a roadway is not available or its use is not practicable. The PDD shall operate as near as practicable to the outside edge of the roadway when neither a pedestrian area nor a shoulder or berm of a roadway is available<sup>7</sup>.
4. The PDD shall cross roadways in accordance with Title 75 Chapter 35 Subchapter C § 3542 and § 3543.
5. The PDD shall obey all traffic control devices and directions from police officers or other appropriately attired person authorized to direct, control or regulate traffic<sup>8</sup>.
6. The PDD shall not be parked and/or docked in a pedestrian area<sup>9</sup> or on a shoulder of roadway in between deliveries.
7. If the PDD becomes inoperable, the authorized entity shall retrieve the PDD in a timely manner and ensure safety around the device until it can be removed.
8. Prior to first operating, an authorized entity shall physically inspect the intended route to ensure the PDD can safely operate.
9. The PDD shall not operate in a pedestrian area, on shoulder or berm of a roadway, or on roadway that PennDOT or the municipality has prohibited<sup>10</sup>.
10. The PDD shall follow all applicable local ordinances and regulations related to pedestrians and abide by Title 75 Chapter 35 Subchapter C (Rights and Duties of Pedestrians).
11. The PDD shall only operate on roadways or shoulders of roadways posted 25 miles per hour or less, unless authorized by PennDOT or the applicable municipality, per 75 Pa.C.S. §8516 and § 8517, to operate on roadways or shoulders of roadways up to 35 miles per hour.
12. The PDD shall not exceed 25 miles per hour when operating on a roadway or shoulder or berm of a roadway.
13. The PDD shall travel in the same direction as vehicles and on the right side of the roadway when operating on roadway or shoulder a roadway.
14. When transitioning from the shoulder or berm of a roadway to the roadway, the PDD shall make an indication to surrounding motorists and pedalcyclists.
15. When operating on a roadway, the PDD shall make an indication to following motorists when braking.
16. PDD operator shall use reasonable efforts so as not to impede the normal and reasonable movement of traffic.
17. The PDD shall yield the right-of-way to, or safely navigate around, all pedestrians and pedalcyclists in a pedestrian area<sup>11 12</sup>.

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<sup>7</sup> The PDD shall immediately return to a pedestrian area or shoulder or berm of a roadway when available and safe to do so.

<sup>8</sup> 75 Pa.C.S. § 3542

<sup>9</sup> Unless the applicant can document that the PDD will not restrict the movement of pedestrians and pedalcycles.

<sup>10</sup> In accordance with 75 Pa.C.S. §8516 and § 8517. Prohibited areas are identified on PennDOT's website.

<sup>11</sup> If a PDD is unable to yield the right-of-way or safely navigate around, the operator shall resume control of the PDD within 60 seconds of notification.

<sup>12</sup> The PDD shall never put a pedestrian in a position of danger due to the inability of the PDD to yield or navigate around.

18. The PDD shall yield right-of-way to, or safely navigate around, animals in a pedestrian area (e.g., pets or service animals).
19. The PDD shall not exceed 12 miles per hour while operating in a pedestrian area.
20. The PDD shall not block curb cuts or access to driveways.
21. The PDD shall leave the sidewalk perpendicular to the shoulder of the roadway when transitioning to and from the shoulder.
22. The PDD shall not operate in a pedestrian area less than 60 inches wide unless the PDD applicant can describe how the PDD will safely yield the right of way or safely navigate around pedestrians and pedalcycles<sup>13</sup>.
23. The PDD shall not operate on a shoulder or berm of a roadway unless width of the PDD is equal to or less than the width of the shoulder.
24. The PDD shall be prohibited from operating on a roadway if the height of the PDD, excluding attachments such as flags or antennae, is less than 42 inches unless the PDD applicant can provide an individualized assessment based on the characteristics of the device and the roadway on which the PDD will be operating.
25. The PDD shall operate at a relative walking speed when in proximity of pedestrians and pedalcyclists in a pedestrian area.
26. The PDD shall maintain a speed differential no greater than 5 mph from the surrounding vehicles, but never to exceed the posted speed limit when operating on a roadway, unless the PDD applicant can provide an individualized assessment based on the characteristics of the device and the roadway on which it will be operating.
27. The PDD shall be prohibited from operating on a roadway or shoulder or berm of a roadway designated as a PDD Restricted Safety Area<sup>14</sup> based on the previous five-year crash history. PennDOT shall maintain a map of all applicable roadway segments on the [www.penndot.gov/pdd](http://www.penndot.gov/pdd) webpage.
28. The PDD shall be prohibited from operating in/on:
  - a. Trails unless:
    - i. The trail is similar to sidewalks, crosswalks, safety zones, pedestrian tunnels, or overhead pedestrian crossings and falls under the jurisdiction of Pennsylvania Title 75.
    - ii. Operating on the trail does not violates 23 U.S.C. § 217(h).
  - b. Unpaved surfaces in the public right-of-way including dirt, gravel, or grass, unless the applicant can document how the PDD will not become immobilized on the unpaved surfaces.
  - c. Bike-only lanes

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<sup>13</sup> Per the Americans with Disability Act and PennDOT Publication 13M(DM-2), the minimum clear width for a single wheelchair is 36 inches and according to FHWA, 2.5 feet is the minimum width for a single pedestrian. The authorized entity shall consider this information when determining routes.

<sup>14</sup> All areas are on state owned roadways.

#### 4.4.2 Recommendations

1. The PDD should not dwell in a pedestrian area for more than 5 minutes while waiting to start or complete a delivery.
2. The PDD should only operate when performing deliveries or conducting essential functions such as mapping or calibrating.
3. When encountering another PDD, the larger PDD should yield to the smaller PDD.
4. Any images collected by the PDD during operations should be used for operational purposes only.
5. The PDD should avoid operations during peak hours and periods of high traffic<sup>15</sup>.
6. The PDD shall operate at a relative walking speed in areas zoned a Downtown or Commercial Neighborhood and in residential zones with 60 or more dwelling units per acre.

### 4.5 WEATHER EMERGENCY AND OTHER HAZARDOUS EVENTS

#### 4.5.1 Requirements

1. The authorized entity shall temporarily cease/restrict the operation of PDDs due to a weather emergency or other hazardous event identified by PennDOT or a municipality<sup>16</sup>.  
The authorized entity shall not resume operations until the extreme weather or hazardous event has been cleared, as defined by PennDOT or the applicable municipality.
2. Hazardous events may include, but not be limited to:
  - a. Events where construction or maintenance is occurring – except where there are pedestrian protections in place, or the authorized entity can provide an individualized assessment based on the characteristics of the device and the roadway, shoulder or berm of a roadway, or pedestrian area on which the PDD will be operating.
  - b. Events where there is a significant increase of pedestrian traffic.

### 4.6 CARGO

#### 4.6.1 Requirements

1. The PDD shall not transport hazardous materials regulated under 49 U.S.C. § 5103 (relating to general regulatory authority) and required to be placarded under 49 CFR Pt. 172 Subpart F (relating to placarding).
2. The PDD shall not transport age restricted items that require age verification at point of delivery, unless the PDD is enabled with method or mechanism for performing age verification.
3. The PDD shall not transport live animals.
4. All cargo shall be enclosed within the PDD.
5. The authorized entity shall ensure that the weight of the cargo does not cause structural damage to any roadway, shoulder or berm of a roadway, or pedestrian area where the PDD will operate<sup>17</sup>.

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<sup>15</sup> Will vary by location, so the authorized entity should coordinate with the municipality and PennDOT.

<sup>16</sup> To the extent possible, PennDOT and local municipalities should attempt to provide advance notice of upcoming events that could be deemed hazardous.

<sup>17</sup> Per PennDOT DM-4 (Structure) 3.6.1.6, "A pedestrian load of 0.075 ksf shall be applied to all sidewalks wider than 2.0 ft. and considered simultaneously with the vehicle design live load."

## 4.7 PUBLIC EDUCATION/COMMUNITY ENGAGEMENT

### 4.7.1 Requirements

1. When developing an educational campaign, the applicable municipalities and PennDOT shall be consulted to ensure the content, material, and approach meets the needs of local stakeholders, including emergency responders.
2. The authorized entity shall work with PennDOT and other IOOs in the development of Pennsylvania education campaigns and training to ensure consistent messaging.
3. The educational campaign shall be factually correct and not conflict with Act 106 or information published by PennDOT.
4. The educational campaign shall be focused on the authorized entity's PDD.
5. The educational campaign shall be tailored to safety and operational information that reflects what was in the PDD application (i.e. not just generic, national marketing material).<sup>18</sup>
6. Accessibility shall be accounted for when developing the educational campaign to ensure material can reach the intended audience(s).
7. PennDOT and any applicable municipalities shall have the ability to review the educational campaign and request changes if the content is not consistent with the PDD application or the law.

### 4.7.2 Recommendation

1. The authorized entity should give PennDOT and all applicable stakeholders the rights to use pictures and information contained within their educational campaign.
2. The authorized entity should coordinate and establish a relationship with local stakeholders including, but not limited to, municipalities, Metropolitan Planning Organizations, emergency service responders, and advocacy organizations.
3. The authorized entity should coordinate with municipalities to identify potential data needs including operational data (e.g., Average number of daily deliveries by zip code of destination, Average wait time for same day deliveries, Average cost of a delivery) and sensor data (e.g., help identify missing signs or debris on a roadway) and share such information, when possible.
4. The authorized entity should operate a service center that can provide support in multiple languages to any person interacting with a PDD by phone, online, or in-person

## 4.8 CRASH PROCEDURES

### 4.8.1 Requirements

1. The authorized entity shall self-report to PennDOT<sup>19</sup> and the law enforcement agency<sup>20</sup> of the municipality governing the right-of-way containing the pedestrian area or roadway, or shoulder or berm of the roadway, a crash involving any of the authorized entity's personal delivery devices that resulted in bodily injury, death or damage to property within a reasonably practicable timeframe, but in no case to exceed 24 hours from the time of the crash.

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<sup>18</sup> Coordination with the applicable municipalities is necessary to ensure the appropriate content is included in the educational campaign.

<sup>19</sup> The PennDOT contact information and required crash reporting information will be accessible on the [www.penndot.gov/pdd](http://www.penndot.gov/pdd) webpage.

<sup>20</sup> Prior to operations, the authorized entity shall receive the appropriate contact information from local law enforcement and required crash information..

2. The authorized entity shall provide information regarding crash procedures including:
  - a. The duties of the authorized entity and its PDD operators with respect to removing the PDD or crash debris from roadways, or shoulders or berms of a roadway, and pedestrian areas of the personal delivery device so as not to impede traffic or pedestrians in the event that the personal delivery device is rendered inoperable or damaged to the extent it cannot be safely operated.<sup>21</sup>
  - b. The process where the applicant will exchange, if necessary, insurance information to all parties involved in the crash within 24 hours of the crash.
  - c. The safety inspection and maintenance protocols for personal delivery devices damaged in a crash.
3. A PDD shall not resume operations after a crash until a safety inspection is performed and the authorized entity can certify the PDD is capable of safely operating.
4. A PDD operator, if deemed responsible for a crash by law enforcement or the authorized entity, shall not resume their role until the authorized entity certifies the PDD operator is capable of safely performing their duties.
5. In the event a reportable crash occurs, the authorized entity shall have the ability inform law enforcement and PennDOT of what the PDD observed and how the PDD reacted.
6. The authorized entity shall cooperate with law enforcement and PennDOT on any crash investigation.
7. The authorized entity shall comply with all applicable laws and regulations related to crash reporting.
8. The authorized entity and/or PDD operator shall take all appropriate steps to ensure safety following a crash.

## 4.9 SAFETY AND MAINTENANCE FOR PDDS

### 4.9.1 Requirements

1. The authorized entity shall perform routine maintenance on their PDD fleet.
2. The authorized entity shall perform an inspection prior to commencing daily operations.
3. The authorized entity shall perform a comprehensive inspection on a periodic basis to ensure the PDD is capable of safely operating within the intended ODD and meeting all applicable requirements.
4. If mechanical or software failure occurs, the authorized entity shall identify the cause of the failure and inspect all similar PDDs.<sup>22</sup>
5. The authorized entity shall take reasonable steps (e.g., controlled testing in simulation, closed track or on-road) to ensure the PDD is capable of operation within the parameters of the Operational Design Domain (ODD).

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<sup>21</sup> Debris cleanup should be performed in accordance to all applicable laws and regulations.

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## 5 IDENTIFYING MARKINGS

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### 5.1 REQUIREMENTS

The authorized entity shall ensure the following information is permanently placed on the front and right side of the PDD<sup>23</sup>:

- The name of the authorized entity.
- The unique identification number assigned to the PDD.
- Telephone number of the authorized entity to report a violation, a crash, or an insurance claim.

The text shall be in a font compliant with the Americans with Disabilities Act (ADA) and have a minimum character height of 5/8" (16 mm). All text shall meet ADA requirements for sign visual characters (ADA 2010 Standards, Section 703.5).

The applicant shall work with PennDOT to ensure the unique identification number does not duplicate the unique identification numbers utilized by an existing authorized entity.

### 5.2 RECOMMENDATIONS

The authorized entity should include the required information in braille when feasible. In addition, the authorized entity should consider displaying information in a language other than English if operating in census tracts with a high proportion of speakers of another language as identified by the municipality.

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## 6 POLICY DISCLAIMER

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This policy is a living document and may be updated to reflect technological changes and national best practices.

Authorized entities will be notified of any policy changes via email and shall confirm receipt.

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## 7 SOVEREIGN IMMUNITY AND GOVERNMENTAL IMMUNITY

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Per 75 Pa.C.S. §8519 (b), Commonwealth agencies and municipalities shall have no duty to make streets, highways or real estate safe for use by personal delivery devices. Commonwealth agencies and municipalities shall be immune from suit by authorized entities and owners of cargo and other items carried on or within a personal delivery device for property damages.

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<sup>22</sup> Regardless if the failure occurs in a PDD in Pennsylvania or another location..

<sup>23</sup> If it is infeasible to place the identifying marking on one or more of the specified locations, the authorized entity shall notify PennDOT and work to find a comparable solution.

## GLOSSARY

**Applicant** - A person or an educational institution applying for PDD Authorization.

**Authorized Entity** - A person or an educational institution holding a PDD authorization.

**Autonomous Operations** - The hardware and software that is collectively capable of performing the entire dynamic driving task on a sustained basis for a PDD.

**Crash** - For purposes of required reporting for PDD operation, a crash involving either injury to or death of any person; or damage to any vehicle or property involved.

**Dynamic Driving Task** - The operational (steering, braking, accelerating, monitoring the device and trafficway) and tactical (responding to events, determining when to change lanes, turn, use signals, etc.) aspects of driving, but not the strategic (determining destinations and waypoints) aspect of the driving task.

**Emergency Responder** - Per section 102 of Title 75, an individual acting in an official capacity as any of the following:

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| <ol style="list-style-type: none"> <li>1. A police officer.</li> <li>2. A sheriff or deputy sheriff.</li> <li>3. A coroner or deputy coroner.</li> <li>4. A firefighter.</li> <li>5. Fire police.</li> <li>6. A fire marshal.</li> <li>7. A medical examiner or deputy medical examiner.</li> <li>8. Rescue personnel.</li> <li>9. Ambulance personnel.</li> <li>10. Towing and recovery personnel.</li> <li>11. Highway maintenance and construction personnel.</li> <li>12. Hazardous material response team member.</li> </ol> | <ol style="list-style-type: none"> <li>13. Emergency medical services personnel.</li> <li>14. Contractors or employees of a public utility as defined under 66 Pa.C.S. § 102 (relating to definitions), a municipally owned utility or an electric cooperative as defined in 15 Pa.C.S. Ch. 73 (relating to electric cooperative corporations).</li> <li>15. A police officer who is also a member of a county or regional municipal special emergency response team which is authorized to respond to emergencies under 42 Pa.C.S. § 8953 (relating to Statewide municipal police jurisdiction).</li> </ol> |
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**Hazard** - A condition, determined by PennDOT or the municipality, where the operation of a PDD poses a danger to the PDD, infrastructure, or users including, but not limited to, pedestrians, pedalcyclists, and motor vehicles. Examples of hazards may include, but are not be limited to, conditions that creates the inability to yield the right of way, conditions that limit sight distance, conditions that increase stopping distance, conditions that may result in the PDD becoming immobilized, and conditions that increase the probability of crashes.

**Hazardous Event** - An event that poses a hazard and/or impacts the safe operations of a PennDOT or the local municipality determines that may impact the safe operations of a PDD.

**Indication** - An action, prescribed by the authorized entity, that the PDD will perform to alert others of an impending movement.

**Infrastructure Owner Operator** - A governmental organization responsible for the ownership, day-to-day operations, or enforcement of a roadway, shoulder or berm of a roadway, or pedestrian area.

**Intervention Time** - The time it takes for PDD operator to take control of a PDD from being made aware of a need to intervene.

**Minimum Risk Condition** - A condition to which a user or an autonomous system may bring a device after performing the Dynamic Driving Task fallback in order to reduce the risk of a crash when a given trip cannot or should not be completed.

**Municipality** - A city, borough, incorporated town, or township.

**Operational Design Domain (ODD)** - The PDD Entity's definition of the conditions in which the autonomous operations, or the differing automated components thereof, is intended to operate with respect to roadway types, geographical location, speed, range, lighting conditions for operation (day and/or night), weather conditions, and other operational domain constraints, including a description of how the automation provides for object and event detection and response under normal driving scenarios, expected hazards (e.g., vehicles, pedestrians), and unspecified events (e.g., emergency vehicles, temporary construction zones) that could occur within the operational domain.

**Operational Phase** - Phase 1 or phase 2.

**PDD Authorization** - An authorization issued by PennDOT under 75 Pa.C.S. §8515 (relating to authorization issuance and renewal) permitting the operation of a personal delivery device in accordance with this subchapter.

**PDD Operator** - An employee of an authorized entity permitted by the authorized entity to remotely control, monitor or otherwise operate a personal delivery device on behalf of the authorized entity as provided under this subchapter. The term does not include an individual who requests a delivery or service provided by the personal delivery device or dispatches the personal delivery device.

**Pedalcycle** - A vehicle propelled solely by human-powered pedals or a pedalcycle with electric assist. The term does not mean a three-wheeled human-powered pedal-driven vehicle with a main driving wheel 20 inches in diameter or under and primarily designed for children six years of age or younger.

**Pedestrian** - Any of the following: (1) An individual afoot. (2) An individual with a mobility-related disability on a self-propelled wheelchair or an electrical mobility device operated by and designated for the exclusive use of an individual with a mobility-related disability. (3) A personal delivery device.

**Pedestrian Area** - A sidewalk, crosswalk, safety zone, pedestrian tunnel, overhead pedestrian crossing or similar area for pedestrians.

**Person** - A natural person, firm, co-partnership, association, or corporation.

**Personal Delivery Device (PDD)** - A ground delivery device that is manufactured for transporting cargo or goods; is operated by a driving system that allows remote or autonomous operation, or both; and weighs 550 pounds or less without cargo or goods.

**Phase 1** - The operation of a personal delivery device through a driving system that allows remote or autonomous operation by an authorized entity where the device is controlled remotely and a PDD operator is within 30 feet of the PDD and within the line of sight of the PDD.

**Phase 2** - The operation of a personal delivery device through a driving system that allows remote or autonomous operation by an authorized entity where the device is monitored remotely by a PDD operator and the driving system is capable of being controlled and overridden remotely by the PDD operator.

**Range** – The horizontal distance to which a PDD can travel.

**Roadway** – That portion of a highway improved, designed or ordinarily used for vehicular travel, exclusive of the sidewalk, berm or shoulder even though such sidewalk, berm or shoulder is used by pedalcycles. In the event a highway includes two or more separate roadways the term "roadway" refers to each roadway separately but not to all such roadways collectively.

**Shall** – Indicates that an action is required or prohibited.

**Should** – Indicates that an action is advisable but not required.

**Trafficway** – The entire width between property lines or other boundary lines of every way or place of which any part is open to the public for purposes of vehicular travel as a matter of right or custom.

**Trail** – A designated route on land or water with public access for recreation and/or alternative transportation opportunities such as walking, jogging, hiking, fitness, backpacking, cross country skiing, bicycling, mountain biking, horseback riding, snowmobiling, four-wheel driving, all-terrain off-road vehicles, canoeing, kayaking, etc. for users of all ages and abilities.

**Trip** – A single or one-way movement to or from a predetermined point of destination.

**Weather Emergency** – A weather event that results in a warning or advisory from the National Weather Service.

**Work Zone** – The area of a trafficway where construction, maintenance or utility work activities are being conducted which is properly signed as a work zone in accordance with PennDOT regulations, policies and publications.