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Current Policies throughout the Nation for Pedestrian Hybrid Beacon (PHB) Installation

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16. Abstract

With increased interest in Pedestrian Hybrid Beacon (PHB) use across the United States, including in Illinois, it is necessary to provide a comprehensive analysis for PHB application nationwide, including current control standards, practice experience, and concerns in all states. Thus, using the official documents of each state and additional information obtained by reaching out to several state engineering staff, this study compiled laws applicable to dark signals and standards, practices, and transportation department concerns regarding PHBs in each state. It was determined that 37 out of 50 states specifically regulate the maneuvers of drivers at dark signals according to statements in law. Forty-one states have implemented PHB use, and three states have made a distinction between traffic signals and PHBs related to driver treatment during a dark condition. In addition, the impedances that prevent PHBs from larger-scale application were obtained. Based on this review, the PHB can be characterized as a widely used device that still poses substantial concerns due primarily to its unique nature. Illinois plans to utilize the information provided in this report to inform policy and focus PHB application in locations where they will be most effective and properly address existing safety concerns.

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EXECUTIVE SUMMARY

Since the Pedestrian Hybrid Beacon (PHB) was invented in the 1990s, it has gained the attention of many walking and bicycling advocacy parties and authorities in transportation engineering, especially after the Federal Highway Administration (FHWA) included it as an optional device in the National Standards for Traffic Control Devices—the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD 2009). This research was conducted to provide the Illinois Department of Transportation (IDOT) with comprehensive information regarding PHB policies in the United States to assist IDOT to determine whether their current policies on PHB use should be reviewed and potentially modified.

With literature review as the primary approach and contacting state department of transportation staff as the supplemental measure, this study obtained information on current policies and applications of PHBs and state laws related to dark signals.

In the common use of the term, a "dark signal" represents a situation in which a traffic signal is not functioning as it should be (i.e. all lighted indicators are dark). As a common but intractable situation, the dark signal has been well studied. However, PHBs rest in a dark condition and the clear intent of national (MUTCD) guidance is that drivers proceed through PHBs in this dark condition, albeit with caution given that these devices are placed at marked crosswalk locations. Still, state laws related to dark signals are relevant to PHB-equipped crosswalk locations, since the ways states have developed such laws could offer meaningful insights on PHB operations in non-activation periods. Thus, it was considered as a critical topic in this study.

By further organizing and analyzing the collected information, the results have been presented separately for the two study topics. It was found that 37 states have established laws on dark signals to regulate the response of people (drivers) when approaching signalized intersections without any lit indications, with 33 laws requiring drivers to stop and four laws enforcing that drivers slow down and prepare for yielding the right-of-way. Importantly, three states have instituted laws that specifically identify a difference between the treatment of a traffic signal and a PHB in a dark condition.

On the topic of application and installation of PHBs, this study summarized the statements in the *Manual on Uniform Traffic Control Devices* (MUTCD), considering both the national MUTCD and the different extensions in each state. Then, this study summarized current PHB practices. Forty-one states have installed PHB devices, seven additional states allow installation of PHBs but have none installed, and one state—Pennsylvania—prohibited PHB installation. We were not able to find any published data for West Virginia, and we did not get a response from our survey questions posed to their DOT personnel. In addition, this study gathered and summarized anecdotal concerns (related primarily to safety and operational efficiency) from state DOTs regarding PHB use.

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1.1 BACKGROUND

A Pedestrian Hybrid Beacon (PHB, as shown in Figure 1), also known as a High-Intensity Activated Crosswalk (HAWK) signal, is a special traffic control device that assists pedestrians in crossing a roadway more safely at midblock crosswalks. The PHB was developed in Tucson, Arizona in the late 1990s (Fitzpatrick and Park 2010), and the Federal Highway Administration (FHWA) added PHB use as an optional device in the publication of the 2009 national *Manual on Uniform Traffic Control Devices* (national MUTCD). Today, PHBs are widely used in some areas of the United States (Arizona, California, and Texas, for example).

Figure 1. A PHB in Phoenix, Arizona provides protection for pedestrians near a high school.

Photo Credit: Mike Cynecki

1.2 MOTIVATION

The inclusion of a PHB as an option by the FWHA has attracted the attention of many groups and parties that advocate for walking and bicycling as major transportation modes. As a result, the Departments of Transportation (DOTs) in many states have received petitions and inquiries to increase the implementation of PHBs. This includes the Illinois Department of Transportation (IDOT). Illinois is seeking a comprehensive review of laws that regulate each party in the presence of a PHB in a dark condition. This, along with a national summary of use and experience, is desired to clarify the issues involved with the use of PHBs statewide in Illinois.

A PHB will not illuminate without activation, so drivers regularly approach a dark condition. Drivers' understanding of their responsibilities when approaching dark PHBs seems critical to ensure the efficiency and safety of PHBs. The national MUTCD 2009 version (Section 1A.13: Definitions of Headings, Words, and Phrases) defines the following: "Dark Mode—the lack of all signal indications at a signalized location. (The dark mode is most commonly associated with power failures, ramp meters, hybrid beacons, beacons, and some movable bridge signals.)," in addition "Traffic Control Signal

(Traffic Signal)—any highway traffic signal by which traffic is alternately directed to stop and permitted to proceed." Note that PHBs are specifically included in the definition even though they are distinct from typical traffic signals.

Noted differences between a typical traffic signal and a PHB:

- PHBs must be activated for the signal indicators to be lit.
- Typical traffic signals are in operation (certain indicators are lit) continuously.

Therefore, in order to provide IDOT with comprehensive insights to understand potential issues involved with widespread PHB implementation, the state regulation of PHBs has been reviewed and the data compiled herein. One key issue is the identification of distinct laws for PHB use as part of broader dark-signal regulations.

CHAPTER 2: DARK SIGNALS AND DARK PHBS

As mentioned previously, a dark signal describes the situation in which a traffic signal has no indications. For traffic signals at intersections, the dark signal can be caused by many reasons, such as equipment failure, power outage, or the manual intervention of the signal operation by the agency that controls the signal. The traffic control policies for dark signals are well established for the majority of the 50 states. Specific regulations for a dark signal at a PHB-controlled crosswalk were only found during research for three states. It is important that drivers understand their responsibilities when they approach an inactivated PHB. Thus, this report first focuses on the current control policy specific to both dark signals and dark PHBs in the 50 states.

2.1 DATA COLLECTION

The regulations on how motorists are to behave at a dark signal were investigated by accessing state DOT websites, state Secretary of State websites, state police websites, etc. If the information sought could not be located on any of these websites, the research team made an effort to contact staff at the state DOT. Data is presented for all states that responded to the contacts.

To determine if there was a specific reference to a "dark PHB," a survey email/request was sent with the following question to DOTs:

- Are there applicable rules or laws for vehicles operating at "dark" Pedestrian Hybrid Beacons?

2.2 SUMMARY

Currently, 39 states have laws on dark signals, of which 34 states require vehicles to stop completely before entering an intersection with a dark signal, and the other five states require approaching vehicles to proceed with caution and yield the right-of-way to pedestrians and other vehicles that may already be at the intersection. The other 13 states have no policies indicating how drivers are required to behave in the presence of dark signals.

More specifically, within the 34 stop-enforced states, 30 states explicitly require drivers to treat the intersection with dark signals as an all-way stop intersection. The other four states require drivers to completely stop before entering the intersection when observing dark signals. The data for dark signals is located in Appendix A—Dark Signal.

The research found that only three states—Idaho, Indiana, and Rhode Island—have adopted specific regulations on how non-activated PHBs should be addressed by drivers. The data regarding dark PHB guidance and laws is located in Appendix B—Dark PHB Guidance and Laws.

CHAPTER 3: PEDESTRIAN HYBRID BEACON PRACTICE

This chapter provides an outline of standards from MUTCD regarding PHB use and then summarizes current PHB practice in the 50 states. See Figure 2 for the breakdown.

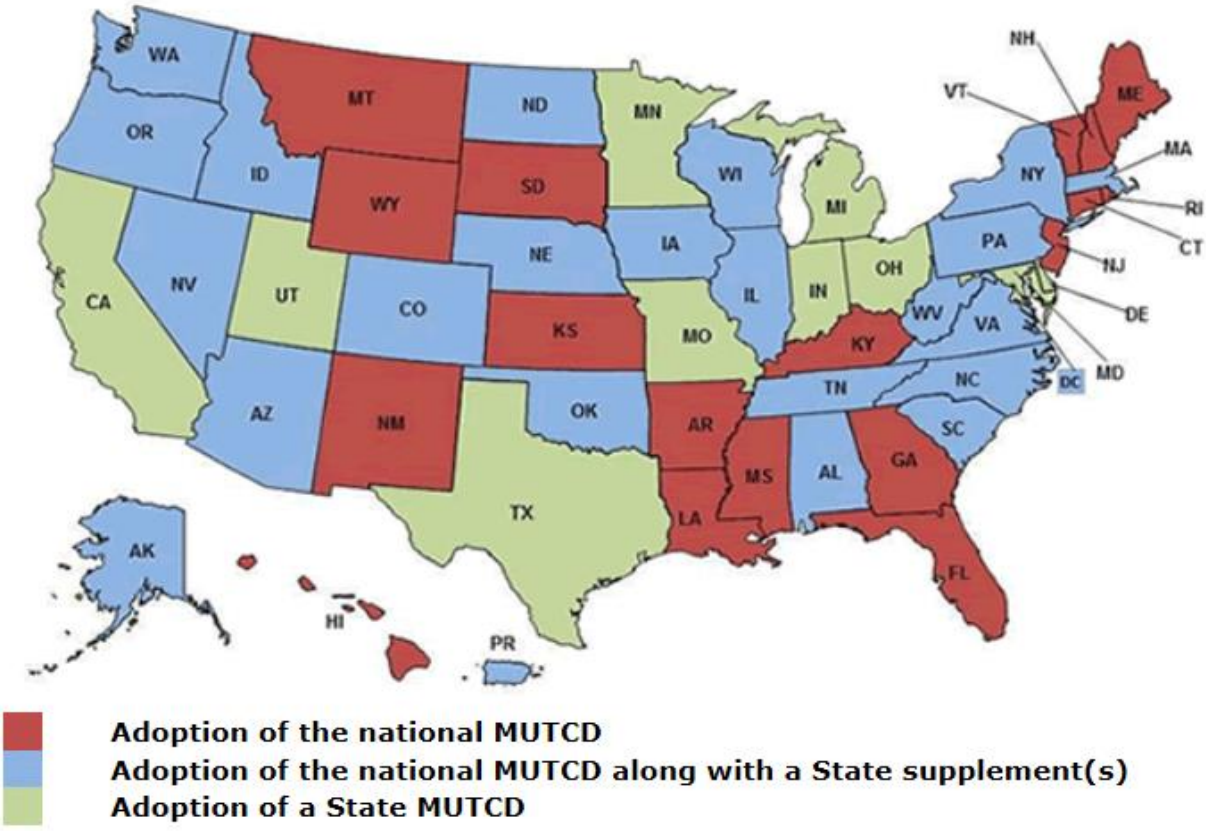

Figure 2. Adoption of MUTCD standards for PHBs.

Policies governing PHB use were investigated by accessing state DOT websites, searching various official state websites, etc., and, if the information could not be located on any website, contacting staff at each state DOT.

A survey email was sent with the following questions:

- How many have you installed?
- What limitations are placed on intersection offsets?

A specific focus was identification of any mention of PHBs in the regulations. This information is compiled in Appendix C—MUTCD by State.

3.1 STANDARDS IN MUTCD FOR PHBS

Policy summary information is compiled in Appendix D—PHB Specifics.

The national MUTCD has developed three sections for PHBs, including application, design, and operation policy.

Most states (39) apply or have the same standards for PHB use as for the national MUTCD. Five states have differences in the application of PHBs, five states have differences in the design of PHBs, and five states have differences in the operation of PHBs.

3.1.1 Application of PHBs

There is one standard and five guidance items regarding PHB application, including the national MUTCD.

3.1.2 Design of PHBs

There are five standards describing the design requirements for PHBs in the national MUTCD.

3.1.3 Operation of PHBs

There are four MUTCD standards describing the operational requirements for PHBs.

3.1.4 Offsets of PHBs

Intersection Offset in MUTCD and state practice were also assessed. See Appendix E—PHB Offset data for more details. There are 43 states where the official regulation is 100' offset (the national MUTCD requirement) "from side streets or driveways that are controlled by STOP or YIELD signs." There are six states that have a no offset (0') requirement, and one state (Illinois) has a requirement of "100 feet from side streets or driveways and at least 300 feet from traffic signals or railroad grade crossings with active warning devices." A summary of the offset for PHBs is shown in Appendix E.1—Offset.

3.2 CURRENT STATUS OF PHB PRACTICE AND QUANTITY INSTALLED

Currently, 41 states have installed PHBs. Another seven states allow PHB application but have not installed PHBs. Four of these states have proposed a plan for PHB installation or are in the process of installing at least one PHB. The remaining three states have no plans to install PHBs. In one state, Pennsylvania, PHB use is prohibited by state law. West Virginia has no online information on PHBs, and their DOT has not responded to requests for information. The number of PHB installations were determined as accurately as possible given the constraints that the research team experienced in accessing state data. This information is compiled in Appendix F—PHB Installed Quantity and shown in Figure 3.

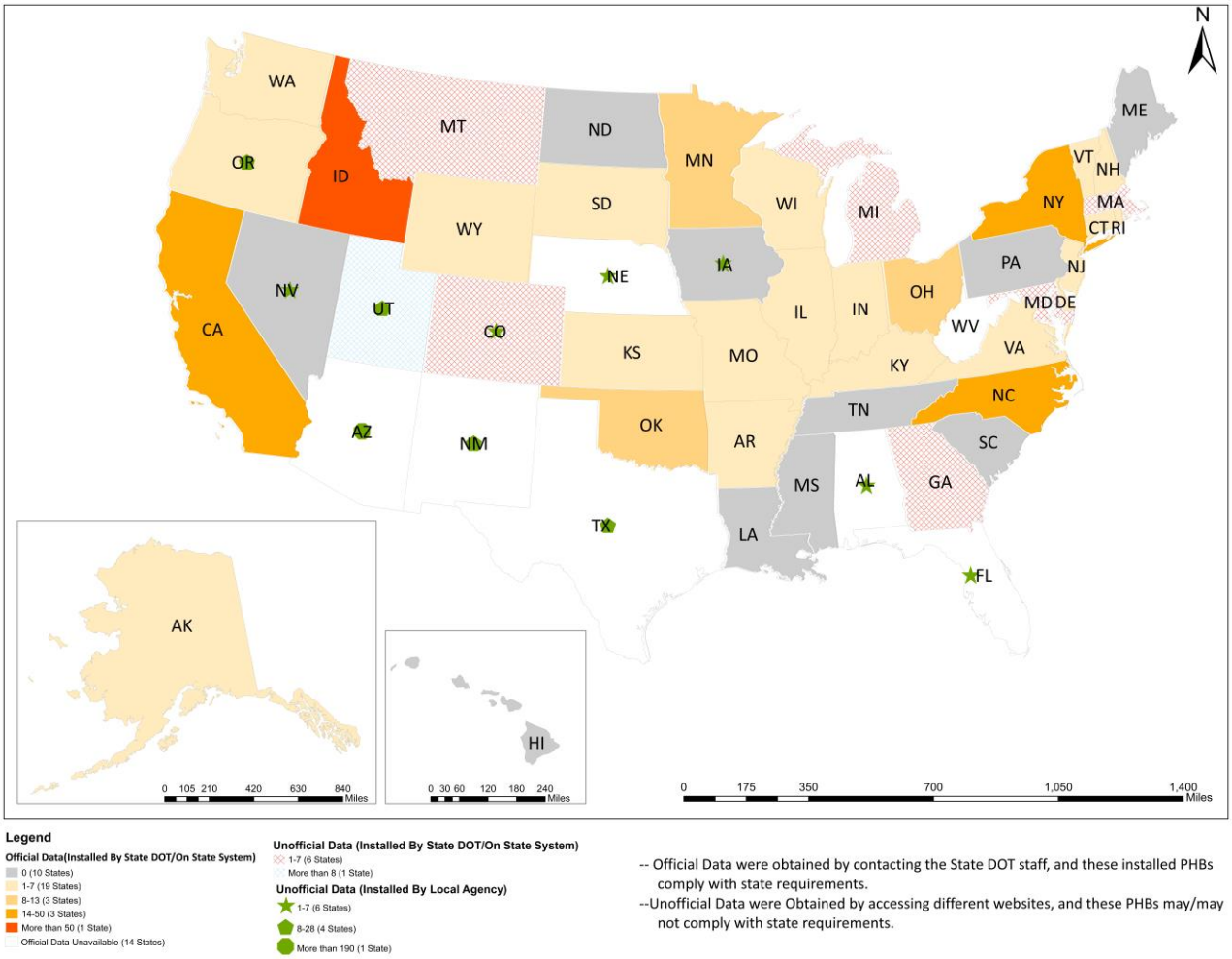

Figure 3. Quantity of PHBs in each state.

3.3 EVALUATION MATRIX/FORM, GUIDELINES

Although PHBs signals are widely used in the US, this traffic control device is still somewhat controversial due to lack of widespread use in many parts of the country. Exposure to these devices has been limited for the majority of US drivers, and there are also questions regarding the adequacy of driver education so that state laws and policies for the devices can be understood. Some specific concerns have been identified by several states. Some issues and feedback that have come up during the investigation are provided in Appendix G—Feedback on Installations.

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APPENDIX A—DARK SIGNAL

State	Methods	Description of "Dark Signal"	Law	Source
AL	Treat it as an all-way stop intersection	Inoperative	If the traffic light is inoperative, treat the intersection as you would a **four-way** stop.	Alabama Driver Manual 2016, Chapter 6. Accessed April 9, 2019.
AK	Stop	Not functioning or not in operation	If a signal does not have any of its bulbs functioning and there is no other signal head in operation for your direction and there is no one directing traffic, the intersection is uncontrolled. You **must stop**. **Yield** to traffic approaching the intersection on your right.	Alaska Driver Manual, Traffic Signals Section. Accessed April 9, 2019.
AZ	Treat it as an all-way stop intersection	Inoperative	When approaching an intersection with an inoperative traffic control signal, treat it as you would a **4-way** stop.	Arizona Driver License Manual, Section 3. Accessed April 9, 2019.
AR	Slowing down or stopping if need be to yield	Not in operation	Where traffic control signals are not in place or in operation, the driver of a vehicle shall yield the right-of-way, slowing down or stopping if need be, to yield to a pedestrian crossing the roadway within any marked crosswalk or within any unmarked crosswalk at an intersection, except as otherwise provided in this subchapter.	AR Code § 27-51-1202 (2017), Rules of the Road Section. Accessed June 4, 2019.
CA	Treat it as an all-way stop intersection	Not working or no lights	The traffic signal light is not working and/or no lights are showing on the signal. Proceed cautiously as if the intersection is controlled by **"STOP" signs** in all directions.	California Driver Handbook, Traffic Control Section. Accessed April 9, 2019.
CO	Treat it as an all-way stop intersection	Not operating or malfunctioning	If the traffic signal is not operating or is malfunctioning, treat the intersection as a **four-way** stop.	Colorado Driver Handbook, Section 4. Accessed April 9, 2019.
CT	Silence		At an intersection where there is no stop sign, yield sign, or oncoming traffic signal, drivers must yield to vehicles coming from the right.	Connecticut Driver's Manual, Chapter 4. Accessed April 9, 2019.
DE	Yield the right-of-way	No lighted indication	In the event that traffic signals are in place and no lighted indication is visible to an approaching driver, the approaching driver shall reduce speed and prepare to **yield to other vehicles** that are in or approaching the intersection.	Delaware Driver's Manual, Section 4. Accessed April 9, 2019.
FL	Treat it as an all-way stop intersection	Out of order	If a traffic signal is out of order, treat the light/intersection as a **four-way** stop sign.	Florida Driver License Handbook, Traffic Control Signal Section. Accessed April 9, 2019.
GA	Treat it as an all-way stop intersection	Not functioning	If a traffic signal is not functioning at all at an intersection, all drivers must treat the intersection as if **a stop sign** is posted for all directions.	Georgia Drivers Manual, Section 7. Accessed April 9, 2019.
HI	Silence			Hawaii Driver's Manual. Accessed April 10, 2019.
ID	Treat it as an all-way stop intersection	Not functioning	Whenever a traffic signal is not functioning, treat the intersection as a **four-way** stop.	Idaho Driver's Manual, Chapter 3. Accessed April 10, 2019.
IL	Treat it as an all-way stop intersection	Not working	When traffic control signals are not working, a driver must always treat the intersection as an **all-way stop**, by coming to a complete stop, unless directed otherwise by law enforcement.	Illinois DMV Handbook (2019), Chapter 10

State	Methods	Description of "Dark Signal"	Law	Source
IN	Treat it as an all-way stop intersection	Non-operating	If you are approaching an intersection with a non-operating signal, you should **stop before entering** the intersection.	Indiana Driver's Manual, Chapter 4. Accessed April 10, 2019.
IO	**Silence (code), An all-way stop (News article—see source)**		At an intersection where there is no stop sign or traffic signal, drivers must yield to vehicles coming from the right. "To my knowledge, the Iowa Code is silent on driver's action at dark signals. From my experience, I drive through one of the PHBs on a local street on my way to and from work, I have not seen anyone stop at the dark signals. The biggest problem I have seen is no one will move after stopping until the signal goes dark." —Timothy D. Crouch (State Traffic Engineer) Tim.Crouch@iowadot.us	Iowa DOT News Release from March 2, 2015
KS	Silence		At an uncontrolled intersection, such as in a residential area, where there is no stop sign, yield sign, or traffic signal, you must yield to vehicles in the intersection and those coming from the right. When entering an intersection with no traffic controls, you must yield to the vehicle on your right.	Kansas Driving Handbook. Accessed April 10, 2019.
KY	Yield the right-of-way	Not in operation	When traffic control signals are not in place or in operation, the operator of a vehicle shall **yield the right-of-way**, slowing down or stopping if need be to yield, to a pedestrian crossing the roadway upon which the vehicle is traveling, or when the pedestrian is approaching so closely from the opposite half of the roadway as to be in danger.	Kentucky Driver Manual. Accessed April 10, 2019.
LA	Treat it as an all-way stop intersection	Not functioning	When a traffic-control signal is not functioning at an intersection, the intersection shall revert to an all-way or **four-way** stop.	Louisiana Driver License Manual, Chapter 6. Accessed April 10, 2019.
ME	Yield to pedestrians	Not in operation	When traffic-control devices are not in operation, an operator must yield the right-of-way to a pedestrian crossing within a marked crosswalk.	Maine Motorist Handbook and Study Guide. Accessed April 10, 2019.
MD	Stop	Not working	When a traffic signal is not working, you are now required to **stop** at a clearly marked stop line; or if there is no clearly marked stop line, before entering any crosswalk; or if there is no clearly marked stop line or crosswalk, before entering the intersection, and yield to any vehicle or pedestrian in the intersection; and remain stopped until it is safe to enter and continue through the intersection.	Maryland Driver's Manual, Section 4. Accessed April 10, 2019.
MA	Treat it as an all-way stop intersection	Blacked out and not functioning	If signals are blacked out and not functioning, be cautious and proceed as though there is **a stop sign in all directions**. Go when it is safe.	Commonwealth of Massachusetts Driver's Manual Passenger Vehicles, Chapter 4. Accessed April 10, 2019.
MI	Completely stop, yield to vehicles approaching from the right	Not working	If a traffic signal is not working, and there are no law enforcement officers or other traffic signal devices present to control the flow of traffic, come to **a complete stop** and **yield** to vehicles already at the intersection. Yield to vehicles on your right if you both reach the intersection at the same time.	What Every Driver Must Know, Chapter 5. Accessed April 10, 2019.

State	Methods	Description of "Dark Signal"	Law	Source
MN	**Uncontrolled**	**Not functioning**	If a traffic signal is not functioning, treat the intersection as you would **an uncontrolled intersection**. *When two vehicles reach an intersection at the same time, and there is no traffic light or signal, the driver of the vehicle on the left must yield to the vehicle on the right. When two vehicles approach an uncontrolled "T" intersection, the driver of the vehicle that is turning must yield to all cross traffic.*	Minnesota Driver's Manual, Chapter 5. Accessed April 10, 2019.
MS	Silence		If there are no signs or signals at an intersection which you are approaching and another vehicle arrives at the same time, remember that the driver on the left must yield to the driver on the right.	Mississippi Driver's Manual. Accessed April 10, 2019.
MO	Treat it as an all-way stop intersection	Not working	Dark signals, or traffic signals that aren't working operate as **a four-way stop**.	Missouri Driver Guide, Chapter 7. Accessed April 10, 2019.
MT	Treat it as an all-way stop intersection	Not working	If a signal is not working, stop as you would if there were **stop signs** in all directions.	Montana Driver Manual, Chapter 3. Accessed April 10, 2019.
ME	Treat it as an all-way stop intersection	Not operational (dark)	If a traffic signal is not operational (dark) because of a power failure or other cause and no peace officer, flagger or other traffic control is in place, the intersection shall be treated as an **all-way stop**.	Nebraska Driver's Manual, Section 3. Accessed April 10, 2019.
NV	Treat it as an all-way stop intersection	Inoperative	When a vehicle enters an intersection controlled by a traffic-control signal which is installed and has its vehicular signals uncovered, but is inoperative at the time the vehicle enters the intersection, the driver of the vehicle shall proceed as if a **stop sign** had been erected at each entrance to the intersection and shall stop at a clearly marked stop line or, if there is none, before entering the crosswalk on the near side of the intersection or, if there is none, at the point nearest the intersection where the driver has a view of approaching traffic on the through highway. After making such a stop, the driver shall proceed cautiously, yielding to vehicles which have previously completed a stop or are within the intersection.	NRS 484B—Rules of the Road, NRS 484B.250. Accessed April 15, 2019.
NH	Treat it as an all-way stop intersection	Not operational	When a traffic control device is not operational, the driver shall obey the rules of the road applicable to intersections without traffic control devices or intersections with **4-way stop signs**.	New Hampshire Statutes Chapter 265 Rules of the Road, Section 265:9. Accessed April 15, 2019.
NJ	Treat it as an all-way stop intersection	Not illuminated (power failure/ malfunction)	When a traffic signal is not illuminated because of a power failure or other malfunction, the traffic signal is observed as a 4-way stop signal.	The New Jersey Driver Manual, Section 4. Accessed April 15, 2019.
NM	Silence		At an intersection where there is no stop sign, yield sign or traffic signal, drivers must yield to vehicles coming from the right.	New Mexico Driver Manual. Accessed April 15, 2019.
NY	Treat it as an all-way stop intersection	Out of service or do not operate correctly	State law requires that if the traffic lights or controls are out of service or do not operate correctly when you approach an intersection, you must come to a stop as you would for **a stop sign**.	New York Driver's Manual, Part 2. Accessed April 15, 2019.
NC	Treat it as an all-way stop intersection	Malfunctioned (power outage or other problems)	When approaching an intersection with a traffic light that has malfunctioned due to a power outage or some other problem, you should approach the intersection and proceed as though the intersection is controlled by **a stop sign** on all approaches to the intersection.	North Carolina Driver Handbook, Chapter 5. Accessed April 15, 2019.

State	Methods	Description of "Dark Signal"	Law	Source
ND	Treat it as an all-way stop intersection	Not lit	If a vehicle approaches an intersection that has traffic-control signals that usually exhibit different colored lights and the signals are not lit, the driver of the vehicle shall **stop and yield** as required under subsection 2 of section 39-10-24.	North Dakota Century Code 39-10-22 &39-10-24(2). Accessed April 15, 2019.
OH	Treat it as an all-way stop intersection	Non-working	By law, except when a law enforcement officer is present to direct traffic, drivers must treat the non-working traffic signal as a four-way stop intersection.	Digest of Ohio—Motor Vehicle Laws Accessed April 15, 2019.
OK	Silence			Oklahoma Driver's Manual Accessed April 15, 2019.
OR	Treat it as an all-way stop intersection	Dark	If a signal appears dark, such as during a power failure, you should stop as if there are stop signs in all directions.	Oregon Driver Manual, Chapter 1. Accessed April 15, 2019.
PA	Treat it as an all-way stop intersection	Non-functioning	A non-functioning traffic signal should be treated as though it were a four-way STOP sign	Pennsylvania Driver's Manual, Chapter 2. Accessed April 15, 2019.
RI	Silence			Rhode Island Driver's Manual. Accessed April 15, 2019.
SC	**Silence (code), An all-way stop (news)**		No signal lights: lights should be treated as a four-way stop.	WMBF News—What to do if a traffic light isn't working WMBF News; article October 11, 2016
SD	Treat it as an all-way stop intersection	Out of operation or not functioning properly	If a traffic control signal is out of operation or is not functioning properly, the vehicle facing a Red or completely unlighted signal stop shall stop in the same manner as if the vehicle is at **a stop sign**.	South Dakota Driver License Manual, Rules of the Road Section. Accessed April 15, 2019.
TN	Treat it as an all-way stop intersection	Not working	Tennessee state law requires that if a signal is not working, the intersection is to be treated as if it were a four-way stop intersection.	Tennessee Driver License Manual, Section 2. Accessed April 15, 2019.
TX	Treat it as an all-way stop intersection	Does not display an indication	An operator of a vehicle facing a traffic-control signal, other than a freeway entrance ramp control signal or a **pedestrian hybrid beacon**, that does not display an indication in any of the signal heads shall stop as provided by Section 544.010 as if the intersection had **a stop sign**.	Texas Statutes TRANSPORTATION CODE Title 7. VEHICLES AND TRAFFIC Subtitle C. RULES OF THE ROAD, Sec. 544.007. (i). Accessed April 15, 2019.
UT	Completely stop, yield to vehicles approaching from the right	Not working	If you approach an intersection where the traffic lights are not working, you must first come to a **complete stop** before entering the intersection and **yield the right-of-way** to any vehicle on the right unless otherwise directed by a peace officer.	Utah Driver Handbook. Accessed April 15, 2019.
VT	Treat it as an all-way stop intersection	Dark (power failure)	Traffic signals control the right-of-way and provide for a smooth, orderly flow of traffic. If a signal light is dark, as in a power failure, stop as if there are stop signs in all directions. When a traffic signal is out of order and flashes yellow or red, you must obey that signal.	Vermont Driver's Manual. Accessed June 7, 2019.
VA	Treat it as an all-way stop intersection	Dark (power failure)	If a signal light is dark, as in a power failure, stop as if there are stop signs in all directions.	Vermont Driver's Manual. Accessed April 15, 2019.

State	Methods	Description of "Dark Signal"	Law	Source
WA	Treat it as an all-way stop intersection	Not working	If a traffic signal is not working, come to a complete stop, then yield to traffic as if it were **a four-way stop**.	Washington Driver Guide. Accessed April 15, 2019.
WV	Silence			West Virginia Driver's Licensing Handbook. Accessed April 15, 2019.
WI	Treat it as an all-way stop intersection	Lose power and malfunctions	If a traffic signal loses power and malfunctions, proceed as if the signal were a stop sign.	Wisconsin Motorists' Handbook. Accessed April 15, 2019.
WY	Silence			The 2016 State of Wyoming Driver License Manual. Accessed June 7, 2019.

APPENDIX B—DARK PHB GUIDANCE AND LAWS

State	Dark PHB in Law?	Email	Contact Info.
AL			
AK		There isn't any specific reference to PHBs in the Alaska Driver's Manual. Vehicle operators are expected to follow commonly understood "rules of the road" and obey posted traffic control devices. To that end, Alaska DOT&PF was recently granted approval from the Alaska Division FHWA to add the CROSSWALK, STOP ON RED, PROCEED ON FLASHING RED WHEN CLEAR (R10-23a) word message sign to the ATM, as allowed under Official MUTCD Interpretation Issued by FHWA 4(09)-61 (I).	Matt Walker, PE State Traffic & Safety Engineer matthew.walker@alaska.gov
AZ		Please open the links below to get more information about PHBs in AZ and the Traffic Engineering Guidelines and Procedures: https://www.azdot.gov/about/transportation-safety/pedestrian-hybrid-beacon https://www.azdot.gov/docs/default-source/traffic-library/tgp0640-2015-06.pdf?sfvrsn=4 I don't have the number of PHBs installed in AZ, as they are mostly installed within the local jurisdictions.	Maysa Hanna, PE State Traffic Engineer MHanna@azdot.gov
AR		ARDOT is working on a database system to track all intersections on the state highway system. This database will eventually house useful information such as this. Until then, though, I don't have an exact number of PHBs in use. I recall that there are less than five, that I am aware of, on our state highway system. There may be more on city or county roads, but we have even less information on those. We follow MUTCD on offsets. No special law(s) has been passed governing the use of PHBs.	Joseph Hawkins Staff Traffic Engineer Joseph.Hawkins@ahtd.ar.gov
CA		– How many have you installed? Less than 50 locations on State Highway (not including local road). – What limitations are placed on intersection offsets? Please see Section 4F.02 in CA MUTCD. – Are there applicable rules or laws for vehicles operating at Dark Pedestrian Hybrid Beacons? There are no special rules or laws for any dark beacon.	Duper Tong Chief, Office of Traffic Engineering duper.tong@dot.ca.gov
CO			
CT		– How many have you installed? 3. – What limitations are placed on intersection offsets? None. We don't have any written policies or practices.	Joseph P. Ouellette State Safety Engineer joseph.ouellette@ct.gov
DE		Delaware currently has five operational pedestrian hybrid beacons. Four are referenced in the attached report and we have since installed one more. There are no specific offset requirements (https://deldot.gov/Programs/DSHSP/pdfs/OtherPedProjects/HAWK_Study_Report_December2017.pdf). Each location is individually studied and analyzed related to traffic flow, speed, pedestrians, bicycles, geometry, etc., and case-by-case decisions are made as to the type of traffic control, location, islands, etc.	Mark Luszcz, PE PTOE Chief Traffic Engineer Mark.Luszcz@delaware.gov
FL			
GA			
HI			
ID		– How many have you installed? Approximately 100. Most have been installed by the Ada County Highway District (ACHD) in the Boise area. http://achdidaho.org/ – What limitations are placed on intersection offsets? We adopt the PHB Chapter of the MUTCD as is, but in effect there are no limitations on intersection offsets. – Are there applicable rules or laws for vehicles operating at Dark Pedestrian Hybrid Beacons? As is typical, Idaho law says to approach a dark signal as a stop-controlled intersection. In practice, that law is ignored for PHBs.	Ryan D. Lancaster Standards Engineer Ryan.Lancaster@itd.idaho.gov

State	Dark PHB?	Email	Contact Info.
IL		We are aware of four PHBs in operation in Illinois. The below section of Illinois law addresses requirements at dark signal. Dark signals – 625 ILCS 5/11-305 (e) states that "The driver of a vehicle approaching a traffic control signal on which no signal light facing such vehicle is illuminated shall stop before entering the intersection in accordance with rules applicable in making a stop at a stop sign." A PHB is an electric device that controls traffic. Therefore, if it is at an intersection, vehicles are compelled to stop at a dark PHB. Consequently, the ILMUTCD (Section 4F.02) was written to require a PHB to be at least 100 ft from side streets or driveways, and at least 300 ft from traffic signals or railroad grade crossings with active warning devices.	Kyle D. Armstrong, PE PTOEEngineer of Traffic Operations Kyle.Armstrong@illinois.gov
IN	Proceed without stopping (law)	– INDOT has installed two PHBs and two more have been or will be installed on the state highway system by local public agencies. – INDOT does not have any separate guidance on the intersection offset distance; it seems that the MUTCD guidance statement in Section 4F.02, ¶4A is generally met for trail crossings but is more difficult to attain for crosswalks. – In 2011, Indiana law was changed to recognize pedestrian hybrid beacons. See Indiana Code Sections 9-21-3-0.5, 9-21-3-7(b)(4)(C), and 9-21-8-36: http://iga.in.gov/legislative/laws/2018/ic/titles/009#9-21-3-7	Dave Boruff Traffic Administration Section Supervisor DBORUFF@indot.IN.gov
IA		To my knowledge, we do not have a pedestrian hybrid beacon installed on a state highway. I know some of the cities have installed a few on the city street system, but I don't have information on the installations. We do not have any policies on their installation, we would just follow the MUTCD for guidance. To my knowledge, the Iowa Code is silent on driver's action at dark signals. From my experience, I drive through one of the PHBs on a local street on my way to and from work, I have not seen anyone stop at the dark signals. The biggest problem I have seen is no one will move after stopping until the signal goes dark.	Timothy D. Crouch State Traffic Engineer Tim.Crouch@iowadot.us
KS		To my knowledge, KDOT has allowed two Hybrid Beacon Systems along the Kansas State Highway System (K, US, I routes). In Kansas, the local entity is responsible for funding, maintaining, and installing pedestrian devices. Because of the expense of the hybrid beacon system, it generally has not been recommended as an option to pursue. Options involving the rectangular rapid flashing beacon (RRFB) are more likely to be recommended. However, there are communities that have hybrid beacons installed which are not on the state highway system. The city of Lawrence, KS has anywhere from 20–30 hybrid beacons installed within its city limits. – How many have you installed? KDOT has allowed two on the state highway system. – What limitations are placed on intersection offsets? We follow guidance provided in the 2009 MUTCD. I have seen some hybrid beacons installed at intersections with one-way streets. These locations are off the state highway system.	Brian D. Gower KDOT – Transportation Safety and Technology Brian.gower@ks.gov
KY		To the best of my knowledge, Metro Louisville is the only agency in Kentucky to install a PHB. It is located at an intersection on River Road. Lexington has kicked the concept around at a few locations, but I don't believe they have installed any yet. To date, the Kentucky Transportation Cabinet has not installed any pedestrian hybrid beacons. For the most part, we feel that a traditional signal would be a better option for controlling traffic since the public already understands the indications in a traditional traffic signal, whereas the pedestrian hybrid beacon would require education efforts. We were prepared to approve a pedestrian hybrid beacon for a heavily used pedestrian crossing on the campus of Transylvania University. This crossing has significant pedestrian traffic throughout the day (including peak periods of traffic flow) and crosses a major roadway entering into downtown Lexington. Mainline traffic is heavy enough that we felt the additional capacity/throughput provided by a pedestrian hybrid beacon was worth dealing with the problems associated with educating the public on the operation of a PHB. However, at the last-minute local officials were not comfortable with installing a pedestrian hybrid beacon, and we ultimately selected a RRFB for that location. If we ever install a pedestrian hybrid beacon, it will be at a location with heavy pedestrian traffic (likely satisfying a warrant) and/or pedestrian safety issues. As with the Transylvania location referenced above, it will likely be a location with significant enough mainline traffic that would necessitate the additional capacity provided by a PHB. Otherwise, our Cabinet would likely select a traditional traffic signal for the crossing.	Jeff J. Wolfe / Troy T. Hearn, (KYTC) Troy.Hearn@ky.gov
LA		We have had a few be accepted into our Safe Routes to Public Places Program, though as of now, none have been installed. The programmed PHBs are undergoing feasibility before final determination after which a specification will be developed.	Jessica DeVille Jessica.DeVille@LA.GOV

State	Dark PHB?	Email	Contact Info.
ME		Maine does not currently have any PHB installations, nor does it have any scheduled. The department may look at them in the near future, however.	Pamela D. Shofner, Librarian, Maine DOT Library Pamela.shofner@maine.gov
MD			
MA			
MI			
MN		MnDOT has about 10 Hawks on the state highway system. We have installed some of our HAWKS at intersections, but we now discourage this. We follow the 100' rule. Minnesota does have laws that you must yield to pedestrians at crosswalks, even if the lights are not flashing.	Jerry Kotzenmacher Signals Section – Office of Traffic Engineering jerry.kotzenmacher@state.mn.us
MS		MDOT does not have any Pedestrian Hybrid Beacon installations at this time. We are currently looking to have one installed on a road that is in the process of being "turned over" from the state to a local agency as part of a construction project; but aside from this one, there are no others installed by MDOT.	Mississippi Department of Transportation
MO		We have installed the pedestrian hybrid beacon (PHB) on MoDOTs highway system in approximately seven locations. PBHs have also been installed on the local system, but the quantity is unknown. Please refer to our Engineering Policy Guide section 902.7 for additional information.	Ashley Buechter Traffic Liaison Engineer Ashley.Buechter@modot.mo.gov
MT			
NE			
NV		The High Intensity Activated crosswalk (HAWK) is not the typical PHB for the Nevada Department of Transportation (NDOT), and we have not installed any that I am aware of.	Seth Daniels, PE Assistant Chief Traffic Operations Engineer sdaniels@dot.nv.gov
NH		In New Hampshire, we currently have five PHBs installed, two each in Goffstown (rail trail crossings) and Meredith (Lakes Region tourist town), and one in Epping (rail trail crossing). One of the two in Meredith was required in order to secure approval for a new crosswalk. The crosswalk was requested by the town as part of the site plan approval for a new senior housing apartment complex across the street from a convenience store. In hindsight it is seldom used and could likely be removed. We do not have any specific intersection offset criteria and would consider locations on a case-by-case basis. Where three of the four active locations are for rail trail crossings, it is not an issue. The fourth location is removed from a signalized intersection by a few hundred feet and is coordinated with the signal.	William R. Lambert Traffic Engineer/Administrator William.Lambert@dot.nh.gov
NJ		NJ has three pedestrian hybrid beacons. NJDOT tries to follow the should guidance of installing the pedestrian hybrid beacon at least 100 ft from an intersection for installations on roadways under state jurisdiction. However, one of our installations is at an intersection (see below aerial) but all traffic on Magnolia Rd must turn right, away from the crosswalk. For local roadways not under the jurisdiction of NJDOT, the installation of pedestrian hybrid beacons is up to the discretion of the local engineer. NJ does not have specific guidance for vehicles when the PHB is dark. NJ uses the R10-23 sign as the MUTCD indicates in a shall condition.	Jaime Oplinger Executive Manager Jaime.Oplinger@dot.nj.gov
NM		The state has not installed any PHBs, but the locals have. I am not aware of the number. But I estimate between 10 to 15. We have not established any parameters.	Jian, Afshin State Traffic Engineer Afshin.Jian@state.nm.us

State	Dark PHB?	Email	Contact Info.
NY		– How many have you installed? Likely less than 20 statewide between both us and local highway authorities. – What limitations are placed on intersection offsets? We follow the MUTCD guidance; we have not developed any of our own guidance on HAWKs. – Are there applicable rules or laws for vehicles operating at Dark Pedestrian Hybrid Beacons? No. NY's dark signal law applies to a traffic control signal which is out of service or otherwise malfunctioning. The HAWK is not a traffic signal, and it's not malfunctioning in its dark mode.	Barbara S. Abrahamer Senior Civil Engineer barbara.abrahamer@dot.ny.gov
NC		North Carolina has 40 +/- hybrid beacons installed on the state system. The vast majority adhere to the current MUTCD restrictions on placement. And our general statute is attached. It is very clear on what to do at a dark traffic signal at an intersection, less so at mid-block locations.	Jason Galloway State Signals Engineer jgalloway@ncdot.gov
ND			
OH		– How many have you installed? ODOT has none on our system. However, I know of at least a dozen statewide. They are mostly located in downtown business district type area, or on college campuses. – What limitations are placed on intersection offsets? When reviewing, we stress the OMUTCD recommendations/guidance, which mirrors the MUTCD, to give the minimum 100' offset from any side street. – Are there applicable rules or laws for vehicles operating at Dark Pedestrian Hybrid Beacons? The only current legislation regarding PHBs under yellow and red beacons can be found in Ohio Revised Code (ORC) Section E4 and F3 of 4511.13 (http://codes.ohio.gov/orc/4511). As long as PHBs are always referred to as Beacons, this suffices. If a PHB is recognized as a signal, Ohio would have to revise our laws since a dark signal needs to stop at stop line, yield to vehicles/peds, and act as a 4-way stop. This is outlined in ORC 4511.132 (http://codes.ohio.gov/orc/4511).	Charlie Fisher Statewide Traffic Operations Engineer Charles.Fisher@dot.ohio.gov
OK		– How many have you installed? So far, we installed about eight HAWK systems on the highway system. – What limitations are placed on intersection offsets? The link below shows the limitations: http://www.okladot.state.ok.us/traffic/collision_analysis/pdf/PHB-Policy2016-09-02.pdf	Tarek A. Maarouf Engineering Manager, Traffic Engineering Division, tmaarouf@odot.org
OR		Here are the PHB installations on state highways in Oregon: – OR 126 between 66th and 67th streets, Springfield (approved for installation, not yet built) – OR 39 at Portland St, Klamath Falls Others we know of in Oregon off the State Highway System (not a complete list of PHBs in Oregon): – Franklin Blvd between I-5 and Glenwood Blvd, Springfield – Gateway St near USPS office, Springfield – Harlow Rd between Pheasant Blvd and Lindale Dr, Springfield – E. Broadway between Patterson and Coburg Rd, Eugene – S Columbus Ave and Diamond St, Medford – Burnside at 41st, Portland Note: The City of Springfield has converted most/all of their PHBs to standard signal heads in recent years (you can see most of them on street view) and are operating them in a unique way. Brian Barnett (City Traffic Engineer) at the City of Springfield can provide more information if you want. Placement criteria for Oregon's State Highway System matches federal MUTCD—recommended not within 100 feet of side street or driveway controlled by STOP or YIELD signs.we found a few more locations on local roads to add to the Oregon list: – Hall Blvd at Fanno Creek Trail, Beaverton – Farmington Rd and 138th, Beaverton – Burnside Rd and 30th, Portland – Sandy Blvd and 18th St, Portland	Eric Leaming State Traffic Investigations Engineer eric.s.leaming@odot.state.or.us Gary R. Obery. Active Modes Traffic Engineer Gary.R.OBERY@odot.state.or.us

State	Dark PHB?	Email	Contact Info.
PA		We currently do not have any HAWK signals installed, as they are not permitted under the Pennsylvania Vehicle Code. This is from our Statewide Traffic Signal Operations Engineer, Steve Gault: "To my knowledge, the language in the PA Vehicle Code hasn't been updated since the HAWK signal was 'invented' and added to the MUTCD. I don't think there was a specific intent to prohibit it, but there hasn't been a push to pass legislation that would specifically allow it. My understanding is the interpretation is a dark signal in PA Vehicle Code means it should be treated as an all-way stop. The intended operation for a HAWK signal is that it is dark whenever not actuated by pedestrians, in which case vehicles would be expected to proceed freely." So, we at PennDOT wouldn't even be able to test the HAWK signal until legislation allows for its use in PA. One more response from Dan Farley who is the chief of our Operations and Performance section: "Other issues with the HAWK (PHB) signal include: – Not clear clarification as to how to navigate a flashing red indication. The MUTCD contradicts itself-regarding when to navigate through a flashing red for a HAWK versus at a traffic signal or even a railroad crossing. – The device was put into the last manual with little research outside of the Southwest where it originated from. Based on results we are seeing our concerns are now becoming problems in other areas of the country. – Driver understanding of the concept is questionable. Many individuals don't understand a dark signal and now we are flashing the devices and developing new meanings. – Many states have been forced to put it in due to political pressure. – The clarification signs are not clearly understandable, and the Official Traffic Control Device team hasn't found an effective sign yet for the operation. – Overall the effectiveness of the unit has been questionable and has created an issue with bikes/pedestrians that arrive at the end of the HAWK phase which has led to additional crashes."	Anthony Chiodo Civil Engineer, Traffic Signals anchiodo@pa.gov
RI		We have one PHB installed with several more in design. – At installed location, intersections are not offset. For proposed locations, they are at midblock crossings and not intersections. The one installed is at an intersection and we have no limitations at this time in regard to being offset from intersections. The locations are governed by where the pedestrians are located. When the PHB is not activated and dark, motorists should treat it as if it weren't there and it was just an unsignalized midblock crossing. It could be possible that motorists who assume it's a full traffic signal and stop at the stop bars thinking that it is malfunctioning (ex. loss of power), but we haven't had any record of this issue coming up.	Lindsey M. Sasso Senior Information and Public Relations Specialist Office of Customer Service dot.customerservice@dot.ri.gov
SC		Our Traffic Engineering office has developed a guideline for pedestrian hybrid beacons in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). I have attached a copy of this guideline for your use. SCDOT has not installed any PHBs but has allowed a few to be installed on state-maintained roads under encroachment permit.	Ashley Johnson Traffic Operations Engineer JohnsonHA@scdot.org
SD		We currently have one Hawk system operating in the state. I am working on the plans for a second installation. SDDOT currently does a policy or practice for offset of the HAWK systems. The one installed is mid-block and the one being designed will be at an intersection.	Dan Martell South Dakota Department of Transportation Aberdeen Region Traffic Engineer
TN		TDOT has not used PHBs much (at all?) I believe and does not plan to use them. I am copying Jessica Wilson who has a longer history with TDOT bike ped than I. She will correct me if I am mistaken. We prefer pedestrian-activated yellow-ball beacons for overhead assemblies and RRFBs.	Whitney Mason, TDOT Bicycle and Pedestrian Coordinator Whitney.Mason@tn.gov
TX		The Texas Department of Transportation has specific requirements for PHB installations in our Traffic Signals Manual (Chapter 5, Section 7) but these requirements apply to state roads only. We currently have only two PHB systems operating on state highways in Texas. Some cities in Texas, however, have installed more PHBs on city streets.	Douglas A. Skowronek Transportation Engineer Doug.Skowronek@txdot.gov
UT			

State	Dark PHB?	Email	Contact Info.
VT		We currently have one HAWK Signal on the state highway system in Vermont. It was installed in 2013. We do not have any documented limitations on intersection offsets. However, our one HAWK Signal does have an offset of approximately 30' with a median on a divided highway. We use the latest edition of the MUTCD as law and therefore there are no specific requirements for the dark signal heads at the HAWK. We utilize retroreflective backplates to draw attention to the signal heads during low light conditions. Attached is our plan sheet showing the layout of our HAWK.	Derek Lyman, PE Traffic Signal Operations Engineer derek.lyman@vermont.gov
VA		Q1 how many have we installed: To date VDOT has only installed one Pedestrian Hybrid Beacon on our system of roads, on Backlick Road near Lynbrook Elementary School. However many of Virginia's traffic signals are maintained by localities (including all signals in cities, large towns, and Arlington County; plus some signals in Henrico County). We don't have an inventory of exactly how many locally maintained PHBs are out there, but we are aware of several in various localities including Arlington, Alexandria, and Vienna. Q2 limitations on intersection offsets: VDOT policies on unsignalized pedestrian crossings is contained in this document. That document also addresses PHBs. Currently that document does not have much Virginia-specific policy beyond what is stated in the MUTCD; however, we are currently developing updates to that policy. Q3 applicable rules or laws for vehicles: There are no Virginia-specific laws that explicitly address PHBs; however, we have been of the opinion that the Code of Virginia adequately addresses required driver behavior at PHBs, whether the PHB is displaying a dark, flashing yellow, steady yellow, steady red, or alternating flashing red indication.	Marc Lipschultz Senior Traffic Engineer marc.lipschultz@vdot.Virginia.gov
WA		– WSDOT does not have a formal policy or position on PHB/HAWK signals. – There are maybe five installed within WSDOT jurisdiction (there are many more installed by local jurisdictions). – Intersection offsets follow the MUTCD, Section 4F.02, with additional distance to signalized intersections. – Washington State only has a law for nonfunctioning traffic signals at an intersection (https://app.leg.wa.gov/RCW/default.aspx?cite=46.61.183) and does not specifically address special signal systems (emergency vehicle, pedestrian crossing, ramp meter, or PHB/HAWK).	Angel Dziedzic Traffic Operations Office DziedzA@wsdot.wa.gov
WV			
WI		The Wisconsin Department of Transportation (WisDOT) currently maintains five PHBs across the state. There are more than five PHBs currently in the state of Wisconsin, but those PHBs were either installed by a local municipality or county; or the PHB was installed as part of a WisDOT project and ownership of the PHB was transferred to the municipality or county after the completion of the project. WisDOT typically follows the standards set in MUTCD 4F.02 when deciding on the placement of PHBs—"The pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs." However, three of the PHBs are in a tourist area with a high concentration of commercial driveways and it was not possible to get 100' of separation between the PHB and driveways. In those cases, engineering judgement was used to determine the best locations to place the PHBs. I do not believe we have any laws specifically addressing PHBs. Some of our PHBs have a variation of the R10-23 sign to assist with drivers unfamiliar with the PHBs.	Jeremy R. Iwen Statewide Traffic Signal Engineer Jeremy.Iwen@dot.wi.gov
WY		WYDOT has four PHBs. No limit on intersection offsets. No laws or rules on dark beacons that I am aware of.	Joel A. Meena State Traffic Engineer joel.meena@wyo.gov

APPENDIX C—MUTCD BY STATE

"Part 4 – Highway Traffic Signals – 2009 Edition" – Refers to the FHWA MUTCD

State	Applicable MUTCD Source	Applicable MUTCD	PHB Specifics in Applicable MUTCD	Applicable Section
AL	Traffic Signal Design Guide & Timing Manual—June 2015			
AK	AK Part 4—Highway Traffic Signals—2016 Edition	AK MUTCD	AK Part 4—Highway Traffic Signals—2016 Edition	4A.100
AZ	Arizona Supplement to the 2009 Manual on Uniform Traffic Control Devices—2009 Edition	Evaluation form	ADOT Traffic Engineering Guidelines and Processes—Pedestrian Hybrid Beacon—June 2015	640
AR	Part 4—Highway Traffic Signals—2009 Edition	MUTCD		
CA	CA Manual on Uniform Traffic Control Devices—2014, Revision 4			
CO	MUTCD 2009 Colorado Supplement Issued 12-06-11 Revised 04-16-18	Lanes/speed/volume/median	CDOT Chapter 14 Bicycle and Pedestrian Facilities	14.3.9.2 & 14.3.9.3
CT	Part 4—Highway Traffic Signals—2009 Edition		Connecticut DOT General Files	
DE	DE Part 4—Highway Traffic Signals—2018 Revision		2015 Traffic Design Manual—IV Traffic Signals	
FL	Part 4—Highway Traffic Signals—2009 Edition	Offset/lanes/median	Traffic Engineering Manual—Chapter 3—Signals—2017 Revision	3.8.7
GA	Part 4—Highway Traffic Signals—2009 Edition	Speed (45mph or less)	GDOT Pedestrian and Streetscape Guide—April 2019	5.3.2
HI	Part 4—Highway Traffic Signals—2009 Edition		Hawaii Pedestrian Toolbox—May 2013	
ID	Traffic Manual: Idaho Supplementary Guidance to the MUTCD	MUTCD		
IL	IDOT Manual on Uniform Traffic Control Devices—June 2014	MUTCD	TRA-23 (Not online yet)	
IN	2011 Indiana Manual on Uniform Traffic Control Devices—Revision 3	MUTCD		
IA	IAC Chapter 130, Pg. 1	MUTCD		
KS	Part 4—Highway Traffic Signals—2009 Edition	MUTCD		
KY	Part 4—Highway Traffic Signals—2009 Edition	MUTCD		
LA	Part 4—Highway Traffic Signals—2009 Edition		LADOTD Traffic Signal Manual V2.0—May 2015	

State	Applicable MUTCD Source	Applicable MUTCD	PHB Specifics in Applicable MUTCD	Applicable Section
ME	Part 4—Highway Traffic Signals—2009 Edition			
MD	Maryland Manual on Uniform Traffic Control Devices—2011 Edition			
MA	MassDOT Manual on Uniform Traffic Control Devices and the Standard Municipal Traffic Code—January 2012			
MI	MDOT MMUTCD Documents			
MN	Minnesota Manual on Uniform Traffic Control Devices		Traffic Control Signal Design Manual—June 2016	1.6
MS	Part 4—Highway Traffic Signals—2009 Edition			
MO	MoDOT 900 Traffic Control	MUTCD		
MT	Part 4—Highway Traffic Signals—2009 Edition		MDT Road Design Manual—Chapter 7: Multimodal Design Considerations—September 2016	
NE	Nebraska MUTCD 2011			
NV	NDOT Highway Sign Supplement—2006	ADT/lanes/median	Pedestrian Safety Improvement Evaluation Guideline for Uncontrolled Crossings—April 2018	Page 5
NH	Part 4—Highway Traffic Signals—2009 Edition			
NJ	Part 4—Highway Traffic Signals—2009 Edition	MUTCD		
NM	Part 4—Highway Traffic Signals—2009 Edition	MUTCD		
NY	NYSDOT MUTCD			
NC	2009 North Carolina Supplement to the MUTCD	General principles and considerations	North Carolina Pedestrian Crossing Guidance—July 2015	4
ND	NDDOT Traffic Operations			
OH	Ohio MUTCD—2012 Edition	Evaluation form	Traffic Engineering Manual—400 Traffic Signals	
OK	Oklahoma Supplement to the 2009 MUTCD—2009 Edition	Evaluation form	ODOT Collision Analysis – PHB Policy—September 2016	
OR	Oregon Supplement to the 2009 MUTCD for Streets and Highways	Offset/lanes/speed/median	2017 Traffic Signal Design Manual—Chapter 12: Flashing Beacon Plan	12.9
PA	Notices Department of Transportation 2009 MUTCD			

State	Applicable MUTCD Source	Applicable MUTCD	PHB Specifics in Applicable MUTCD	Applicable Section
RI	Part 4—Highway Traffic Signals—2009 Edition			
SC	SCDOT Supplement to the MUTCD		TG-26 (not available online)	
SD	Part 4—Highway Traffic Signals—2009 Edition			
TN	Adoption of the Tennessee Manual on Uniform Traffic Control Devices for Streets and Highways—Revised July 2012		TDOT Multimodal Project Scoping Manual—April 2018	
TX	Texas Manual on Uniform Traffic Control Devices (TMUTCD)		Pedestrian Hybrid Beacons	
UT	Utah Manual on Uniform Traffic Control Devices for Streets and Highways—December 2011		UDOT Standard Drawings for Road and Bridge Construction—August 2018	
VT	Part 4—Highway Traffic Signals—2009 Edition	Lanes/speed/median/AADT	VTrans Guidelines for Pedestrian Crossing Treatments—January 2015	5.3
VA	Virginia Supplement to the MUTCD	PED volume	I&I Memorandum 384.0—Pedestrian Crossing Accommodations at Unsignalized Locations—July 2016	7.3
WA	Manual on Uniform Traffic Control Devices (MUTCD)	Lanes/speed/median/AADT	Action Plan for Implementing Pedestrian Crossing Countermeasures at Uncontrolled Locations—November 2018	5
WV	Manual on Temporary Traffic Control for Streets and Highways—2006 Edition			
WI	Wisconsin Manual on Uniform Traffic Control Devices (WMUTCD)	MUTCD		
WY	Part 4—Highway Traffic Signals—2009 Edition		WYDOT Pedestrian and School Traffic Control Manual—January 2014	

APPENDIX D—PHB SPECIFICS

Blue underline means added text

Red italic underline means text deleted

State	[Section 4F.01] Application of PHB	[Section 4F.02] Design of PHB	[Section 4F.03] Operation of PHB	PHB Specifics Data Source(s)
Alabama				
AK	Guidance: 05A Installation of pedestrian hybrid beacons should be limited to uncontrolled locations evaluated according to Figure 3B-101 as "M - marginal" or "N – should not be installed." Locations evaluated according to Figure 3B-101 as "C – candidate" for marked crosswalks at uncontrolled locations typically should not be considered for pedestrian hybrid beacons. 07A Meeting or exceeding minimum pedestrian volume guidelines indicated in Figure 4F-1 or Figure 4F-2 at a proposed location should not be the sole criterion used for installing a pedestrian hybrid beacon. 08A Pedestrian hybrid beacons are best used on higher volume multiple lane approaches and roads where other methods have not provided adequate improvement in pedestrian crossing opportunities or safety. Lower cost treatments can be employed at most locations with low to moderate volumes and/or shorter crossing distances to alert motorists of the presence of pedestrians, slow traffic, shorten the crossing distance, or create adequate gaps for crossing.	E. If a pedestrian hybrid beacon is installed at or immediately adjacent to an intersection with a side road or driveway, vehicular traffic on that side road or driveway shall be controlled by STOP signs. 11A. If installed at a midblock location, a pedestrian hybrid beacon should not be installed less than 300 feet from the nearest location that provides a controlled crossing of the major street or an intersection where pedestrians are permitted to cross the major street.	N/A	AK Part 4—Highway Traffic Signals—2016 Edition

State	[Section 4F.01] Application of PHB	[Section 4F.02] Design of PHB	[Section 4F.03] Operation of PHB	PHB Specifics Data Source(s)
AZ	Option: 02 ... Agencies may develop warrants or guidelines for the installation of Pedestrian Hybrid Beacons on roadways under their jurisdiction. Guidance: 05..., the need for a pedestrian hybrid beacon should be considered on the basis of an engineering study that considers one or more of the following: major-street volumes, speeds, widths, and gaps in conjunction with pedestrian volumes, walking speeds, and delay. The engineering study should be based on guidelines established by the agency for installation of pedestrian hybrid beacon.	Guidance: 04 When an engineering study finds that installation of a pedestrian hybrid beacon is justified, then: A. *The pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs,* C.D. *If installed within a signal system*, Consideration should be given to coordination of the pedestrian hybrid beacon within a signal system. *should be coordinated.* Option: 09 A Pedestrian (W11-2) warning sign (see Section 2C.50) with an AHEAD (W16- 9P) supplemental plaque may be placed in advance of a pedestrian hybrid beacon. A warning beacon may be installed to supplement the W11-2 sign. The Bicycle (W11-1), Bicycle/Pedestrian (W11-15), or Trail Crossing (W11-15a) warning signs may be used when appropriate. Guidance: 10 If a warning beacon supplements a W11-1, W11-2, W11-15, or W11-15a warning sign in advance of a pedestrian hybrid beacon, it should be programmed to flash only when the pedestrian hybrid beacon is not in the dark mode.	Guidance: 08 If used with a pedestrian signal head that does not have a concurrent vehicular phase, the pedestrian change interval (flashing UPRAISED HAND) should be set to be approximately 4 seconds less than the required pedestrian clearance time (see Section 4E.06) and an additional clearance interval (during which a steady UPRAISED HAND is displayed) should be provided prior to the start of the conflicting vehicular phase.	ADOT Traffic Engineering Guidelines and Processes—Pedestrian Hybrid Beacon—June 2015
AK				
CA	Support: 01a A conventional traffic control signal operation with a standard signal face displaying green, yellow and red (steady and/or flashing red) indications, at a mid-block crosswalk is an alternative to the pedestrian hybrid beacon.	Guidance: 04 When an engineering study finds that installation of a pedestrian hybrid beacon is justified, then: A. The pedestrian hybrid beacon should be installed at an intersection, or at the junction of a roadway with a driveway, or at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs,	Standard: during the pedestrian *clearance* change interval (see Figure 4F-3).	
CO				CDOT Chapter 14 Bicycle and Pedestrian Facilities
CT				Connecticut DOT General Files
DE				2015 Traffic Design Manual—IV Traffic Signals
FL				Traffic Engineering Manual—Chapter 3—Signals—2017 Revision

State	[Section 4F.01] Application of PHB	[Section 4F.02] Design of PHB	[Section 4F.03] Operation of PHB	PHB Specifics Data Source(s)
GA				GDOT Pedestrian and Streetscape Guide—April 2019
HI				Hawaii Pedestrian Toolbox—May 2013
ID				
IL	Standard: Pedestrian Hybrid Beacons shall not be installed at locations where any signal warrants of Chapter 4C are met. Guidance: The need for a pedestrian hybrid beacon should be considered on the basis of an engineering study that includes a queue analysis for vehicular traffic and that considers major-street volumes, speeds, widths, and gaps in conjunction with pedestrian volumes, walking speeds, and delay.	Standard: If used, pedestrian hybrid beacons shall be installed at least 100 feet from side streets or driveways and at least 300 feet from traffic signals or railroad grade crossings with active warning devices. If backplates are used for pedestrian hybrid beacons, retroreflective material shall not be applied to the face of the backplates.	N/A	TRA-23 (Not Online Yet)
IN				
IA				
KS				
KY				
LA				LADOTD Traffic Signal Manual V2.0—May 2015
ME				
MD				
MA				
MI				
MN	N/A	Guidance: 04 A The pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs when not installed at an intersection 04 E If installed at an intersection, appropriate side street traffic control should be considered	Standard: during the pedestrian *clearance* change interval (see Figure 4F-3).	Traffic Control Signal Design Manual—June 2016
MS				
MO	Standard: 03 If used, pedestrian hybrid beacons shall be used in conjunction with signs and pavement markings to warn and control traffic at locations where pedestrians enter or cross a street or highway. A pedestrian hybrid beacon shall only be installed at a marked crosswalk. A pedestrian hybrid beacon shall meet one of the subsequently defined guidance in order to be installed, unless an engineering study justifying installation is submitted and approved by the State Traffic Engineer.	N/A	N/A	

State	[Section 4F.01] Application of PHB	[Section 4F.02] Design of PHB	[Section 4F.03] Operation of PHB	PHB Specifics Data Source(s)
MT				MDT Road Design Manual—Chapter 7: Multimodal Design Considerations—September 2016
NE				
NV				Pedestrian Safety Improvement Evaluation Guideline for Uncontrolled Crossings—April 2018
NH				
NJ				
NM				
NY				
NC				North Carolina Pedestrian Crossing Guidance—July 2015
ND				
OH				Traffic Engineering Manual—400 Traffic Signals
OK				ODOT Collision Analysis—PHB Policy—September 2016
OR				2017 Traffic Signal Design Manual—Chapter 12: Flashing Beacon Plan
PA				
RI				
SC				TG-26 (not available online)
SD				
TN				TDOT Multimodal Project Scoping Manual—April 2018
TX	N/A	N/A	Standard: during the pedestrian *clearance* change interval (see Figure 4F-3).	Pedestrian Hybrid Beacons
UT				UDOT Standard Drawings for Road and Bridge Construction—August 2018
VT				VTrans Guidelines for Pedestrian Crossing Treatments—January 2015

State	[Section 4F.01] Application of PHB	[Section 4F.02] Design of PHB	[Section 4F.03] Operation of PHB	PHB Specifics Data Source(s)
VA				I&I Memorandum 384.0—Pedestrian Crossing Accommodations at Unsignalized Locations—July 2016
WA				Action Plan for Implementing Pedestrian Crossing Countermeasures at Uncontrolled Locations—November 2018
WV				
WI	N/A	N/A	Standard: during the pedestrian *clearance* change interval (see Figure 4F-3).	
WY	Wyoming adopted National MUTCD but they have another doc with different parameters regarding PHB. Per ***WYDOT Pedestrian and School Traffic Control Manual***: Pedestrian hybrid beacons should not be installed at locations where the distance to the nearest traffic control signal along the major road is less than 300 feet, nor should they be installed where the posted speed limit on the major street is 45 mph or higher.			WYDOT Pedestrian and School Traffic Control Manual—January 2014

APPENDIX E—PHB OFFSET

State	Offset (FT)	Installed Location Additional Information	MUTCD—Offset Source
AL	MUTCD (100)		Traffic Signal Design Guide & Timing Manual—June 2015
AK	0		AK Part 4—Highway Traffic Signals—2016 Edition
AZ	0		Arizona Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways—2009 Edition
AR	MUTCD (100)	100'	Part 4 – Highway Traffic Signals—2009 Edition
CA	0		CA Manual on Uniform Traffic Control Devices—2014, Revision 4
CO	MUTCD (100)		MUTCD 2009 Colorado Supplement Issued 12-06-11 Revised 04-16-18
CT	MUTCD (100)	100'	Part 4—Highway Traffic Signals—2009 Edition
DE	MUTCD (100)	At least 4 at the intersection	DE Part 4—Highway Traffic Signals—2018 Revision
FL	MUTCD (100)		Part 4—Highway Traffic Signals—2009 Edition
GA	MUTCD (100)		Part 4—Highway Traffic Signals—2009 Edition
HI	MUTCD (100)		Part 4—Highway Traffic Signals—2009 Edition
ID	MUTCD (100)	Adopt the PHB Chapter of the MUTCD, but no limitations in practice	Traffic Manual: Idaho Supplementary Guidance to the MUTCD
IL	300		IDOT Manual on Uniform Traffic Control Devices—June 2014
IN	MUTCD (100)	100'	2011 Indiana Manual on Uniform Traffic Control Devices—Revision 3
IA	MUTCD (100)	100'	IAC Chapter 130, Pg. 1
KS	MUTCD (100)	100' but some local PHB has been installed in the intersection	Part 4—Highway Traffic Signals—2009 Edition
KY	MUTCD (100)	100', the installed one is close to the parking lot entrance	Part 4—Highway Traffic Signals—2009 Edition
LA	MUTCD (100)		Part 4—Highway Traffic Signals—2009 Edition
ME	MUTCD (100)		Part 4—Highway Traffic Signals—2009 Edition
MD	MUTCD (100)		Maryland Manual on Uniform Traffic Control Devices—2011 Edition

State	Offset (FT)	Installed Location Additional Information	MUTCD—Offset Source
MA	MUTCD (100)		MassDOT Manual on Uniform Traffic Control Devices and the Standard Municipal Traffic Code—January 2012
MI	MUTCD (100)		MDOT MMUTCD Documents
MN	MUTCD (100)		Minnesota Manual on Uniform Traffic Control Devices
MS	MUTCD (100)		Part 4—Highway Traffic Signals—2009 Edition
MO	MUTCD (100)	100'	MoDOT 900 Traffic Control
MT	MUTCD (100)		Part 4—Highway Traffic Signals—2009 Edition
NE	MUTCD (100)		Nebraska MUTCD 2011
NV	MUTCD (100)		NDOT Highway Sign Supplement—2006
NH	MUTCD (100)	3 PHB for rail trail crossings, 1 PHB a few hundred feet away from intersection	Part 4—Highway Traffic Signals—2009 Edition
NJ	MUTCD (100)	100', one installed is at the intersection but it was discouraged as a practice	Part 4—Highway Traffic Signals—2009 Edition
NM	MUTCD (100)	100'	Part 4—Highway Traffic Signals—2009 Edition
NY	MUTCD (100)		NYSDOT MUTCD
NC	MUTCD (100)		2009 North Carolina Supplement to the MUTCD
ND	MUTCD (100)		NDDOT Traffic Operations
OH	MUTCD (100)	100'	Ohio MUTCD—2012 Edition
OK	MUTCD (100)	These pedestrian-based warrants shall not be applied at locations where the distance to the nearest traffic control signal is less than 300 feet, unless the proposed traffic control signal will not restrict the progressive movement of traffic (for one Oklahoma City PHB).	Oklahoma Supplement to the 2009 MUTCD—2009 Edition
OR	MUTCD (100)		Oregon Supplement to the 2009 MUTCD for Streets and Highways
PA			Notices Department of Transportation 2009 MUTCD
RI	MUTCD (100)	100', one installed is at the intersection but discourage	Part 4—Highway Traffic Signals—2009 Edition

State	Offset (FT)	Installed Location Additional Information	MUTCD—Offset Source
SC	0		SCDOT Supplement to the MUTCD
SD	MUTCD (100)	The one installed is mid-block and the one being designed will be at an intersection	Part 4—Highway Traffic Signals—2009 Edition
TN	MUTCD (100)		Adoption of the Tennessee Manual on Uniform Traffic Control Devices for Streets and Highways—Revised July 2012
TX	MUTCD (100)		Texas Manual on Uniform Traffic Control Devices (TMUTCD)
UT	MUTCD (100)		Utah Manual on Uniform Traffic Control Devices for Streets and Highways—December 2011
VT	MUTCD (100)	100'	Part 4—Highway Traffic Signals—2009 Edition
VA	MUTCD (100)		Virginia Supplement to the MUTCD
WA	MUTCD (100)	100'	Manual on Uniform Traffic Control Devices (MUTCD)
WV	MUTCD (100)		Manual on Temporary Traffic Control for Streets and Highways—2006 Edition
WI	0	100’ in MUTCD, but in practice 3 less than 100'	Wisconsin Manual on Uniform Traffic Control Devices (WMUTCD)
WY	0		Part 4—Highway Traffic Signals—2009 Edition

APPENDIX E.1—OFFSET

Offset	States
MUTCD (100')	Alabama, Arkansas, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia
0'	Alaska, Arizona, California, South Carolina, Wisconsin, Wyoming
300'	Illinois

APPENDIX F—PHB Installed Quantity

State	Installed Qty	Installed QTY Source of Information	Email Details of Installed QTY Information	Installed QTY Contact Info.
AL	2 knows (city of Huntsville)	City of Huntsville Crews to Activate New Pedestrian Crossing at Alabama A&M University—May 23, 2019 Google Map image—Holmes Ave NW		
AK	3	**Email**	We currently have three installations. Two of them will be removed soon. A new installation is also planned. PHBs are installed according to Chapter 4F of the Alaska Traffic Manual (ATM). The ATM is comprised of the MUTCD and the Alaska Traffic Manual Supplement (ATMS). See attached. The ATMS does not add to or change any MUTCD language regarding intersection offsets. There isn't any specific reference to PHBs in the Alaska Driver's Manual. Vehicle operators are expected to follow commonly understood "rules of the road" and obey posted traffic control devices. To that end, Alaska DOT&PF was recently granted approval from the Alaska Division FHWA to add the CROSSWALK, STOP ON RED, PROCEED ON FLASHING RED WHEN CLEAR (R10-23a) word message sign to the ATM, as allowed under Official MUTCD Interpretation Issued by FHWA 4(09)-61 (I).	Matt Walker, PE State Traffic & Safety Engineer matthew.walker@alaska.gov
AZ	50 (the Phoenix areas)+ more than 140 (city of Tucson)	Pedestrian Safety Efforts Gain Momentum as Mayor Gallego Activates 50th HAWK—Posted June 7, 2019 Road Runner: City of Tucson installing more HAWK signals for pedestrian safety—Posted March 3, 2019	Please open the links below to get more information about PHB in AZ and the Traffic Engineering Guidelines and Procedures. https://www.azdot.gov/about/transportation-safety/pedestrian-hybrid-beacon https://www.azdot.gov/docs/default-source/traffic-library/tgp0640-2015-06.pdf?sfvrsn=4 I don't have the number of PHB installed in AZ as they are mostly installed within the local jurisdictions.	Maysa Hanna, PE, State Traffic Engineer MHanna@azdot.gov
AR	Less than 5	Email	ARDOT is working on a database system to track all intersections on state highway system. This dB will eventually house useful information such as this. Until then, though, I don't have an exact number of PHBs in use. I recall that there are less than five, that I am aware of, on our state highway system. There may be more on city or county roads but we have even less information on those. We follow MUTCD on offsets. No special law(s) has been passed governing the use of PHBs.	Joseph Hawkins Staff Traffic Engineer Joseph.Hawkins@ahtd.ar.gov
CA	Less than 50	Email	– How many have you installed? Answer: Less than 50 locations on State Highway (not including local road). – What limitations are placed on intersection offsets? Answer: Please see Section 4F.02 in CA MUTCD – Are there applicable rules or laws for vehicles operating at Dark Pedestrian Hybrid Beacons? Answer: There are no special rules or laws for any dark beacon.	Duper Tong Chief, Office of Traffic Engineering duper.tong@dot.ca.gov
CO	2 knows (ONE CTDOT, ONE city of Pueblo)	Eyes on the Street: "HAWK" Signals Installed in Stapleton, More to Come in Westwood, Green Valley Ranch—Posted June 2, 2017 High Intensity Activated Crosswalk (HAWK) Beacon Comes to Pueblo Neighborhood—2018		

State	Installed Qty	Installed QTY Source of Information	Email Details of Installed QTY Information	Installed QTY Contact Info.
CT	3	Email	– How many have you installed? 3. – What limitations are placed on intersection offsets? None. We don't have any written policies or practices.	Joseph P. Ouellette State Safety Engineer joseph.ouellette@ct.gov
DE	5	Email	Delaware currently has 5 operational pedestrian hybrid beacons. Four are referenced in the attached report and we have since installed one more. There are no specific offset requirements (https://deldot.gov/Programs/DSHSP/pdfs/OtherPedProjects/HAWK_Study_Report_December2017.pdf). Each location is individually studied and analyzed related to traffic flow, speed, pedestrians, bicycles, geometry, etc., and case-by-case decisions are made as to the type of traffic control, location, islands, etc.	Mark Luszcz, PE, PTOE Chief Traffic Engineer Mark.Luszcz@delaware.gov
FL	1 knows (city of Sarasota)	HAWK crosswalk signal now active at U.S. 41 and First Street—Posted June 28, 2018		
GA	1 knows	Georgia Department of Transportation to Utilize Pedestrian Hybrid Beacon on Whitlock Avenue at Cheatham Hill—Posted March 30, 2016		
HI	0			
ID	Approx. 100	Email	– How many have you installed? Approximately 100. Most have been installed by the Ada County Highway District (ACHD) in the Boise area. http://achdidaho.org/ – What limitations are placed on intersection offsets? We adopt the PHB Chapter of the MUTCD as is, but in effect there are no limitations on intersection offsets. – Are there applicable rules or laws for vehicles operating at Dark Pedestrian Hybrid Beacons? As is typical, Idaho law says to approach a dark signal as a stop-controlled intersection. In practice, that law is ignored for PHBs.	Ryan D. Lancaster Standards Engineer Ryan.Lancaster@itd.idaho.gov
IL	4	Email	We are aware of 4 PHBs in operation in Illinois. The below section of Illinois law addresses requirements at dark signal. Dark signals – 625 ILCS 5/11-305 (e) states that "The driver of a vehicle approaching a traffic control signal on which no signal light facing such vehicle is illuminated shall stop before entering the intersection in accordance with rules applicable in making a stop at a stop sign." A PHB is an electric device that controls traffic. Therefore, if it is at an intersection, vehicles are compelled to stop at a dark PHB. Consequently, the ILMUTCD (Section 4F.02) was written to require a PHB to be at least 100 ft from side streets or driveways, and at least 300 ft from traffic signals or railroad grade crossings with active warning devices.	Kyle D. Armstrong, PE, PTOE Engineer of Traffic Operations Kyle.Armstrong@illinois.gov
IN	2	Email	– INDOT has installed two PHBs and two more have been or will be installed on the state highway system by local public agencies. – INDOT does not have any separate guidance on the intersection offset distance; it seems that the MUTCD guidance statement in Section 4F.02, ¶4A is generally met for trail crossings but is more difficult to attain for crosswalks – In 2011, Indiana law was changed to recognize pedestrian hybrid beacons. See Indiana Code Sections 9-21-3-0.5, 9-21-3-7(b)(4)(C), and 9-21-8-36: http://iga.in.gov/legislative/laws/2018/ic/titles/009#9-21-3-7	Dave Boruff Traffic Administration Section Supervisor DBORUFF@indot.IN.gov

State	Installed Qty	Installed QTY Source of Information	Email Details of Installed QTY Information	Installed QTY Contact Info.
IA	0 (state highway)+ 3 knows (city of Cedar Rapids)	Email Cedar Rapids—Traffic Engineering News	To my knowledge we do not have a pedestrian hybrid beacon installed on a state highway. I know some of the cities have installed a few on the city street system, but I don't have information on the installations. We do not have any policies on their installation, we would just follow the MUTCD for guidance. To my knowledge, the Iowa Code is silent on driver's action at dark signals. From my experience, I drive through one of the PHBs on a local street on my way to and from work, I have not seen anyone stop at the dark signals. The biggest problem I have seen is no one will move after stopping until the signal goes dark.	Timothy D. Crouch State Traffic Engineer Tim.Crouch@iowadot.us
KS	2 (KDOT)+ Local	Email	To my knowledge, KDOT has allowed two Hybrid Beacon Systems along the Kansas State Highway System (K, US, I routes). In Kansas, the local entity is responsible for funding, maintaining, and installing pedestrian devices. Because of the expense of the hybrid beacon system, it generally has not been recommended as an option to pursue. Options involving the rectangular rapid flashing beacon (RRFB) are more likely to be recommended. However, there are communities that have hybrid beacons installed which are not on the state highway system. The city of Lawrence, KS has anywhere from 20–30 hybrid beacons installed within its city limits. – How many have you installed? KDOT has allowed two on the state highway system. – What limitations are placed on intersection offsets? We follow guidance provided in the 2009 MUTCD. I have seen some hybrid beacons installed at intersections with one-way streets. These locations are off the state highway system.	Brian D. Gower KDOT—Transportation Safety and Technology Brian.gower@ks.gov
KY	1	Email	To the best of my knowledge, Metro Louisville is the only agency in Kentucky to install a PHB. It is located at an intersection on River Road. Link: https://goo.gl/maps/82JfLjfzzgExzN3FA Lexington has kicked the concept around at a few locations, but I don't believe they have installed any yet. To date, the Kentucky Transportation Cabinet has not installed any pedestrian hybrid beacons. For the most part, we feel that a traditional signal would be a better option for controlling traffic since the public already understands the indications in a traditional traffic signal, whereas the pedestrian hybrid beacon would require education efforts. We were prepared to approve a pedestrian hybrid beacon for a heavily used pedestrian crossing on the campus of Transylvania University. This crossing has significant pedestrian traffic throughout the day (including peak periods of traffic flow) and crosses a major roadway entering into downtown Lexington. Mainline traffic is heavy enough that we felt the additional capacity/throughput provided by a pedestrian hybrid beacon was worth dealing with the problems associated with educating the public on the operation of a PHB. However, at the last minute local officials were not comfortable with installing a pedestrian hybrid beacon, and we ultimately selected and RRFB for that location. If we ever install a pedestrian hybrid beacon, it will be at a location with heavy pedestrian traffic (likely satisfying a warrant) and/or pedestrian safety issues. As with the Transylvania location referenced above, it will likely be a location with significant enough mainline traffic that would necessitate the additional capacity provided by a PHB. Otherwise, our Cabinet would likely select a traditional traffic signal for the crossing.	Jeff J. Wolfe / Troy T. Hearn, (KYTC) Troy.Hearn@ky.gov
LA	0	Email	We have had a few be accepted into our Safe Routes to Public Places Program, though as of now, none have been installed. The programmed PHBs are undergoing feasibility before final determination after which a specification will be developed.	Jessica DeVille Jessica.DeVille@LA.GOV

State	Installed Qty	Installed QTY Source of Information	Email Details of Installed QTY Information	Installed QTY Contact Info.
ME	0	Email	Maine does not currently have any PHB installations, nor does it have any scheduled. The department may look at them in the near future, however.	Pamela D. Shofner Librarian, Maine DOT Library Pamela.shofner@maine.gov
MD	1 knows	MDOT SHA improves pedestrian safety with new HAWK crosswalk beacon on MD 410 in Montgomery County—Posted September 21, 2017		
MA	3 knows	MassDOT Blog: Search results for Pedestrian Hybrid Beacon		
MI	4 knows	Pedestrian safety improved with new HAWK signals crossing M-3 (Gratiot Avenue) in Macomb County—Posted January 28, 2015		
MN	About 10	Email	MnDOT has about 10 Hawks on the State highway system. We have installed some of our HAWKS at intersection, but we now discourage this. We follow the 100' rule. Minnesota does have laws that you must yield to pedestrians at crosswalks, even if the lights are not flashing.	Jerry Kotzenmacher Signals Section—Office of Traffic Engineering jerry.kotzenmacher@state.mn.us
MS	0		MDOT does not have any Pedestrian Hybrid Beacon installations at this time. We are currently looking to have one installed on a road that is in the process of being "turned over" from the State to a local agency as part of a construction project; but aside from this one, there are no others installed by MDOT.	Mississippi Department of Transportation
MO	7	Email	We have installed the pedestrian hybrid beacon (PHB) on MoDOTs highway system in approximately seven locations. PBHs are also been installed on the local system, but the quantity is unknown. Please refer to our Engineering Policy Guide section 902.7 for additional information.	Ashley Buechter Traffic Liaison Engineer Ashley.Buechter@modot.mo.gov
MT	2 knows	MDT Pedestrian Hybrid Beacons		
NE	1 knows (city of Omaha)	City of Omaha: Pedestrian Hybrid Beacon Signals		
NV	0 (NDOT) + 1 knows (Las Vegas)	Email Google Map: 1500 NV-589, Las Vegas, NV 89104	The High Intensity Activated crosswalk (HAWK) is not the typical PHB for the Nevada Department of Transportation (NDOT) and we have not installed any that I am aware of.	Signals, Lighting & ITS / Traffic Operations Technology Services (TOTS) Seth Daniels, PE Assistant Chief Traffic Operations Engineer sdaniels@dot.nv.gov
NH	5 (only 4 active locations)	Email	In New Hampshire, we currently have five PHBs installed, two each in Goffstown (rail trail crossings) and Meredith (Lakes Region tourist town), and one in Epping (rail trail crossing). One of the two in Meredith was required in order to secure approval for a new crosswalk. The crosswalk was requested by the town as part of the site plan approval for a new senior housing apartment complex across the street from a convenience store. In hindsight it is seldom used and could likely be removed. We do not have any specific intersection offset criteria and would consider locations on a case-by-case basis. Where three of the four active locations are for rail trail crossings, it is not an issue. The fourth location is removed from a signalized intersection by a few hundred feet and is coordinated with the signal.	William R. Lambert Traffic Engineer/ Administrator William.Lambert@dot.nh.gov

State	Installed Qty	Installed QTY Source of Information	Email Details of Installed QTY Information	Installed QTY Contact Info.
NJ	3	Email	NJ has 3 pedestrian hybrid beacons. NJDOT tries to follow the should guidance of installing the pedestrian hybrid beacon at least 100 ft from an intersection for installations on roadways under state jurisdiction. However, one of our installations is at an intersection (see below aerial) but all traffic on Magnolia Rd must turn right, away from the crosswalk. For local roadways not under the jurisdiction of NJDOT, the installation of pedestrian hybrid beacons is up to the discretion of the local engineer. NJ does not have specific guidance for vehicles when the PHB is dark. NJ uses the R10-23 sign as the MUTCD indicates in a shall condition.	Jaime Oplinger Executive Manager Jaime.Oplinger@dot.nj.gov
NM	10–15 (local)	Email	The state has not installed any PHFs, but the locals have. I am not aware of the number. But I estimate between 10 to 15. We have not established any parameters.	Jian, Afshin State Traffic Engineer Afshin.Jian@state.nm.us
NY	Less than 20	First High-Intensity Activated Crosswalk (HAWK) Signal on a State Highway is installed in Tonawanda—Posted June 16, 2016	– How many have you installed? Likely less than 20 statewide between both us and local highway authorities. – What limitations are placed on intersection offsets? We follow the MUTCD guidance; we have not developed any of our own guidance on HAWKs. – Are there applicable rules or laws for vehicles operating at Dark Pedestrian Hybrid Beacons? No. NY's dark signal law applies to a traffic control signal which is out of service or otherwise malfunctioning. The HAWK is not a traffic signal, and it's not malfunctioning in its dark mode.	Barbara S. Abrahamer Senior Civil Engineer barbara.abrahamer@dot.ny.gov
NC	40+/-	Email	North Carolina has 40 +/- hybrid beacons installed on the state system. The vast majority adhere to the current MUTCD restrictions on placement. And our general statute is attached. It is very clear on what to do at a dark traffic signal at an intersection, less so at mid-block locations.	Jason Galloway State Signals Engineer jgalloway@ncdot.gov
ND	Study 1 Location (Grand Fork)	City of Grand Forks Staff Report—Final Report for City Project No. 7728—March 5, 2018		
OH	At least 12	Email	– How many have you installed? ODOT has none on our system. However, I know of at least a dozen Statewide. They are mostly located in downtown business district type area, or on college campuses. – What limitations are placed on intersection offsets? When reviewing, we stress the OMUTCD recommendations/guidance, which mirrors the MUTCD, to give the minimum 100' offset from any side street. – Are there applicable rules or laws for vehicles operating at Dark Pedestrian Hybrid Beacons? The only current legislation regarding PHBs under yellow and red beacons can be found in Ohio Revised Code (ORC) Section E4 and F3 of 4511.13 (http://codes.ohio.gov/orc/4511). As long as PHBs are always referred to as Beacons, this suffices. If a PHB is recognized as a signal, Ohio would have to revise our laws since a dark signal needs to stop at stop line, yield to vehicles/peds, and act as a 4-way stop. This is outlined in ORC 4511.132 (http://codes.ohio.gov/orc/4511).	Charlie Fisher Statewide Traffic Operations Engineer Charles.Fisher@dot.ohio.gov
OK	8	Email	– How many have you installed? So far we installed about 8 HAWK systems on the Highway system. – What limitations are placed on intersection offsets? The link below shows the limitations: http://www.okladot.state.ok.us/traffic/collision_analysis/pdf/PHB-Policy2016-09-02.pdf	Tarek A. Maarouf Engineering Manager, Traffic Engineering Division, tmaarouf@odot.org

State	Installed Qty	Installed QTY Source of Information	Email Details of Installed QTY Information	Installed QTY Contact Info.
OR	1	Email	Here are the PHB installations on state highways in Oregon:• OR 126 between 66th and 67th streets, Springfield (approved for installation, not yet built)• OR 39 at Portland St, Klamath FallsOthers we know of in Oregon off the State Highway System (not a complete list of PHBs in Oregon):• Franklin Blvd between I-5 and Glenwood Blvd, Springfield• Gateway St near USPS office, Springfield• Harlow Rd between Pheasant Blvd and Lindale Dr, Springfield• E. Broadway between Patterson and Coburg Rd, Eugene• S Columbus Ave and Diamond St, Medford• Burnside at 41st, Portland Note: the City of Springfield has converted most/all of their PHBs to standard signal heads in recent years (you can see most of them on street view) and are operating them in a unique way. Brian Barnett (City Traffic Engineer) at the City of Springfield can provide more information if you want. Placement criteria for Oregon's State Highway System matches federal MUTCD—recommended not within 100 feet of side street or driveway controlled by STOP or YIELD signs.we found a few more locations on local roads to add to the Oregon list:• Hall Blvd at Fanno Creek Trail, Beaverton• Farmington Rd and 138th, Beaverton• Burnside Rd and 30th, Portland• Sandy Blvd and 18th St, Portland	Eric Leaming State Traffic Investigations Engineereric.s.leaming@odot.state.or.us Gary R. Obery Active Modes Traffic EngineerGary.R.OBERY@odot.state.or.us
PA	0	Email	We currently do not have any HAWK signals installed as they are not permitted under the Pennsylvania Vehicle Code.This is from our Statewide Traffic Signal Operations Engineer, Steve Gault: "To my knowledge, the language in the PA Vehicle Code hasn't been updated since the HAWK signal was 'invented' and added to the MUTCD. I don't think there was a specific intent to prohibit it, but there hasn't been a push to pass legislation that would specifically allow it. My understanding is the interpretation is a dark signal in PA Vehicle Code means it should be treated as an all-way stop. The intended operation for a HAWK signal is that it is dark whenever not actuated by pedestrians, in which case vehicles would be expected to proceed freely." So we at PennDOT wouldn't even be able to test the HAWK signal until legislation allows for its use in PA. One more response from Dan Farley who is the chief of our Operations and Performance section: "Other issues with the HAWK (PHB) signal include:• Not clear clarification as to how to navigate a flashing red indication. The MUTCD contradicts itself regarding when to navigate through a flashing red for a HAWK versus at a traffic signal or even a railroad crossing.• The device was put into the last manual with little research outside of the Southwest where it originated from. Based on results we are now seeing our concerns are now becoming problems in other areas of the country.• Driver understanding of the concept is questionable. Many individuals don't understand a dark signal and now we are flashing the devices and developing new meanings.• Many states have been forced to put it in due to political pressure.• The clarification signs are not clearly understandable and the Official Traffic Control Device team hasn't found an effective sign yet for the operation.• Overall the effectiveness of the unit has been questionable and has created an issue with bikes/pedestrians that arrive at the end of the HAWK phase which has led to additional crashes."	Anthony Chiodo Civil Engineer, Traffic Signals anchiodo@pa.gov

State	Installed Qty	Installed QTY Source of Information	Email Details of Installed QTY Information	Installed QTY Contact Info.
RI	1	Email	We have one PHB installed with several more in design. At installed location, intersections are not offset. For proposed locations, they are at midblock crossings and not intersections. The one installed is at an intersection and we have no limitations at this time in regard to being offset from intersections. The locations are governed by where the pedestrians are located. When the PHB is not activated and dark, motorists should treat it as if it weren't there and it was just an unsignalized midblock crossing. It could be possible that motorists who assume it's a full traffic signal and stop at the stop bars thinking that it is malfunctioning (ex. loss of power), but we haven't had any record of this issue coming up.	Lindsey M. Sasso Senior Information and Public Relations Specialist Office of Customer Service dot.customerservice@dot.ri.gov
SC	0	Email	Our Traffic Engineering office has developed a guideline for pedestrian hybrid beacons in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). I have attached a copy of this guideline for your use. SCDOT has not installed any PHBs but has allowed a few to be installed on state-maintained roads under encroachment permit.	Ashley Johnson Traffic Operations Engineer JohnsonHA@scdot.org
SD	1	Email	We currently have one Hawk system operating in the state. I am working on the plans for a second installation. SDDOT currently does a policy or practice for offset of the HAWK systems. The one installed is mid-block and the one being designed will be at an intersection.	Dan Martell South Dakota Department of Transportation Aberdeen Region Traffic Engineer
TN	0	Email	TDOT has not used PHBs much (at all?) I believe and does not plan to use them. I am copying Jessica Wilson who has a longer history with TDOT bike ped than I. She will correct me if I am mistaken. We prefer pedestrian-activated yellow-ball beacons for overhead assemblies and RRFBs.	Whitney Mason TDOT Bicycle and Pedestrian CoordinatorWhitney.Mason@tn.gov
TX	28 (Austin)	ArcGIS Map of Austin, TX for Signals	The Texas Department of Transportation has specific requirements for PHB installations in our Traffic Signals Manual (Chapter 5, Section 7) but these requirements apply to state roads only. We currently have only two PHB systems operating on state highways in Texas. Some cities in Texas, however, have installed more PHBs on city streets.	Douglas A. Skowronek Transportation Engineer Doug.Skowronek@txdot.gov
UT	10 (2016 UDOT)+ 28 (2016 local)	UDOT Traffic Signal Management Plan—February 5, 2016		
VT	1	Email	We currently have one HAWK Signal on the state highway system in Vermont. It was installed in 2013. We do not have any documented limitations on intersection offsets. However, our one HAWK Signal does have an offset of approximately 30' with a median on a divided highway. We use the latest edition of the MUTCD as law and therefore there are no specific requirements for the dark signal heads at the HAWK. We utilize retroreflective backplates to draw attention to the signal heads during low light conditions. Attached is our plan sheet showing the layout of our HAWK.	Derek Lyman, PE Traffic Signal Operations Engineer derek.lyman@vermont.gov

State	Installed Qty	Installed QTY Source of Information	Email Details of Installed QTY Information	Installed QTY Contact Info.
VA	1 knows (Fairfax County)	Email Installed Location: Google map image of the crossing on the Backlick Rd in Springfield, VA	Q1 how many have we installed: To date VDOT has only installed one Pedestrian Hybrid Beacon on our system of roads, on Backlick Road near Lynbrook Elementary School. However many of Virginia's traffic signals are maintained by localities (including all signals in cities, large towns, and Arlington County; plus some signals in Henrico County). We don't know have an inventory of exactly how many locality maintained PHBs are out there, but we are aware of several in various localities including Arlington, Alexandria, and Vienna. Q2 limitations on intersection offsets: VDOT policies on unsignalized pedestrian crossings is contained in this document. That document also addresses PHBs. Currently that document does not have much Virginia-specific policy beyond what is stated in the MUTCD, however we are currently developing updates to that policy. Q3 applicable rules or laws for vehicles: There are no Virginia-specific laws that explicitly address PHBs, however we have been of the opinion that the Code of Virginia adequately addresses required driver behavior at PHBs, whether the PHB is displaying a dark, flashing yellow, steady yellow, steady red, or alternating flashing red indication.	Marc Lipschultz Senior Traffic Engineer Marc.Lipschultz@VDOT.Virginia.gov
WA	5+local	Email	– WSDOT does not have a formal policy or position on PHB/HAWK signals. – There are maybe five installed within WSDOT jurisdiction (there are many more installed by local jurisdictions). – Intersection offsets follow the MUTCD, Section 4F.02, with additional distance to signalized intersections. – Washington State only has a law for nonfunctioning traffic signals at an intersection (https://app.leg.wa.gov/RCW/default.aspx?cite=46.61.183) and does not specifically address special signal systems (emergency vehicle, pedestrian crossing, ramp meter, or PHB/HAWK).	Angel Dziedzic Traffic Operations Office DziedzA@wsdot.wa.gov
WV	0			
WI	5 (DOT) +Local	Email	The Wisconsin Department of Transportation (WisDOT) currently maintains five PHBs across the state. There are more than five PHBs currently in the state of Wisconsin, but those PHBs were either installed by a local municipality or county; or the PHB was installed as part of a WisDOT project and ownership of the PHB was transferred to the municipality or county after the completion of the project. WisDOT typically follows the standards set in MUTCD 4F.02 when deciding on the placement of PHBs—"The pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs." However, three of the PHBs are in a tourist area with a high concentration of commercial driveways and it was not possible to get 100' of separation between the PHB and driveways. In those cases, engineering judgement was used to determine the best locations to place the PHBs. I do not believe we have any laws specifically addressing PHBs. Some of our PHBs have a variation of the R10-23 sign to assist with drivers unfamiliar with the PHBs.	Jeremy R. Iwen Statewide Traffic Signal Engineer Jeremy.Iwen@dot.wi.gov
WY	4	Email	WYDOT has 4 PHBs. No limit on intersection offsets. No laws or rules on dark beacons that I am aware of.	Joel A. Meena State Traffic Engineer joel.meena@wyo.gov

APPENDIX G—FEEDBACK ON INSTALLATIONS

Currently, 43 states have installed PHBs, within which there are three states worth extra attention, Kentucky, Maryland, and Colorado. Kentucky only has one PHB installation, and it was erected by a private party. Maryland first banned the use of PHBs then permitted it at a later time, and Colorado replaced an installed PHB signal with a conventional signal. Some detailed feedback from these three states is noted below.

- Kentucky: Kentucky has only one installed PHB on 1237 River Road, which was developed by a local agency (Metro Louisville). While Kentucky Transportation Cabinet was ready to approve PHB installation on the Transylvania University campus, it ultimately decided to use the Rectangular Rapid Flash Beacon (RRFB) at that location. Lexington City has approved the application of the PHB at several locations but has not installed yet.
- Maryland: The 2011 Maryland MUTCD prohibited the use of PHBs, as well as the R10-25 signs (used along with PHBs). These traffic control devices have Interim Approval for use in Maryland since November 1, 2017.
- Colorado: [In 2017] the city of Boulder removed the "**H**igh-Intensity **A**ctivated Cross**W**al**K**" (HAWK) signal light that was at the crosswalk on Regent Drive that connects the Engineering Center with Regent Autopark. The light has been replaced by a traditional traffic signal light. The HAWK signal originally was installed by the city to try to minimize traffic interruptions. But many drivers actually found the light confusing, which is the main reason the city decided to make the switch back to a traditional signal. https://www.colorado.edu/today/2017/04/06/city-removes-hawk-light-regent-drive

Although PHB signals are widely used in the US, this technique is still controversial and poses concerns in some states. This part provides a few of the noteworthy concerns expressed, especially by the one state that does not allow them.

- Kentucky:

  The Kentucky Transportation Cabinet prefers traditional traffic signals that are well known to the public, since PHB signals would require more education for drivers and pedestrians.

- Pennsylvania:
  - "Not clear clarification as to how to navigate a flashing red indication. The MUTCD contradicts itself regarding when to navigate through a flashing red for a HAWK versus at a traffic signal or even a railroad crossing.
  - The device was put into the last manual with little research outside of the Southwest where it originated from. Based on results we are seeing our concerns are now becoming problems in other areas of the country.
  - Driver understanding of the concept is questionable. Many individuals don't understand a dark signal and now we are flashing the devices and developing new meanings.
  - Many states have been forced to put it in due to political pressure.

- The clarification signs are not clearly understandable, and the Official Traffic Control Device team hasn't found an effective sign yet for the operation.
- Overall the effectiveness of the unit has been questionable and has created an issue with bikes/pedestrians that arrive at the end of the HAWK phase which has led to additional crashes."


Illinois Department
of Transportation


ILLINOIS