

# NCDOT Evaluates Effects of Beachside Pedestrian Hybrid Beacon

Wrightsville Beach, North Carolina

## KEY ELEMENTS:



**Pedestrian Hybrid Beacon  
Implementation**



**STEP Countermeasure Evaluation**

The North Carolina Department of Transportation (NCDOT) installed a Pedestrian Hybrid Beacon (PHB) on Causeway Drive at the intersection with N. Channel Drive in Wrightsville Beach. The PHB was installed to serve both residents and beachgoers crossing the arterial roadway. Both before and after it was implemented, NCDOT conducted an evaluation of pedestrian behavior and motor vehicle compliance at the crossing.

## BACKGROUND

Wrightsville Beach is a coastal community east of Wilmington, NC. Causeway Drive is one of only two routes from Wilmington, and mainland North Carolina, to the nearby beaches. As such, Causeway Drive serves many beachgoers, including both pedestrians and motorized road users. Lodging, restaurants, and shops are all within walking distance of the intersection of Causeway Drive and N. Channel Drive. In addition to beachgoers, the crosswalk serves residents and families as they access the nearby churches and Wrightsville Beach Elementary School. The speed limit of

Causeway Drive is 35 miles per hour, though during the morning and afternoon hours a School Zone is in place with a 25 mile per hour speed limit and a crossing guard is present at the crosswalk.

NCDOT installed the PHB at Causeway Drive and N. Channel Drive, as shown in figure 1, in April 2013. PHBs are traffic control devices designed to help pedestrians safely cross busy or higher-speed roadways at midblock crossings and uncontrolled intersections.<sup>1</sup> The beacon consists of two red lenses above an amber lens, which all remain dark until a pedestrian activates the beacon by pushing the button. The beacon then flashes to alert motorists to stop and provides a WALK display to the pedestrian. PHBs have been shown to reduce pedestrian crashes by up to 55 percent, including a 15 percent reduction in fatal and serious injury crashes.



Figure 1. Photo. Cars come to a stop and a pedestrian crosses Causeway Drive while the PHB is activated.

## Case Study: NCDOT Evaluates Effects of Beachside Pedestrian Hybrid Beacon

STEP: [https://safety.fhwa.dot.gov/ped\\_bike/step/](https://safety.fhwa.dot.gov/ped_bike/step/)

### COMPLIANCE EVALUATION

One of the keys to a successful PHB implementation is that drivers recognize the signal and stop to allow pedestrians to cross when the beacon is activated. To assess the Causeway Drive PHB, NCDOT analyzed the crossing both before and after the PHB was installed. The analysis focused on three major aspects of the intersection:

- Pedestrian crossing volumes before and after PHB implementation.
- Vehicle compliance at the crosswalk before and after PHB implementation.
- Pedestrian activation of the PHB after implementation.

Causeway Drive in the vicinity of the crosswalk was divided into four zones, and pedestrian crossing counts were collected by zone. This allowed NCDOT to determine whether any changes in pedestrian crossing behavior occurred following implementation of the PHB. Eight hours of before data were collected in August 2011 and eight hours of after data were collected in September 2013. Both data collection periods were during daylight on weekdays when school was in session.

In total, the site was observed for approximately 20 hours, and 460 pedestrians and bicyclists were captured crossing Causeway Drive.

“NCDOT PHB evaluations assess the safety benefits and performance of the treatment. This allows continuous improvement of our safety programs and helps address common questions and concerns from local government, NCDOT staff, and the public.”

–Brian Mayhew, State Traffic Safety Engineer

### RESULTS

Vehicle compliance behavior at the crosswalk increased following implementation of the PHB. NCDOT defined vehicle compliance as any situation where pedestrian(s) were waiting to cross, vehicles were present, and all vehicles stopped to allow the pedestrians to cross. Before installation of the PHB, the vehicle compliance rate at the crosswalk was 27 percent. Following installation of the PHB, vehicle compliance rose to 74 percent when the PHB was activated.

The percent of pedestrians and bicyclists using the crosswalk increased slightly following the installation of the PHB, from 45 percent to 49 percent.

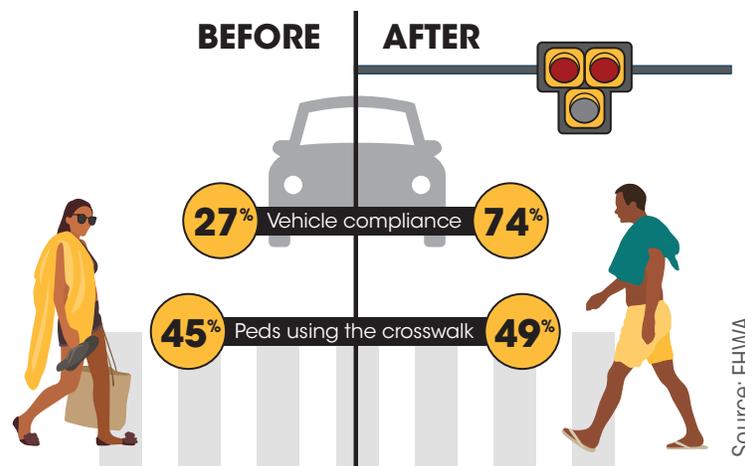


Figure 2. Graphic. Results of PHB evaluation in Wrightsville Beach.

### References

<sup>1</sup>FHWA. (2019). "Proven Safety Countermeasures: Pedestrian Hybrid Beacons." Last accessed May 13, 2020. [https://safety.fhwa.dot.gov/provencountermeasures/ped\\_hybrid\\_beacon/](https://safety.fhwa.dot.gov/provencountermeasures/ped_hybrid_beacon/).