

SAFE ROUTES to TRANSIT



Hatboro SEPTA Regional Rail Station

PROCESS MEMO | AUGUST 2019



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ABOUT DVRPC

DVRPC is the federally designated Metropolitan Planning Organization for the bi-state, nine-county Greater Philadelphia Region. DVRPC works with a variety of stakeholders, including municipal, county, and state representatives, to address issues of transportation, land use, environmental protection, and economic development. For more information, see www.dvrpc.org and www.dvrpc.org/SafeRoutesToTransit.

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Project Background

SAFE ROUTES TO TRANSIT PROGRAM

The Delaware Valley Regional Planning Commission (DVRPC) worked with the Borough of Hatboro to identify upgrades that would enhance bicycle and pedestrian access to Hatboro Station. This partnership was part of DVRPC's [Safe Routes to Transit](#) (SRTT) program, which offers technical assistance to municipalities in the greater Philadelphia region that have an interest in improving bicycle and pedestrian access to transit stations. The SRTT program, which involves a competitive application process, emphasizes short-term strategies that can be implemented with funding from competitive grants and other resources.

HATBORO STATION PROJECT

DVRPC provided technical assistance with a focus on low-cost, high-impact interventions around Hatboro Station to improve bicycle and pedestrian access and safety. The primary issues identified by the Borough of Hatboro for this program were:

- Gaps in the sidewalk network around the station;
- Incomplete wayfinding between the station and the commercial corridor on York Road;
- Lack of bicycle routes and infrastructure near the station; and
- Pedestrian safety concerns around the station parking lot and at at-grade rail crossings.

There are gaps in the sidewalk network around the station, such as this gap at the railroad crossing on E. Moreland Avenue.



Source: DVRPC (2019)

Existing wayfinding signage like this one on York Road can be expanded upon.



Source: DVRPC (2019)

Bicycle infrastructure like the striped sharrows on Orange Street in Media, Pennsylvania is lacking near the station.



Source: DVRPC (2019)

At-grade rail crossings like this one at E. Moreland Avenue are a safety concern.



Source: DVRPC (2019)

PROJECT TIMELINE

Two stakeholder meetings were held in Spring 2019. Representatives from the Borough of Hatboro, Montgomery County Planning Commission, Southeastern Pennsylvania Transportation Authority (SEPTA), Pennsylvania Department of Transportation (PennDOT), and DVRPC met in March 2019 to discuss both existing conditions and suggestions for recommendations. Upper Moreland Township was included in communication about the project. These stakeholders provided valuable insight into existing conditions and informed the planning process. DVRPC conducted additional fieldwork near Hatboro Station and investigated concepts to improve bicycle and pedestrian access to the station. At a second meeting in May 2019 stakeholders reviewed and discussed the results of DVRPC's research and draft recommendations.

ONGOING PLANS AND PROJECTS

In addition to the work produced by DVRPC, other planning efforts were concurrently focused on pedestrian and bicycle access and connectivity in Hatboro. DVRPC used these plans as a reference guide when crafting recommendations. The intersection of Jacksonville Road and E. Montgomery Avenue is currently being addressed by PennDOT as part of the Green Light-Go program, which provides state funds for the operation and maintenance of traffic signals along critical and designated corridors.

Bike Montco Plan

In August 2018, the Montgomery County Planning Commission released the [Bike Montco](#) plan. The plan, building on the recommendations from the [Montco 2040](#) Comprehensive Plan released in 2015, laid out a proposed bicycle network within the county and identified a series of bike routes that should be prioritized for improvements. Within the study area, Byberry Road, from S. Warminster Road to York Road, was identified as a priority bike route.

Hatboro 2040 Comprehensive Plan

The Borough of Hatboro, with leadership from the Montgomery County Planning Commission, recently updated the 2004 Hatboro Comprehensive Plan to *Hatboro 2040*. The process included extensive public input through surveys, public open houses, and social media updates.

During the public input process, residents requested improved safety and access for pedestrians and cyclists in Hatboro. They cited speeding, especially on York Road, as a concern. Better connections between Hatboro Station and the York Road commercial corridor as well as to the new housing development on Jacksonville Road were also mentioned.

Existing Conditions

In order to develop a set of recommendations for the challenges identified by the Borough of Hatboro, DVRPC first evaluated the current conditions near the station. To get a sense of where people are coming from and going to, major origins and destinations within Hatboro were identified. The DVRPC team then examined possible barriers to pedestrian and bicycle access such as sidewalk gaps, Bicycle Level of Traffic Stress, and crash locations. In addition, possible opportunities were identified by examining PennDOT's resurfacing schedule. This section explains how each of these factors was considered and how they relate to each other in order to formulate the recommendations in the following section.

STUDY AREA

The Borough of Hatboro is located in Montgomery County near the border with Bucks County. Hatboro Station is the second to last station on SEPTA's Warminster Regional Rail Line (Figure 1).¹ Within the Borough of Hatboro, the study area extends west to east from S. York Road to S. Warminster Road and north to south from E. Montgomery Avenue to Byberry Road. The new housing developments on Jacksonville Road – Hatboro Lofts and Jacksonville Green – as well as the new Hatboro Station townhomes and the Station Park business park on S. Warminster Road were also considered as part of a broader study area (See Figure 2).

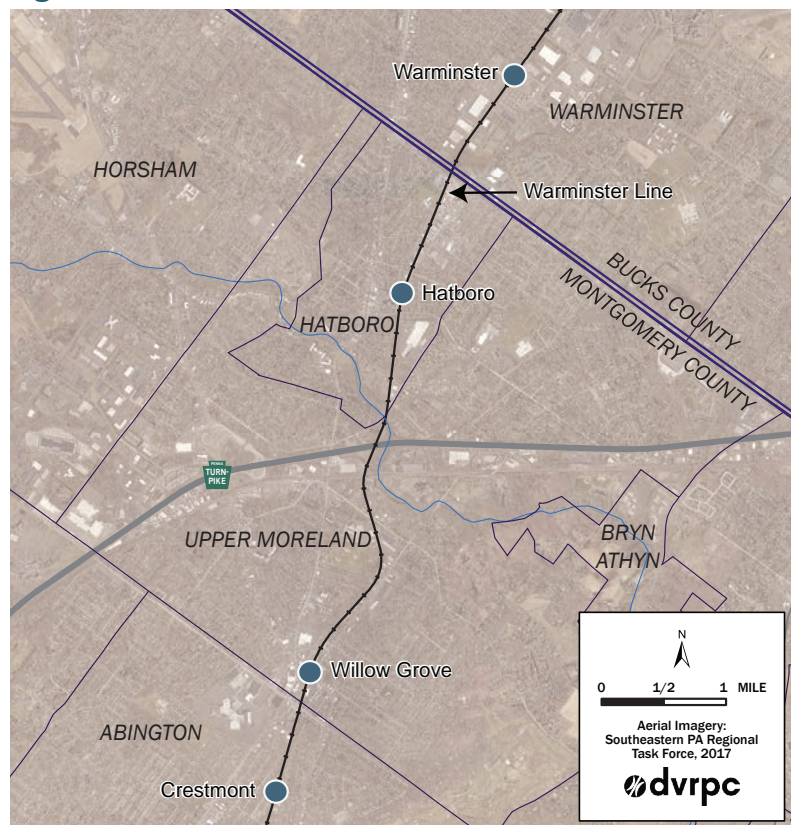
Included in the study area are the three parking lots for Regional Rail riders: an adjacent SEPTA-owned parking lot west of the platforms, a municipal parking lot owned and managed by the Borough of Hatboro north of the station, and an overflow lot leased by SEPTA south of Byberry Road. The municipal and overflow parking lots generate pedestrian traffic to and from the station. They also present challenges to pedestrians, especially as a result of the layouts of the parking lots and the resulting conflicts between pedestrians and vehicles.

The roadways around the station are well-used by people getting to the station, station parking lots, and to get around the train and station to their destination. At peak hour DVRPC staff observed drivers using many of the local streets, specifically S. Penn Street as a shortcut when trains come through the borough.

Two pedestrian paths are present in the study area: one leading southwest from Byberry Road to Rorer Avenue and the adjoining residential community, and one heading south from Byberry Road that connects with the Hatboro Station townhomes south of the Station Park business park. These are both examples of efforts by developers to better connect residents and jobs to the station.

While the Borough of Hatboro faces some challenges in creating additional pedestrian and bicycle access to the station, strides have already been made in an effort to make the station more accessible.

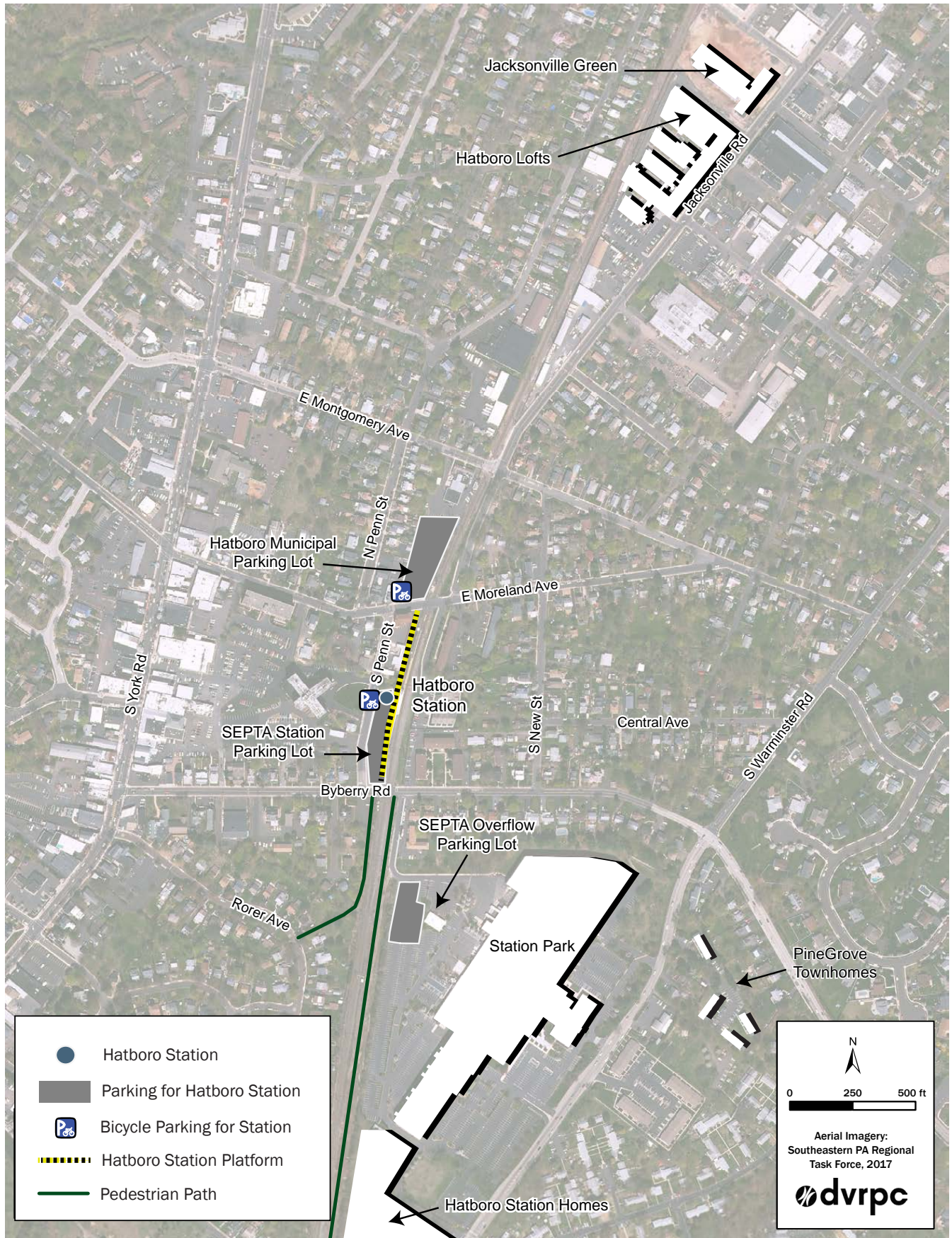
Figure 1: Hatboro Station on the Warminster Line



Source: DVRPC (2019)

¹ More information about Hatboro Station can be found on SEPTA's website at <https://septa.org/stations/rail/hatboro.html> (2019).

Figure 2: Study Area



MAJOR ORIGINS AND DESTINATIONS

In order to make the most impactful pedestrian and bicycle recommendations around Hatboro Station, it is necessary to understand where people are coming from and going to—their origins and destinations. Some common examples of origins and destinations that people travel to and from include their homes, workplaces, schools, and places of business. The major origins and destinations in this study area are large housing complexes and apartment buildings, office buildings, business parks, and popular businesses (see Figure 3).

There are three new housing developments in the area: Jacksonville Green (Number 1), located on Jacksonville Road, east of the train tracks and north of the station; Hatboro Lofts (Number 2), located just south of Jacksonville Green; and Hatboro Station town homes (Number 4), located on S. Warminster Road, south of Station Park business park. In addition, there are multiple multi-family residences: PineGrove Townhomes, on S. Warminster Road across from the Station Park business park (Number 3); Garner House (Number 5); and Moreland Towers (Number 6), located west of the station.

There are two locations in the study area where a cluster of businesses are present: Station Park business park (Number 7) located southeast of the station, and the main commercial corridor located west of the station along York Road (Numbers 8, 9, and 10).

The major origins and destinations are south, west, and north of the station. Pedestrian travel patterns observed during fieldwork confirmed that most current Regional Rail riders travel to and from these directions. As a result, recommendations were focused around making it more straightforward and safe to access the station by walking and bicycling to and from the south, west, and north.

Hatboro Station townhomes south of the station; a pedestrian path connects the townhomes and station area.



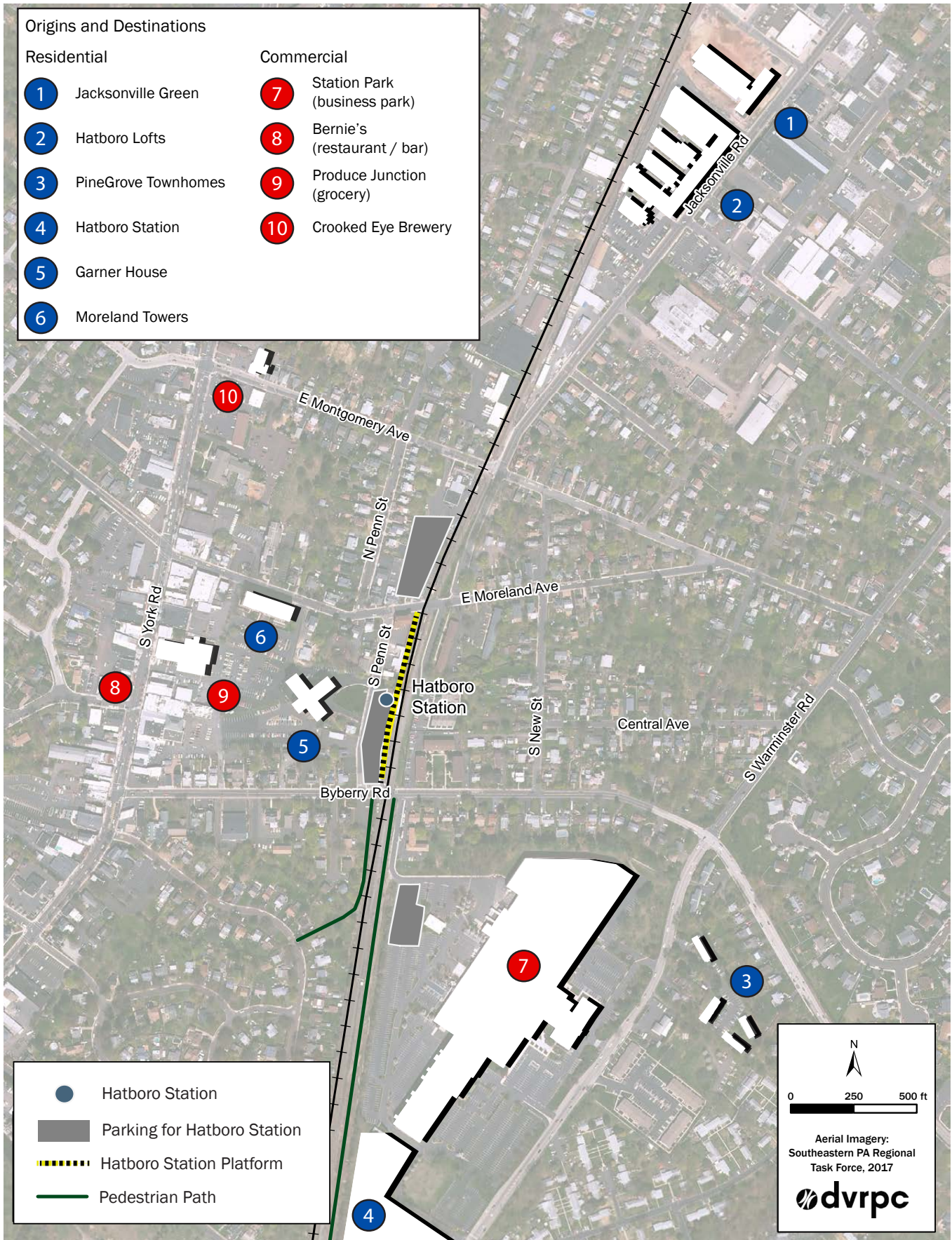
Source: DVRPC (2019)

York Road, the main commercial corridor, is connected to the station area by E. Moreland Avenue and Byberry Road.



Source: DVRPC (2019)

Figure 3: Major Origins and Destinations



SIDEWALK NETWORK

Along with understanding where Regional Rail riders are coming from and going to, it is also important to determine what infrastructure is currently in place that allows riders to easily walk to and from the station. In general, sidewalks make walking safe and accessible because they provide a designated, separate space for pedestrians.

Figure 4 illustrates the disparity in the sidewalk network. East of the station there are several residential streets without sidewalks, including Central Avenue, New Street, Lacey Street, and much of Byberry Road. In addition, there is no designated pedestrian crossing at the at-grade rail crossings in the borough including Byberry Road, E. Moreland Avenue, and E. Montgomery Avenue.

In the area surrounding the station, even where sidewalks and crosswalks are present, pedestrians have been observed to repeatedly use informal routes called desire lines that are more time efficient than the formal pedestrian network of sidewalks and crosswalks. Desire lines show how pedestrians move, so it is important to plan for those routes to ensure pedestrian safety.

A sidewalk gap on Jacksonville Road between E. Montgomery Avenue and E. Moreland Avenue.



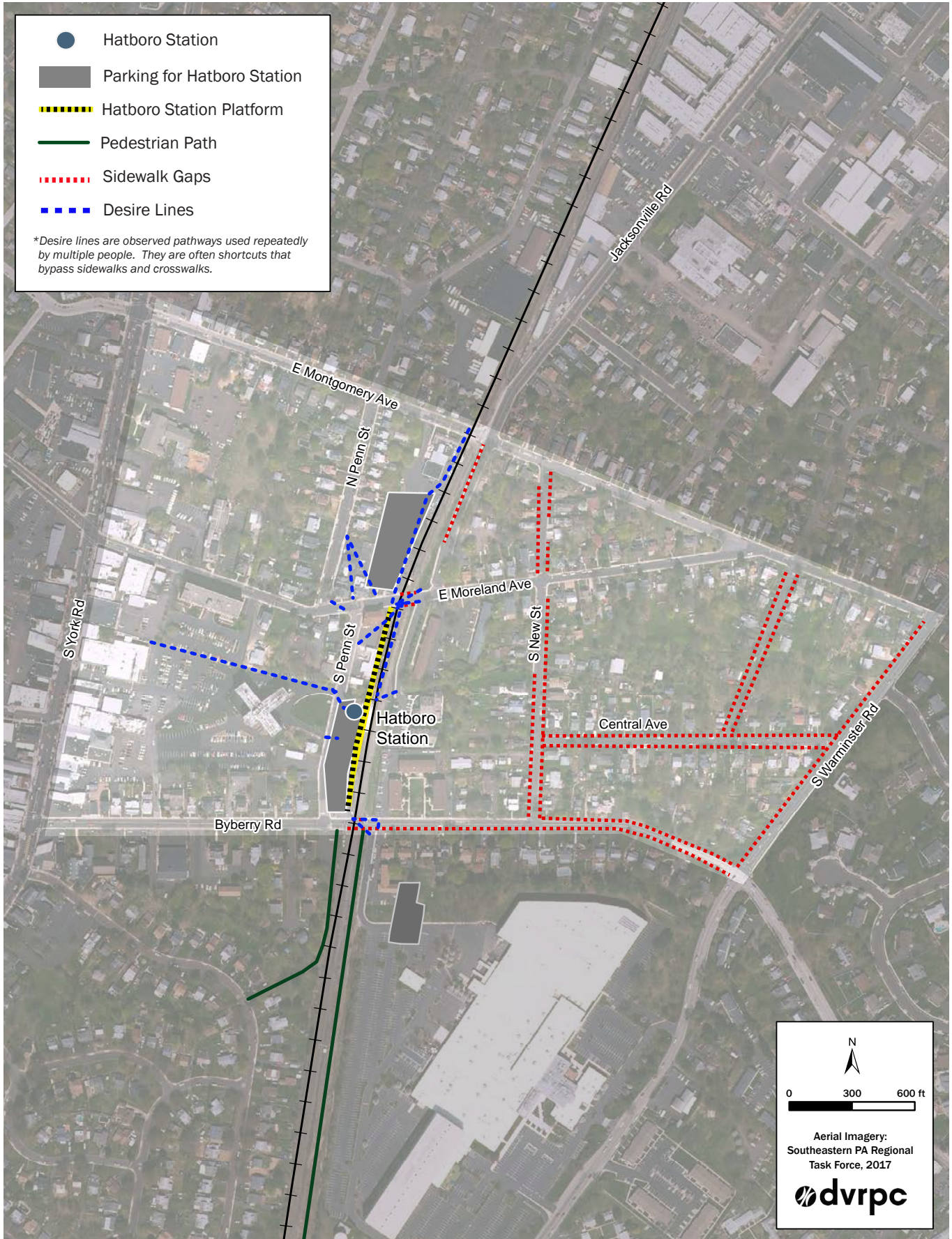
Source: DVRPC (2019)

Pedestrians cross mid-block on E. Moreland Avenue between the municipal lot and the station, showing a desire line where crosswalks are present close by.



Source: DVRPC (2019)

Figure 4: Sidewalk Network



BICYCLE LEVEL OF TRAFFIC STRESS

Just as connectivity in the sidewalk network is important for pedestrian access to and from the station, so too is the bicycle network. Currently there are no bicycle treatments within the study area that facilitate access to Hatboro Station. In order to determine where new bicycle interventions could have the biggest impact on improving the cycling experience, DVRPC examined the [Bicycle Level of Traffic Stress](#) within the study area. DVRPC developed its version of Bicycle Level of Traffic Stress analysis in 2017, which was used in this analysis.²

Level of Traffic Stress (LTS) is a road classification technique based on the comfort of bicyclists in the road. DVRPC's LTS assignment is based on the number of lanes, effective vehicle speed, and presence of a type of bicycle facility (i.e. bike lane, signed designated bike route, sharrow, or multi-use trail). Table 1 outlines the characteristic of each LTS level.

In relation to this study, the primary use of this analysis is to inform new road design that can occur alongside PennDOT's resurfacing program (see pages 12-13). This analysis identifies the potential impact on low-stress bicycle connectivity for individual road segments that are not already considered comfortable for bicycling, namely LTS 3 road segments (featuring moderate traffic stress). Among those road segments, the ones that would enable the most new low-stress connections (top 10% in each county) are classified as "regional priorities"², which will be assigned a lower LTS if redesigned to be more bicyclist-friendly. Based on this analysis, decision makers can more efficiently invest in bike treatments that may have the greatest benefit to their community.

In the study area, there are three LTS 3 roads running east to west (E. Montgomery Avenue, E. Moreland Avenue, and Byberry Road) and one LTS 3 road running north to south (Jacksonville Road). Two regional priority road segments are also present: One on E. Moreland Avenue, starting at its intersection with S. Penn Street and running west; and the other on Byberry Road, starting at its intersection with S. Penn Street and running east.

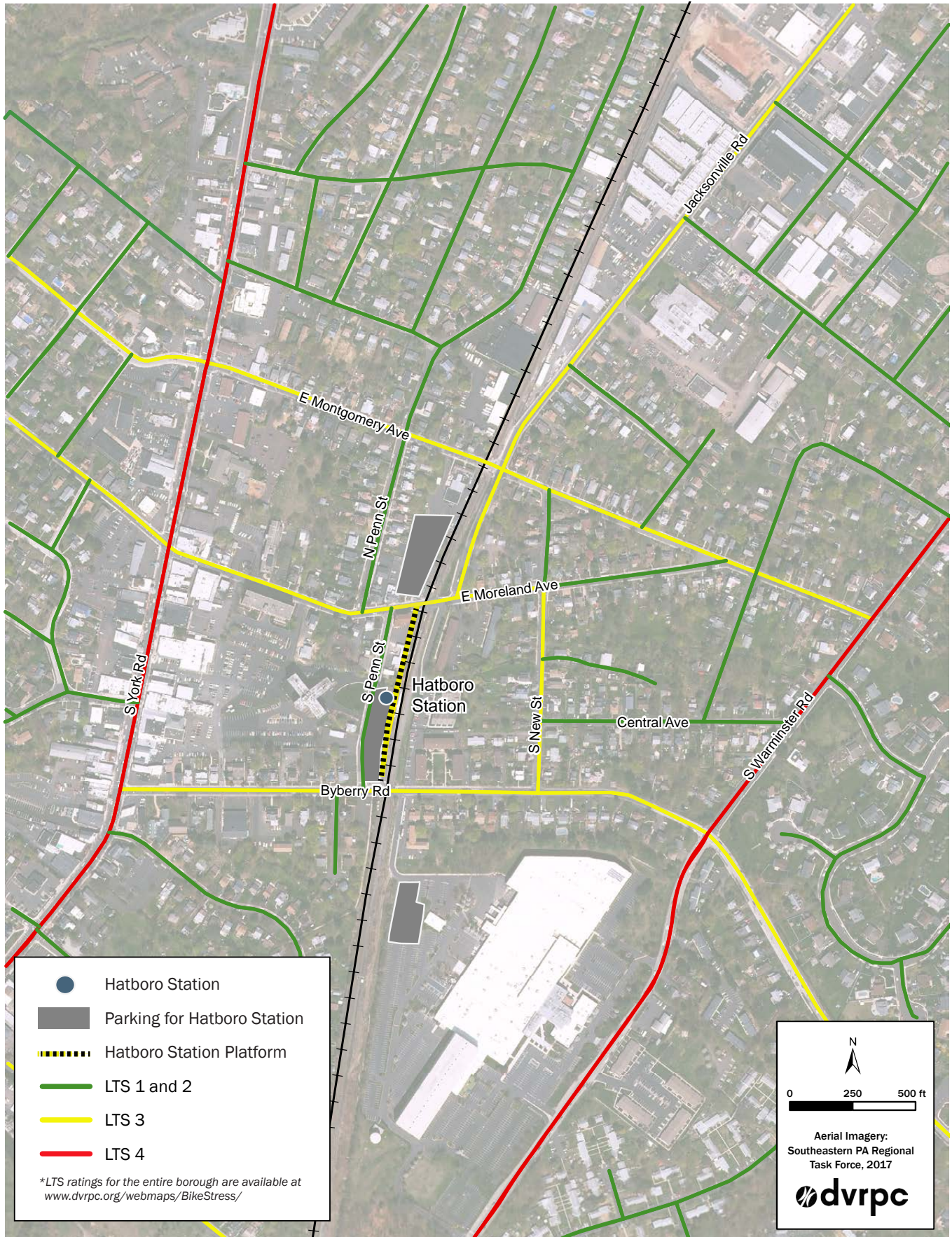
Table 1: Bicycle Level of Traffic Stress Key

LTS	Comfortable Enough For (Cyclist Type)	Characteristics
1	Most People	Relaxing Suitable for children
2	Interested, but Concerned	Suitable for most adults Presenting little traffic stress
3	Enthusied and Confident	Moderate traffic stress Comfortable for those already riding bikes in American cities
4	Strong and Fearless	High traffic stress Multilane, fast moving traffic

Sources: Mekuria, M., Furth, P. and Nixon, H. "Low-stress bicycling and network connectivity", *Mineta Transportation Institute, No. Report 11-19, 2012.*; Geller, R. "Four Types of Cyclists," *Portland Bureau of Transportation, Portland, OR, 2006.* www.portlandoregon.gov/transportation/article/264746. Accessed August 11, 2016.

²DVRPC, *Bicycle LTS and Connectivity Analysis (2017, 2019)*

Figure 5: Bicycle Level of Traffic Stress



RESURFACING PLAN

Integrating bicyclist-friendly redesigns of regional priority road segments through PennDOT's five-year resurfacing plan can provide an implementation plan for access improvements like striping and a new bike lane. Hatboro can work with PennDOT to request that appropriate bicycle treatments on regional priority LTS 3 streets are being installed when these streets are resurfaced, if possible.

PennDOT resurfaces its roads approximately every ten years, though this can fluctuate depending on funding and capacity. The resurfacing of York Road was recently completed in 2019, and based on PennDOT's resurfacing plan three additional segments within the study area are tentatively scheduled for resurfacing within the next 5 years: Jacksonville Road south to E. Montgomery Avenue and E. Montgomery Avenue between York Road and Jacksonville Road in 2019, and Byberry Road in 2023. Given this resurfacing schedule and the Bike LTS analysis in Figure 5, the DVRPC team considered Jacksonville and Byberry roads as candidates that should be considered for further study regarding bicycle treatments.

Prior to this study, Jacksonville Road was already proposed for a bicycle lane on both sides of the road between E. Montgomery Avenue and E. County Line Road, which will be completed by PennDOT separately. The municipality will add sharrows, which designate a travel lane should be shared by automobiles and bicycles, for the segment between E. Montgomery Avenue and E. Moreland Avenue to guide bicylists to Hatboro Station.

Jacksonville Road is scheduled for resurfacing in 2019.



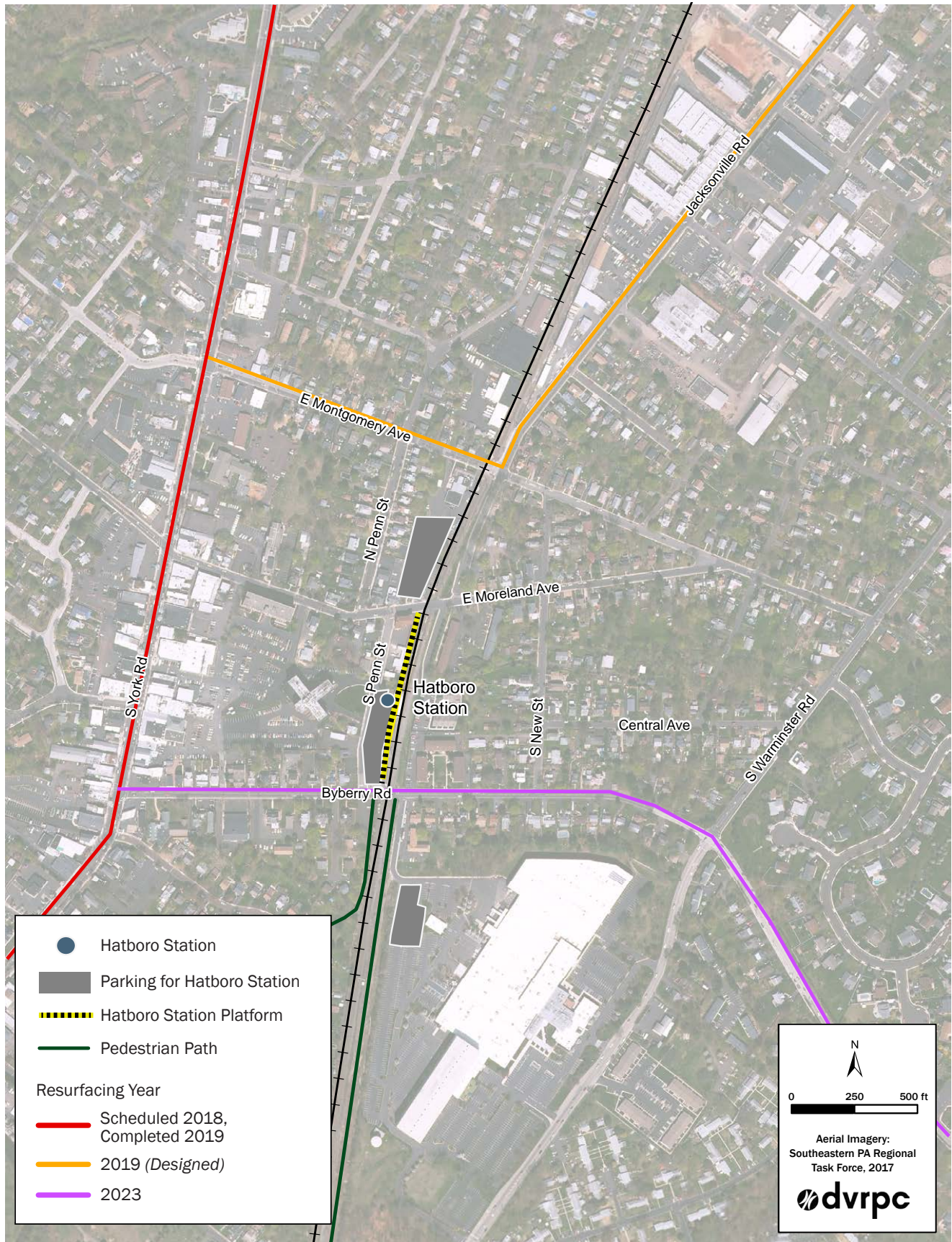
Source: DVRPC (2019)

E. Moreland Road, from Jacksonville Road to York Road, is scheduled for resurfacing in 2019.



Source: DVRPC (2019)

Figure 6: PennDOT Resurfacing Plan



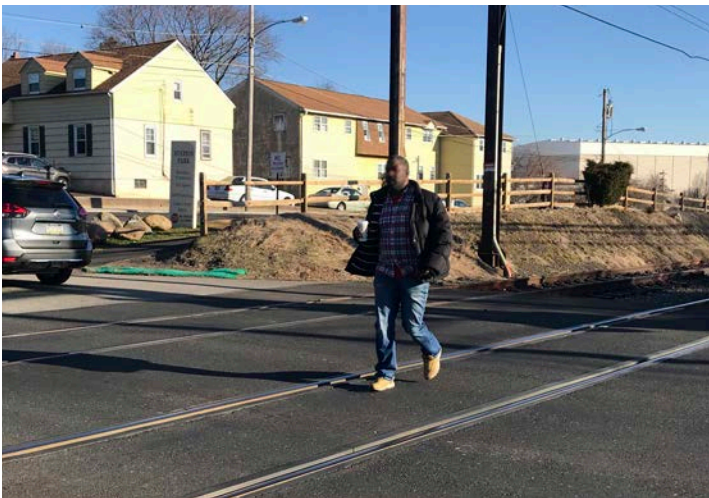
CRASH ANALYSIS

Safety is another important factor that should be considered when studying bicycle and pedestrian access. Streets that were designed with vehicles as the priority can feel unsafe to people and discourage bicycle and pedestrian use. Figure 7 shows where reported crashes occurred within the study area between 2013-2017.³

There were two crashes involving pedestrians and none reported involving bicyclists within the study area during this time period. There is a cluster of crashes (albeit not involving pedestrians or bicyclists) near the intersection of S. Penn Street and E. Moreland Avenue, and a pedestrian was involved in a crash at the intersection of E. Montgomery Avenue and Jacksonville Road. This indicates that safety should be a consideration when planning for increasing bike and pedestrian access to Hatboro Station.

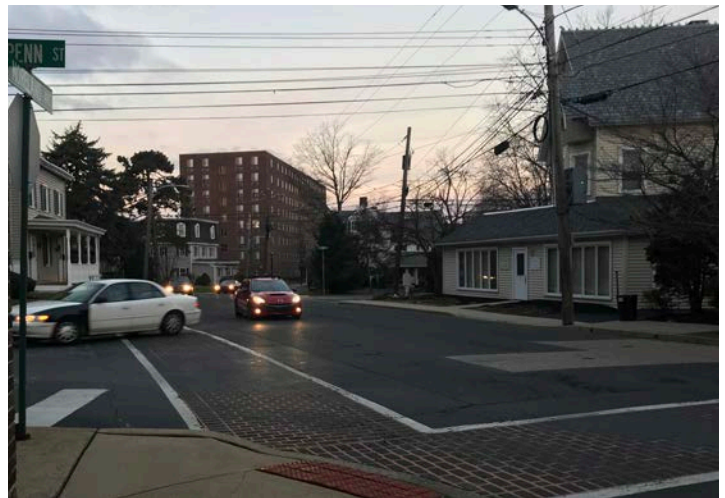
According to the *Reducing Speeding-Related Crashes Involving Passenger Vehicles* safety study conducted by the National Transportation Safety Board (NTSB), higher speeds are a major contributor to the number of crashes as well as the severity of crashes, especially around vulnerable road users such as pedestrians and cyclists. Introducing traffic calming techniques can reduce speeds and make a difference in lowering crashes, thereby improving the pedestrian and cyclist experience.⁴

A pedestrian crosses Byberry Road from the Station Park business park driveway to the Hatboro Station platform.



Source: DVRPC (2019)

There were six crashes between 2012-2017 at the intersections of N. Penn Street, S. Penn Street, and E. Moreland Avenue.

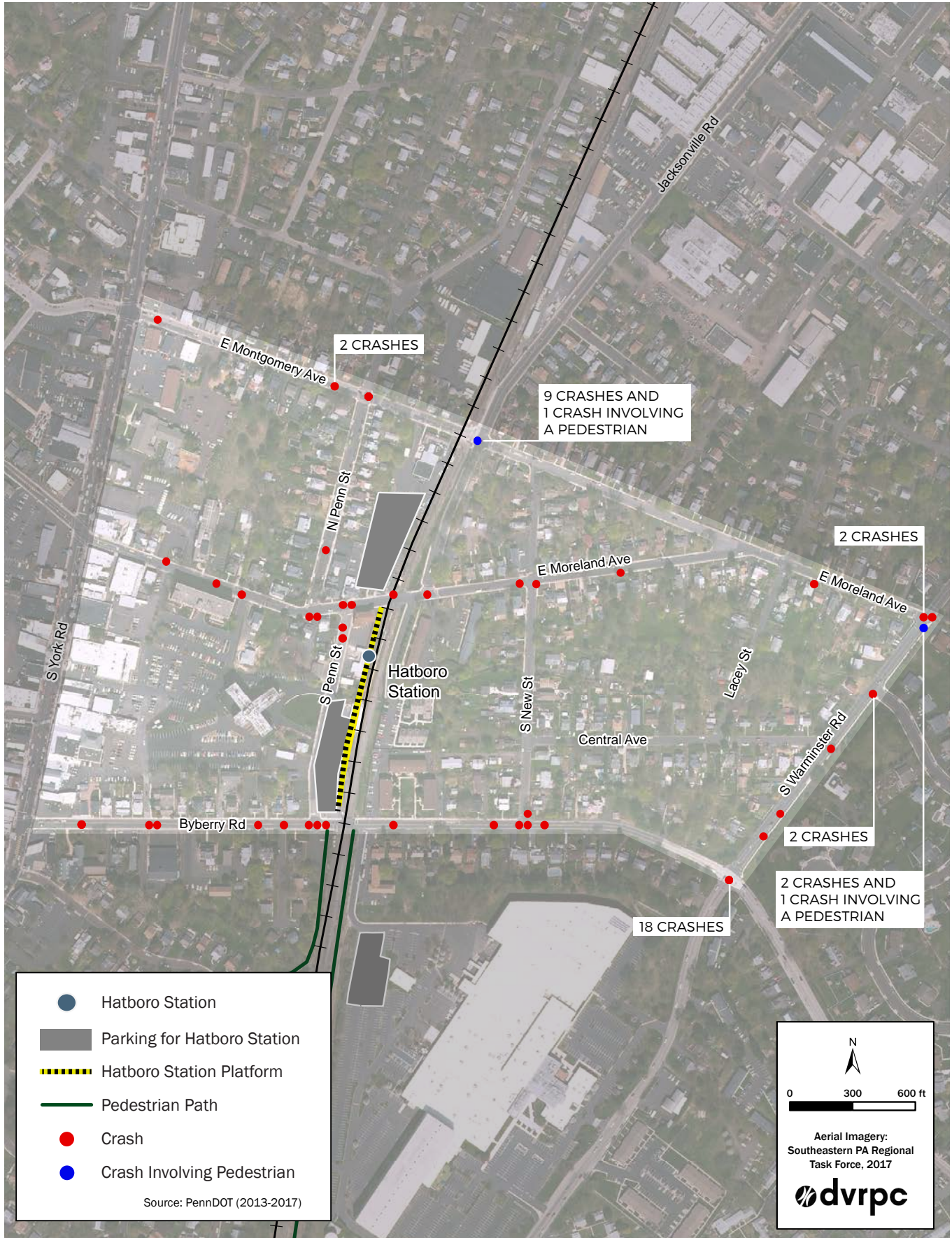


Source: DVRPC (2019)

³ PennDOT, *Pennsylvania Crash Information Tool (2019)*.

⁴ National Association of City Transportation Officials (NACTO), *NACTO Design Guide (2009)*.

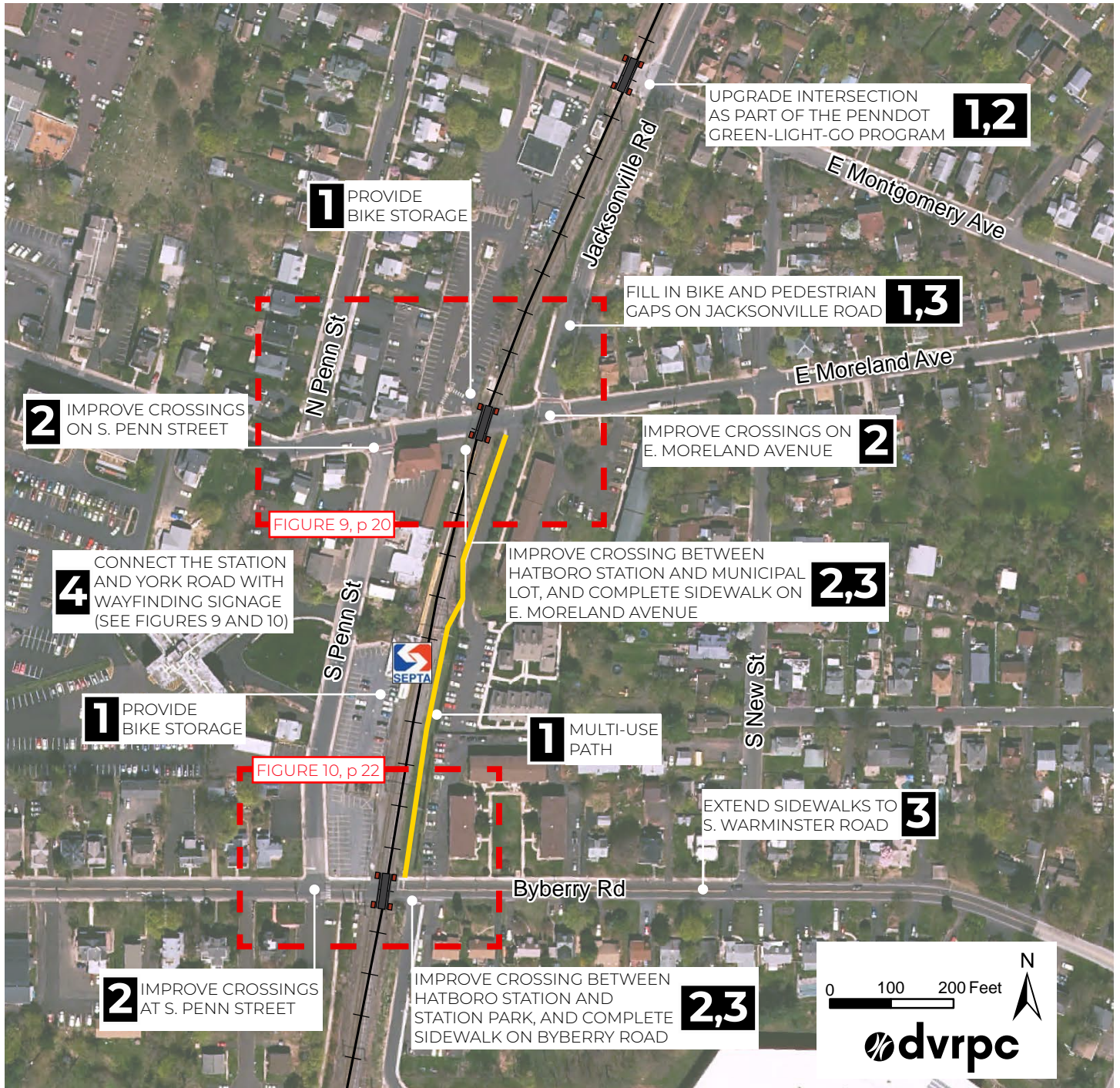
Figure 7: Crash Analysis (2013-2017)



Comprehensive Recommendations

Figure 8 and Table 2 together illustrate an array of recommendations for the entirety of the study area. Modifications are presented that connect Hatboro Station with dense residential, commercial corridors, and employment centers within a half-mile radius. Precedent examples of a number of these recommendations are shown on pages 18-19. More detailed recommendations with cost estimates are listed in the subsequent pages.

Figure 8: Comprehensive Recommendations



The pedestrian access recommendations focus on revitalizing existing sidewalks and crosswalks and adding new sidewalks, crosswalks, bumpouts, and pedestrian-activated flashing beacons. New bicycle-oriented interventions for the area, including pavement markings, signage, and racks and lockers for parking, are recommended to create a clear and more convenient trip for bicyclists.

Since Byberry Road is an LTS 3 and a priority bike route in the Bike Montco plan, the DVRPC team did consider this for additional bicycle facilities. However, the road narrows considerably at intersections and to create a bike lane would require major construction. Additionally, a multi-use path was considered for Jacksonville Road between E. Montgomery and E Moreland avenues, however, utilities from the railroad restrict opportunities to fit in a path here.

Table 2: Comprehensive Recommendations Summary

NUMBER ON MAP	IMPROVEMENT STRATEGY	DESCRIPTION
1	Promote the addition of new bicycle infrastructure	Improve bicycle storage for Hatboro Station passengers, including bike lockers in the municipal parking lot and additional covered bike parking adjacent to the station building. This will help to accommodate people traveling from the south and west.
		Continue bicycle network on Jacksonville Road south of Montgomery Avenue <ul style="list-style-type: none"> • Add sharrows in pavement and <i>Bicycles May Use Full Lane</i> signs on this segment • Add a bike box on Jacksonville Road where it meets E. Moreland Avenue so that bicyclists can safely dismount and walk to bike parking or continue riding • Expand the sidewalk on the NW corner of that intersection to provide space for bicyclists to enter the sidewalk on foot without disrupting pedestrian flow
		Upgrade Montgomery Avenue intersection under the Green-Light-Go program to accommodate bicycle and pedestrian infrastructure and transition the end of the Jacksonville Road bike lane to E. Montgomery Avenue
		Extend path from Byberry Road to E. Moreland Avenue <ul style="list-style-type: none"> • Build new eight-foot wide multi-use path from mid-block crosswalk on Byberry Road to existing sidewalk adjacent to Moreland Crossing • Widen existing sidewalk from 5' to 8' up to E. Moreland Avenue to accommodate a multi-use path
2	Improve crossings	Improve crossings on S. Penn Street <ul style="list-style-type: none"> • Add bumpouts, crosswalks, and ADA ramps at both ends of S. Penn Street to narrow the crossing distance and slow vehicles • Add new continental crosswalks • Repaint existing crosswalks and stop bars in the continental style • Add painted center median along S. Penn Street
		Improve crossing at E. Moreland Avenue and Jacksonville Road <ul style="list-style-type: none"> • Add new continental crosswalks and ADA ramps • Repaint existing crosswalks and stop bars in the continental style
		Add traffic calming measures between Hatboro Station and the municipal parking lot <ul style="list-style-type: none"> • Add a raised crosswalk with ADA ramps • Install rectangular rapid flashing beacons to warn drivers of pedestrians crossing
		Improve crossing on Byberry Road between Hatboro Station and Station Park <ul style="list-style-type: none"> • Add traffic calming measures for pedestrians at this intersection, including a mid-block crosswalk with ADA ramps (one parking spot or more will likely need to be taken) and pedestrian crossing signage • Improve sidewalk along south side of Byberry Road to Station Park pedestrian path, including new pedestrian-friendly at-grade ADA rail crossing
3	Complete the sidewalk network	Extend existing sidewalk north on Jacksonville Road between E. Montgomery and E. Moreland avenues
		Complete sidewalks at rail crossings on E. Moreland Avenue and Byberry Road
		Extend sidewalk on Byberry Road to S. Warminster Road
4	Connect York Road commercial corridor with Hatboro Station	Strategically place wayfinding signs at intersections for pedestrians and vehicles <ul style="list-style-type: none"> S. Penn Street and E. Moreland Avenue S. Penn Street and Byberry Road S. York Road and E. Moreland Avenue S. York Road and Byberry Road

Source: DVRPC (2019)

PRECEDENTS

A number of examples of the recommended strategies are shown here with a brief description of their benefits. These strategies are not new to the region and Montgomery County. They include low cost interventions that can improve pedestrian and bicycle access to Hatboro Station.

Painted Center Median Pennsylvania



Source: FHWA (Retrieved 2019)

Painted center medians help clarify lane position for drivers.

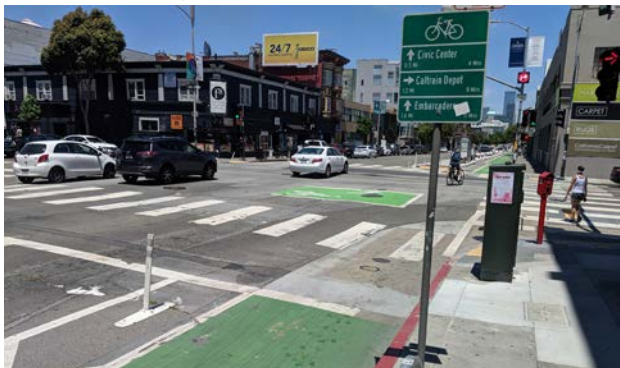
Sharrow Philadelphia, PA



Source: DVRPC (2019)

Sharrows direct cyclists to the center of a lane to avoid conflict with parked cars. They alert drivers that cyclists are permitted to use the lane, and help discourage wrong-way bicycling.

Bicyclist-Oriented Wayfinding Signage San Francisco, CA



Source: DVRPC (2019)

Bicyclist-oriented signage is an important element of a bike network.

Bike Box Portland, OR



Source: Toole Design Group (Retrieved 2019)

Bike boxes allow bicyclists to safely and visibly separate themselves from traffic.

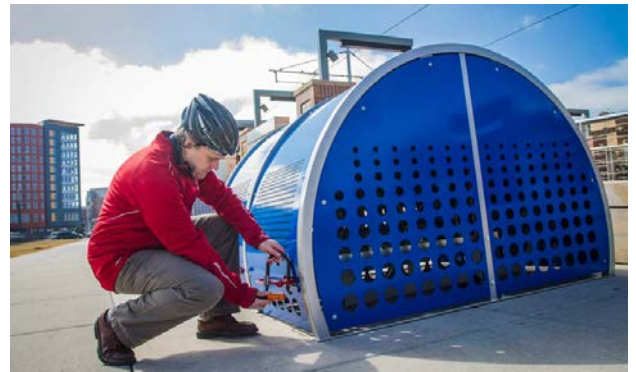
Path Next to Railway Cynwyd, PA



Source: DVRPC (2017)

Paths next to railways must be separated by a fence.

Bike Lockers



Source: Dero (Retrieved 2019)

Bike lockers deter theft and vandalism, and encourage people to combine biking with transit.

ADA-Compliant Rail Crossing Upper Darby, PA



Source: SEPTA (2013)

Rail crossings can be made safer with installation of a sidewalk, curbs, ADA ramps, crossing panels between tracks, and gate arms.

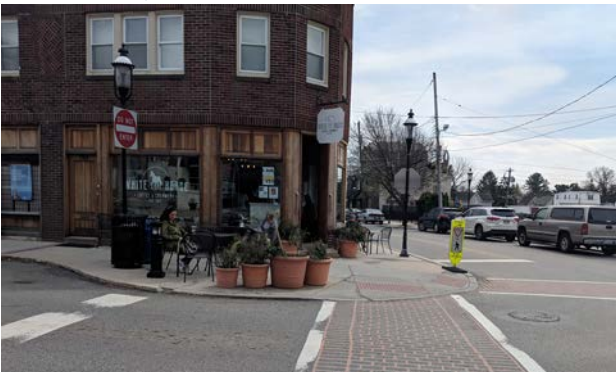
Continental Crosswalk with Pedestrian Signage Jenkintown, PA



Source: DVRPC (2019)

Continental crosswalks are recommended by the FHWA as the safest type due to their high visibility to drivers.

Corner Bumpout with Planters Jenkintown, PA



Source: DVRPC (2019)

Bumpouts extend the sidewalk into the parking lane, preventing cars from parking close to the intersection, allowing pedestrians to better see oncoming traffic.

Rectangular Rapid Flashing Beacons (RRFBs) Hatboro, PA



Source: Borough of Hatboro (2017)

The RRFB on W. Moreland Avenue in Hatboro enables pedestrians to safely cross the road between a pool and its overflow parking lot. Traffic has been observed to be slower.

Raised Crosswalk Alexandria, VA



Source: FHWA (2016)

Raised crosswalks slow vehicle speeds and increase pedestrian visibility.

Bumpouts with Continental Crosswalk Jenkintown, PA



Source: DVRPC (2019)

Bumpouts shorten the distance a pedestrian must cross. They also slow traffic by narrowing the road.

Specific Intersection Improvements

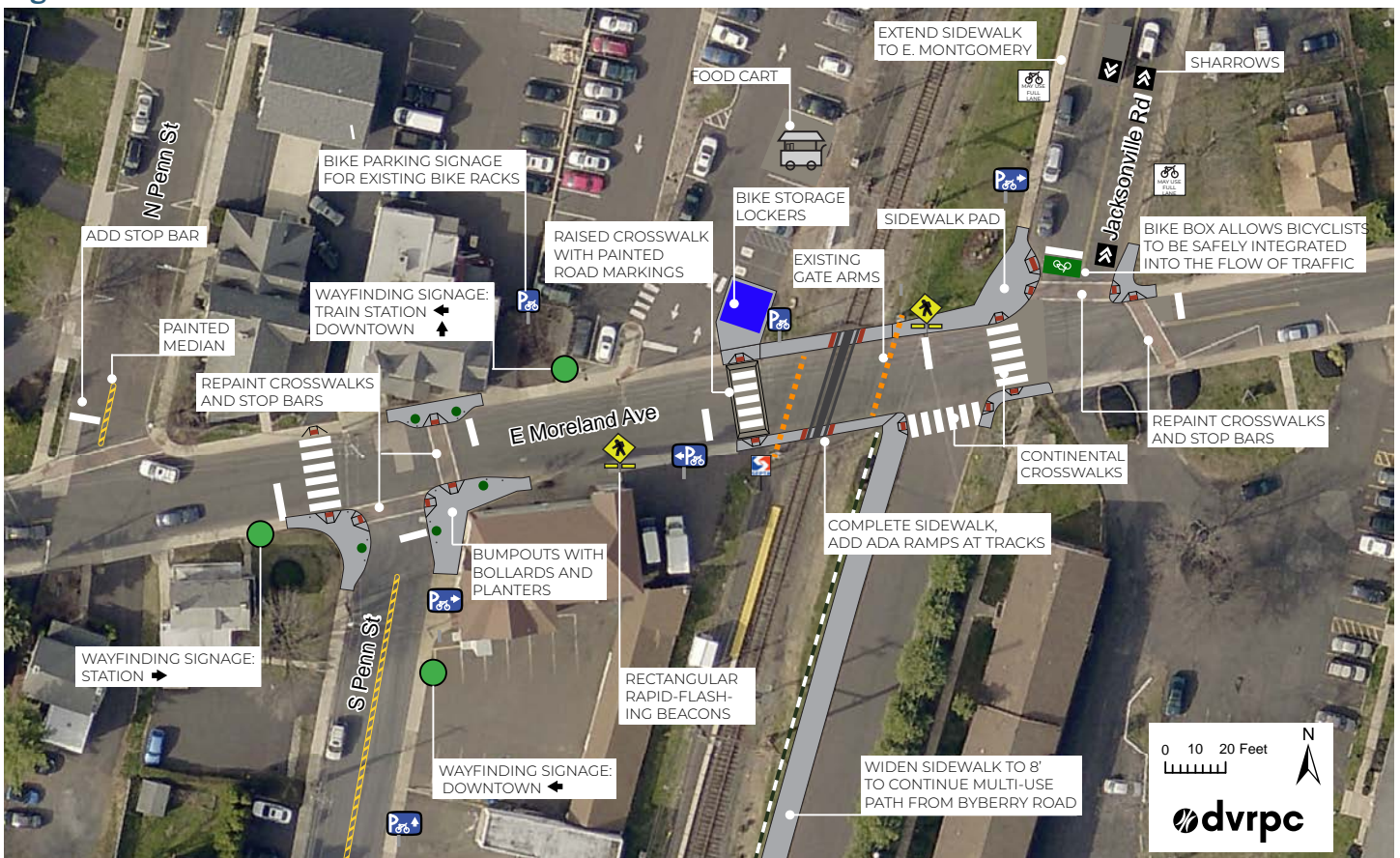
Figure 9 and Table 3 illustrate interventions that should improve the comfort and safety for pedestrians and bicyclists crossing E. Moreland Avenue between N. Penn Street and Jacksonville Road. Currently, pedestrians often cross E. Moreland Avenue midblock or outside of crosswalks to walk efficiently between the surrounding dense residential areas, the Hatboro Station platforms, and the municipal parking area. N. Penn Street and S. Penn Street are offset, resulting in more crossings. The SEPTA Warminster Line crosses E. Moreland Avenue, and this can cause some vehicle congestion to S. Penn Street while the train is coming into and stopped at the station.

The recommendations shown propose methods of alleviating conflicts between pedestrians, bicyclists, vehicles, and the train due to all the activity along this corridor. The approach is to add infrastructure and signage to guide pedestrians and bicyclists better to the routes they should use and the facilities they are looking for while at the same time alerting those in motor vehicles. In addition, this may cause vehicles to slow down in this area.

Parking is an important element of bike infrastructure. Bike lockers can be installed to provide a secure parking option for people biking to the station. A bank of ten lockers can be installed over two parking spaces in the municipal lot, and potentially more lockers could replace the existing bike racks. When selecting a model, it is important to consider the locking mechanism for convenience, the number of doors for space, and visibility of the interior for surveillance. Although any locker can be placed in the municipal parking lot, it should be considered that SEPTA requires bike lockers to be designed such that the interior can be seen easily. One model (see example on page 18) best satisfies these security concerns due to the large perforations on its sides. Another two-door model can be lower in cost and occupies a smaller area per bicycle, but it is less transparent even with the perforated door option. Both models can be locked conveniently with a standard bike lock or U-lock instead of a key. The costs can range. A bank has ten available spaces for bikes for the first model is about \$20,000 and the two-door model will likely be lower in cost, approximately \$10,000.

Table 4 presents each recommendation for this area broken down by cost.

Figure 9: Recommendations for E. Moreland Avenue between Jacksonville Road and N. Penn Street



Source: DVRPC (2019)

Table 3: Jacksonville Road and E. Moreland Avenue Intersection Recommendations

IMPROVEMENT STRATEGY	DESCRIPTION	COST*
Improve safety by bringing attention to pedestrian crossing activity near the railroad tracks	Install railroad crossing treatment, including: sidewalk, curb, detectable warning surfaces (similar to ADA ramps), signage, roadway restoration, crossing panels between tracks, and striping; this needs to be coordinated with SEPTA, similar to the crossing at Primos Station	HIGH
	Add rectangular rapid flashing beacons on both sides of the railroad tracks on E. Moreland Avenue	LOW
	Paint stop bars on both sides of the railroad on E. Moreland Avenue	LOW
	Expand sidewalk on NW corner of Jacksonville Road and E. Moreland Avenue to provide space for bicyclists to safely dismount and walk bikes	LOW
Create a safe pedestrian crossing between the municipal parking lot and the station platform	Install a mid-block raised crosswalk west of the railroad tracks on E. Moreland Avenue	LOW
Construct safe crossings for all users	Put in place ADA-compliant curb ramps at all crosswalks	HIGH
	Paint four new continental-style crosswalks	LOW
	Paint stop bars where E. Moreland Avenue intersects N. Penn Street and S. Penn Street, and next to the bike box on Jacksonville Road	LOW
	Build bumpouts at the E. Moreland Avenue and S. Penn Street intersection, include flexible delineators and planters	LOW
Install and draw attention to bike parking facilities	Add bike lockers in the municipal lot (See p. 20 for considerations)	LOW
	Add signs directing bicyclists to bike parking in the municipal parking lot	LOW
Provide a connection for bicyclists traveling to E. Moreland Avenue from proposed bike lanes ending at Jacksonville Road and E. Montgomery Avenue	Add sharrows on Jacksonville Road between E. Montgomery Avenue and E. Moreland Avenue, placed every 100' over the 500' road segment	LOW
	Add a bike box on Jacksonville Road at E. Moreland Avenue to provide bicyclists with a place to dismount to walk bikes safely to parking	LOW
	Add signs on Jacksonville Road indicating that bicyclists use the full lane	LOW
Complete sidewalk network	Fill in sidewalks on E. Moreland Avenue (120') to facilitate crossing the railroad tracks; use ADA-compliant ramps	LOW
	Extend sidewalk on Jacksonville Road from E. Moreland Avenue to E. Montgomery Avenue (350')	LOW
Improve safety by identifying lanes on S. Penn Street	Paint 2' wide median on S. Penn Street and install rumble strips to alert drivers exiting the station that they are crossing the median	LOW
Improve wayfinding to the station and downtown	Install directional signage along Byberry Road and S. Penn Street	LOW

* Improvements estimated to cost more than \$50,000 according to PennDOT's Engineering and Construction Management System are considered high cost. Source: DVRPC (2019)

Table 4: Cost Estimates for Recommendations

DESCRIPTION	UNIT	QTY	UNIT PRICE	APPROX. COST
Rectangular rapid flashing beacons	Each	2	\$12,500	\$25,000
Raised crosswalk	Each	1	\$10,000	\$10,000
ADA-compliant curb ramps	Each	21	\$7,500	\$160,000
Continental crosswalk	Each	3	\$500	\$1,500
Stop bar	Each	8	\$100	\$800
Bumpouts, including planters and flexible delineators	Each	3	\$250	\$750
Bank of bike lockers, 10-bike capacity (See p.20 for considerations)	Bank	1	\$10,000-\$20,000	\$10,000-\$20,000
Signs (wayfinding and bicycle-oriented, cost varies by size)	Each	11	\$400	\$4,400
Sharrows	Each	10	\$350	\$3,500
Bike box	Each	1	\$600	\$600
Concrete Sidewalk extensions (500' long, 5' wide)	SY	275	\$150	\$40,000
Curbs	LF	275	\$50	\$14,000
Railroad crossing treatment	Coordinate with SEPTA			
Maintenance and Protection of Traffic (MPT), Mobilization, Excavation	Typically about 3-5% of project cost			

Note: A right-of-way (ROW) survey was not completed. Some of the recommendations may require ROW to be acquired outside of the public ROW (state or local) and additional costs could be incurred.

Source: PennDOT Engineering and Construction Management System Item Price History (2019)

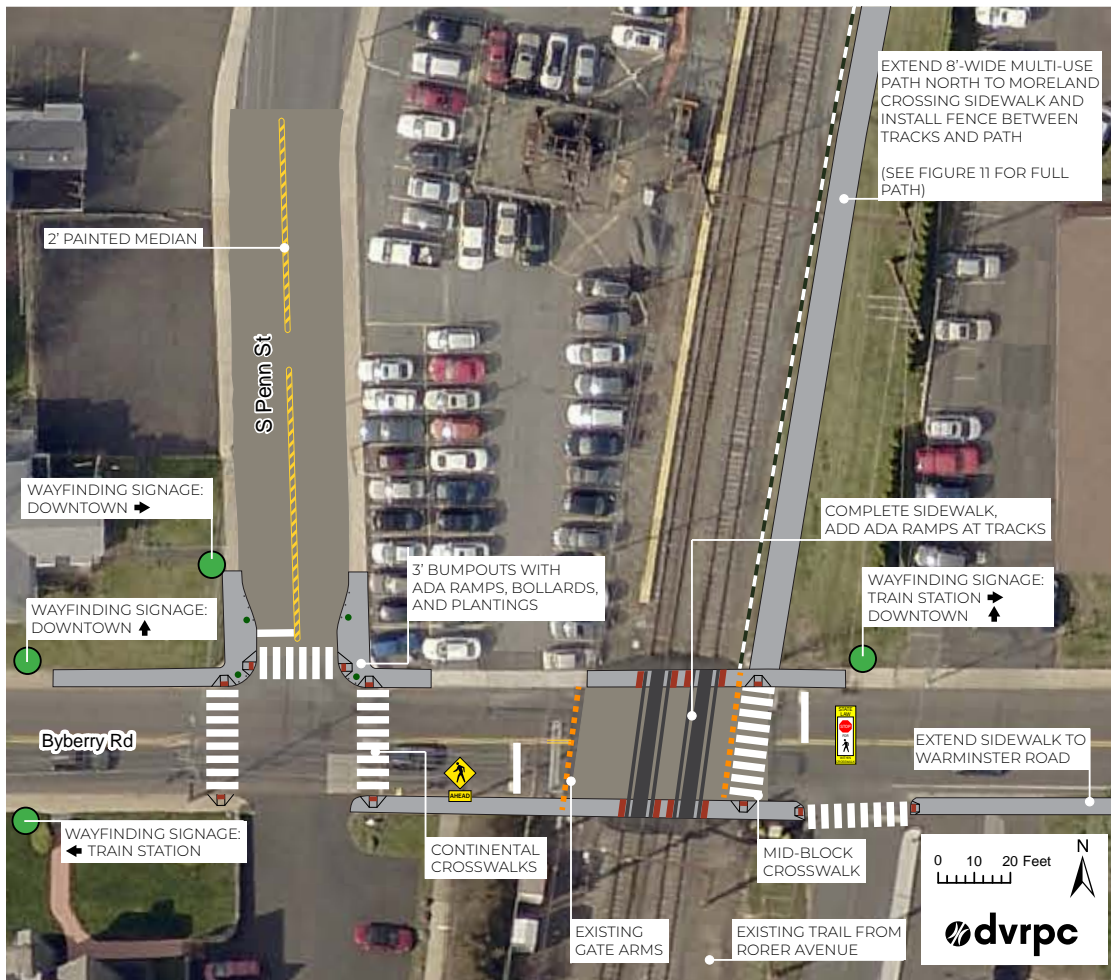
Figure 10 and Table 5 illustrate proposed recommendations for S. Penn Street and Byberry Road. Improvements shown here aim to provide new infrastructure for pedestrians and delineate space between them and vehicles across Byberry Road and along S. Penn Street to Hatboro Station.

At this location one major pedestrian movement observed at peak hour was between the station platform across Byberry Road into the Station Park employment center and the SEPTA overflow parking lot. Currently pedestrians are crossing diagonally across Byberry Road and the rail tracks. To create a safer pedestrian environment, improvements are recommended for the at-grade crossing, mid-block crosswalk, and sidewalks and crosswalks on Byberry Road. To connect pedestrians and bicyclists from Byberry Road to E. Moreland Avenue a multi-use path is recommended on the east side of the rail tracks.

Stakeholders agreed that traffic calming could alleviate speeding along S. Penn Street, where currently there are sidewalks but no centerline or roadway striping. Therefore, DVRPC recommends building bumpouts on both ends of S. Penn Street and adding median striping down the center of the roadway.

Table 6 presents each recommendation broken down by cost.

Figure 10: Recommendations for the Intersection of Byberry Road and S. Penn Street



Note: To implement the mid-block crossing on Byberry Road, the Borough of Hatboro will need to write and submit a safety-related justification to PennDOT. PennDOT's approval will be based upon engineering judgment predicated upon this submission.

Source: DVRPC (2019)

Figure 11: Multi-Use Path

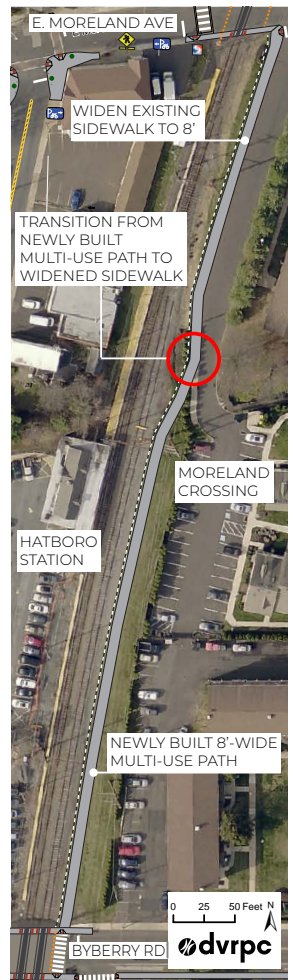


Table 5: Byberry Road and S. Penn Street Intersection Recommendations

IMPROVEMENT STRATEGY	DESCRIPTION	COST*
Construct safe crossings for all users	Install railroad crossing treatment, including: sidewalk, curb, detectable warning surfaces (similar to ADA ramps), signage, roadway restoration, crossing panels between tracks, and striping; this needs to be coordinated with SEPTA	HIGH
	Repaint stop bars adjacent to railroad crossing	LOW
	Add pedestrian crossing signage on Byberry Road on either side of the mid-block crosswalk, such as an In-Street Pedestrian Crossing Sign (MUTCD R1-6a) and a Pedestrian Crossing sign (MUTCD W11-2); both of these are available with a high-visibility fluorescent background	LOW
	Put in place ADA-compliant curb ramps at all crosswalks	HIGH
	Paint five new continental-style crosswalks	LOW
	Build bumpouts on S. Penn Street at the Byberry Road intersection, include flexible delineators and planters	LOW
Complete sidewalk network	Extend sidewalk on Byberry Road east to S. Warminster Road (1,800' long, 5' wide)	HIGH
Create a pedestrian-oriented connection between Byberry Road and E. Moreland Avenue	Extend multi-use path from Byberry Road towards Moreland Avenue; connect to existing sidewalk on east side of railroad tracks (450', 1/12 mile)	HIGH
	Widen existing sidewalk east of railroad tracks from 5' to 8', from new multi-use path to E. Moreland Avenue (300')	LOW
	Build fence between railroad tracks and multi-use path per AASHTO guidelines; the fence must be 10' from the center of the tracks and 2' from the path	LOW
Improve safety by adding a centerline on S. Penn Street	Paint 2' median on S. Penn Street to alert drivers to their position on the road	LOW
Improve wayfinding to the station and downtown	Install directional signage along Byberry Road and S. Penn Street	LOW

* Improvements estimated to cost more than \$50,000 according to PennDOT's Engineering and Construction Management System are considered high cost.

Note: To implement the mid-block crossing on Byberry Road, the Borough of Hatboro will need to write and submit a safety-related justification to PennDOT. PennDOT's approval will be based upon engineering judgment predicated upon this submission.

Source: DVRPC (2019)

Table 6: Cost Estimates for Recommendations

DESCRIPTION	UNIT	QTY	UNIT PRICE	APPROX. COST
Pedestrian crossing signage	Each	2	\$400	\$800
ADA-compliant curb ramps	Each	14	\$7,500	\$105,000
Continental crosswalk	Each	5	\$500	\$2,500
Stop bar	Each	3	\$100	\$300
Bumpouts, including planters and flexible delineators	Each	2	\$250	\$500
Concrete sidewalk extensions (120' long, 5' wide)	SY	67	\$150	\$10,000
Concrete sidewalk to S. Warminster Road (1,800' long, 5' wide)	SY	1,000	\$150	\$150,000
Concrete sidewalk widening for multi-use path (300' long, 3' wide)	SY	100	\$150	\$15,000
Multi-use path from Byberry Road to sidewalk connection (450')	Mile	1/12	\$1,000,000	\$85,000
Median striping and rumble strip	LF	500	\$2	\$1,000
Wayfinding signs to station and downtown	Each	4	\$400	\$1,600
Curbs	LF	120	\$50	\$6,000
Railroad crossing treatment	Coordinate with SEPTA			
Maintenance and Protection of Traffic (MPT), Mobilization, Excavation	Typically about 3-5% of project cost			

Note: A right-of-way (ROW) survey was not completed. Some of the recommendations may require ROW to be acquired outside of the public ROW (state or local) and additional costs could be incurred.

Source: PennDOT Engineering and Construction Management System Item Price History (2019)

Next Steps

FUNDING RESOURCES

The recommendation and cost estimate tables are designed to assist the Borough of Hatboro in applying for various types of grants. Each table is associated with goals and specific project recommendations, as well as total and unit costs. The purpose of this format is so the Borough can apply to grants based on eligibility of specific interventions or a maximum or minimum total estimated cost.

DVRPC's [Municipal Funding Resource](#) is an online database intended to assist local governments, community groups, and non-profit organizations in identifying federal, state, regional, county, and private sources of funding for locally initiated planning and development projects.

Some of the most relevant potential funding sources for pedestrian and bicycle projects include: DVRPC's [Congestion Mitigation and Air Quality Improvement Program](#) (CMAQ), PennDOT's [Multimodal Transportation Fund](#), and PennDOT's [Transportation Alternatives Set-Aside](#) (TA).

A potential funding source for future planning needs is the [Transportation and Community Development Initiative](#) (TCDI) Program. TCDI supports municipalities by providing funding to undertake **planning, analysis, or design initiatives** which enhance the efficiency of the regional transportation system and implement the long-range plan. The next funding round for TCDI will begin in Fiscal Year 2020.

Nonprofit and advocacy groups often seed small walkability projects with microgrants, including [America Walks](#) and [AARP](#). The [Pedestrian and Bicycle Information Center](#) (PBIC) also provides examples of non-government funding sources.

CONCLUSION

The recommendations in this memo were designed for the Borough of Hatboro to fulfill needs stated in the SRTT application and those brought up during the project. These are listed below:

- Gaps in the sidewalk network around the station;
- Incomplete wayfinding between the station and the commercial corridor on York Road;
- Lack of bicycle routes and infrastructure near the station; and
- Pedestrian safety concerns around the station parking lot and at at-grade rail crossings.

If funding is not available for all the recommendations at the same time, the Borough should prioritize each intersection or type of improvement. In addition, the Borough of Hatboro should continue to coordinate with PennDOT and coordinate in-street striping and changes with the repaving program described further in the Existing Conditions section of this memo. SEPTA and Montgomery County should also continue to be involved in any further meetings on access recommendations for the station to ensure there are no other plans in place.

A first step that can be taken by the Borough of Hatboro is to investigate the right-of-way and ownership of each parcel and roadway that is being considered for any changes.

It is recommended that the Borough of Hatboro begin determining the precise location of the right-of-way boundary lines and ascertaining ownership of each parcel and roadway that is being considered for changes. Of particular note are Byberry Road, from the railroad tracks to S. Warminster Road where sidewalk extensions are recommended, and the land immediately east of the railroad tracks from Byberry Road to E. Montgomery Avenue, where the multi-use path and sidewalk extension are recommended. Ultimately, it is important to have this information ready before seeking a grant. With a clear understanding of the right-of-way and ownership in these areas, Hatboro Borough is one step closer to implementing the improvements recommended in this memo.