



Part 3 | Ridership Forecasts

Introduction

The Delaware Valley Regional Planning Commission (DVRPC) developed ridership forecasts for both the Immaculata and Three Tun Station sites using the most recent travel demand model, called TIM2.3.1 (Transportation Improvement Model version 2.3.1). The TIM2.3.1 model includes representations of the highway and public transit systems in DVRPC's nine member counties, plus an extended area of 16 counties in Pennsylvania, New Jersey, Delaware, and Maryland, immediately surrounding the DVRPC region (where a less detailed transportation network is modeled). The transit network represents operational characteristics of the regional transit system including route alignment, stop locations, service schedules, and fare information. See Appendix 3.1 for more information about DVRPC's travel forecasting process and the modeling results. Stakeholders reviewed and provided input regarding the ridership forecasts at Stakeholder Meeting #3 held on May 21, 2019.

Future Year Alternatives

Four initial future year alternatives were modeled for the purposes of this study:

- 2035 No Build (no new train station)
- 2035 with the Immaculata Station and hourly train service
- 2035 with the Immaculata Station and half hourly train service
- 2035 with the Three Tun Station and half hourly train service

These alternatives are meant to represent feasible scenarios based on known existing and assumed future conditions as presented in Part 1 and Part 2.

Each scenario includes all of the transportation projects in DVRPC's Transportation Improvement Program (TIP) and Long Range

Transportation Plan (LRTP) that are scheduled to be complete by the analysis year (2035). There are a number of regionally significant projects that will influence the ridership forecasts on SEPTA’s Paoli/Thorndale line and therefore forecasts for the proposed station in East Whiteland. In particular, parking capacity expansion projects are in the planning or design phases for the nearby Paoli, Exton and Downingtown Amtrak and SEPTA stations. All three projects are assumed to be complete by 2035 in the TIM2.3.1 model. These projects will double the number of parking spaces that are available at these three stations, which may impact the demand for parking at the proposed East Whiteland station.

Existing and Proposed Parking at other Stations

	Existing Parking	Future Parking	Increase
Paoli Station	486	1,086	600
Exton Station	610	1,043	433
Downingtown Station	360	900	540
TOTAL	1,456	3,029	1,573

Key Model Inputs and Assumptions

Proposed Stations and Associated Improvements

Station Concept Plans and Access and Circulation Improvements: For the 2035 build alternatives analyzed, elements of the station concept plans and preferred access and circulation improvements identified in Part 2 were key inputs to the TIM2.3.1 model, as follows:

- **Immaculata Station**—Includes the new College Avenue/Frazer Road access roadway, the Planebrook Loop, and the pedestrian overpass to connect the Planebrook Loop with the platforms.
- **Three Tun Station**—Includes the intersection improvements at Route 352/Route 30 and Route 352/Three Tun Road, as well as sidewalks along Route 352 and Three Tun Road.

Number of Parking Spaces: The concept plans for the Immaculata and Three Tun station sites presented in Part 2 each include 300 parking spaces. The size of the parking lots was based on current conditions at similar and nearby stations and do not necessarily reflect potential demand for parking. Both sites have area available for

additional parking and could feasibly support 100 to 150 additional surface spaces.

The four existing adjacent SEPTA regional rail stations (Paoli, Malvern, Exton, and Whitford) have 100% parking utilization according to data from 2018 provided by SEPTA. The average number of parking spaces currently provided by SEPTA at these four stations is 410. For the purposes of the ridership forecasts, 400 parking spaces were assumed at each of the two station sites. This amount of parking is feasible given the site constraints, and it was used so that ridership forecasts are not skewed or distorted by an over or under supply of parking at each site.

Bus/Private Shuttle Service: For the purpose of the ridership forecasts, existing bus routes and schedules were not revised to directly serve either the Immaculata or Three Tun Station sites. At this point in the planning process, the potential routes and schedules for SEPTA or private shuttle services are unknown. Additionally, SEPTA is not able to commit to bus service plans for the model horizon year of 2035. It is reasonable to assume that ridership forecasts would be modestly higher for both sites with the addition of direct and timed transfers to bus or private shuttle services.

Train Service: The TIM2.3.1 model assumes the following levels of regional rail service for the three future build alternatives. These are consistent with the train service described in Part 2.

- **Immaculata Station**

- Hourly Service: 21 inbound trains per day with service approximately every hour, similar to existing train service to the Exton Station
- Half Hourly Service: 36 inbound trains per day with service approximately every half-hour, similar to the existing train service to the Malvern Station. It was to be the assumed westernmost stop with half-hour service

- **Three Tun Station**

- Half Hourly Service: 36 inbound trains per day with service approximately every half-hour, similar to the existing train service to the Malvern Station. It was to be the assumed westernmost stop with half-hour service

Population and Employment Forecasts

DVRPC has developed and adopted regional population and employment forecasts in five-year increments between 2015 and 2045

for each municipality in the nine county region. These socioeconomic projections are part of the foundation of DVPRC's travel demand model. As described in Part 2, DVPRC's adopted population and employment forecasts for East Whiteland Township were reviewed and revised based on recent and anticipated growth in the township. Additionally, revised population and employment forecasts were developed to account for the potential growth that may occur in the area surrounding a new station to a future year of 2035. Due to the proximity of the two proposed sites, the same forecasts were used for both the Immaculata and Three Tun Station.

In order to more accurately capture potential population and employment within the vicinity of the proposed stations, enrollment forecasts for students and staff at Immaculata University were applied to the travel demand model's zonal data. Immaculata University is expecting strong growth with a 6% annual increase in undergraduate enrollment, and 1%-5% annual growth in other student programs. They also expect 4% annual growth in employment at the University. The University is a major potential origin/destination for trips within the study area. Therefore, the anticipated growth in students and staff has a significant influence on the number of potential riders for a new train station, particularly at the Immaculata site. Additionally, the possibility of a train station near campus was not considered in the development of the enrollment and employment forecasts for the University. With a new train station, particularly on the Immaculata Site, the University would expect additional growth in the number of students, faculty, and staff.

Ridership Forecasting Results

The ridership forecasts are presented in the table below.

2035 Ridership Forecasts from DVRPC's TIM2.3.1 Model

	First Train (Inbound)	Last Train (Inbound)	# of trains (Inbound)	Total Daily Boardings (including Park-n-Ride vehicles)	Park-n-Ride vehicles
Immaculata Hourly Service	05:14	23:25	21	385	90
Immaculata Half Hourly Service	04:21	23:25	36	530	175
Three Tun Half Hourly Service	04:21	23:25	36	360	240

The overall ridership levels and the total daily boardings are comparable between the one hour Immaculata and half hour Three Tun forecasts. However, the half hour Immaculata forecast is much higher than the other two build alternatives.

- The Immaculata Station site offers more convenient access and short walking times to/from Route 30, Immaculata University, and the other nearby institutional and commercial uses. This results in higher projected ridership from non-drivers. It also reflects the anticipated growth in student enrollment at Immaculata University, which could be served by the Immaculata Station.
- The Three Tun Station site has more direct access to the regional highway network via Sproul Road (SR 0352), which makes it more attractive for riders driving to the station. Long walking times to/from Route 30, Immaculata University, and nearby residential neighborhoods results in lower projected ridership from non-drivers.

Forecasted Regional Rail Ridership Growth

Comparing the future build alternatives to the 2035 No Build alternative provides an indication of how many “new” riders would potentially use the regional rail services versus how many riders would shift from another station to use the new station in East Whiteland. For modeling purposes, ridership was evaluated for a study area that

included the Paoli, Malvern, Exton, or Whitford stations on SEPTA's Paoli/Thorndale Regional Rail line.

For the Three Tun Station alternative, the model forecasted virtually no change in the overall number of riders using regional rail within the study area. For the Immaculata Station alternatives, the model forecasted approximately 130 "new" riders to the regional rail system for hourly service and 230 "new" riders for half hourly service. The new riders are likely utilizing regional rail due to the direct connections to Immaculata University's campus and the Route 30 corridor. Additionally, the "new" riders for the Immaculata Station are likely influenced by the forecasted growth in student enrollment and staff at Immaculata University.

Potential Changes to Key Inputs and Results

Travel forecasting models provide an estimation of future travel patterns and transit ridership based on the model inputs. They are highly influenced by the future transportation network and projected future land use, population, and employment. When these projections are met, travel model outputs generally fall within 15 percent of the actual, future values. However, future ridership at a new station in East Whiteland Township could be impacted by several other factors, as follows:

Bus/Shuttle Service to Stations

It is feasible and probable that a new station will be served by bus and shuttle services. Additional direct transit connections would likely increase ridership for either station site.

Railroad Infrastructure and Train Service

Improvements to the rail infrastructure along the Keystone Corridor/SEPTA Paoli/Thorndale Rail Line could impact the frequency of train service and resultant ridership. For example, providing half hourly train service to the Immaculata Station becomes feasible with completion of the proposed Potts Interlocking or a similar improvement that would enable SEPTA trains to change directions and tracks west of Frazer Yard (and west of the proposed Immaculata Station). Additionally, the frequency of rail service is dependent upon the availability of rail cars, availability of crews, and train scheduling.

Parking Expansion Projects at Other Stations

DVRPC's travel demand model for 2035 includes significant increases in parking capacity due to capital projects in the planning and design phases at the Paoli, Exton and Downingtown Stations. However, if one or more of those projects does not move forward as anticipated, it would likely increase the ridership forecasts for either the Immaculata Station or the Three Tun Station.

Growth and Development

East Whiteland Township could update their land use ordinances to allow for more mixed-use and walkable development around the train station site. These land use policy updates could support increased potential ridership and also provide opportunities for the formation of a public-private partnership. For example, market forces could support new transit oriented development at the station site and result in higher ridership.

Future (Long Term) Considerations

In addition to the project specific factors, there are a number of future considerations that may influence ridership forecasts. Unforeseen changes in the national and regional economies and other market forces can have a significant effect on future land use and travel patterns. The travel model assumes that household income, transit fares, parking charges, tolls, and other auto operating costs will all increase at approximately the same rate through 2035. Finally, technological advances, including autonomous vehicles, have the potential to dramatically change the ways people travel and could result in either increased or decreased demand for transit.