



# Potential Passenger Rail Options

## Technical Memorandum

An Element of Connecting Landscapes—the Transportation Plan for Chester County

PREPARED BY THE CHESTER COUNTY PLANNING COMMISSION



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The Chester County Planning Commission is developing a long range transportation plan as was recommended in *LANDSCAPES*, the County's comprehensive policy plan. *Connecting Landscapes* will review all modes of travel and make recommendations for strategies and improvements. As the transportation plan develops, between 20 and 25 technical memorandums will be published and made available for public review. Different modes of travel will be addressed with background information, analyses, discussion of issues, and recommendations. When all technical memorandums are completed a final report will synthesize the recommendations into a plan element.

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## Background

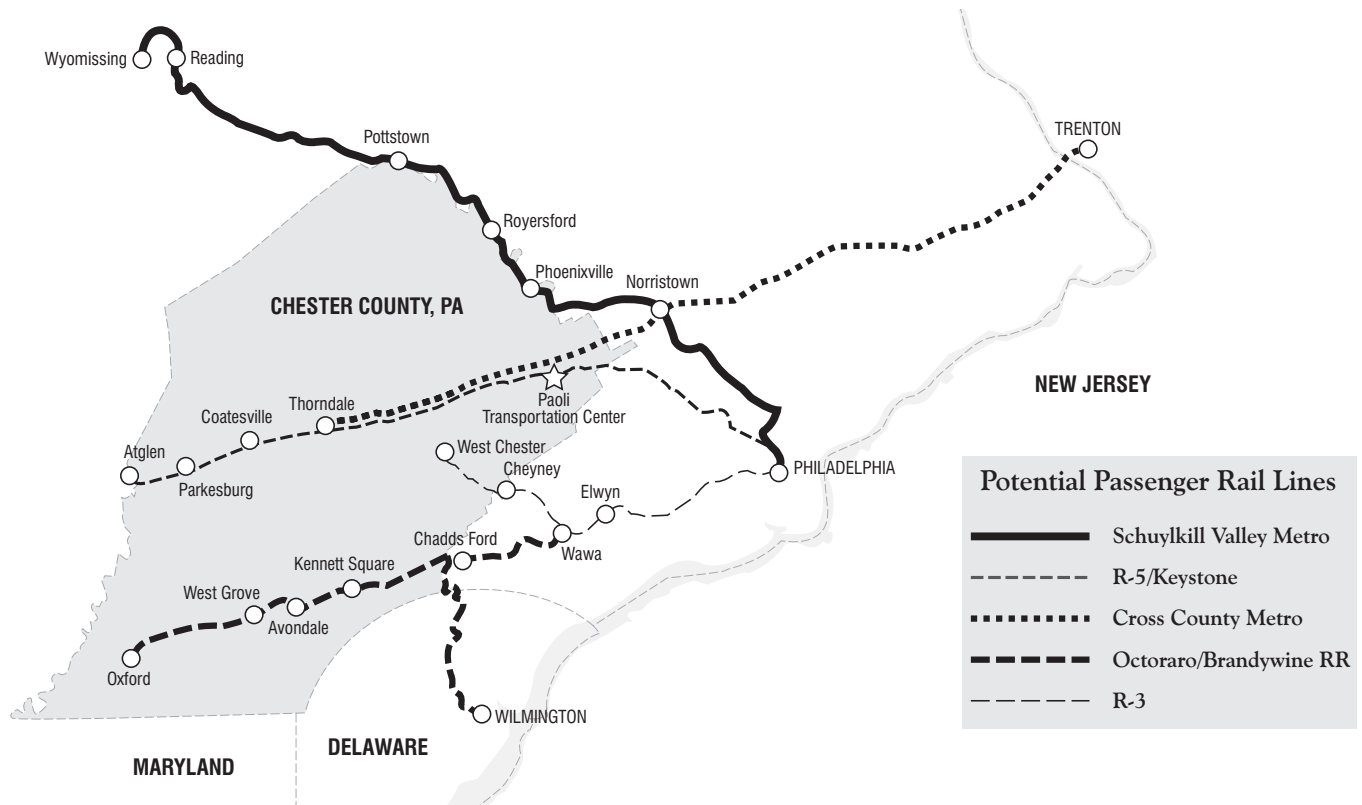
Chester County is currently served by one commuter rail service (SEPTA's R-5 service from Philadelphia to Thorndale) and one longer distance passenger rail service (Amtrak's Keystone service) that operates along the same corridor as the R-5. Planning efforts are underway for five additional rail services or facilities. Three other projects have been the subject of informal regional discussions, but are not yet in an official planning stage. Most, if not all, of the rail projects currently in the planning stages are facing funding challenges, operational challenges, or both. Given these challenges, it is clear that only a limited number of these projects will be funded and implemented in the foreseeable future.

With the number of potential projects under consideration and the challenges facing each of them, the Chester County Planning Commission (CCPC) conducted a comprehensive comparative analysis of the costs and benefits of each service. In April 2004, CCPC adopted a set of priorities for these passenger rail options. These priorities are the focus of this technical memorandum. In addition to prioritizing the current rail planning efforts, this memorandum and its supporting documentation help create a long term vision for the future of passenger rail service in Chester County.

## Project Need and Descriptions

The corridors, depicted in *Figure 1*, include five projects that are specific to Chester County and three that are more regional in nature but would be important to Chester County commuters and employers.

**Figure 1 | Existing and Potential Passenger Rail Services Relating to Chester County**



Source: Chester County Planning Commission, 2004

## **Chester County Projects**

### **1 | Paoli Transportation Center**

The existing Paoli rail station is inadequate to meet the demands it faces today and the increasing demands it will face in the future. The station and associated parking areas are not large enough or configured properly to provide adequate parking or serve the multi-modal function that the station provides. Bus circulation around and through the station area is inadequate to accommodate the increasing number of busses and private shuttles that are coordinated with rail service at the station. Additionally, vehicular, bicycle, and pedestrian circulation in the station area cannot efficiently or conveniently get users to or from the station.

The proposal is for the reconstruction of the Paoli rail station into a multi-modal transportation center and development of the surrounding area into a compact downtown development area oriented around the station. The proposal would include a new train station, new parking facilities, an improved circulation network for busses, automobiles, bicycles, and pedestrians, and a redevelopment plan for the Paoli rail yards and the surrounding area with a mix of commercial and residential uses oriented around the station.

### **2 | Expansion of SEPTA R-5 Passenger Rail Service**

The R-5 service currently runs from center city Philadelphia, through portions of Montgomery and Delaware Counties, and through Chester County to a terminus in Thorndale. Stations west of Paoli and Malvern are served by fewer trains than stations to the east. The R-5 is SEPTA's most successful commuter rail line. It is by far the most important single mass-transit service operating in Chester County. The R-5 runs on Amtrak's Philadelphia to Harrisburg line, which extends to the west through Chester County as far as Atglen Borough and then beyond into Lancaster County. Residents from areas west of Thorndale must currently drive to Thorndale or other stations further east to access the R-5.

The proposal is to extend service on the R-5 beyond the existing last stop in Thorndale to Coatesville, Parkesburg and, possibly, Atglen. This project would involve infrastructure improvements, including a switching facility to allow trains to turn around in either Parkesburg or, more likely, in Atglen. It would require some upgrading of the stations in Coatesville and Parkesburg and a new station in Atglen. Other minor infrastructure improvements might be necessary as well. Because this project does not have official planning status yet, studies to determine the full scope and cost of the project need to be conducted.

### **3 | Existing SEPTA R-5 Service and Station Improvements**

Despite its success, the existing R-5 service has a number of limitations. As noted above, service levels are higher at Malvern, Paoli and points east than to stations from Exton to the west. Additionally, ridership is limited by inadequate parking at most Chester County rail stations from Exton to the east. While there is adequate parking capacity at the western stations, only two stations (Daylesford and Berwyn) to the east of Exton have enough capacity to accommodate parking demand. Finally, a number of stations need improvements to the station areas, to pedestrian facilities in the vicinity of the station, and to the vehicular circulation in the vicinity of the station. A number of station improvements have been completed in recent years and others are currently underway, but additional work is needed.

The proposal is threefold. First, expand the number of trains per day in the western portion of the existing corridor (from Malvern to Thorndale) to meet those service lev-

els currently enjoyed to the east. Second, improve stations and associated vehicle and pedestrian circulation as needed. Third, look for opportunities to increase parking capacity at stations from Exton to the east where ever possible.

#### **4| Extension of SEPTA R-3 Passenger Rail Service**

SEPTA's R-3 service currently runs from center city Philadelphia to Elwyn, Delaware County, just west of Media. Although primarily a Delaware County route, commuters from southern Chester County use the R-3. An extension of the R-3 to Wawa, Delaware County is planned and funded, with the design process soon to begin. This extension would move the end-point of the service closer to Chester County riders, provide direct access from Route 1, and provide needed additional parking for park and ride commuters.

The extension under consideration in this technical memorandum would be a continuation of the line beyond Wawa to an ultimate termination point in West Chester Borough. The R-3 served West Chester until financial and infrastructure limitations caused the route to be scaled back to Elwyn in 1986. This proposal would modernize and reinstate that service. In addition to extending the line to West Chester, the proposed extension would also result in the reopening of stations in Glen Mills and Cheyney in Delaware County, and Westtown in Chester County.

#### **5| Octoraro Passenger Rail Service**

This proposal would create a passenger service on the Octoraro freight railroad right-of-way that would serve the Chadds Ford area and the boroughs of Kennett Square, Avondale, West Grove and Oxford as well as other points along the Route 1 corridor. This service could either connect to Philadelphia or to Wilmington or both. The project would require extensive infrastructure work. It is possible that infrastructure limitations might preclude the service altogether or might determine whether the project could connect to Philadelphia or Wilmington. In addition to the track improvements, new stations would be needed at several locations along the line.

## **Regional Projects**

### **1| Keystone Service Upgrade**

This project consists of improvements to infrastructure and equipment to increase reliability and travel time for Amtrak's Philadelphia to Harrisburg Keystone Service. Key components include improvements to tracks, replacement of wooden railroad ties with concrete ties, electrical improvements, and improved switching facilities. This project primarily affects the inner tracks used by Amtrak and has minimal impact on the outer tracks generally used by SEPTA trains. This project has been committed to and is fully funded.

### **2| Schuylkill Valley Metro**

This new passenger rail project would operate between Philadelphia and Reading along the Schuylkill River corridor. The service would run on tracks currently used by SEPTA's R-6 service from Philadelphia to Norristown and continue up the Schuylkill River corridor primarily on existing Norfolk Southern freight tracks to Phoenixville, Pottstown, and Reading, with a connection serving King of Prussia. The service is proposed to use "metrorail" technology which combines the small-car operating characteristics of light rail with the safety features of and ability to share tracks of heavy rail.

The Schuylkill Valley Metro would serve Phoenixville via a new station in the borough's key redevelopment area on the old Phoenix Steel site. This passenger rail service is a key component of the borough's revitalization strategy.

### **3| Cross County Metro**

This new passenger rail service would be the first in the region to connect various suburban centers on the periphery of the region rather than connecting the suburbs to Philadelphia. This service would run from Thorndale to Exton along the same line used by the R-5, split off near Route 202 to the existing Morrisville freight line, and use this line to connect to King of Prussia, Norristown, and continue through Montgomery and Bucks Counties to Trenton, New Jersey. This service, like the Schuylkill Valley Metro, would use "metrorail" technology. In addition, because this operation would primarily serve suburban areas with limited potential for walk-up riders, an extensive series of shuttle busses is proposed to get riders the "last mile" between the train and employment and/or residential areas.

A comparative analysis of the issues associated with each of the proposals is summarized in the *Appendix* beginning on page 10.



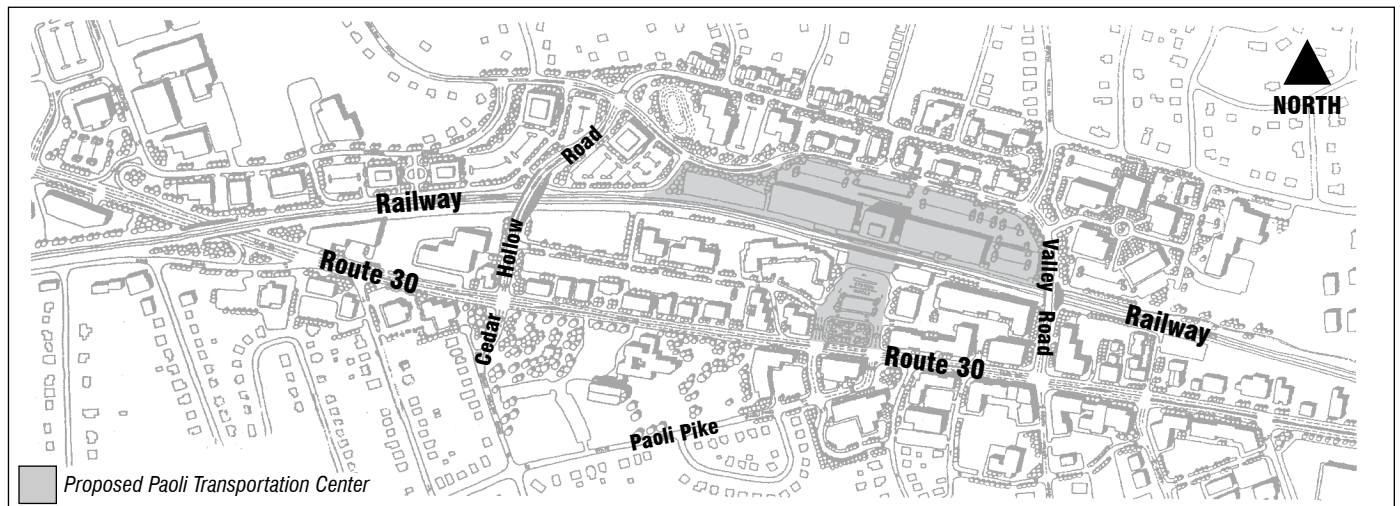
## Recommended Priorities

Based on the tradeoffs summarized in the *Appendix*, the Chester County Planning Commission has prioritized the projects as follows:

### Highest Priority

The Paoli Transportation Center as seen in *Figure 2* is a “win-win” project with significant benefits and no discernable downside. It does not establish new service, but promises to greatly improve existing services and to coordinate re-development of Paoli’s downtown area. It is reasonably priced and funding is partially committed. It is, however, a very complex project involving a number of private and public entities, making implementation difficult.

**Figure 2** | Sketch of the Planning Area of the Paoli Transportation Center Area



Source: Illustration from the Paoli Community Master Plan cover

Improvement to Paoli station is particularly important, for several reasons:

- SEPTA service levels are higher at Paoli and stations to the east than at stations to the west. As such, a significant number of commuters from points west use Paoli station because of the greater number of trains and flexibility in choosing a return trip. As such, demand for parking and station amenities are particularly high at this station.
- Numerous public and private buses stop at this station to link with SEPTA’s rail service, making the bus circulation and loading/unloading features of this project very important.
- The area immediately around the existing station and Amtrak rail yard is a fairly high density but uncoordinated mix of residential, office, retail, and other commercial uses. The Paoli Transportation Center project creates an opportunity, with the sale of Amtrak’s rail yard and redevelopment of key adjacent properties, to create a coordinated, mixed-use, transit oriented development area that would work with the transportation center and as a small downtown area.
- Circulation for motor vehicles, pedestrians, and bicyclists around and to the existing station is very difficult at best. The new Paoli Transportation Center proposal would include a comprehensive set of circulation improvements to help get transit users, residents, and employees of the area in and out of the center and surrounding developments.

This project should continue to be pursued at every opportunity. The county should lend support to this project whenever possible.

### High Priority

The **R-5 Expansion, improvements to existing R-5 service**, and the **Schuylkill Valley Metro** (at least as far as Phoenixville) are rated as high priority projects.

The **R-5 Expansion and improvements to the existing R-5 service** appear to have significant benefits without any major downside. Because these projects have no official status yet, however, there is still much that has to be learned about project options, costs, and potential problems. What is known indicates that each project could add service to key urban and suburban areas at a relatively low cost. The existing R-5 service is one of the most successful, if not the most successful, transit service in the region and is the spine and the jewel among Chester County transit services. Building and expanding on that success, both by extending the service farther to the west and improving the R-5 in the existing service area would provide the following key benefits:



*Both the historic Stafford train station (left) and the new Thorndale train station (right) serve rail customers effectively.*

- Adding parking capacity at those stations from Exton to the east that currently fill their existing capacity would increase potential ridership along the R-5 service area.
- Increasing service levels by adding more trains to stations west of Paoli and Malvern would make the R-5 a more attractive option to residents of western Chester County and would take advantage of existing parking capacity at stations west of Exton, thereby reducing parking demand at Malvern and Paoli stations.
- Extending the R-5 to the west would serve areas with limited or no commuter rail options currently and could increase the number of commuters using rail to Exton, Great Valley, Radnor, and other suburban locations, in addition to Philadelphia bound commuters.
- Extending the R-5 service to Coatesville, Parkesburg, and Atglen would help revitalize these western Chester County urban centers and would be highly consistent with **LANDSCAPES**.

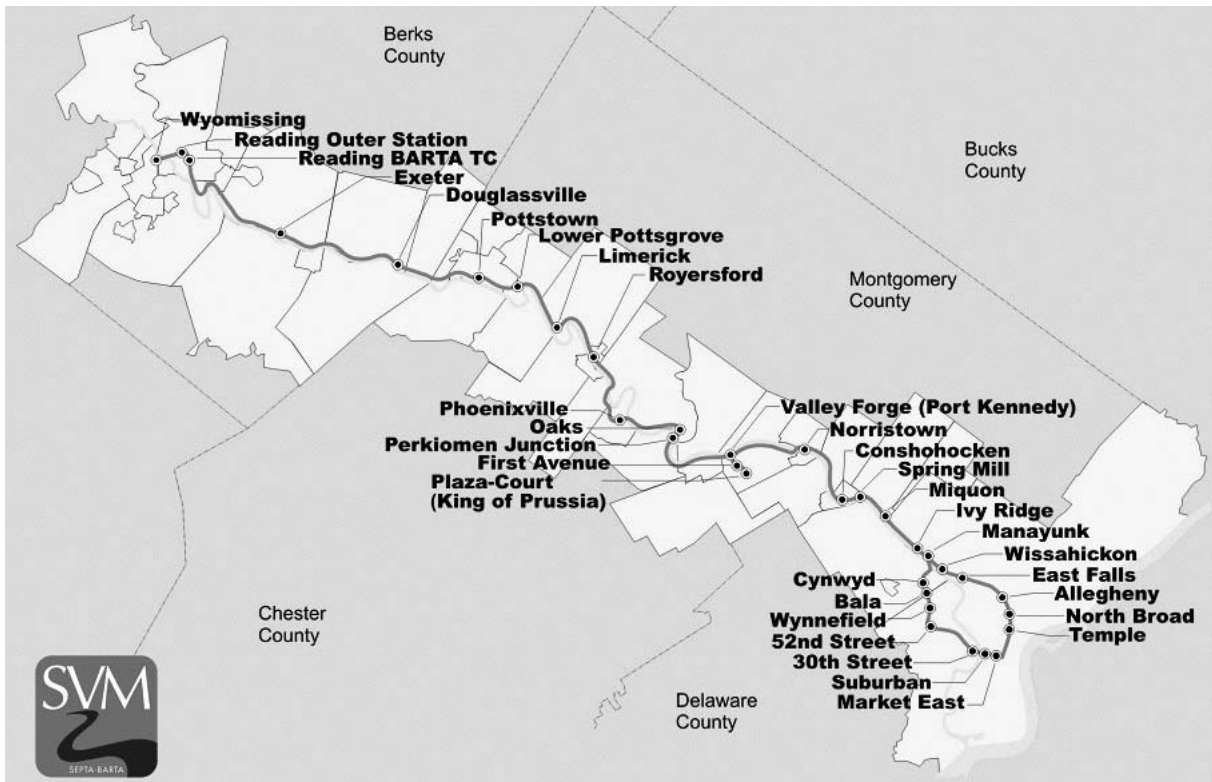
For these reasons and others, improving the R-5, both within and beyond its current service area, should be among our highest priorities. This should be a particularly high priority if the costs are as low (relative to some of the other services under consideration) as appears likely.

The **Schuylkill Valley Metro** illustrated in *Figure 3*, at least extended as far as Phoenixville, would have two key benefits to the Schuylkill River corridor:

- The project would bring passenger rail service to an area that does not currently have such service and has serious traffic congestion problems along the Route 422 corridor. While rail service would not solve all of the traffic problems in this corridor, it would provide a much needed transportation alternative and would mitigate traffic growth along Route 422 and connecting roadways.
- The project would create stimulus for urban revitalization efforts in older boroughs along the corridor. Within Chester County, the Borough of Phoenixville has initiated a major revitalization effort that is largely dependent on access to the Schuylkill Valley Metro at a new station built on the old Phoenix Steel site along French Creek. Outside of Chester County, Royersford (with some spillover benefits to Spring City), Pottstown, and Reading would also see significant revitalization benefits from the project.

Based on these two key benefits, the Schuylkill Valley Metro should continue to be a high priority for Chester County. The obvious downside of the project is its very high cost and contributing to development pressure in some rural areas. As such, Chester County must be open to working with other regional entities on less expensive technological approaches and a phasing plan that allows the cost to be spread over a longer period.

**Figure 3 | Schuylkill Valley Metro Corridor**



Source: SEPTA/BARTA

### **Moderate Priority**

The **Cross County Metro** and **Keystone Service Upgrade** are both projects that should be supported, but not at as high a level of priority as those projects mentioned on the previous pages.

The **Cross County Metro** would be the first regional rail transit line that would link suburban centers on the periphery of the Philadelphia region, rather than being another radial service oriented toward center city Philadelphia. The western portion of this service is potentially important to Chester County by linking key employment and residential areas to the King of Prussia area, and to the entire Schuylkill Valley Metro corridor.

The project has a number of tradeoffs, however, including:

- The portion east of Norristown is of limited importance to Chester County interests, and is evidently of limited importance to other regional entities as well, based on the lack of support this portion of the project has received.
- The dispersed pattern of development at almost all of the suburban stops along this route would make connecting riders from the rail stations to their jobs and homes a challenge that may limit the effectiveness of the service. To do so would require an extensive network of shuttle busses which would add to the cost of the project.
- The suburban nature of much of the corridor has resulted in a level of opposition to the project. For example, within Chester County, some Tredyffrin Township residents oppose any additional use of the rail corridor. The township government has been lukewarm in its support for the project and has been unable to reach agreement with SEPTA on a suitable station location within the township.
- This project, like the Schuylkill Valley Metro, would be very expensive to implement, with a projected cost of approximately \$1 billion for the entire project. The key portion for Chester County, between Thorndale and Norristown would account for about 60 percent of this cost.

Because of these tradeoffs, Chester County should continue to pursue the western portion of this project, but at a moderate level of priority, and should not prioritize service for the entire corridor.

The upgrade to the **Keystone Service** should be supported. Because it has limited implications for service to Chester County users, however, it should be a moderate priority. The bulk of project activities would improve speed and reliability on the tracks that Amtrak uses for the Keystone Service, but the outer tracks primarily used by SEPTA for the R-5 would not be improved under this project. Chester County SEPTA riders would see little increase in reliability on the R-5 service until further improvements are made to the outer tracks primarily used by SEPTA. SEPTA has recently programmed money for these necessary improvements which will improve speed and reliability for SEPTA's R-5 service.



*Upgrading the Keystone Service would improve speed and reliability on the tracks that Amtrak uses.*

### Low Priority

The **R-3 extension to West Chester** is a project that could provide benefits, like bringing direct rail service to West Chester Borough, and portions of West Goshen, Westtown, and Thornbury Townships. Benefits of this service would be relatively minor, however, for the following reasons:

- Anticipated new stations along an extended R-3 line would only be marginally closer for Chester County commuters than the new station that will be constructed at Wawa. As such, there would be little if any travel time improvement for most Chester County users of the line.
- An R-3 extension would provide a walk-up station for many West Chester Borough commuters, but travel times to center city Philadelphia would likely be as long or longer than using the existing R-5 service.
- If the service did prove to be more successful than anticipated and improve travel time to center city for West Chester area commuters, it might actually be taking trips away from the R-5, which is a more important service overall for Chester County residents.
- Finally, the planned extension of the R-3 from Elwyn to Wawa only covers three miles and is projected to cost \$51 million. To further extend the line to West Chester would require electrification of the line and major improvements to the track. While specific cost estimates have not been developed, the cost of such an extension would be very high for a limited amount of benefit.

For these reasons, Chester County should continue to support the expansion to Wawa and should pursue studies to more specifically determine the costs and potential benefits of an extension to West Chester. The extension to West Chester should not be a high priority, however, and should not be undertaken until the more active projects discussed above are resolved.

### Long Term Priority

The **Octoraro Passenger Rail** service could eventually be an important commuter link from southern Chester County to either Wilmington, Philadelphia, or both. Although there has been some interest in such a service on the part of municipal leaders in the southern portion of the county, neither the need for or feasibility of such a project has been established to date. To the extent that this service would be needed, it is likely years away. Additionally, a feasibility study would have to be done to determine the physical potential to run a passenger train on several portions of the existing rail right-of-way in the corridor. Chester County should encourage a dialog with municipal and regional leaders to determine the level of demand for such a service and pursue a feasibility study if the demand warrants. This should not be undertaken until some of the more pressing issues discussed above are resolved.



*Freight Rail passes through Kennett Square on the Octoraro Branch.*

# Appendix | Comparison of Various Passenger Rail Options

		Chester County Specific Projects					Regional Projects			
	Paoli Transportation Center	R-5 Expansion	Existing R-5 Service/Station Improvements	R-3 Extension to West Chester	Octoraro Passenger Service	Schuylkill Valley Metro (SVM)	Cross County Metro	Keystone Service Upgrade		
Description	Construction of a new, multi-modal transportation center with private commercial development component.	Extend service to Coatesville, Parkesburg and Atglen.	Increase service frequency west of Malvern, expand parking where needed, improve track infrastructure, improve stations where needed.	Extend R-3 rail service to Wawa and ultimately to West Chester.	Use existing Octorara freight line as basis for passenger service along Route 1 corridor, probably terminating in Oxford Borough.	Commuter rail service providing access to Schuylkill River corridor from Reading to Philadelphia.	Commuter rail service from Thorndale to Trenton, NJ, via King of Prussia with stations at various suburban centers.	Improved infrastructure between Philadelphia and Harrisburg.		
Primary Purpose	To better serve the significant number of trains and busses that come together at Paoli Station, to provide more parking for rail passengers, and to develop a transit oriented development center.	To serve areas currently not being served by SEPTA.	To increase service levels to areas already served, to expand ridership by increasing parking supply, to improve speed/reliability with infrastructure upgrades, and to ensure a safe and attractive environment at all stations to help retain and attract riders.	Extend commuter rail service beyond Elwyn to better serve residents of southern Chester County and possibly to West Chester to directly serve county seat. Would also provide direct service to Cheyney and West Chester Universities.	To provide passenger rail service to the boroughs and rapidly developing areas along the Route 1 corridor, connecting to either Philadelphia and/or Wilmington.	To provide commuter rail access to areas not currently served and to help with revitalization efforts in older boroughs in corridor.	To provide a rail connection between various suburban employment and residential centers.	To improve reliability and travel times for Keystone Service.		
Area Served	Directly serves the Paoli area, but by facilitating bus transfers and providing additional parking at key rail station, serves much of Chester County.	Extends successful service to western Chester County.	Entire R-5 line from Thorndale to Strafford.	Connects Wawa, southern Chester County, and possibly West Chester more directly to Philadelphia via Elwyn and Media.	Would connect boroughs and rapidly growing suburban areas on Route 1 corridor with Philadelphia and possibly Wilmington.	Creates new service to rapidly growing Schuylkill River corridor.	Key employment and residential portions of Chester County, connecting with King of Prussia and other centers to east and NW (through connection with SVM).	Harrisburg to Philadelphia, with extension to New York City.		
Planning Status	<ul style="list-style-type: none"> <li>Chester County Commissioners: Top priority transportation project in 2003.</li> <li>DVRPC's 2025 Horizons plan: "plan project." Endorsed in Willistown and Tredyffrin local comprehensive plans.</li> </ul>	Included in Coatesville, Parkesburg, and Atglen comprehensive plans and/or revitalization plans.	There is no status for such a project as a whole, although individual improvements are already planned and programmed.	<ul style="list-style-type: none"> <li>DVRPC's 2025 Horizons Plan: Elwyn to Wawa plan project; Wawa to West Chester study project.</li> </ul>	Conceptual—no discussion in regional or local plans.	<ul style="list-style-type: none"> <li>Chester County Commissioners: high priority transportation project in 2003.</li> <li>DVRPC's 2025 Horizons plan: key component in Phoenixville's revitalization strategy.</li> </ul>	<ul style="list-style-type: none"> <li>Chester County Commissioners: high priority transportation project in 2003.</li> <li>DVRPC's 2025 Horizons Plan: plan project.</li> </ul>	<ul style="list-style-type: none"> <li>DVRPC's 2025 Horizons plan: plan project.</li> </ul>		

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	Paoli Transportation Center	R-5 Expansion	Existing R-5 Service/ Station Improvements	R-3 Extension to West Chester	Octoraro Passenger Service	Schuylkill Valley Metro (SVM)	Cross County Metro	Keystone Service Upgrade		
Studies	Norman Day Associates study prepared for station committee established by Tredyffrin and Willistown Townships.	None	None	Volmer Study prepared for SEPTA.	None specifically, however Volmer Study of R-3 extension includes section to Painters Crossroads, which applies to a portion of this line.	Draft environmental impact statement.	Draft environmental impact statement (not completed).	Amtrak State of Good Repair analysis.		
Program Status	Included in SEPTA Capital Program and TIP.	Not programmed—concept stage.	There is no programming for such a project as a whole, although individual improvements are already planned and programmed.	Elwyn to Wawa included in SEPTA Capital Program and TIP for approximately \$50 million (beyond four years). Wawa to West Chester not programmed.	Not programmed—conceptual stage.	Included in SEPTA Capital Program. Included in TIP for \$5 million in '03 and \$10 million in '04.	Included in SEPTA Capital Program. Included in TIP for approximately \$2.5 million in '03.	Included in TIP, for \$9 million per year through 2006. Amtrak commitment not certain.		
Community Issues	Issues have been raised during the conceptual design and zoning for the project regarding scale of buildings and some associated road improvements.	Strong support and requests from Coatesville.	None known regarding station improvements and increased service levels. Increased parking may raise community issues, both pro and con.	West Chester representatives would like to see service re-established.	Community leaders in area have expressed interest in such service or at least preserving the right-of-way.	Key to Phoenixville revitalization. Most controversy is over cost/affordability, not individual stations or need for service.	Tredyffrin has issues with station location and questions entire service. Limited support for line east of Norristown.	Communities served by Amtrak support Amtrak services and do not oppose Keystone service upgrade.		
Traffic Impacts	Possible short-term confusion as roads near station are diverted/acced, but should be a long-term positive. Improvements to regional traffic as both area buses and the R-5 will be more accessible and more conveniently connected for transfers. Some diversions from Rt. 202 and I-76.	Diversions from Rt. 30 and possibly Rt. 202 and the Schuylkill Expressway. Minor impacts around stations.	Continued and increased diversions from Route 30 and Schuylkill Expressway. Additional parking would increase traffic around stations.	May be some diversion from Rt. 202, Schuylkill Expressway, Route 1, Route 3, and I-95 into Philadelphia.	Diversion primarily from Route 1, possibly some from Rt. 202 south.	Diversions from Routes 23, 422 and 724 as well as Schuylkill Expressway. Local traffic impacts around stations.	Diversions from Rt. 202 and PA Turnpike. Local traffic impacts around stations.	Diversions from PA Turnpike and US 30/283 corridor.		

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		R-5 Expansion	Existing R-5 Service/ Station Improvements	R-3 Extension to West Chester	Octoraro Passenger Service	Schuylkill Valley Metro (sVM)	Cross County Metro	Keystone Service Upgrade	
Environmental Issues	<p><b>Paoli Transportation Center</b> EPA Super Fund site environmental cleanup underway from old rail yard contamination.</p>	<p>None known, probably site specific at stations or switching facility.</p>	<p>None known, probably some site specific impacts associated with parking expansion.</p>	<p>Minimal, since existing rail right-of-way. More significant from Wawa to West Chester if double tracking is necessary.</p>	<p>Minimal, since existing right-of-way, but some issues likely at stations. More significant if double tracking is required.</p>	<p>No major negative environmental issues identified in environmental impact study.</p>	<p>Minimal, since existing rail right-of-way.</p>	<p>Few if any, since all work on existing track.</p>	
Induced Development	<p>Re-development of Paoli core is intended consequence of project. This could spill over into some new development in immediate area, although most of area is at or close to build-out.</p>	<p>In addition to revitalization of urban areas, could cause some unwanted development in rural portions of western Chester County.</p>	<p>Limited or no impact. Corridor already developed—additional rail service and/or parking may draw commuters from greater distance, but not likely to cause more development.</p>	<p>Could accelerate residential development in Westtown/Thornbury.</p>	<p>Some possible. Continuation of suburban areas, but could spill into rural areas as well.</p>	<p>In addition to revitalization of depressed older boroughs, could contribute to pressure in rural portions of corridor as well.</p>	<p>Some potential, but most of proposed service area passes through areas already pretty heavily developed. Would not be a negative impact.</p>	<p>Since there are very few stations served and fewer of these are in areas with significant remaining development potential, little induced development is likely.</p>	
Revitalization	<p>The project is, by definition, a revitalization of the core of Paoli.</p>	<p>Key to efforts in Coatesville and has been discussed in Parkesburg and Atglen plans.</p>	<p>May help revitalization efforts in Downingtown.</p>	<p>May contribute minimally to continued gentrification of West Chester.</p>	<p>Possible benefit to boroughs on corridor, since rail line passes directly through.</p>	<p>Vitaly important to older river communities, particularly Spring City and Phoenixville.</p>	<p>Minimal—serves mostly suburban areas. Some possible benefit in Downingtown.</p>	<p>Minimal—possibly small contributor to efforts in Coatesville and Parkesburg.</p>	
Infrastructure Implications	<p>Station will be designed such that it will not interfere with future capacity improvements on the rail line. Will require one new bridge.</p>	<p>Mostly in place. Would need new rail cars, a switching facility (interlocking), one new station, and improvements to two stations. Would add to problems at existing rail capacity choke points.</p>	<p>Increasing service levels may increase conflicts with Amtrak and freight services, putting additional strain on infrastructure at specific locations from Philadelphia to Thorndale. Not expected to create significant problems. SEPTA and Amtrak efforts to upgrade infrastructure should preclude conflicts.</p>	<p>Requires major track improvement and electrification. Would require new or improved stations.</p>	<p>Portions of track would need to be rebuilt—portion between Chadds Ford and Lenni may not be restorable. Chadds Ford to Wilmington track may be unsuitable for passenger rail. Service may be able to run on single track. All new stations would be needed.</p>	<p>Major—New service would need almost all new stations. Track mostly in place, but sharing of Norfolk-Southern Reading line with freight creates problems and solution is expensive.</p>	<p>Would need significant additional track, many new stations. Would use existing right-of-way wherever possible.</p>	<p>Significant for Amtrak services. No improvements planned for outer tracks, which SEPTA uses, so limited or no impacts for SEPTA or most Chester County rail commuters.</p>	



# Appendix | Comparison of Various Passenger Rail Options

		Chester County Specific Projects					Regional Projects		
	Paoli Transportation Center	R-5 Expansion	Existing R-5 Service/Station Improvements	R-3 Extension to West Chester	Octoraro Passenger Service	Schuylkill Valley Metro (SVM)	Cross County Metro	Keystone Service Upgrade	
Conflicts with other Services	No conflicts anticipated—merely an improvement to existing services.	May overlap with Amtrak service at Coatesville and Parkersburg stations, although the two services would mostly serve different markets. Combining westward expansion with increased service levels may create conflicts.	No conflict associated with parking expansion or station improvement. Some potential conflict possible with increased service levels—may not be possible to both increase service levels and extend R-5 to west.	None for Elwyn to Wawa. Extension to West Chester would compete somewhat with R-5. West Chester (WC) residents might be able to reach center city more quickly via R-5, even having to drive to R-5 station.	Possibly some conflict with minimal freight service operating on western portion of corridor currently co-exist.	Conflict with freight on Reading line, may result in diversion of freight to Morrisville-Enola line.	Possible conflict between Cross County Metro and future Morrisville freight option. Possibly some overlap with R-5.	No conflicts are anticipated. Indirectly reduced conflicts with SEPTA service, since there would be fewer Amtrak main-tenance issues that would force Amtrak trains on to outer tracks used by SEPTA.	
Service Implications	None anticipated.	Extension of highly successful service. Once infrastructure is in place and additional trains are added, extension should not impact service at existing R-5 stations.	Parking expansion could increase ridership on existing service, possibly requiring more cars. Increased service creates opportunities for improved intra-suburban and reverse commute trips.	R-3 from Elwyn to Philadelphia is already a fairly long trip (approximately 40 minutes on non-express trains, 30+ when express)—adding section to WC would lengthen considerably.	All new service. May or may not be able to serve Philadelphia, depending on track condition. Link to Wilmington may be more appropriate given the orientation of this corridor to Delaware businesses.	All new service and vehicles.	Minimal walk-up stations. Extensive parking and bus shuttle system needed. All new vehicles needed.	Would improve travel time between Harrisburg and Philadelphia, but would not add to amount of service.	
Landscapes Consistency	The proposed revitalization and transportation center in the Paoli urban center is highly consistent.	Would bring rail service to two or three urban centers—highly consistent.	Would further encourage rail usage on one of Chester County's most developed corridors—highly consistent.	Consistent since areas served are designated urban and suburban. Track passes through natural landscape, so care must be taken with infrastructure and station siting.	Would be consistent except to extent any development induced in rural portions of the corridor.	By encouraging development near the corridor and helping Phoenixville revitalization, very consistent. Any resulting sprawl in rural areas would not be consistent.	Serves mostly designated suburban areas and suburban centers—consistent.	Given the limited impact on Chester County commuters, the proposal is positive, but limited in terms of <b>LANDSCAPES</b> consistency.	
Miscellaneous	The status of the environmental cleanup and potential track configurations are potential issues but do not appear serious enough to significantly affect the project.	Heavily dependent on Amtrak for infrastructure maintenance—risky given Amtrak's financial status.	Increased service level would need to be balanced and carefully coordinated with any westward expansion of R-5.	May not contribute much beyond symbolic service to county seat. Probably not as cost-effective as R-5 enhancement. Unknown whether double tracking would be necessary.	Very long term option—demand is likely many years away. Most of the area is really oriented more towards Wilmington than Philadelphia.	Large price tag, both capital and ongoing costs for county, may be limited benefit to Chester County beyond Phoenixville.	Reliant on Amtrak west of Frazer. Western spur could be combined with phased SVM.	Improving this line may create additional option for Harrisburg bound freight.	

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Costs	\$34 million between rail portion and associated highway projects.	Unknown, but relatively inexpensive because infrastructure mostly in place.	Costs of individual projects known, but costs of service increase not known. Likely a cost effective way to increase ridership.	Eliwyn to Wawa approximately \$50 million. Wawa to West Chester not known.	Unknown	\$1.8 billion for entire project, less for initial phases, once determined. Potentially very high operating costs.	\$1 billion for entire project, less for western spur. Potentially very high operating costs.	Total could be up to \$700 million over long-term, with \$146 million in initial phase. See discussion of TIP status.	
Next Steps	<ol style="list-style-type: none"> <li>1. Environmental cleanup.</li> <li>2. Station area zoning.</li> <li>3. Amtrak participation.</li> <li>4. Preliminary engineering.</li> </ol>	<ol style="list-style-type: none"> <li>1. Municipal support.</li> <li>2. Feasibility study.</li> <li>3. Secure funding.</li> <li>4. Preliminary engineering.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify infrastructure and station access needs.</li> <li>2. Define service options.</li> <li>3. Determine municipal support.</li> <li>4. Feasibility study on increased frequency of service.</li> <li>5. Obtain funding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Wawa station engineering and construction.</li> <li>2. Monitor Wawa impact on Chester County.</li> <li>3. Feasibility study for West Chester extension.</li> </ol>	<ol style="list-style-type: none"> <li>1. Begin regional dialog.</li> <li>2. Maintain freight service.</li> <li>3. Preserve right-of-way to keep option available.</li> <li>4. Interim land use strategy (higher density uses near stations).</li> </ol>	<ol style="list-style-type: none"> <li>1. Evaluate phasing plan.</li> <li>2. Preliminary engineering.</li> <li>3. Secure funding for final engineering and construction.</li> </ol>	<ol style="list-style-type: none"> <li>1. Evaluate phasing plans.</li> <li>2. Complete environmental review.</li> <li>3. Preliminary engineering.</li> <li>4. Secure funding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Secure Amtrak funding.</li> <li>2. Support increased TIP programming.</li> <li>3. Implement improvements.</li> </ol>	
Preliminary Recommendation	Highest priority—No downside except difficulty of implementation.	High priority—extension of very effective service could serve even more people.	Highest priority—increased service levels and parking supply could bring additional ridership cost-effectively. Immediate and ongoing time-frame.	High priority to Wawa, low priority to West Chester—may be useful eventually, but would serve relatively few new users and may have downside for more critical R-5 service.	Long term priority—Many positives but a long way off. Many technical concerns. Important to pre-serve ROW.	High priority to Phoenixville—depending on costs, phasing, and high density development in Borough. Lower priority further west.	Moderate priority—section west of Norristown only—low priority to east. Time frame fairly long term.	Moderate priority—infrastructure improvements needed, but of limited benefit to Chester County residents.	

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