Residential Development
West Hanover and South Hanover are the fastest growing municipalities in Dauphin County. The 2010 census confirms previous estimates and shows 28% growth in South Hanover and 43% growth in West Hanover over the last decade. In total population, however, both municipalities remain out of Dauphin County’s top five municipalities. West Hanover Township has a 2010 census population of 9,000, and South Hanover a population of 6,000. When these new population figures are calculated with the total land area of these two municipalities, West Hanover Township shows a population density of 400 people/square mile (0.6 people/acre). South Hanover Township shows a population density of 570 people/square mile (0.9 people/acre). These overall densities are far below any recommended densities for curbside bus transit. The most generous threshold for curbside transit is around 7,000 people/square mile (11 people/acre) and a more common threshold is 10,000 people per acre (15 people/acre).

The lack of population density makes it difficult to plan bus service for the suburban and exurban development like that found in the Hanovers. This is not a local problem, but one with which every metropolitan area in the country is struggling. There has been much written on what is needed for a successful suburban transit route and there are many examples to explore, but the best case study is most likely local. Lower Paxton Township currently supports three successful bus routes and it is worth examining the characteristics of those routes to predict what may be successful in West Hanover and South Hanover Townships.

Existing Suburban Routes

Route 14: Union Deposit/Four Seasons
Route 14 has two morning runs into Harrisburg and one morning run out of Harrisburg. The morning run out serves employment off of Briarside Dr including the Sysco Central PA distribution center. There are two afternoon runs out of Harrisburg, the earlier of which can be used by riders who wish to return to the city the same day. There are no off peak runs. Route 14 carries about 85 riders a day, which is about 17 passengers per revenue hour. Route 14 serves one park and ride lot, at the Point Shopping Center, and provides service for two Lower Paxton neighborhoods: Four Seasons and Twin Lakes. The Four Seasons development has a population of 825 people over 36 acres (23 people/acre). The Twin Lakes development has about 900 people on 23 acres (40 people/acre). The route enters and exits the city on Market St through the Alison Hill neighborhood where on about one mile of route length there are well over 5,000 residents within one quarter mile of the route.

Route 16: Union Deposit/Pennswood
Route 16 has two runs into Harrisburg and two runs out during the morning peak. In the afternoon there is one run coming in and two runs going out. There are no off peak runs. The route doesn’t serve much in the way of suburban retail/services or employment. There is a highway stop at the Osteopathic Hospital that may attract riders from Harrisburg city. The main purpose of the route is to carry commuters into Harrisburg. The route carries about 75 passengers a day and 17 passengers per revenue hour. Three large apartment complexes are served: Pennswood, Lakewood, and Eagle Crest. The route also goes through residential neighborhoods in Progress (along Schoolhouse Ln), Penbrook (along Canby Ln), and along State St into the city. Pennswood holds about 700 people on 36 acres (20 people/acre). Lakewood holds about 600 people on 24 acres (25 people/acre). Eagle Crest has about 680 people on 12.5 acres (54 people/acre). On the route’s quarter mile length through Progress there are about 380 people within a quarter mile of the route. The length of the route through Penbrook, about three quarters of a mile long,
gives access to about 2,700 people, and a one mile length of the route along State St in Harrisburg gives access to about 5,400 people.

**Route 12: Colonial Park/Gateway/Linglestown**

Route 12 is the most diverse route of the three. The route serves two branches in Lower Paxton Township, one branch is commuter and retail service along US 22 to Linglestown Square, and one branch is a straight commuter route along Locust lane to Springford Apartments. There are no separate statistics for ridership on the two branches available. Route 12 carries about 1,100 passengers a day and 24 passengers per revenue hour. The US 22 branch has eight runs into Harrisburg during the morning peak, including one partial express route. It serves park and ride lots at Amelia’s Grocery and at the Colonial Park Mall. There are seven afternoon peak routes going out of Harrisburg. Besides the commuter routes in and out of center city, there are also three morning peak routes from Harrisburg to Gateway Corp, a large employer along US 22 in Lower Paxton. This branch also features frequent service from downtown to the Colonial Park Mall during off-peak hours, and serves K-Mart, Colonial Commons, and Paxton Towne Center with shops. This makes it the only one of the three Lower Paxton routes that serves retail establishments.

The Locust Lane branch serves the Springford Apartment complex, which has about 1,000 people on 53 acres (19 people per acre). The Linglestown Square serves the Linglestown neighborhood which has about 3,200 people on 714 acres (4.5 people per acre). The population density of Linglestown is not enough to support the route on its own, which is why the park and ride at Amelia’s Grocery is necessary. The route goes through more dense neighborhoods as it gets closer to the city. On a one and half mile stretch of Walnut St in Susquehanna Township there are about 5,300 people within a quarter mile. The route then goes through Penbrook and into Harrisburg on State St, providing service to the same number of people as Route 16 above.

**Common attributes of the three routes**

The three routes have several things in common. Each focuses service on downtown Harrisburg commuters, which not only has very high employment density but also parking scarcity that provides a very strong deterrent to driving. Monthly parking costs are currently about $60 a month for a remote lot that requires either a long walking trip or a shuttle trip, and $140 a month to park nearer to employment. Each route follows a regional corridor (US 22, Locust Ln, or Union Deposit Rd) and diverts into residential neighborhoods for curbside service. Two of the three routes serve park and ride lots. The only route of the three that runs off peak provides reverse trips from Harrisburg to suburban retail centers and employment on US 22. All three of the routes travel through very dense urban neighborhoods to get to downtown Harrisburg, where additional riders are picked up. Following the model of these successful routes, we would look for the same type of characteristics in planning suburban service to West Hanover and South Hanover Townships.

**Potential Park and Ride/Express Routes**

*Reserve at Hershey Meadows development, through Hershey and connecting to downtown Harrisburg.*

The Reserve at Hershey Meadows is a large, mixed density residential development centered on a commercial development anchored on a Giant grocery store. It provides a good opportunity to establish a park and ride lot to serve that development and possibly riders to the north. Curbside service in the denser parts of the development may be possible. The route should serve commuters to Hershey destinations along US 422 and the Penn State Hershey Medical Center to build that ridership, but the priority should
be service to downtown Harrisburg similar to service provided by CAT Route 322. This priority can be revisited if sufficient ridership to Hershey employment is established. Simply extending the current Route 322 up PA 39 will most likely result in long trips unable to compete with personal automobiles. Therefore it is recommended that a new route be established, and the park and rides currently served by Route 322 be split up between that route and the new route to minimize travel time on both routes.

**US 22/PA 39 intersection to Harrisburg Express**
The lack of a large retail/grocery center in West Hanover Township currently limits the potential for establishing a park and ride lot. The residential growth in the township over the past decade and the existence of several potential lots could lead to the establishment of a large commercial development in the township in the near future. If such a development is proposed, it would be a good opportunity to propose use of part of the parking as a park and ride for CAT riders. At that time, if the existing use of the short term park and ride lot established on US 22 warrants expansion, it is recommended that the township and CAT partner with the developer to find a mutually beneficial way to serve the development with transit.

**East Hanover to West Hanover to Harrisburg Express**
The long distance express routes offered by CAT have recently been very successful. This experience suggests that an express route from this part of eastern Dauphin County can build sufficient ridership to be feasible. Currently the largest barrier to this service is the lack of a prime location for a park and ride lot. CAT park and ride lots are located for the most part in large retail establishments, like a mall or the Outlets, or in grocery store parking lots. There is no similar commercial property in West Hanover Township or East Hanover Township. When a large, centralized, accessible lot is established in the mid-term and ridership increases, it could provide the anchor to express service with stops at smaller park and ride lots or possible curbside service at dense residential developments. The township and county should keep this long term goal in mind when reviewing future land development plans in either township.

**Potential West Hanover/Hershey/Pinnacle Health Routes**

**Hanover/Hershey Route**
A direct trip from the intersection of Jonestown Road and Manor Drive in West Hanover Township to the Hershey Medical Center would travel south on Manor Drive, turn right onto Hershey Road (PA 39), right on Hershey Park Drive (PA 39), left onto US 322, then right onto University Drive onto the campus. This trip is about 10 miles, and without traffic or stops takes about 20 minutes. A bus taking this same route without any other stops besides curbside stops on Manor Drive through the Skyline View community could deliver riders to the medical center in a time comparable to the time it would take those riders to drive a personal automobile. Between Skyline View and Hershey on PSA 39 in South Hanover Township is the Hershey Meadows development. This development includes a commercial strip anchored by a Giant grocery store and residential units ranging from townhouses to large lot homes. It would make sense to also serve this neighborhood with the same bus.. It would be ideal to run the route into the neighborhood to pick up riders curbside, however residential development is along looping roads on either side of PA 39 and serving both loops would take too much time. The best way to serve this development would most likely be to pick up riders in the commercial parking lot, at the corner of Hayshed Rd, and at the corner of Goldfinch Ln. Making these stops along PA 39 would increase travel
time and make the route less competitive from Skyline View, so value of adding potential riders at Hershey Meadows would have to be weighed with possible lost riders from West Hanover.

Other major employment in Hershey is located along Chocolate Ave (US 422). It has been proposed that this employment could also be served, and that the route from West Hanover Township to Hershey also connect with the Hershey Intermodal Center on N. 1st and J St. A person traveling to work in Hershey would take different routes to employment at the Hershey Medical Center and the east side of town then to the Intermodal Center and employment on the west side of town. A person traveling to the west side of town would turn right onto Hershey Park Dr from Hershey Rd, a person traveling to the east side of town would turn left. Travel time from the Jonestown Rd/Manor Dr origin point in West Hanover Township would have a similar travel time to either end of town – about 20 minutes. However a bus route that served these two destinations, the Medical Center and the Intermodal Center, in a continuous route, would not be competitive. If the Hershey Medical Center is the first stop in Hershey on this route, the trip by bus for a person traveling from Skyline View to the Chocolate and Cocoa Ave intersection near the Intermodal Center would have their commute time increased by about 50%. Traveling the other way, by turning east on Hershey Park Dr from PA 39 and then right on Park Avenue to connect to Chocolate Ave, likewise increases the commute time for those going to the Hershey Medical Center by about 50%, without traffic. Chocolate Ave during peak hours has a level of service “D”, whereas Hershey Park Drive between Hershey Rd and US 422 has a level of service “B”, so the peak hour travel time difference would be much higher than 50%, and a person choosing the bus over a personal automobile would be exposing themselves to a longer wait in congested traffic.

Travel times on this route are essential to attracting riders because there is little to no other incentive for commuters between West Hanover Township and Hershey to choose the bus. The travel times a bus would have on a route serving both ends of Hershey plus employment along Chocolate Ave are not competitive with travel times by personal automobile. A route of this nature does not seem to have a good chance of being successful. A choice should be made which side of town takes priority. A competitive route could be drawn to serve employment at Hershey Medical Center or a route could be drawn to serve the Hershey Intermodal Center and employment on the east side of town, but not both.

Comparing the benefits to commuters at each end of town, service to Hershey Medical Center and perhaps continuing west on US 322 seems to make more sense than service to the Intermodal Center and Chocolate Avenue. The corridor along Chocolate Ave has the greater number of employees, but the Hershey Medical Center has the greater concentration of employees, and density is a key driver of bus ridership. Service to the Medical Center does not put the bus into congestion on Chocolate Ave. Finally, the potential for transfers at the Intermodal Center to Route 322 to Harrisburg seems much too low to justify the connection because the increase in travel time and the inconvenience and uncertainty of the connection would be too much for commuters who have a mode choice. The connection to Harrisburg would be a more viable option for those riders originating at Hershey Meadows. Riders originating in Skyline View would take a northern route to Harrisburg, either on US 22 or I-81. So the commuter pool for potential transfers is cut way down. If connection to downtown Harrisburg from Hershey Meadows is needed, it would be much more successful if it is done after the connection to the Medical Center.
Hanover/Osteo Hospital

A route connecting Skyline View with the PinnacleHealth Community Campus (the Osteo Hospital) on Londonderry Rd in Lower Paxton Township would serve Skyline View along Manor Rd, then travel west on US 22 and then either travel south on Prince St and Rutherford Rd to connect with Londonderry Rd and the campus, or if a connection to the Colonial Park Mall is needed the route would continue on US 22 to the mall, then use I-83 to connect with Londonderry Rd off of the Union Deposit exit. The first is the more direct route, the latter could potentially more than double the travel time to the end destination. The advantage to routing along Prince St and Rutherford Rd besides the travel time is the potential to serve the dense residential neighborhoods along that corridor. However, for a route terminating at the Hospital there is little reason to prioritize this service because for such a short trip with no driving deterrents there is little or no reason to expect riders.

The attraction of the route is the potential to serve employees and shoppers along US 22, employees of the Hospital, and to provide a connection to Route 12 and downtown Harrisburg at the Colonial Park Mall park and ride. Each of these attractions will be explored in turn to judge the potential for ridership and the best routing and timing to serve that need. First, there are the retail and employment destinations along US 22. West Hanover Township itself has little commercial development so it would be expected that residents shop in this corridor. The corridor, in fact, provides enough of a diversity of services and large retailers that it is a regional shopping destination. However, he experience of transit agencies, including CAT, with service to retailer centers shows that there is a rather strict set of circumstances needed to make the service worth providing. Retail routes attract ridership where there is a very dense residential population with low incomes and low automobile ownership. These households would be likely to be without alternatives to meet their retail shopping needs. Commuter trips are readily served by transit because the origins and destinations are fixed, the times are fixed, and the trip is repeated each morning and afternoon during the work week. Normal retail trips are variable, trips to a variety of destinations are often chained, the trips are repeated weekly or even monthly rather than daily, and for regular day workers shopping is mostly done in the evening or on weekends. Therefore it is extremely difficult to provide service when it is needed with the travel times and headways that would compete with personal automobile trips that offer the flexibility people are accustomed to. The population of West Hanover Township shows none of the attributes that would indicate a shopping route would be successful.

The next potential driver for ridership along this corridor is employment along US 22. The employment on this corridor is in the large retail centers mentioned above and also in a very diverse mix of commercial development along the corridor, including some office employment. The development is very typical of a suburban corridor, with buildings situated away from the main road behind parking areas. Parking is plentiful, so there is no deterrent to driving. There is, however, some deterrent to bus service because of the design and function of the roadway. US 22 along this corridor is a suburban arterial with high travel speeds and peak hour through traffic with a level of service “B”. The attributes of the roadway do not lend themselves to the stop and go travel of a bus providing curbside service. Service currently on that corridor is provided by buses pulling off of the roadway and into the large retail commercial developments. This employment could be well served, for as much as there are residents of West Hanover working in those stores. The only large concentration of non-retail employment in this corridor is the Corporate Gateway Office Park which also offers small potential to attract choice riders as it is a mere 5 minute trip from the center of Skyline View. The size and potential to pull off at other employment locations varies from spot to spot. To provide local service on this corridor stops would have to be fixed
at places the buses can exit and enter traffic safely. The last segment of the trip for commuters would have to be made walking or by bicycle. The situation ends up being, for a choice rider, the addition of great inconvenience for a trip that can be made in less than 15 minutes by personal automobile with ample parking much closer to the trip destination.

Route 12 serves two park and ride lots along this corridor, at the K-Mart at Colonial Commons and the Boscov’s at the Colonial Park Mall. Of the two, the mall’s park and ride is the better served and the better used. Commuters from Skyline View could potentially transfer onto Route 12 at the mall and continue a commute to downtown Harrisburg. Within the CAT system currently almost all transfers are made at the Market Square Transfer Center. There is nothing in the system to compare a suburban transfer to judge its viability. It is recommended that if CAT implements a suburban transfer the buses be timed to three minutes.

The anchor of this proposed route would be the Osteo Hospital. The hospital employs about 4,000 people and is one of the larger employers in the region. Ridership to the hospital will be limited by the availability of onsite parking. Every employee and visitor to the hospital is able to park easily and for free directly outside the building. Paired with the limited areas of high density residential development on this proposed route the current potential for ridership from West Hanover to the hospital is very limited. If there is a high priority on running this service, it is recommended that the hospital be brought into the planning and implementation, and that there be an employee benefits program to incentivize ridership agreed to. Without any sort of incentive to ride, or deterrent to drive, riders to the hospital from the West Hanover area will be for the most part inconveniencing themselves by choosing the bus over their personal automobiles.

**Hershey/Osteo Hospital**

A route connecting Hershey to the hospital would follow Route 322 through Hershey on Chocolate Ave, and has the option of serving the same park and rides at the Hershey Outlets, the Intermodal Center and at Hummelstown. The route would cross the rail road tracks at 63rd St and go on 61st St to Newside Rd to Rutherford Rd to Londonderry Rd and the hospital. This segment is probably the weakest of the three because of the lack of a good destination. On the origin side, Route 322 has been operating successfully for several years now and has shown that ridership can be generated in Hershey. Although there is generally dense residential neighborhoods in Hershey, park and ride lots were established to expand potential ridership and that strategy has met expectations. The success of the Hershey park and ride lots led to the establishment of the Hummelstown park and ride, which is now attracting other ridership to Route 322. A bus along this same route would have the same potential to attract ridership. But the route to the Osteo Hospital has very limited destinations for those riders. There are no significant destinations along the route besides the hospital, and the limitations of the hospital as a transit destination have been discussed above – mostly the presence of ample free parking. There is retail development along 322 and the potential for much more to be added in the future, and this route could serve those destinations. The same limitations to ridership from Hershey to retail destinations exist as those described above for riders from West Hanover to retail destinations. The potential rider for this route is in general living in lower density, has a higher income, and most likely has a personal auto available and would have little reason to rely on transit for retail needs.
Conclusions and Recommendations
When compared to other areas of the region that support successful bus routes, residential development in West Hanover and South Hanover resemble areas served by park and ride lots. Lower Paxton, a township with a much higher population and a much higher overall density, still cannot support ridership without park and rides. The exception to this rule is the apartment complexes in Lower Paxton that have a density of at least twenty people per acre and in some cases much higher. There are no developments in either West Hanover or South Hanover that compare. There is no indication that curbside bus service is currently feasible in either township. Park and ride lots are recommended for all short and mid-term route implementation. Ridership out of Hershey is also recommended to remain based on park and ride lots.

As transit destinations, the Osteo Hospital and downtown Hershey/Hershey Medical Center do not seem to have adequate employment or deterrents to driving to support routes on their own. An optimal fixed route destination has a very high number of employees in a pedestrian friendly setting and a parking scarcity that will be an incentive to choice riders. These are attributes of downtown Harrisburg. The recommended destination of routes serving West Hanover and South Hanover is Harrisburg. If these destinations should be served for the sake of providing coverage, the routes serving them should continue on to downtown Harrisburg to help the routes generate enough ridership to be feasible.