To: Commissioners of Cheltenham Township

From: Dr. Rachel Weinberger, University of Pennsylvania, and Mr. Donald Maley, Planning Collective, LLC

Subject: SEPTA Jenkintown-Wyncote Station Region Commuter Preferences and Parking Needs Study: Methodology Review

Date: April 7, 2010

Introduction

This memorandum is a review of the SEPTA Jenkintown-Wyncote Station Region Commuter Preferences and Parking Needs Study (the Study), draft dated December 8, 2009, for the Commissioners of Cheltenham Township. According to the Executive Summary, the study purpose, in conjunction with other research, is to identify existing and projected need for commuter parking at Jenkintown-Wyncote and other stations in the area. Our analysis is focused exclusively on the Jenkintown-Wyncote portions of the Study.

We disagree with several assumptions made by the Study's authors and offer the counter-notion that far from requiring an increase in available parking, SEPTA, the Township and other regional stakeholders may wish to consider a decrease in available parking at this station location.

In this memo we review the Study methodology, analyze several assumptions and offer a different outcome based on minor changes to the assumptions. It is our hope that our review of the Study and the additional perspective we offer will lead to an effective planning process that ultimately leads to an acceptable outcome for all stakeholders.

Study Methodology Overview

The Study uses data collected from a range of secondary sources, field observations and rider surveys to estimate the demand for parking at eight SEPTA regional rail stations within three miles of each other in the vicinity of Jenkintown-Wyncote. The Study's methodology employs a series of steps intended to estimate **existing** and **future** demand for parking. We examine each methodology below.

Existing demand was assumed to be met if a station's parking occupancy was observed to be below 85% of the existing capacity. If occupancy was observed to be higher than 85%, the station was designated "constrained" and the Study authors employed two methods to develop estimates of what they believed to be the true existing demand. The first method combined observed demand with 90% of the waitlist and an estimate of parking overflow onto city streets (based on rider surveys). The second method derived a demand estimate by multiplying the percentage of drive-and-park boarders at each station (based on rider surveys) by the total number of boarders at each station (from SEPTA). It also added a figure for "adjusted drop-offs" which was meant to estimate the latent demand of boarders at each station who are dropped off, but would have (in the Study authors' opinion) preferred to drive-

and-park. After calculating parking demand at each "constrained" station with both methods, the authors chose whichever was higher as their estimate.

As the 85% occupancy threshold is not substantiated as an appropriate measure or criterion for demand for the Study, we speculate it is adopted from the work of Donald Shoup. Shoup champions an 85% occupancy threshold as a way to reduce cruising in search of available parking and to eliminate double parking and other illegal parking. Some cities have adopted the 85% goal for certain districts and are using pricing to achieve it. It is universally understood that demand for commodities, including parking, is price-sensitive. New York City recently launched ParkSmart, a pilot program that increases meter rates at certain times of day in order to ensure some vacancies and to reduce cruising. It appears that San Francisco is poised to implement a city-wide program, SF*Park,* to achieve the same goal.

If the 85% occupancy threshold is in fact derived from the work of Shoup, it has been misapplied in the current Study and should be re-evaluated. The threshold of 85% occupancy is not intended as a benchmark of met or un-met demand at parking facilities. It is a performance standard to reduce double parking, parking in bus stops, loading zones, at fire hydrants or in other illegal zones, and to eliminate unnecessary driving in search of an available parking spot. The cities noted above recognize that there are many negative externalities associated with excess reliance on automobiles. Therefore, they are seeking to meet the 85% threshold by charging a market price, not by increasing the supply. Implementation of the 85% performance standard is coupled with appropriate access planning that encourages walking, cycling, transit and passenger drop-off when appropriate.

The existing parking demand observed in the Study is the demand at today's price. It is not a meaningful representation of "true" parking demand because "true" parking demand is itself not a meaningful idea. One question of importance to the stakeholders is whether increasing parking supply to the level suggested in this report will increase SEPTA ridership and whether there are other viable ways to increase ridership.

Assumptions regarding additional components of existing demand are unsubstantiated and inconsistent with modern station access planning:

Assumption 1. **Walkers and bikers also need places to park.** In their estimate of existing demand, the Study authors include current walkers and cyclists. Walkers typically reside within a half-mile radius of a station and, by walking, have shown their preference given the current cost and convenience structure. This preference will be due to circumstances of their own situation as well as circumstances of station access design. Adding parking would change the cost and convenience structure, causing walkers and cyclists to re-evaluate their choices. Some might choose to drive. However, given the close proximity of high and medium density housing, it is unclear that some of the walkers would **ever** prefer to drive. The inconvenience of driving one or two blocks is greater than the inconvenience of walking. That would remain true even during episodes of inclement weather. Many walkers likely share one automobile among two or more drivers in a household; tying up the household vehicle all day in a station parking lot is not a desired outcome. These walkers will continue to walk. On a bad day, they might get a ride. Others may not own a vehicle at all.

The assumptions that a SEPTA rider would prefer to drive and therefore needs a parking space, and that walkers and cyclists have extra cars available, are unfounded. There is no justification to count this group as part of unmet demand for station parking. A policy to convert walkers to drivers in an age of increasing attention to the health, traffic, safety and environmental externalities of automobile use is of questionable merit. We would argue further that a policy of converting walkers to drivers is ultimately a policy of converting transit users to drivers.

Finally, the authors suggest that walkers and bikers need a place to park because traffic is chaotic when the weather is foul. Not only would it be bad public policy to build a large facility expected to sit mostly unused, but the more likely outcome of constructing a parking facility would be more riders induced to drive on a daily basis, resulting in similar traffic problems when the weather is poor.

Assumption 2. **People on waitlists represent extra demand.** Because the waitlists are for permit parking, most people on waitlists are likely already driving and using metered spaces. To add 90% of the waitlist back into the estimate of parking demand likely represents a large amount of double-counting.

Assumption 3. **"Drop-offs" cause twice the traffic of parkers.** The authors assert that "drop-off" access contributes "two times the daily vehicle miles" of "drive-and-park" access. While it is true that each passenger dropped-off or picked-up represents an approach to and departure from the station, this assumption fails to recognize that dropping someone off at the train station is frequently an aspect of someone else's trip to work, school or a store. Transportation planners call this "trip-chaining." An extra vehicle driving to park at the station may actually represent *more* daily vehicle miles if another member of that household passes near the station for unrelated trips on a regular basis. It is also true that the person dropped-off or picked-up would walk or cycle if s/he weren't offered a ride, and that s/he is either dropped off *or* picked up, not necessarily both, resulting in the same number of auto trips. Finally, as with the faulty assumption regarding additional automobiles for current walkers, it is conceivable that a person is dropped off because another household member will need to use the automobile.

The Study authors have not made a strong case to include people who are dropped-off as an example of latent parking demand. Demand for parking among these riders is just as likely zero as it is the number of people who are dropped-off.

Assumption 4. **The price of parking is irrelevant to demand.** The Study's authors argue that "parking supply must be expanded to meet the already long existing demand." The implicit assumption is that supply should be expanded to accommodate the demand for $1 parking. This is a narrow view of how to manage a transportation system. Indeed, it is strange to read an entire study about the demand for something without ever seeing a reference to its price.

Pricing is a very powerful tool to rationalize access. By increasing the current cost of parking, some people who can walk or cycle but currently drive would switch to walking or cycling. This would free up parking space for those who live further away and cannot reasonably walk. These people, who previously drove to Center City in order to avoid the parking hassle, could now find a parking space and might well be induced to take transit. By increasing parking prices without increasing parking supply, SEPTA may well be able to increase ridership. See an example of this on pages 7-7.

Future parking demand was estimated in two parts. The first component was parking demand growth attributable to 2030 population projections from the Delaware Valley Regional Planning Commission. The second component was intended to estimate the number of area residents who would be attracted to each station based primarily on the availability of additional parking. To arrive at an estimate for the second component, the authors subtracted the existing supply of parking at each station from the estimated existing demand plus the estimated future demand from population growth. That result was inflated by 25% to represent induced demand.

As with the above assumptions regarding existing demand, assumptions regarding future demand are unsubstantiated and inconsistent with modern station access planning:

Assumption 5. **The only way to add new transit riders is to expand parking.** There are many ways to increase transit ridership. While not all methods would be feasible in all situations, it is foolish to dismiss all other possibilities. Potential strategies at Jenkintown-Wyncote Station could include residential/commercial development on the parking lot site, pulse transfers with buses, enhancements to the pedestrian environment and even increasing current parking prices. The latter we explain in the conclusion to this memorandum.

Assumption 6. **Induced demand is 25% of existing demand and future demand net of existing supply.** The use of latent demand or elasticity factors is inadequately described on page 23 of the report. An elasticity factor is usually associated with a price change. Though a price change can be associated with a supply change as in the current case, an elasticity of 0.2 or 0.3 means that a 1% increase in the price of a commodity will elicit a 0.2% or 0.3% decrease in demand. Perhaps the authors mean the elasticity factors indicate that a 1% increase in supply will lead to a 0.2% or 0.3% increase in demand. Without citing specific research we are unable to understand the rationale for simply "bumping up" demand by an additional 25%.

Assumption 7. **Fuel prices will increase demand for parking.** The authors of this memorandum wrote a journal article which is referenced on pages 10, 24 and 131 of the Study. Our research showed that SEPTA regional rail ridership increased by 10% for every dollar increase in gas price during the recent gas spike. The Study misinterprets the results of our research suggesting instead that for every dollar increase in gas price, 10% of the non-transit riding population switches to transit, irrespective of transit price. While the authors don't include this step as part

of their basic methodology, the Study indicates that they plan to use these figures to calculate gas price scenarios for parking demand.

Total demand is the sum of existing demand, population growth demand and induced demand. As an extra step, the authors divided their total future parking demand estimate by 0.95, effectively adding an additional 5% to the recommended supply. That step is intended to increase the parking supply such that the lot would always have a 5% vacancy.

The methodology is complicated, but not necessarily accurate. Each step in the model introduces new assumptions, few of which are justified in the text, or other planning literature and parking research with which we are familiar.

In two locations, the authors write that they "conservatively" erred on the side of estimating a higher level demand in formulating their methodology. There is nothing conservative about constructing parking spaces that aren't needed. The conservative approach could just as easily be the one in which a smaller construction project is undertaken. Often in the past traffic planners have assumed there is no harm in having too much parking; therefore cities, towns and transit providers have erred on the side of overbuilding. Recent research indicates that overbuilding parking invites a plethora of problems including induced driving, compromised pedestrian safety and deterioration of transit use[1].

Other possible estimates can be developed from the same inputs. We can follow the authors' methodology and discover a conservative outcome by our definition, i.e. selecting the lower number reported in their methodology. The following chart presents a summary of the Study's methodology for estimating future parking demand. One column illustrates how many spaces the authors added to the total future demand estimate for Jenkintown-Wyncote Station by each step of the methodology when erring on the side of showing a higher level of demand. The final column shows what the results would have been erring toward the lower bound.

Their upper bound estimate is more than one and half times greater than the lower bound estimate. Assuming a $10,000 per space construction cost[2], the difference between the upper and lower bound represents $3.98 million.

[1] Weinberger, Rachel, John Kaehny and Matt Rufo (2010) U.S. Parking Policies: An Overview of Management Strategies http://www.itdp.org/documents/ITDP_US_Parking_Report.pdf Institute for Transportation and Development Policy. Retrieved March 8, 2010

[2] Victoria Transport Policy Institute. (2009, May). Parking Evaluation. TDM Encyclopedia: http://www.vtpi.org/tdm/tdm73.htm#_Toc18599156. Retrieved June 16, 2009.

Step	Description	Number of Spaces Added to the Study Estimate	Number of Spaces Added to the Lower Bound Estimate
Existing Demand	This represents the number of people observed parking today.	495	495
Latent Demand	This step uses two methodologies. The first is based on estimated overflow onto city streets and 90% of the waitlist. Assuming the waitlist represents current parkers without permits, this method indicates a latent demand of 77 parkers. The second is based on a rough methodology that multiplies daily boardings by the percentage of riders the authors expect would prefer to drive-and-park. The Study chooses the second methodology because it yields a higher result.	356	77
Population Growth Demand	This step predicts additional parkers likely to result from Delaware Valley Regional Planning Commission population growth projections. The lower bound estimate is identical.	7	7
Induced Demand	This step inflates unmet demand (existing + latent + future demand minus supply) by 25%; this step is intended to show how many new parkers would be motivated to use the station based on increased supply.	83	13
Design Demand	The study suggests inflating the demand again to maintain a utilization rate of 95% (rather than 100%) in order to improve traffic flow. Based on the fact that observed utilization today is only 93%, the lower bound estimate does not add these additional spaces.	49	0
Total		990	592

An entirely different set of assumptions would yield a different outcome. For example, research has shown a parking price elasticity of -0.3.[3] This means that for every 1% increase in price you should expect a 0.3% decrease in demand. Applying this rate to the current observed demand, a doubling of the parking price from $1 to $2.00 per day would have the effect of reducing demand to 400, leaving 127 spaces to accommodate the latent demand. At the new price, the latent demand would be reduced so the gap could become quite narrow. It's crucial to realize that not every parker has the same elasticity. Some SEPTA riders can walk or drive to Jenkintown, or drive to Center City. Other SEPTA riders face the choice to drive to a SEPTA station or to drive to Center City. When the latter group can't park at a SEPTA station, they will drive to Center City. But the former group—those who drive the shortest distances that could be comfortably walked—will switch more quickly to walking, thus freeing a parking space for someone who has to drive.

SEPTA might increase its parking revenue, increase its ridership and avoid a costly and unpopular construction project. This is an experiment the agency can ill-afford to skip prior to building an expensive parking garage that is as yet unjustified.

Conclusion

Parking supply is a very heated and little understood area of planning practice. There are several considerations that have been overlooked in the SEPTA Jenkintown-Wyncote Station Region Commuter Preference and Parking Needs Study. Opportunity cost, alternative access options and parking pricing are among them.

A site as large as the parcel in question, adjacent to a train station, with service to Center City less than every 10 minutes during peak hours, in the heart of a densely populated residential area, could be many things other than a 75,000 square-foot paved lot. Convenience retail development could save the thousands of residents within walking distance of the site from having to get in a car every time they need to go to the pharmacy. New housing development could enhance the township's tax base. New green space along the creek could complement the existing park north of the station. Or you could do any combination of these things while retaining or reducing the supply of parking.

The important question is whether increasing parking supply will increase SEPTA ridership, and if so, at what cost? Stakeholders must determine if there are more cost effective ways to increase ridership that are more consistent with local goals.

[3] Vaca, Erin and Richard Kuzmyak (2005) TCRP report 95 Chapter 13 Parking Pricing and Fees: Traveler Response to Transportation System Changes. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c13.pdf Retrieved April 4, 2010