University Hill Park & Ride Feasibility Study

Prepared by
C&S Engineers

for
Syracuse Metropolitan Transportation Council

Final Report
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1. Introduction

A. Purpose of Study

University Hill is a thriving center for education and healthcare institutions in Syracuse, New York. Previous studies have documented plans for more than 4 million square feet of development to take place in the area over the next twenty years. Realizing this significant development potential, the Syracuse Metropolitan Transportation Council (SMTC) commissioned the University Hill Transportation Study, a comprehensive examination of transportation and land use on the Hill, which was completed in November 2007. The goal of this study was to maintain and enhance the viability of the institutions on University Hill by identifying innovative land use policies and transportation alternatives. One of the key recommendations from the study was the development of an integrated parking strategy to include:

- **Shared parking**: where overall parking demand is reduced by allowing the same spaces to be shared by different, compatible uses (e.g. spaces used by daytime employees can be used at night by residents who work elsewhere during the day);
- **Wrapped parking**: where the “dead space” represented by parking is eliminated by lining the facades of garages with active, pedestrian-oriented uses;
- **Remote parking**: where parking is located off-site; and
- **Parking pricing and management**: where a centralized parking authority would manage all institutional parking facilities and raise or lower parking prices to accurately reflect parking costs (not to be addressed as part of this study).

The SMTC commissioned the University Hill Park and Ride Feasibility Study on behalf of the project sponsor, the Metropolitan Development Association (MDA) and the University Hill Corporation. The goal of this University Hill Park and Ride Feasibility Study is to advance the concept of the first three parts of the integrated parking strategy by assessing the development potential for a single, remote, mixed-use facility including shared institutional parking, structurally integrated supportive land uses, and transit shuttle service to major institutions.

Ideally, this remote parking facility will allow Hill institutions to accommodate demand generated by new development, replace existing parking on the Hill to make land available for new development, or shift employee parking to preserve nearby spaces for patients and visitors. The remote nature of the facility will benefit traffic operations in the area by preventing cars from reaching already-congested Hill streets. Further, the facility’s wrapped design, which will allow supportive land uses on site, will enliven the streetscape and supply needed services for commuters and residents. The remote parking facility will also allow the University Hill institutions to advance green initiatives by encouraging alternative modes of transportation, including carpooling, walking, and transit.
B. Area to be Served
The remote parking facility is primarily intended to serve the academic and healthcare facilities within the University Hill area, depicted in Figure 1.1. These include the academic institutions of SUNY-College of Environmental Science and Forestry, SUNY-Upstate Medical University, and Syracuse University and the medical complexes of Crouse Hospital, SUNY Upstate, VA Medical Center and Hutchings Psychiatric Center. In addition, there is the potential for the facility to serve the needs of the Crouse-Marshall Business District and the East Genesee Business District. Depending on the preferred location for the remote facility, there is also the potential for the facility to serve areas of downtown Syracuse that do not have sufficient parking capacity.

C. Definition of Area of Interest
At the initiation of the project, the intent is to be broad in the identification of study area limits. Potential sites should not be precluded because of their size, existing use, or proximity to the Hill. Once the programming needs and evaluation criteria have been identified, all locations will be reviewed for basic functional feasibility and either dismissed or progressed for more detailed evaluation. Potential sites may be actual parcels or general locations that appear appropriate due to travel patterns or employee places of residence.

Site identification was generally based on travel patterns, employee places of residence, highway access, and current use. Potential sites were identified through four main mechanisms:

- Review of relevant prior studies, including the *University Hill Transportation Study* and the *University Hill Site Planning Study*
- Review of vacant land inventory
- Meetings with the project sponsor
- Meeting with the SAC

The following figures depict potential sites for park and ride facilities:

- **Figure 1.2: Local Potential Sites** – the sites depicted on this figure focus on the general vicinity of University Hill and downtown Syracuse
- **Figure 1.3: Regional Potential Sites** – this figure covers a broader area, extending to the west to include the area of Carousel Center/Inner Harbor and the State Fairgrounds
- **Figure 1.4: Centro Park and Ride Locations** – this figure represents the potential to leverage the existing park and ride locations operated by Centro
Figure 1.2: Local Potential Sites

Legend

- Potential Sites
- Railroads
- Street
- Interstate or Ramp

1" = 500'

When printed at 22"x34"

Source: Orthoimagery (2006) & CSCIC Street data from NYS GIS Clearinghouse; Background info from ESRI.
D. Study Advisory Committee
A Study Advisory Committee (SAC) was established at the outset of the study to provide technical and procedural guidance for the project. The SAC includes representatives from the following agencies:

- Syracuse Metropolitan Transportation Council (SMTC)
- Metropolitan Development Association (MDA)/University Hill Corporation
- City of Syracuse
- Central New York Regional Transportation Authority (CNYRTA)
- Syracuse-Onondaga County Planning Agency (SOCPA)
- New York State Department of Transportation (NYSDOT)
- Central New York Regional Planning and Development Board (CNYRPDB)
- Syracuse University (SU)
- State University of New York College of Environmental Science and Forestry (SUNY-ESF)
- State University of New York Upstate Medical University (SUNY Upstate)
- Crouse Hospital
- Veteran’s Administration Medical Center (VA)
- Hutchings Psychiatric Center
- Crouse-Marshall Business Improvement District

The SAC has met four times over the course of the study to set direction and discuss deliverables. A copy of the minutes from each meeting is provided in Appendix A.

E. Institutional Focus Group
The Institutional Focus Group (IFG) is comprised of individuals from the same institutions and agencies listed above that are directly associated with employee relations, parking and shuttle operations, as well as representatives from businesses on the Hill. One meeting was held with the IFG to obtain existing conditions data, future demand information, and guidance on outlining programming needs and parameters. A copy of the meeting minutes is provided in Appendix A.

F. Institution Interviews
Individual teleconference interviews were conducted with operations representatives from SUNY ESF, Hutchings Psychiatric Center, SUNY Upstate Medical Center, Syracuse University, and the VA Medical Center. Centro also provided information via interview. Crouse Hospital representatives were not available when interviews were conducted but provided information and input during SAC and IFG meetings. The institutions provided information regarding their operations and future transportation needs as well as their opinions on the feasibility of a combined park and ride facility. A summary of the interviews is provided in Appendix B.
2. Background

A. Park and Ride Case Studies
The park and ride concept has been successfully implemented in other areas across the country. The following case studies provide some examples of existing park and ride systems.

**University of Michigan/Ann Arbor, MI (www.theride.org, pts.umich.edu)**
The Ann Arbor Transit Authority (AATA) and the University of Michigan provide parking and shuttle systems designed to encourage parking at the periphery of both the city and the campus, with incentives for the former. The AATA system includes free parking in a series of peripheral lots along highways and at the outskirts of downtown with morning and afternoon bus service from these lots to the University of Michigan, the University of Michigan medical complex, and downtown on 9 to 15 minute headways. Fares are free for Michigan students and employees and $1 for others, and the AATA advertises an annual savings of $1,050 over city parking facilities. The AATA provides a guaranteed ride home and real time bus tracking as part of its service.

The AATA’s service is integrated with the University’s on-campus parking system. The university advertises permit-only parking on the campus periphery for a monthly cost of approximately $20. These lots are served by either UM Transit and/or UM Health System shuttle buses at 5 to 10 minute headways during daylight hours and 15 to 20 minute headways during evening hours (6:30 – 1:00 am). This parking is supplemented by additional lots at graduated costs based on proximity to major buildings.

**Medical Academic and Scientific Community Organization, Inc. (MASCO), Boston, MA (www.masco.org)**
MASCO is a Transportation Management Association (TMA), or a private, non-profit organization representing a collection of entities, each of whom is legally and financially invested, for the purpose of improving their transportation services, often through transportation demand management. MASCO was created in the 1970s by a collection of institutions in Boston’s Longwood Medical and Academic Area (LMA) with the goal of more efficiently providing services that all of its member institutions need, including planning and development, parking and transportation, collaborative programs, telecommunications, and child care.

MASCO operates a park and ride system through which LMA employees can park off-site at any MASCO-managed facility. Parking permits for these off-site facilities are distributed through the institutions, and are partially subsidized by both the institutions and the TMA. Simultaneously, rates within the LMA are set by the market in an effort to discourage their use. Multiple shuttle buses serve the off-site facilities. Shuttle buses are free to off-site parkers and run on 5 to 15 minute headways. MASCO offers some real-time shuttle tracking.

MASCO supplements the park and ride system with other transportation demand management programs through its CommuteWorks initiative, including guaranteed
ridehome; zipcar; ridesharing and vanpooling; incentives for walking, running or biking; and personalized commute assistance.


The OTMA is a Transportation Management Association serving the educational and medical complex in Pittsburgh. OTMA works with the region’s metropolitan planning organization (MPO), Southwestern Pennsylvania Commission, and its transit authority, the Port Authority of Allegheny County, to service its institutions. Among many objectives, the TMA and the MPO promote alternative modes of transportation and park and ride facilities.

Regional park and ride services are provided through the Allegheny County Port Authority, which operates over 50 park and ride lots throughout the Pittsburgh metro area. Parking is free in the TMA. Employee fares for shuttle services from these lots are subsidized by local institutions, including the University of Pittsburgh and Carnegie Mellon. Some of the park and ride lots are served by rapid transit. Headways are generally 10-15 minutes. In addition, commuter parking on the near fringes of downtown is provided at low cost through a private entity, with free shuttle service into downtown provided by the Port Authority. Shuttles generally run only during peak hours.

The University of Pittsburgh, Carnegie Mellon University, and University of Pittsburgh Medical Center collaborate to provide comprehensive bus service to their employees in the campus district. Staff and students from one institution are generally permitted to ride the shuttles of the other institutions at no cost, given valid identification.

**South Main Alliance (SMA), Houston, Texas (www.SouthMainAlliance.org)**

The South Main Alliance is the designated Transportation Management Association (TMA) for the greater Texas Medical Center. The organization partners with the City of Houston, Harris County, METRO (Metropolitan Transit Authority of Harris County, Houston, Texas) and the Texas Department of Transportation to promote commute solutions and provide travel information including traffic and accident alerts. The Texas Medical Center (TMC) is home to 47 institutions including 13 hospitals. The Texas Medical Center is served by various METRO bus routes, the METRORail (light rail service), free shuttle service and a low-cost ($1 fare) trolley service. A single TMC METRO Fare Q Card allows users to travel any of these transportation options within the medical center boundaries.

The Texas Medical Center Contract Parking Department serves the parking needs of employees of the institutions of the Texas Medical Center, students, vendors, contractors and construction personnel. Texas Medical Center currently manages over 34,000 contracts in 18 garages and more than 20 surface lots. Two types of parking contracts are offered. The type of contract a person has depends on the institution with which they are employed by. A Direct Bill Contract is a contract in which an individual is approved by their institution, but monthly payments for the contract are paid directly to Texas Medical Center. Parking rates for 2009 are:
Campus Garages: $155-215  
Campus Surface Lots: $75-125  
Remote Surface Lots: $60

An Institutional Bill Contract parker does not make payments directly to Texas Medical Center. Parking payments are coordinated through the Parker’s TMC institution. The monthly rate an Institutional Bill Parker pays for parking varies from each institution of the Texas Medical Center based on the level of benefits offered.

On campus visitor parking rates are $12 per day. Visitors can park at off-campus locations for a reduced rate of $6 per day and use the free shuttle service to access their destination.

In addition to the off campus medical center parking facilities served by the free shuttle service, METRO operates 26 park and ride facilities, across Harris County, where users can park free of charge and use the bus to travel to their destination. To promote their services, METRO’s web site provides potential users with a commute calculator, to compare the cost of transit to driving, and a trip planning service.

B. Previous Studies
The following is a summary of previous studies with information relevant to the University Hill Park and Ride Feasibility Study:

University Hill Transportation Study
The foundation of the University Hill Transportation Study was a June 2006 confidential document completed for the University Hill Transportation Study entitled, Current Planned Vision. This document identified plans by University Hill institutions and major property owners for approximately 4.2 million square feet of development and the creation of over 2,000 new parking spaces in the next two decades. To improve accessibility, flexibility, economic viability, and sustainability on the Hill, the study recommends the development of an integrated parking strategy to include:

- Shared parking;
- Wrapped parking;
- Remote parking; and
- Parking pricing and management.

The first three aspects of the parking strategy are incorporated into this Park and Ride Feasibility Study. According to the University Hill Transportation Study, the use of parking facilities, when shared among different users, will reduce overall demand by 700 spaces (from 3,800 to 3,100 spaces).

The study recommends that garages and surface lots be surrounded by a liner building incorporating a mix of uses (wrapped parking) to generate activity and enhance the pedestrian environment. The liner (wrap) buildings can include retail activity on the ground floor and offices and residences on upper floors.
Finally, the *University Hill Transportation Study* documents that remote parking facilities may provide low cost parking while reducing traffic congestion on the Hill. To maximize their effectiveness, remote parking facilities should incorporate mobility hubs, or transit centers, and have convenient access to major commuting routes, including I-81 and I-690. The *University Hill Transportation Study* recommends the development of a West Street Mobility Hub, northwest of Armory Square, to provide improved transit service and serve as a major park and ride facility serving the Hill. The study also notes that other remote parking locations should be explored in coordination with efforts to address the demand for parking and accessibility in downtown Syracuse.

The *University Hill Transportation Study* documents the following two case studies that illustrate the potential for centralized and shared parking.

**Centralized Parking: Chattanooga, TN**
To encourage urban development in downtown Chattanooga while limiting congestion and air pollution, the Chattanooga Area Regional Transit Authority (CARTA) developed a strategy to provide peripheral parking and a free shuttle service. CARTA intercepts commuters and visitors with a parking garage at both ends of the linear 15-block business corridor. The garages, with 550 and 650 spaces each are owned by CARTA and privately operated. The free shuttle buses are financed through the garages’ parking revenues.

**Shared Parking: Indianapolis, Indiana**
Circle Centre is a 730,600 SF mixed-use project incorporating retail and entertainment destinations. To reduce construction and maintenance costs and provide a pedestrian-friendly design, Circle Centre used a shared parking arrangement to serve both customers and employees. The mixed-use nature of the project allows customers to use a single parking space while visiting multiple destinations. The peak evening and weekend characteristics of retail and entertainment uses also allow employees to use nearby off-site parking that serve downtown workers during the day. By using a shared parking approach, parking requirements were reduced from 6,000 to approximately 2,800 spaces.

**Downtown Syracuse Parking Study**
The Syracuse Industrial Development Agency (SIDA) commissioned the *Downtown Syracuse Parking Study*, completed in February 2008. The purpose of the study was to address several parking challenges within the Central Business District (CBD). The study assessed existing parking supply and demand as well as the supply and demand relationship anticipated with development projects in a five-year planning horizon. For analysis purposes, the CBD was divided into eight sub-areas. The study documented that parking demand is anticipated to approach or exceed the available capacity in the following areas:

- The Federal Building area
- Hanover Square area
- Armory Square area
- Presidential Plaza area
Depending on the preferred location for a park and ride facility, these areas may also benefit. Consistent with the recommendations of the University Hill Transportation Study, the Downtown Syracuse Parking Study recommended shared parking agreements and the development of a Transportation Demand Management Program.

University Hill Site Planning Study
The University Hill Site Planning Study was prepared for the University Hill Corporation in January 2007. Recent growth in the area and the short-term development needs of several projects raised the issue of sufficient development sites within the University Hill area. The purpose of the Site Planning Study was to assist the University Hill Corporation in:

- Verifying development needs,
- Identifying potential development sites, and
- Documenting opportunities and challenges of site development.

Identification of potential development sites focused on vacant properties, underutilized properties including surface parking and low density development, and land identified as available for sale or lease. The study, which identified ten potential development sites, was used in the identification of potential sites for the University Hill Park and Ride Feasibility Study.

C. Data Collection
In support of this study, each of the major academic and medical institutions provided documentation of their institution’s population and existing parking and shuttle services. The following is a summary of the data provided.

i. Population
Each institution tracks population in several categories, although the categories and how they are defined are not always consistent across institutions. The intent of the population summary is to provide an order of magnitude assessment of the daytime population with a focus on the daytime employee population. As presented in Table 2.1, the major institutions in the University Hill area have a daytime employee population of approximately 11,800. To address traffic congestion, the daytime employee population at area hospitals has been distributed in up to 140 discrete shifts.

It is difficult to define the average daytime population of students, contractors, out-patients, and visitors since these numbers vary widely throughout the day. The population data will not be used to calculate parking demand.
### Table 2.1. Population by Institution

<table>
<thead>
<tr>
<th>Institution</th>
<th>Total Employees</th>
<th>Daytime Employees</th>
<th>Total Students</th>
<th>Daily Visitors</th>
<th>Daily Other&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syracuse University</td>
<td>4,648</td>
<td>4,150</td>
<td>19,366</td>
<td>600</td>
<td>-</td>
</tr>
<tr>
<td>SUNY Upstate</td>
<td>6,200</td>
<td>4,100</td>
<td>1,400</td>
<td>1,000</td>
<td>300</td>
</tr>
<tr>
<td>Crouse Hospital</td>
<td>2,750</td>
<td>1,700</td>
<td>200</td>
<td>1,500</td>
<td>-</td>
</tr>
<tr>
<td>SUNY ESF</td>
<td>520</td>
<td>520</td>
<td>2,446</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>VA Medical Center</td>
<td>1,400</td>
<td>800</td>
<td>-</td>
<td>200</td>
<td>500</td>
</tr>
<tr>
<td>Hutchings Psychiatric Center</td>
<td>530</td>
<td>530</td>
<td>10</td>
<td>-</td>
<td>160</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16,048</strong></td>
<td><strong>11,800</strong></td>
<td><strong>23,422</strong></td>
<td><strong>3,350</strong></td>
<td><strong>960</strong></td>
</tr>
</tbody>
</table>

<sup>1</sup> Other includes out-patients and contractors

### Table 2.2. Existing Parking by Institution

<table>
<thead>
<tr>
<th>Institution</th>
<th>Own</th>
<th>Lease</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syracuse University</td>
<td>9,112&lt;sup&gt;1&lt;/sup&gt;</td>
<td>-</td>
<td>9,112</td>
</tr>
<tr>
<td>SUNY Upstate</td>
<td>3,430</td>
<td>802</td>
<td>4,232</td>
</tr>
<tr>
<td>Crouse Hospital</td>
<td>1,440</td>
<td>245</td>
<td>1,685</td>
</tr>
<tr>
<td>SUNY ESF</td>
<td>349</td>
<td>-</td>
<td>349</td>
</tr>
<tr>
<td>VA Medical Center</td>
<td>708</td>
<td>250</td>
<td>958</td>
</tr>
<tr>
<td>Hutchings Psychiatric Center</td>
<td>445</td>
<td>-</td>
<td>445</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,484</strong></td>
<td><strong>1,297</strong></td>
<td><strong>16,781</strong></td>
</tr>
</tbody>
</table>

<sup>1</sup> 180 spaces of the SU inventory located off-campus to serve Syracuse Stage & the Warehouse

<sup>2</sup> 300 spaces available through agreement with Syracuse University

---

**ii. Parking**

The major institutions own or lease approximately 16,800 spaces, depicted in Figure 2.1, to serve the needs of their employees, students, and visitors. Syracuse University and Hutchings Psychiatric Center are the only institutions that own adequate parking to meet their demand. The remaining institutions lease or have agreements to make 1,600 parking spaces available.

Previous studies have documented an additional 1,150 spaces in off-street private facilities, 380 spaces available in public parking facilities and 945 on-street spaces, for a total of 19,275 parking spaces in the University Hill area. By comparison, the Downtown Syracuse Central Business District has 1,615 on-street spaces, 12,440 off-street public spaces and 4,174 off-street private spaces for a total of 18,229 parking spaces. Parking in the University Hill area is primarily private (93%) as compared to the Central Business District (23%).
The occupancy in the majority of parking facilities is at or near the capacity. The two notable exceptions are:

- Syracuse University’s Skytop paved spaces – 70% occupancy
- SUNY Upstate’s Adams Lot – 75% capacity

The combined parking availability in these two lots is approximately 115 spaces.

With the exception of SUNY ESF and Hutchings Psychiatric Center, the institutions require parking user fees for employees, staff, and students. The user fees vary depending on a variety of factors including salary, parking location, and facility type (surface lot or garage). Monthly parking fees range from $4 to $55 for surface lots and $14 to $125 for garages. By comparison, downtown surface parking fees range from $25 to $85 with the most common fees in the range of $50-70. Downtown garage parking fees range from $55 to $110 with an average fee of $75.

Operating and maintenance (O&M) costs for parking facilities vary depending on the facility type (surface or structured parking), the distribution of facilities (consolidated facilities are generally less expensive to maintain), staffing and security. Table 2.3 summarizes the parking operating and maintenance costs ranging from a low of $2,000 annually by SUNY ESF that covers striping and signage expenditures to a high of $8 million by SUNY Upstate which includes $4 million in debt service of the garages.

<table>
<thead>
<tr>
<th>Institution</th>
<th># of Owned Spaces</th>
<th>Owned Costs</th>
<th># of Leased Spaces</th>
<th>Leasing Costs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syracuse University</td>
<td>9,112</td>
<td>$1.3 M</td>
<td>-</td>
<td>-</td>
<td>$1.3 M</td>
</tr>
<tr>
<td>SUNY Upstate</td>
<td>3,430</td>
<td>$7.7 M</td>
<td>802</td>
<td>$340,000</td>
<td>$8.0 M</td>
</tr>
<tr>
<td>Crouse Hospital</td>
<td>1,440</td>
<td>$800,000</td>
<td>245</td>
<td>$200,000</td>
<td>$1.0 M</td>
</tr>
<tr>
<td>SUNY ESF</td>
<td>349</td>
<td>$2,000</td>
<td>-</td>
<td>-</td>
<td>$2,000</td>
</tr>
<tr>
<td>VA Medical Center</td>
<td>708</td>
<td>$200,000</td>
<td>250</td>
<td>$155,000</td>
<td>$355,000</td>
</tr>
<tr>
<td>Hutchings Psychiatric Center</td>
<td>445</td>
<td>$7,500</td>
<td>-</td>
<td>-</td>
<td>$7,500</td>
</tr>
</tbody>
</table>

1 – 180 spaces of the SU inventory located off-campus to serve Syracuse Stage & the Warehouse
2 – 300 spaces available through agreement with Syracuse University

Note: Although all institutions track operating and maintenance costs, the factors considered by each institution vary. Costs noted above do not always account for annualized costs of repairs and reconstruction, snow removal, staffing and security.

User fees generally do not cover the full operating and maintenance costs of parking facilities. This is particularly evident for leased facilities where the institution may be leasing at market rates of $25 to $60 for surface lots and up to $75 for garage spaces but only charging users nominal fees for remote surface lots
and $50 for garage spaces. The remote leased parking facilities also have the additional cost of shuttle services that is not covered by the user fees.

Additional parking information provided during the SAC and IFG meetings, as well as the institution interviews are included in Appendix A.

### iii. Shuttle Services

Four institutions currently operate shuttle services: Syracuse University, VA Medical Center, SUNY Upstate and Crouse Hospital. Shuttles for Syracuse University, SUNY Upstate and Crouse Hospital serve multiple buildings in addition to parking facilities. Therefore, some shuttles services may need to be retained even if a park and ride facility with a joint shuttle is established. There are several areas where the existing shuttle routes overlap, particularly on Irving Avenue, as depicted in Figure 2.2 and summarized in the table below:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Route</th>
<th>Operator</th>
<th>Annual Operating Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syracuse University</td>
<td>43, Brewster-Boland Sadler</td>
<td>Centro</td>
<td>Not Available</td>
</tr>
<tr>
<td></td>
<td>45, Carousel Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>543, Connective Corridor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>443, Drama Dept.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>243, Euclid/Lancaster/Drumlins</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>343, Euclid/Westcott</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>243, Flint/Day Hall</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>44, Manley</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>143, Quad Shuttle</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>244, Slocum Heights</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>444, Vincent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>443, Warehouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>144, Winding Ridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUNY Upstate</td>
<td>Single route</td>
<td>Birnie Bus</td>
<td>$455,000</td>
</tr>
<tr>
<td>Crouse Hospital</td>
<td>Single route</td>
<td>Crouse</td>
<td>$60,000</td>
</tr>
<tr>
<td>VA Medical Center</td>
<td>J-Lot</td>
<td>Centro</td>
<td>$225,000</td>
</tr>
<tr>
<td></td>
<td>Sears Lot</td>
<td>Birnie Bus</td>
<td></td>
</tr>
</tbody>
</table>

Additional shuttle information provided during the institution interviews is included in Appendix B.
Shuttle Services

Figure 2.2

Legend

- Railroad
- Street
- Interstate or Ramp
- Up Shuttle
- SUNY Upstate Shuttle
- Crouse Shuttle
- CENTRO Routes
  - 43 - Crouse Island Stop
  - 45 - Manley
  - 44, 144, 244 - Manley, Winding Rdg, Slocum Hgt
  - 143 - Quad Shuttle
  - 443 - Drama & Warehouse
  - 444 - Vincent
  - 140 - End Different
  - 445 - Connect Bus Connector

- Bus & Shuttle Stops
  - VA
  - SUNY Upstate
  - Crouse
  - SMTC

Railroads
Street
Interstate or Ramp
VA Shuttle
SUNY Upstate Shuttle
Crouse Shuttle
CENTRO Routes
43 - Crouse Island Stop
45 - Manley
44, 144, 244 - Manley, Winding Rdg, Slocum Hgt
143 - Quad Shuttle
443 - Drama & Warehouse
444 - Vincent
140 - End Different
445 - Connect Bus Connector
Box & Shuttle Stops
VA
SUNY Upstate
Crouse
SMTC

When printed at 22" x 34"
3. Programming Needs and Parameters

A. Methodology/Resources

i. SAC and IFG
As stated in Sections 1.D and 1.E, the SAC provided technical and procedural guidance for the study and the IFG included individuals directly associated with employee relations, parking and shuttle operations, as well as representatives from businesses on the Hill. Meetings were held with both the SAC and IFG separately in order to obtain existing conditions data, future demand information, and guidance on outlining programming needs and parameters. The minutes from these meetings are provided in Appendix A.

ii. Relevant Studies
The University Hill Transportation Study, Downtown Syracuse Parking Study, and the University Hill Site Planning Study provided guidance and background information relevant to programming needs.

iii. Institution Interviews
Individual teleconference interviews were conducted with operations representatives from the institutions involved in the study as well as Centro. A summary of the interviews is provided in Appendix B.

iv. Transportation Opinion Survey
An employee survey was conducted to obtain feedback from potential users on the desired characteristics of a park and ride facility. The web-based survey was coordinated by the SMTC. Each institution independently distributed a survey link to their employees via internal email or, in the case of businesses, by flier. The survey opened on May 6, 2009 and closed on May 22, 2009. Twenty-six questions were asked including demographic, current commute, and park and ride preference information. Approximately 3,600 submitted surveys had usable data.

The entities included in the survey were Syracuse University, SUNY Upstate, Crouse Hospital, SUNY ESF, VA Medical Center, Hutchings Psychiatric Center, and local University Hill businesses. With a total number of employees at the institutions of 15,498, the response rate was approximately 23%. Over 40% of the respondents were from Syracuse University. Only 3% were from local businesses.

Appendix C contains a copy of the survey questions, a summary of the results and the tabulated responses. Specific results of the survey are also reported and discussed throughout the report.

1 This figure does not include employees of businesses on University Hill.
v. Case Studies

The following section briefly describes a number of wrapped or mixed-use parking structures currently operating or being designed throughout the country that can provide a model for the park and ride system on University Hill. Each structure provides 400 to 1,000 parking spaces and at least one additional use on the ground floor. They help to create a pedestrian-friendly, urban environment while providing destination and supporting land uses.

a. Wrapped Garages

The University Hill Transportation Study’s Land Use Concept report states that the land use concept “must mitigate the impacts of the necessary parking supply through wrapping garages with active uses, installing retail on the ground floor of garages, improving the safety at entrances and exits to parking, and designing parking so that it fits into the general milieu and character of a pedestrian-oriented district.” The following case studies provide examples of parking structures that are wrapped (surrounded) by other buildings.

15th & Pearl Parking Garage – Boulder, Colorado²

This wrapped, mixed-use structure, in the East End District of Boulder, consists of 700 parking spaces (7 levels of parking) surrounded on three sides by 7,500 SF of ground floor retail and 7,500 SF of upper level office space. The structure is owned and was developed by the City of Boulder and was designed by RNL Design and Shears & Leese (now Shears-Adkins Architects of Denver).

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University Hill Development/University Bookstore – Syracuse, New York

Designed by Slaggie Architects and developed by the Cameron Group of East Syracuse, this 120,000+ SF building will be 60 feet wide and will be built along the west side of Syracuse University’s University Avenue Parking Garage approximately 10 feet off the garage. The 793-space garage will be masked by the building along University Avenue. The building is expected to contain a University bookstore, fitness center and other retail space.

Morris Street Parking Structure – New Brunswick, New Jersey

This ten-level, 820-space garage is wrapped on two sides with 13 stories of student housing for Rutgers University and is accommodating parking demands from students, a hotel and conference center, and two other residential projects at the same intersection. The garage was designed by Timothy Haahs & Associates and the façade was developed in collaboration with Hillier.

Southwest Parking Garage Complex – Gainesville, Florida

The University of Florida earned the LEED Platinum certification for their Southwest Parking Garage Complex. The six-level, 313,000 square foot building can accommodate up to 950 vehicles and an attached 52,000 square foot, two-story building contains the transportation, parking service and public safety offices as

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4 http://www.timhaahs.com/index.php/site/pdetail/morris_street_parking_structure/
well as retail space. Pierce, Goodwin, Alexander & Linville designed and built the parking facility.

**Eastside Transit Village – Plano, Texas**

The parking garage next to the transit station in Plano, Texas, is wrapped with residential units and ground floor retail, creating a great station environment. The project, built in two phases, includes a total of 463 residential units, 40,000 square feet of non-residential space, and 770 parking spaces.

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### b. Mixed-Use Parking Structures

This section provides more examples of successful integrated parking structures, including the various types of land uses that can be incorporated.

**Le Meridien Cambridge, University Park – Cambridge, Massachusetts**

Forest City Enterprises, the Massachusetts Institute of Technology and the City of Cambridge partnered to create University Park in the Boston area which is anchored by the Le Meridien Cambridge Hotel. Along with the 200-room hotel, the building contains 1,000 parking spaces, indoor bicycle parking and 100,000 SF of office space along with a grocery store, restaurants and other amenities.

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7 http://www.starwoodhotels.com/lemeridienproperty/overview/index.html?propertyID=3253
Hamilton Square at the University of Pennsylvania – Philadelphia, Pennsylvania

The University of Pennsylvania, Timothy Haahs & Associates and Wood and Zapata, Inc. worked together to design a nine-story mixed-use parking garage and supermarket in Hamilton Square. The final layout utilizes a one-way traffic system throughout with a speed ramp from grade to the parking floor above the supermarket. A pay-on-foot parking access and revenue control system is utilized for effective entry and exit.

Argyle Parking Facility & Library – St. Louis, Missouri

This 457-space parking structure, designed by Desman Associates for the City of St. Louis, is located in a residential/retail area. The building provides for a branch facility of the St. Louis Public Library as well as other retail space on the ground level.

61st & Drexel Avenue Police/Office/Parking Facility – Chicago, Illinois

The University of Chicago Hospitals retained Desman Associates to design a state-of-the-art mixed-use building to provide 1,000 parking spaces on nine levels, 9,000 SF for a police station and 50,000 SF of office space. This facility is a part of the University’s South Campus Master Plan.

8 http://www.timhaahs.com/index.php/site/pdetail/hamilton_square_at_the_university_of_pennsylvania/
9 http://www.desman.com/hotproperty/task/view/id,34/Itemid,189/
10 http://www.desman.com/hotproperty/task/view/id,69/Itemid,168/
Mountaineer Station – Morgantown, West Virginia

Mountaineer Station is located within West Virginia University’s campus and features a 500-space garage, a commuter student lounge with lockers, interior bicycle storage and showers, direct access to PRT stations and information for other transit and campus transportation services. The building also contains the West Virginia University’s Parking Management and the Department of Transportation and Parking administrative offices.

B. Site Needs

i. Size
The size of the site required to accommodate the park and ride facility will be based largely on the type of parking facility desired, the number of spaces required, and the types of amenities provided. There were no preferences on the size of the site by the SAC or IFG, although it was noted that the site and context should influence the size of the facility. The survey did not include a question on site size preferences.

To maximize efficiency, a parking garage should have a minimum lot size of 200 feet by 200 feet, or approximately 1.0 acre. For a surface parking lot, a minimum of 300 square feet of area per parking space should be allocated depending on landscaping. A minimum of 7.5 acres is required to accommodate 1,060 spaces, the low estimate of anticipated parking demand. 14.9 acres is required to accommodate the high estimate of 2,160 spaces.

Site Size: To accommodate a garage, the site should be a minimum of 1.0 acre. Otherwise, a minimum of 7.5 acres is required.

ii. Location
The SAC and IFG agreed that employees would prefer park and ride locations within a 10 minute walk from the institutions and businesses or sites in suburban locations within close proximity to their home. The SAC and IFG were primarily concerned with employee convenience. They suggested that the facility location be selected so that it does not substantially increase existing commute times or require additional transfers or connections on a shuttle or transit system.

Based on the survey results, location factors are among the most important issues for potential users. Ability to access a vehicle quickly in case of emergency and time savings over current commute were among the top two factors that would encourage potential users to choose a park and ride facility. When asked about location preferences, however, no clear preference emerged. 34% of respondents indicated that either near University Hill, near the city boundary, or in the suburbs would be acceptable locations for a park and ride facility, as depicted in Figure 3.1. 36% of respondents answered that the facility should be near the Hill and 26% preferred a location in the suburbs. Only 5% of respondents preferred a site near the city boundary.

**Site Location: The site should be located near University Hill or in a suburban location.**

The preference for facility sites near University Hill or in suburban locations is supported by the respondents’ preferences for total commute time, the strongest factor in commuting decisions. The majority of respondents to the employee survey stated that their average commute is less than 20 minutes. 82% have less than a 30 minute commute, and about 82% also live within 20 miles or less. Respondents overwhelmingly (90%) prefer a 10 minute or less shuttle ride and acceptance drops to 59% when the ride is between 11-15 minutes. Survey respondents also indicated that a shuttle ride in excess of 15 minutes is generally unacceptable. Given these factors, any park and ride option would have to consider a 30-35 minute window as the maximum commute time for the average participant: a 15-20 minute drive to the facility with a 10-15 minute shuttle ride. These findings tend to exclude regional options (Figure 1.3) that require nearly a full commute to the parking facility (20 minutes) and then a significant shuttle ride (greater than 15 minutes).

**Site Location: The site should be located within a 10-15 minute shuttle ride and preferably a 10 minute walk from the Hill or in a suburban location.**

The survey also indicated which major roadways the employees use to get to work. Over 50% of respondents indicated that they access the Hill via Interstates 81 and 690, with the largest portion of these, 26%, traveling I-81 southbound. Figure 3.2 shows the commute routes reported by surveyed employees. The SAC
and IFG also indicated that locating the facility within easy access of I-81 or I-690 would accommodate most users.

**Site Location: The site should be located within easy access of I-81 or I-690.**

Figure 3.2: Employee Travel Approach*

* The remaining 26% travel on other roadways

### C. Facility Needs

#### i. Users and Availability
The anticipated users of the park and ride facility will have an impact on the parking demand, operations, and costs. Both the SAC and the IFG agreed that the facility should serve institutional and business employees, and that daytime employees should be targeted. Both groups noted that the institutions’ night-time and weekend demands are currently being met.
The results of the Transportation Opinion Survey indicated that 88% of respondents, all of whom were employees, currently drive to work alone, and that 80% of respondents are satisfied with their existing commute. This represents a large population of potential park and ride system participants. It also represents a large number of people who would have to change their current commuting habits in order for a park and ride system to be effective.

57% of survey respondents indicated that limiting the system to employees would be very important in encouraging them to use the facility. For safety and security reasons, as well as to simplify operations, the park and ride components of the facility should not serve the general public. However, the facility could be used for special events during evening hours. The SAC also noted that any land uses associated with the facility should be designed to serve the population of the surrounding area.

**User: The park and ride facility should serve daytime employees.**

**ii. Facility Type**

The existing park and ride systems in the University Hill area and serving Syracuse more generally are operating from surface parking lots. The SAC indicated that this was not due to preference but the fact that surface lots associated with park and rides are often large, in locations on the outskirts of downtown or the Hill, and, in the case of Centro’s park and ride facilities, shared with another use (i.e., Wegmans). The IFG indicated that they believe the user preference is for open surface lots, as they are perceived as being safer than a garage.

57% of employee survey respondents currently park their vehicle in a surface lot. However, as depicted in Figure 3.3, the majority (54%) of survey respondents indicated that they prefer a garage. 40% of survey respondents preferred a surface lot.

**Figure 3.3. Facility Type Preferences**

**Facility Type: A garage is the preferred facility type.**
iii. **Facility Size - Parking Demand**

At the request of the University Hill Corporation, each institution provided a low and high estimate of their anticipated parking demand for the next three to ten years. Each institution was asked to provide the number of spaces the institution would like (or need) to have accommodated in a park and ride facility. Institutions were asked to consider employment growth and planned development projects that would eliminate existing parking. Institutions did not include demand for development projects that are anticipated to provide their own parking including development at Syracuse University, the Kennedy Square site and the Center for Excellence. The estimated demand is shown in **Table 3.1**:

<table>
<thead>
<tr>
<th>Institution/Organization</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syracuse University</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SUNY Upstate</td>
<td>300</td>
<td>750</td>
</tr>
<tr>
<td>Crouse Hospital</td>
<td>350</td>
<td>500</td>
</tr>
<tr>
<td>SUNY ESF*</td>
<td>10</td>
<td>510</td>
</tr>
<tr>
<td>VA Medical Center</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Hutchings Psychiatric Center</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Crouse-Marshall Business District</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,060</strong></td>
<td><strong>2,160</strong></td>
</tr>
</tbody>
</table>

* - assumes loss of 300 leased spaces from SU in high estimate

There may be undocumented demand from employees that park on-street or pay for private parking. Demand associated with special events and conferences and latent student demand was not accounted for.

For a sense of scale and comparison between the anticipated demand listed above and the size of facility needed, the size and capacity of a number of large parking facilities in the Syracuse area are referenced below:

**Surface Lots**

The largest surface parking lots within the City of Syracuse central business district are a 350-space lot on Montgomery Street which is approximately 90,000 square feet (2.0 acres) and the surface lot just north of the Convention Center Garage which contains 335 spaces on approximately 100,000 square feet (2.3 acres) of land. The larger of the New York State employee surface lots under I-81 contains 800 spaces (lot area is not available). The Manley North/South surface lots provide 1,030 spaces and cover approximately 315,000 square feet (7.0 acres). In terms of comparisons to accommodate the high demand estimate, the 2,000-space surface lot at the Syracuse Hancock International Airport is approximately 550,000 square feet (13.0 acres).
Garages

Table 3.2 provides a comparison of local parking garages and their supply:

<table>
<thead>
<tr>
<th>Facility</th>
<th># of Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crouse Garage</td>
<td>980</td>
</tr>
<tr>
<td>Atrium Garage/Sibleys Garage</td>
<td>800</td>
</tr>
<tr>
<td>Washington Garage/Harrison Garage</td>
<td>1,200/1,300</td>
</tr>
<tr>
<td>Upstate Garage East/West</td>
<td>1,400/1,500</td>
</tr>
<tr>
<td>Rochester - Midtown Garage/Washington Square Garage</td>
<td>1,800</td>
</tr>
<tr>
<td>Syracuse Airport Garage</td>
<td>3,068</td>
</tr>
</tbody>
</table>

*Facility Size: The facility(ies) should provide a minimum of 1,060 spaces and maximum of 2,160 spaces.*

iv. Supportive Land Use

The Land Use Concept from the *University Hill Transportation Study*, prepared by Wallace Roberts & Todd, LLC (WRT), forecasted future land uses on University Hill based on interviews with institutional representatives. The land use forecast focused on an area bordered by Madison Street, University Avenue, Waverly Avenue, and Irving Avenue and suggested the following uses:

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>280,950 SF</td>
</tr>
<tr>
<td>Cinema</td>
<td>45,000 SF</td>
</tr>
<tr>
<td>Medical</td>
<td>400,000 SF</td>
</tr>
<tr>
<td>Daycare</td>
<td>7,000 SF</td>
</tr>
<tr>
<td>Housing</td>
<td>970 units (1.2 million SF)</td>
</tr>
<tr>
<td>Office</td>
<td>55,000 SF</td>
</tr>
<tr>
<td>Academic</td>
<td>384,000 SF</td>
</tr>
</tbody>
</table>

If the park and ride facility is located close to the Hill, one or more of these uses could be incorporated into the building and contribute to the land use concept proposed in the *University Hill Transportation Study*. If the park and ride facility is located on the outskirts of the Hill, meeting the prescriptions of the *University Hill Transportation Study* land use concept becomes less feasible; for example, the retail use becomes inappropriate in terms of walkability and serving those on the Hill. If destination-oriented uses such as medical, housing, and office are included in the park and ride facility, they would create their own parking demand that would need to be accommodated within the structure. Members of the SAC indicated some interest in incorporating office uses into the facility to meet future institutional needs.
The results from the employee survey indicated that the incorporated amenities at the park and ride facility would be the least important factor in encouraging its use. Discussions with the IFG corroborated that result. However, the IFG also expressed the desire to avoid isolating the facility.

The SAC noted the importance of ensuring that the facility supports the surrounding neighborhood and incorporates elements of any existing neighborhood plans. Recommendations for amenities included an alternative fueling station and available parking spaces for CuseCar and ZipCar. However, these vehicles are typically kept closer to the institutions than a park and ride facility would likely be located.

The employee survey queried participants regarding their preferences for amenities or land uses associated with the park and ride facility. Respondents were asked to prioritize eight land use options. An “other” category for write-in suggestions was also provided. Survey results are summarized in Table 3.4. The highest-ranked first choice amenity, by over 1,000 of the respondents (32%), was a coffee shop. A convenience/drug store was the highest-ranked second choice. Respondents also showed interest in a bank and auto service/gas station.

The “other” category was the second highest ranked first choice amenity. Of these, the most popular write-in answer was a grocery store. Other amenities frequently noted were clean bathrooms, weather protection, comfortable seating/waiting area, and security on-site. Many write-in comments reflected the relative lack of importance of incorporated amenities in encouraging the use of the park and ride facility.

<table>
<thead>
<tr>
<th>Amenities</th>
<th>Ranked 1</th>
<th>Ranked 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Respondents</td>
<td>Percentage</td>
</tr>
<tr>
<td>Coffee shop</td>
<td>1,002</td>
<td>32.4%</td>
</tr>
<tr>
<td>Other (Please explain)</td>
<td>548</td>
<td>17.7%</td>
</tr>
<tr>
<td>Convenience/Drug store</td>
<td>442</td>
<td>14.3%</td>
</tr>
<tr>
<td>Auto repair services/gas station</td>
<td>359</td>
<td>11.6%</td>
</tr>
<tr>
<td>Bank</td>
<td>307</td>
<td>9.9%</td>
</tr>
<tr>
<td>Café/Restaurant</td>
<td>207</td>
<td>6.7%</td>
</tr>
<tr>
<td>Daycare</td>
<td>137</td>
<td>4.4%</td>
</tr>
<tr>
<td>Dry cleaner</td>
<td>45</td>
<td>1.5%</td>
</tr>
<tr>
<td>Entertainment (movie rentals, bookstore, library, etc)</td>
<td>41</td>
<td>1.3%</td>
</tr>
<tr>
<td>Total</td>
<td>3,088</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

The MDA’s Downtown Committee is currently conducting a retail recruitment program for the downtown area, the Hill, and the north side of the City. A study by Buxton Consulting will provide demographic and consumer spending pattern
information that can be used to show retailers that a store would be successful in the area. The study is expected to be finalized in the summer of 2009 and any land use incorporated into the proposed park and ride facility should take the findings of this study into consideration.

**Supportive Land Use:** The park and ride facility should provide a coffee shop, restrooms and a waiting area. A convenience/drug store or grocery store should also be considered.

### D. Shuttle Needs

**i. Schedule**

Most Transportation Opinion Survey respondents (63%) preferred a frequent but short shuttle ride, which is typical. A majority of respondents (56%) also indicated that predictability in shuttle schedules was important. If both of these needs are satisfied, a slightly longer shuttle route will likely be tolerated. The possibility of a slightly longer shuttle route (closer to 15 minutes rather than 10) will provide more options for park and ride facility locations and help manage the overall cost of the system.

*Schedule: Maximum 15 minute shuttle ride with frequent and predictable arrival. If suburban park and ride facility is implemented, total commute time (including average drive time to park and ride facility and shuttle ride to University Hill area) should not exceed approximately 35 minutes.*

**ii. Tracking Technology**

Including GPS tracking technology, which was important to more than 70% of survey respondents, will also help instill a sense of predictability by controlling passenger information about the location and timing of shuttles. When passengers have real time information, either by looking up shuttle locations on their phones (43% of survey respondents stated they would use this option) or viewing shuttle status on an LCD screen (50% of respondents stated they would use this option), the overall satisfaction with the service rises.

*Technology: Shuttles should be equipped with GPS tracking technology and users should have access to real time arrival information.*

**iii. Vehicle**

The IFG indicated that vehicles should be comfortable and appropriate for transporting professional employees. Survey respondents were asked how important several vehicle characteristics would be in encouraging them to use a park and ride facility with shuttle service. 60% of respondents indicated that the use of a vehicle other than a bus (e.g. streetcar) was “unimportant.” 78% indicated that having shuttles that accommodate bicycles was also “unimportant.” Respondents did indicate a preference (66%) for smaller shuttles with comfortable
seating with 19% rating this as “very important” and 47% as “somewhat important.”

_Vehicle: System should use smaller shuttle buses with comfortable seating._

iv. **Shuttle Stops**
The availability of shuttle stops equipped with shelters and seating is an important factor in encouraging use of a park and ride system. 51% of survey respondents ranked this factor as “very important” and another 37% ranked this as “somewhat important.”

_Stops: Shuttle stops should be equipped with shelter and seating._

v. **System Flexibility**
Through interviews it was evident that all the institutions support the concept of combining transportation services, so long as service levels, capacity, and frequency were not unreasonably impacted. There is enough overlap in the existing shuttle systems to realize cost savings operationally, as well as through economies of scale with respect to overhead, management costs, and potential volume discounts. One challenge is that some institutions are private and some are public. Any contracted service will be required to address the intricacies of creating a workable agreement that meets New York State procurement law. A second challenge is that Crouse and SUNY Upstate have a need to transport individuals between facilities in addition to transporting employees from a remote lot, while other institutions have no need for a combined internal system. Finally, several institutions identified the need for unscheduled charter type service to provide transportation for conferences, field trips, or other similar activities.

_Flexibility: The shuttle serving the park and ride facility should be available to all participating institutions and businesses. If feasible, the system should also:_

- accommodate the circulation needs of Crouse and SUNY Upstate, including use by patients and visitors,
- provide service to local retail and dining establishments to enhance quality of life for employees, and
- provide charter type service.
E. Summary of Programming Needs and Parameters

The following park and ride needs and parameters were identified in previous sections:

i. Site

- Size: To accommodate a garage, the site should be a minimum of 1.0 acre. Otherwise, a minimum of 7.5 acres is required.
- Location: The site should be located near University Hill or in a suburban location.
- Location: The site should be located within a 10-15 minute shuttle ride and preferably a 10 minute walk from the Hill or in a suburban location.
- Location: The site should be located within easy access of I-81 or I-690.

ii. Facility

- User: The park and ride facility should serve daytime employees.
- Type: A garage is the preferred facility type.
- Size-Parking Demand: The facility(ies) should provide a minimum of 1,060 spaces and maximum of 2,160 spaces.
- Supportive Land Use: The park and ride facility should provide a coffee shop, restrooms and a waiting area. A convenience/drug store or grocery store should also be considered.

iii. Shuttle

- Schedule: Maximum 15 minute shuttle ride with frequent and predictable arrival. If suburban park and ride facility is implemented, total commute time (including average drive time to park and ride facility and shuttle ride to University Hill area) should not exceed approximately 35 minutes.
- Technology: Shuttles should be equipped with GPS tracking technology and users should have access to real time arrival information.
- Vehicle: System should use smaller shuttle buses with comfortable seating.
- Stops: Shuttle stops should be equipped with shelter and seating.
- Flexibility: The shuttle serving the park and ride facility should be available to all participating institutions and businesses. If feasible, the system should also:
  - accommodate the circulation needs of Crouse and SUNY Upstate, including use by patients and visitors,
  - provide service to local retail and dining establishments to enhance quality of life for employees, and
  - provide charter type service.
4. Alternative Sites and Evaluation Criteria
Based on the large number of potential facility locations, identified in Figures 1.2-1.4, a two-phase screening process will be used to determine the recommended site(s). The first will reduce the number of alternative sites to three to seven based on site needs. Then, more detailed evaluation criteria will be used to qualitatively evaluate the remaining sites based on facility and shuttle needs.

A. Phase 1 Evaluation

i. Methodology and Evaluation Criteria
The Phase 1 evaluation reduces the number of potential facility locations based on the following site needs:

- Size: To accommodate a garage, the site should be a minimum of 1.0 acre. Otherwise, a minimum of 7.5 acres is required.
- Location: The site should be located near University Hill or in a suburban location.
- Location: The site should be located within a 10-15 minute shuttle ride and preferably a 10 minute walk from the Hill or in a suburban location.
- Location: The site should be located within easy access of I-81 or I-690.

These criteria progress all of the Centro Park-N-Ride Locations, identified in Figure 1.4, since they are in suburban locations. 26% of employee survey respondents indicated that they prefer a suburban park and ride location. An additional 34% would consider it an acceptable option. Members of the SAC and IFG also stated that employees would prefer a suburban park and ride that reduced their personal commute time and cost. Therefore, all suburban sites have been evaluated in Section 4.A.ii.

36% of survey respondents preferred a park and ride facility located near University Hill. SAC and IFG members also indicated employees would prefer a site within a 10 minute walk. Therefore, all Local Potential Sites, identified in Figure 1.2, will be considered for evaluation in Section 4.A.iii. Even though only 5% of survey respondents preferred a site near the city boundary (Figure 1.3), the acceptable length of a shuttle ride (10-15 minutes) would include a number of regional sites for consideration. Therefore, all regional sites have also been evaluated in Section 4.A.iii.

ii. Suburban Sites
The intent of the suburban park and ride facilities is that they be located close to the employee’s place of residence and would therefore reduce their individual commute time. By their suburban definition they would not be located within the 10-minute walk or 10-15 minute shuttle ride. Due to the proximity to employee residence, it is anticipated that the users of suburban sites would primarily access the sites via local roads. Therefore, the location criteria defined above is not applicable. Similarly, the minimum site requirement to construct a garage would
not be appropriate evaluation criteria since the Centro Park-N-Ride locations operate through an informal agreement to use existing private parking facilities. Therefore, it was determined that the most appropriate evaluation criteria for these suburban sites would be to determine which of the existing Centro Park-N-Ride locations would have the potential to serve the greatest number of University Hill employees.

An analysis of employee place of residence was conducted to determine the potential number of University Hill employees that could be served by each Centro location. Figure 1.4 shows the existing park and ride locations within Onondaga County. The locations closest to the Hill (P-19, 20, 21 and 17) were eliminated from consideration since these locations will be analyzed as local or regional sites.

For the purposes of this analysis, potential riders are those employees that live within a five mile radius of a park and ride location. If a zip code area fell partially within the radius, an assumption was made for the potential number of employees that could be served based on how much of the area is included. It was also assumed that ridership may be decreased based on the location of the park and ride in relation to the Hill. For example, for the Fayetteville/DeWitt location, those employees on the west side of the five mile radius were not included since they are closer to the Hill than the park and ride facility. A table of the Central New York employee zip codes for all institutions, used to determine the number of potential riders, is provided in Appendix D.

Based on the five mile radius, the Fayetteville/DeWitt location (P-8), the two Liverpool locations (P-4, P-6), and the Camillus location (P-16) have the potential to serve the most employees. The two Liverpool locations were in such close proximity that it is assumed that either one could serve the employees and were therefore analyzed as one location.

The Fayetteville/DeWitt location (P-8), located in the Wegmans parking lot off East Genesee Street (New York State 92) in DeWitt, could serve employees from Fayetteville, portions of East Syracuse, Manlius and the Jamesville areas, as well as all of Minoa, for a total of approximately 2,150 employees. While there are hundreds more employees within a five mile radius of this location, those west of I-481 were not considered potential users.

The P-4 or P-6 park and ride location in Liverpool would serve a large portion of the Town of Clay and Town of Salina, approximately 1,900 employees. Location P-4 is off County Route 57 in the Seneca Mall (K-Mart) parking lot. P-6 is just north of John Glenn Boulevard in the Wegmans parking lot, also off County Route 57.

Over 1,500 employees could be served by the park and ride location off West Genesee Street in Camillus Commons (P-16). Employees that live in Camillus,
Fairmount, Solvay, and parts of Marcellus and Onondaga Hill could be served by this location.

These three suburban sites will be among the alternatives evaluated in Phase 2. Each of these locations is served by Centro routes that currently have service to the Hill. **Figure 4.1** shows each of the suburban park and ride alternatives to be progressed.
Figure 4.1

Legend

- Zip Code Boundaries
- Park-n-Ride
- 5 Mile Buffer
- Railroads
- Interstate or Ramp
- Highway
- Major Road
- Local Road

Source: CSCIC Street data from NYS GIS Clearinghouse; Background info from ESRI; Park-n-Ride data from SMTC.

When printed at 22"x34"
iii. Local/Regional Sites

All local and regional potential sites have been evaluated based on the following criteria:

**Size**
- Minimum Site Size of 1.0 acre

**Location**
- Easy Access to Regional Highways (I-81/I-690)
- Within 10-15 Minute Shuttle Ride from Hill: Figure 4.2 shows a 1 ½ mile (10-15 minute shuttle ride with stops) and 3 mile (15-20 minute shuttle ride with stops) from the center of the Hill
- Within 10 Minute Walk from Hill: Figure 4.2 also shows a ½ mile radius (10 minute walk) from the center of the Hill

First the sites were evaluated to determine if they fall within the 10-15 minute shuttle ride. Those that met these criteria, as shown on Figure 4.2, were evaluated to assess if they met the minimum site size of 1.0 acre and are easily accessed from I-81 and I-690. Site size information was obtained through tax map data or scaled from aerial photography and access to the regional highways was based on distance from I-81 and I-690 exits.

Table 4.1 contains the Phase 1 evaluation matrix for the potential sites. Based on the evaluation, the following sites met the criteria to be progressed to the Phase 2 detailed analysis:

1. A1, A2, A3 – Kennedy Square Vicinity
2. C1, C2 – Centro Headquarters/Syracuse Housing Authority
3. K – Teall Avenue
4. I – St. Joseph’s Hospital
Figure 4.2

Source: Street data from CSCIC NYS GIS Clearinghouse; Background info from ESRI.

1" = 2000'

When printed at 22"x34"
Table 4.1 Phase 1 Site Evaluation

<table>
<thead>
<tr>
<th>Minimum Site Size (200 ft x 200 ft)</th>
<th>Kennedy Square Vicinity (A1)</th>
<th>Kennedy Square Vicinity (A2)</th>
<th>Kennedy Square Vicinity (A3)</th>
<th>Manley (B1)</th>
<th>Manley (B2)</th>
<th>Syracuse Housing Authority (C1)</th>
<th>Syracuse Housing Authority (C2)</th>
<th>Centro (C3)</th>
<th>Trolley Lot (E)</th>
<th>City/Private Lots (H1)</th>
<th>State Lot (H2)</th>
<th>St. Joseph’s Hospital (I*)</th>
<th>Teall Avenue (K)</th>
<th>West Street (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Somewhat/Partially</td>
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<td>☐</td>
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<tr>
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<td>☐</td>
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<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

I* - only works for one block if two parcels are combined

iv. Phase 2 Evaluation Sites

Despite the results of the Phase 1 analysis, the progressed sites were modified to remove the St. Joseph’s Hospital site and instead progress the Alliance Bank Stadium site. This change was made to reflect the concern of representatives from St. Joseph’s Hospital, who felt their own parking demand and expansion plans would preclude the use of their property for a park and ride to serve University Hill. Alliance Bank Stadium was added due to its past success as a park and ride serving SUNY Upstate and the proximity of potential rail access to University Hill. Therefore, the following sites were progressed to the Phase 2 analysis and are shown in Figures 4.3 and 4.4:

1. Fayetteville/DeWitt (P-8)
2. Liverpool
   - Seneca Mall (P-4)
   - Wegmans Plaza (P-6)
3. Camillus (P-16)
4. Kennedy Square Vicinity (A1, A2, A3)
5. Syracuse Housing Authority (C1, C2)
6. Teall Avenue (K)
7. Alliance Bank Stadium (D)
B. Phase 2 Evaluation

i. **Methodology and Evaluation Criteria**
The following criteria are used for the in-depth Phase 2 evaluation of alternatives based on the findings developed through steering committee and institutional focus group meetings, a transportation opinion survey, research of best practices and case studies, and interviews with the individual institutions.

**Site**
- **Location:** The site should be located near University Hill or in a suburban location.
- **Size:** To provide a garage with efficient layout and operation, the site should meet the minimum size requirement of 1.0 acre and have the general dimensions of 200 ft. x 200 ft. A minimum parcel of 7.5 acres is required for a surface lot. Suburban park and ride locations are located within existing retail plazas. Since it is assumed that a new parking facility will not be constructed at these locations, the minimum site size criterion does not apply.
- **Acquisition Costs:** Acquisition cost should be minimized. For sites that would need to be acquired, the full market value is documented. For suburban sites, only operation costs are included in this analysis. This project did not ascertain or analyze capital costs or site depreciation values relative to the suburban sites. Centro advises that the private businesses currently hosting suburban park and rides would not likely permit the volume of commuter parking identified in this analysis. If stand alone facilities dedicated to park and ride users only ever become necessary, land acquisition cost and other associated capital costs would require additional review pending consideration of recommendations.
- **Access to commuter corridors:** The site should be proximate to the main commuting corridors, I-81 and I-690. The site should also be located on a roadway that has adequate capacity to accommodate traffic generated by the facility.
- **Visibility from Major Roads:** The site should be visible from major roadways for ease of wayfinding.
- **Walking Distance:** A site located within a reasonable walking time of the center of the Hill (10 minutes) is an advantage. The walking time from the assumed center of the Hill, University Avenue and Adams Street, is noted where applicable.
- **Zoning/Land Use:** By right use of the site for parking is an advantage. Existing land use and zoning are documented. Required modifications to zoning are noted where applicable.
- **Transit Compatibility:** The site should maximize the potential for connections to a broader transit network. Location of a site along an existing transit route is documented. This criterion has been modified from the Programming Needs and Parameters Memo to note all potential transit access rather than be limited to the Connective Corridor.
Safety/Security: The site should be safe. The presence of real or perceived safety issues is documented.

Facility
- **Type:** While a garage is the preferred facility type, the sites were evaluated as with both a garage and a surface parking lot if applicable.
- **Potential to Meet Parking Demand:** The facility(ies) should provide a minimum of 1,060 spaces and maximum of 2,160 spaces. It is assumed that the suburban park and ride locations would not meet the full parking demand. Instead, anticipated demand for these facilities is calculated based on the number of employees within a defined catchment area. This demand is documented in the evaluation of the individual suburban sites.
- **Supportive Land Use:** The availability of the desired land uses in the surrounding areas is documented. The park and ride facility should provide a coffee shop, restrooms and a waiting area. A convenience/drug store or grocery store should also be considered.
- **Development Cost:** To increase the feasibility of a facility, development costs should be minimized. The costs to construct a parking facility and wrap buildings are documented.
- **Operating and Maintenance Cost:** Operating and maintenance costs should be minimized. The annual costs to operate and maintain a parking facility and wrap building are documented.
- **Compatibility with Surroundings:** The facility should be compatible with existing surroundings. Land uses in a wrap structure should support users of the park and ride and where feasible meet the needs of the surrounding neighborhood. Compatibility with existing plans is also documented.

Shuttle
- **Shuttle Trip Length:** The shuttle trip time evaluation criteria consist of two components. The first relates to the total commute time from an employee’s home to the park and ride facility and continuation on a bus to University Hill. The total commute should not exceed 35 minutes with an assumed commute to the park and ride of 5 to 10 minutes. The second component relates to the park and ride facilities near the Hill. The maximum shuttle trip time for the University Hill facilities should not exceed 15 minutes. Additionally, all shuttles should provide frequent headways and be designed to maximize predictable arrivals.
- **Peak Hour Ridership:** Potential ridership varies by parking facility size and is documented in the alternative analysis. Shuttle service for each site is designed to accommodate the peak hour passenger volume.
- **Technology:** Shuttles should be equipped with GPS tracking technology and users should have access to real time arrival information.
- **Vehicle Type:** System should use smaller shuttle buses with comfortable seating.
- **Stops:** Shuttle stops should be equipped with shelter and seating.
• **Capital Costs:** Capital costs should be minimized. Capital costs to initiate shuttle service are documented.

• **Operating Costs:** Operating costs should be minimized. Annual operating and maintenance costs are documented.

• **Flexibility:** The shuttle serving the park and ride facility should be available to all participating institutions and businesses. If feasible, the system should also:
  o accommodate the circulation needs of Crouse and SUNY Upstate, including use by patients and visitors,
  o provide service to local retail and dining establishments to enhance quality of life for employees, and
  o provide charter type service.

ii. **General Assumptions**
The following assumptions were used in the evaluation of alternatives:

**Site Assumptions**
• The analysis of potential suburban park and ride locations focuses on existing park and ride facilities operated by Centro. The decision to analyze these specific existing locations was made for several reasons. First, for purposes of analysis, these sites provide ready examples of suburban park and ride locations and can be used as representatives of other potential sites in the vicinity. Second, there is evidence that these sites could theoretically accommodate additional users. However, it should be noted that these existing park and rides sites are privately owned. Centro operates park and ride service from these facilities at the discretion of the property owner. It was assumed that the informal agreements between Centro and the site owners would remain the same, but it should be noted that if ridership increases to a point that demand exceeds the available parking or otherwise affect the surrounding uses, the existing agreement would require renegotiation or alternate locations would need to be identified. It should also be noted that in some cases, these existing park and rides may not represent the optimal locations for suburban park and ride sites.

• Parcel size and acquisition costs are based Onondaga County Property Tax Information ([www.ongov.net](http://www.ongov.net)). The acquisition costs reflect 2009 full market value assessments and do not include site preparation, environmental assessment or remediation costs or any other fees associated with buying or developing the site. For suburban sites, it is assumed that the informal existing park and ride agreements could be extended or renegotiated, and that there would be no acquisition costs.

• To maximize efficiency in terms of layout and the number of spaces available, the minimum lot size necessary for a parking garage was assumed to be 200 feet by 200 feet. These values were considered flexible depending on the individual site and dimensions available.
Facility Assumptions

- The park and ride facility should serve daytime employees.
- The suburban sites are privately owned. Therefore, it is assumed that no garage or wrap buildings will be constructed.
- The demand for suburban park and ride sites was calculated based on the total employee population in the vicinity of suburban sites, as estimated through employee zip code data. The survey documented that just under 4% of employees currently take transit often (3-5 days per week). When asked the preferred commute option they would use instead of driving alone, 40% of respondents selected transit as their first choice and 31% identified transit as their second choice. 45% of survey respondents also indicated they would be very likely to shift to transit if express routes were provided from park and ride lots. Although a high number of employees indicated a preference for transit with direct service, the large number of varying employee shifts at the different institutions makes it difficult to accommodate all work schedules.

The intent is to serve daytime employees. Given the existing low transit ridership and the limited number of employees that could be accommodated during the typical morning and evening peak periods, a reasonable goal would be to achieve a transit ridership of 10 to 15% of potential demand. Being cognizant of the ability of the existing park and ride facilities to accommodate the increase in demand, an initial ridership of 10% was assumed. Therefore, the assumed parking demand at a suburban site is 10% of the employee population within a five-mile radius of the park and ride location.

- To determine the number of spaces that could be accommodated by each site, it was assumed that 300 square feet per parking space would be needed. This assumption includes accommodations for landscaping in a surface lot or structural purposes in a garage. This number is consistent with the area per square foot for the recently constructed SUNY Upstate West Garage.

- Any wrap buildings associated with a site were assumed to need 75 feet of depth (a 65 foot building with a 10 foot offset from the facility) and contain three floors of supporting uses (see example graphical representation below).

![Diagram](image-url)
The potential height of a parking garage was determined based on the character of the surrounding area, including a review of neighboring building heights.

It is assumed that the final uses located within a building wrapping a parking facility will include a coffee shop, restrooms and a waiting area. Where there is sufficient demand a convenience/drug store or grocery store will also be considered. The evaluation notes where these uses are currently located within close proximity to an alternative site.

The parking demand associated with any uses in the wrap building will need to be accommodated within the proposed parking facility. The specific land use and associated square footage will need to be determined during preliminary design. This analysis does not account for demand from uses located in wrap buildings on site.

**Facility Cost Assumptions**

- For suburban park and ride locations, it is assumed that existing informal park and ride agreements could be extended or renegotiated, and that there would be either minimal or no development or maintenance and operations costs.
- The costs associated with the construction of a garage are more conservative therefore they were the costs documented in this evaluation. For comparison’s sake, the per space costs for the construction of a surface parking lot would be approximately $4,000 per space. This cost includes pavement, drainage, sidewalks, striping and signage. As with the garage costs, this price does not include acquisition costs, site preparations, etc.
- Since the SUNY Upstate structure was recently built on the Hill and contains many of the features that would be desirable or required in a park and ride structure, the $20,000 cost per parking space for the SUNY Upstate West Garage was used to determine the construction costs for the potential park and ride garages. Characteristics of the SUNY Upstate West Garage include:
  - Concrete structure with 1,500 spaces accommodated on 4 floors plus roof parking (estimated 90,000 square feet per floor)
  - 3 elevators, fire protection, ventilation system, snow melting hopper and deck traffic coating system
  - Federal APD gated access, cash operations and proximity cards and approximately 90 security cameras (360° view)
  - Construction cost (including some fees and demolition costs) of $29,000,000 or $20,000 per space
• Development costs per square foot for the buildings that will wrap around the parking facilities were estimated at $200 per square foot, based on the following assumed characteristics:
  o 3 floors (no interior fit out for specific uses)
  o Decorative concrete face and slab foundation
  o Includes plumbing, HVAC, and sprinklers
  o No demolition or site work
• A 20% contingency was added to estimated capital costs.
• Operation and maintenance costs for the garages were assumed at $300 per space per year based on industry standard practices and the SUNY Upstate Garage West:
  o Utility costs were assumed at $150,000 per year or $100 per space per year
  o Maintenance costs for a parking garage were assumed at $200 per space per year and include regular maintenance such as sealing the decks, slab and column patching, drainage and lighting maintenance, revenue control systems management, and cleaning
• General operations and maintenance costs associated with the wrap building are assumed based on the *Whitestone Building Operations Cost Reference 2008-2009, 2nd Edition*, which calibrates costs for the Washington D.C. area. Based on the local cost indexes provided in the reference, the costs in Syracuse are approximately 98% of those listed for Washington D.C. To be conservative, the costs listed in the references were used as documented. Costs assume that the first floor of the wrap building will be comprised of retail uses and the top two floors will be office space. Actual operation and maintenance costs will vary based on the final mix of uses established in the building.
  o First floor costs are assumed to be $12 per square foot per year
  o Second and third floor costs are assumed to be $18 per square foot per year

**Shuttle Assumptions**
• The primary objective of all transportation options is to provide safe and convenient peak period shuttle service from the park and ride facility for employees of each of the six major University Hill institutions and the Crouse-Marshall Business District. The institutions served include Syracuse University, SUNY ESF, the VA Hospital, Crouse Hospital, SUNY Upstate Medical University, and the Hutchings Psychiatric Center. To be conservative in the planning of shuttle services, Syracuse University has been included. SU has not indicated the need to accommodate any demand in a future park and ride facility. If they do not participate, the number of stops could be reduced and improve the travel time for other participants.
• Route recommendations were made based on the shortest and/or most efficient routes as identified by mapping software programs – Google Maps/Earth and Microsoft MapPoint with additional add-in programs.
Manual adjustments were made as needed based on knowledge of the local roadway network.

- The University Hill park and ride shuttle system options vary by the location of the park and ride facility. The suburban shuttle options are focused on direct service to the University Hill area with an average total commute time of 35 minutes. The University Hill options are divided into two groups. Kennedy Square and the Syracuse Housing Authority are essentially on University Hill; shuttles from these sites would not incorporate any highway travel. The Alliance Bank Stadium and Teall Avenue sites are far enough to utilize a limited amount of higher speed highway travel.

- There are four sites that are considered ‘University Hill’ locations. These are identified as non suburban park and ride facilities. Kennedy Square and the Syracuse Housing Authority are essentially in University Hill and the routes do not include highway travel. Routes that include only urban streets run at slower speeds due to congestion, traffic control (stop signs, lights, etc.), and lower speed limits. Conversely, these urban routes benefit from multiple alternate options and shorter total drive times. The Alliance Bank Stadium and Teall Avenue sites will travel on highways at higher speeds for a portion of their routes, but substantially less than the suburban options. The type of roads used on each route influence the schedule estimates and average speed calculations.

- The peak commuting periods are defined as 5:30 AM to 9:30 AM and 3:00 PM to 6:30 PM, Monday through Friday. Peak commuting periods were defined from information gathered during interviews with the individual institutions. During those interviews, representatives from the institutions identified multiple shifts and discussed how the existing bus service schedules were designed around those shifts as much as possible. The proposed service periods provide transportation options for multiple work shifts starting at 6:00 AM and ending at 6:00 PM. Copies of proposed routes and schedules are provided in Appendix E.

- Due to the medical and academic nature of the University Hill institutions, many of the employees have varied work shifts. Arrival at the park and ride facility will not be concentrated during any one hour period. For shuttle planning purposes, a peak hour estimate of 30% of total demand is assumed.

- The R1 and R2 SUNY Upstate Medical University parking lots currently begin limited shuttle service at 4:00 AM daily. The proposed University Hill shuttle analysis assumes that this service will be discontinued. Should SUNY Upstate still require this service, any of the shuttle options could be expanded to accommodate it.

- Average vehicle speed includes factors for stops, passenger boarding and alighting, and traffic congestion. For evaluation purposes, highway speed is estimated at an average of 38-39 MPH and urban road speed is estimated at an average of 9-10 MPH based on industry references and averages. It is assumed that vehicles will maintain schedules by adhering to stated time points. No vehicle will leave the route origination point prior to the established schedule time. Where possible, the schedule provides up to an
additional 5 minute cushion on the longer routes. The minutes are added to the schedule at the route origination point. This will allow time to gather passengers as well as to provide some leeway to make up for unexpected delays.

- Currently there is a gated barrier restricting access between South Crouse Avenue and Irving Avenue when using University Place. The recommended routes require the buses to pass along this route. It is our recommendation that the existing barrier be replaced with a gate arm that automatically lifts when the bus approaches, using radio frequency identification (RFID) or other similar technology. This will enable Syracuse University to continue to restrict access while providing a thoroughfare for authorized vehicles.

Technology

- Each vehicle will be outfitted with a GPS (Global Positioning System)-based tracking system that provides management reporting as well as a passenger interface. The system will enable management to track near real time locations of vehicles, route performance, and daily activity. The passenger interface will allow passengers to view the location of vehicles in near real time on the Internet and may include the ability to view locations directly on cell phones.

- An LCD monitor and internet computer setup should be installed at all permanent stop locations where reasonable security levels can be maintained to protect the equipment. The monitors will automatically update vehicle locations and display the information to passengers. Each vehicle will be equipped with the electronic ability to track each passenger’s institutional affiliation and report that information to management for cost allocation purposes. The specifics of the system will be established during the implementation stage and will require an evaluation of identification cards from each institution and input from IT departments. The simplest option would be either a self reported touch screen (you indicate your affiliation when entering the vehicle and show your ID card to the driver), or a separate swipe or bar code card that is only for the bus system. Centro currently does
not have swipe or bar code functionality on its inventory of fareboxes. It is assumed that vehicles purchased for this service will include this equipment. The cost is included in the cost of the vehicles.

Vehicle Type and Capacity

- There are any number of vehicle sizes and passenger seating and standee configurations available. For evaluation purposes, two general vehicle types, one smaller, mid-duty-rated vehicle, and one larger, heavier duty-rated vehicle are assumed. The actual vehicles chosen for this service may have slightly different characteristics or capacities due to fleet availability and final cost considerations. All vehicles used for this service should be ADA compliant.

- With respect to the smaller 28 passenger seat buses, it is likely that a private contractor would have them in their fleet, or would be willing to purchase them. A private contractor is not as likely as a public entity to have large buses in their fleet, and the cost to purchase them for this contract may prove to be prohibitive. Typically, more expensive buses are purchased for longer term contracts (e.g. 7-10 years) with high vehicle utilization (e.g. vehicles are in service for 12-16 hours daily). Private contractors may use either larger mid-duty buses, or, most likely, coach style buses. Either vehicle type is acceptable as long as the defined passenger capacity needs are met. If Centro provides shuttle service, it prefers to operate large buses that are compatible with the balance of the fleet.

- Assumptions regarding vehicle passenger capacity and bus size have been practical but conservative. The large buses, used for highway travel that requires passengers to be seated, are assumed to have 40 seats. However, a service provider may have the capability to furnish a vehicle with as many as 48 seats in a transit style bus or over 50 seats in a coach style bus. The large vehicles that are on routes where standing is permitted are estimated to carry 50 people (combined seated and standing). In practice, depending on vehicle configuration, transit buses may have the capacity to accommodate 60 people (considered the ‘crush capacity’) if required due to passenger demand.

- According to the *Transit Capacity and Quality of Service Manual*—2nd Edition (TCQoSM), Part 4, Bus Transit Capacity, published by the Transportation Research Board of the National Academies (TRB), maximum schedule loads are typically 125 to 150% of a bus’ seating capacity.

- “Crush loads, typically loads above 150% of a bus’ seating capacity, subject standees and other passengers to unreasonable discomfort. Such loads are unacceptable to passengers. Crush loads prevent circulation of passengers at intermediate stops and so induce delay and reduce vehicle capacity. Although crush loading represents the theoretically offered capacity, it cannot be sustained on every bus for any given period, and it exceeds the maximum utilized capacity” –TCQoSM, 2nd Edition.

Shuttle Flexibility:

- There is a need for a circulator transportation service that incorporates additional facilities, affiliated with core institutions, and access to retail and
dining establishments. The shuttle operations could be expanded to incorporate the additional service needs beyond those for the park and ride facility. The cost for these services could be allocated directly to the institutions based on proportional ridership. A brief description of this service and a suggested route and ordered stop list has been included in Appendix E.

- The Kennedy Square and Syracuse Housing Authority park and ride locations are close enough to the University Hill area that shuttle service could potentially accommodate both the commuter and circulator functions, primarily addressing the needs of the VA Hospital, Crouse Hospital, and the Upstate Medical University. This route model would require two additional buses above the amount required for the proposed Kennedy Square and Syracuse Housing Authority park and ride routes. All other service options would require a separate circulator shuttle to meet additional transportation needs.

**Shuttle Cost Assumptions**

There are three likely options for providing the shuttle service alternatives described in this analysis. Service is assumed to run Monday through Friday, every week of the year except for holidays. It is assumed there would be 10 days per year without service, or 250 total service days per year.

(1) Partner with Regional Transportation System  
Centro currently provides transportation to Syracuse University and multiple Park and Ride facilities. They have the infrastructure and a fleet of vehicles readily available to provide the service. Based on discussions throughout the study process and an interview (see Appendix B), they have indicated interest in providing this service for the University Hill park and ride facility.

Any route or routes operated by Centro must be available to the general public. Anyone who wishes to pay the fare can ride any of the routes, whether or not they are dedicated to the University Hill park and ride facility. While the routes would be open to anyone wishing to use them, it is likely that in practice only those who are part of the University Hill park and ride system would actually use the routes.

To provide this service, Centro would have to acquire additional vehicles equipped with the desired technology stated in the Technology section of the Shuttle Assumptions. Based on their current operating models, they are strongly inclined to purchase only 40’ transit buses. The purchase of smaller transit buses (30’ or 35’) or smaller (15-28 passenger) cutaway (light- or medium-duty) buses is unlikely to be considered.

To provide this service, Centro may require additional maintenance and storage facilities. Because of the weather in the Upstate New York region, all buses must be stored in enclosed facilities. Centro is currently at capacity in their maintenance facility. At the time of this study, estimated costs for maintenance and storage facilities were not known by Centro and are not included in cost
estimates. The final budget model would require the inclusion of additional costs for capital improvements.

For planning purposes, the amortization of all transit vehicles uses a 12 year depreciation schedule. This is the minimum useful life required when receiving federal money. It is reasonable that Centro could assume the amortization of the cost over the entire useful life of the vehicle, even if the agreement with the University Hill park and ride system is shorter than 12 years. Centro could assign the buses to other operations or use them to replace aging vehicles elsewhere in the fleet should the University Hill contract end or not be renewed.

- Federal subsidy programs will contribute 80% of the total cost of capital (vehicles, maintenance facility, storage facility) if matched by a 20% local contribution.
- New York State will contribute 10% of the total cost of capital (additional supplement to the Federal contribution).
- Approximately 10% of the total capital cost for vehicles, maintenance, and storage facilities will be added to the cost of the transportation provided by Centro.
- 40' Transit Buses are estimated to cost approximately $375,000 each.

Centro’s current cost to provide transportation services is approximately $60 per hour. This is known as the avoidable cost or variable operating costs to provide additional routes. This would encompass maintenance (parts & labor), driver wages and benefits, and fuel.

Vehicle Cost
The following assumptions were used to estimate the expected capital costs that will likely be added to the hourly rate charged by Centro. The dollar value per hour was calculated and added to the $60 per hour ‘avoidable cost’ figure provided by Centro.
- Estimated cost per vehicle is $375,000 each.
- The customer will be responsible for about 10% of the total vehicle cost after Federal and State subsidies.
- The expected contract length will be five (5) years and the vehicles will be amortized over the length of the contract.
- Number of annual service days is estimated at 250 per year, or five (5) days of service per week for 50 weeks each year.
- 25% spare ratio used in pricing calculations. The costs for the spare buses have been included in the hourly cost estimates.

(2) Outsource to Private Contractor
Private bus contractors/operators are typically flexible and interested in providing regularly-scheduled service to supplement other operations. Companies with local operations and infrastructure, such as Birnie Bus, Caz Limo, First Transit (First Student), are likely candidates to provide this service. Birnie Bus and Caz Limo
provide service to University Hill institutions as of the date of this study. Other companies not yet identified, such as coach operators, providers of non-emergency medical transportation, or livery companies, may be interested in providing this service as well.

Birnie Bus provides service to Upstate Medical University that is similar to the service proposed for the park and ride facility. The current costs are approximately $43 per hour for the smaller mid-duty shuttle (24 passengers) and approximately $57 per hour for the larger vehicle (44 passengers). To anticipate general operating expense increases as well as additional costs related to lease or purchase of new or additional vehicles to provide this service, a 15% increase is assumed. Typically, costs of service rise with inflation, increased maintenance and labor costs, and the cost of equipment, which is, on average, approximately 20% of the hourly rate.

(3) Operate Internally
If the capital is available for the purchase or lease of vehicles, and the operations and infrastructure requirements for maintenance and vehicle storage can be met, self operations may be a cost effective alternative that provides operational flexibility. The institutions involved in this study are both public and private and have different financial situations and procurement rules. As a result, this option may prove too cumbersome to implement. A separate operating company could be set up and owned by the institutions and employ a professional manager. Again, based on the variety of institutions involved, this may not be a practical solution.

Proposed schedules are approximate. For purposes of calculating costs, service hours have been rounded up to the next higher quarter hour. It is assumed that all operating costs are included in the hourly rate except where specifically noted in this analysis. These costs include management, maintenance, vehicle costs, insurance, ‘deadhead’ time (transit time from the storage location or depot to the initiation of the route), and fuel. Fuel is one of the most challenging costs to forecast as nearly all service providers will require a surcharge to protect against fluctuations. For the purposes of analysis, it is assumed that fuel costs are included in the base price. Since fuel is generally the same cost regardless of who provides the service, it is assumed that any increases will be proportionally equal for all providers.
iii. Option 1 – Fayetteville/DeWitt (P-8)

a. Site

Assumptions
The existing Fayetteville/DeWitt Centro Park-N-Ride is located in the suburban town of DeWitt, approximately 5.0 miles from University Hill (as measured along NYS Route 92). The existing park and ride is located within a shopping plaza owned by Wegmans Food Markets Inc. on East Genesee Street (NYS Routes 5 and 92). The park and ride area is on the south end of the parking lot in front of the Value City Furniture store. Site access is provided by a signalized intersection to East Genesee Street. There are signs internal to the shopping plaza to guide drivers to the park and ride shelter.

Evaluation
This suburban site currently exists on the same parcel as the Value City Furniture store, which is 30.0 acres, and is less than 0.5 miles east of I-481 in the Town of DeWitt. This suburban park and ride location is designed to capture existing commuters on East Genesee Street (NYS Routes 5 and
prior to accessing I-481. By removing commuters in single-occupancy vehicles from the section of East Genesee Street between the site and I-481, a minor increase in capacity on this road segment may be achieved. The signalized site driveway with East Genesee Street (NYS Routes 5 and 92) appears to have adequate capacity to accommodate potential users.

Due to the setback of the Centro shelter and the presence of out parcel buildings, the park and ride site is not visible from East Genesee Street. The land use of the parcel is documented as large retail and the zoning was not available but since a Centro Park-N-Ride currently exists, a park and ride facility on this site is acceptable.

Centro currently serves the park and ride through Routes 30, 62 and 262X. Route 262X provides peak hour express service to University Hill. Route 30 also provides local service to University Hill. These routes serve as additional transit service to University Hill commuters. There may also be commuters traveling from the existing park and ride that would benefit from direct express service.

There are no perceived safety issues at this location, although pedestrian access from the current shelter to the services on site is difficult. The Wegmans located within the plaza is open 24 hours and there is adequate lighting in the parking areas. There is existing lighting, landscaping, and a small shelter currently on-site, but no pedestrian accommodations. The site also has bike and pedestrian access from the east via the Erie Canal Trail.

b. Facility
Assumptions
 There are approximately 2,150 employees within a five mile radius of the site. Assuming that the park and ride could capture 10% of that population, it would need to accommodate 215 vehicles.

Evaluation
 The parking area associated with the furniture store, where the park and ride is located, contains approximately 360 spaces. This number does not include the parking areas in front of the Wegmans supermarket, bank, or strip mall. During a site visit, late on a typical weekday morning, there were approximately 10 vehicles parked in proximity of the park and ride shelter. Given these factors, it is assumed that the parking demand of 215 could be accommodated on site, leaving 152 spaces for the furniture store.
Surrounding land uses are generally commercial in nature, although a large residential neighborhood is also proximate to the site. The use of this site as a park and ride is generally compatible with the surroundings. In addition, the location adjacent to the supermarket, with a café and pharmacy, would provide preferred user amenities within walking distance. There is also a bank located in the plaza.

The only development costs anticipated would be the installation of enhanced signage providing commuters on East Genesee Street with information regarding the presence of the park and ride facility within the plaza. In keeping with the existing agreement, it is assumed that there would be no operations and maintenance costs.

c. Shuttle

Assumptions

Operational Overview

Inbound (to University Hill) Schedule:
First bus departs Fayetteville/DeWitt park and ride at 5:30 AM.
Last bus departs Fayetteville/DeWitt park and ride at 9:40 AM.
Vehicles will depart every 25 minutes.
Roundtrip distance is approximately 19 miles and approximate travel time is estimated at 45 minutes.

Outbound (to Fayetteville/DeWitt park and ride) Schedule:
First bus departs Syracuse University at 3:00 PM.
Last bus departs Syracuse University at 6:45 PM.
Vehicles will depart every 25 minutes.
Roundtrip distance is approximately 17 miles and approximate travel time is estimated at 43 minutes.

**Vehicle Requirements**
Maximum parking demand is estimated at 215 spaces. For evaluation purposes, the maximum number of passengers who will park in a one hour period is estimated at 30% of total parking demand, or 65. Based on the proposed schedule, one vehicle departs the Fayetteville/DeWitt park and ride facility every 25 minutes. This proposed service schedule would require two buses with a minimum of 28 passenger seats. This yields a maximum capacity of 84 passengers who may originate their trip each hour.

**Route Description**
The inbound route would operate during AM hours, originating at the Fayetteville/DeWitt park and ride facility, stopping at each of the six University Hill institutions, terminating at the Syracuse University Main Shuttle Stop. The vehicle would then return directly to the Fayetteville/DeWitt park and ride. The first stop, Hutchings Psychiatric Center, is approximately a 12 minute ride. The final stop at Syracuse University is approximately a 27 minute ride. Please refer to the Fayetteville/DeWitt park and ride inbound and outbound route maps found in Appendix E.

The outbound route would operate during PM hours, originating at the Syracuse University Main Shuttle Stop, stopping at each of the five additional University Hill institutions, and terminating at the Fayetteville/DeWitt park and ride. The vehicle would then return directly to the Syracuse University Main Shuttle Stop. The passengers on University Hill would be picked up within approximately 16 minutes. Those passengers boarding at Syracuse University would have a total ride of approximately 27 minutes, and those boarding at Hutchings Psychiatric Center will have a total ride of approximately 11 minutes.

**Evaluation**
Centro currently operates a Park-N-Ride service from this location. Route 262X provides direct service to SUNY Upstate. The Centro AM service begins at 6:17 AM and operates for two hours with the last run leaving at 8:07 AM. The vehicle frequency varies with most trips 20-25 minutes apart. There are five inbound trips. The proposed University Hill shuttle option runs four hours from 5:30 AM – 9:40 AM every 25 minutes for a total of 11 trips. The Centro service reaches SUNY Upstate in about 16 minutes. The proposed University Hill shuttle service takes approximately 19 minutes. This also includes a stop at the Hutchings Psychiatric Center.
Centro PM service operates every 30-40 minutes for a total of four trips. The service begins at 3:40 PM and the last trip leaves SUNY Upstate at 5:21 PM. The proposed University Hill shuttle runs from 3:00 PM until 6:45 PM every 25 minutes, a total of nine trips are made each day. Trip time is about 14 minutes from SUNY Upstate to the Wegmans Plaza using both services.

Although Centro currently operates direct service, it is limited in its hours of operation, the number of trips serving the Hill, and the number of stops within the University Hill area. The proposed University Hill shuttle provides multiple stops and travel time meets the evaluation criteria of a total commute time of 35 minutes or less, with an assumed commute to the park and ride of 5 to 10 minutes. Most passengers will have a ride of 20 minutes or less, with the maximum ride estimated at less than 30 minutes.

The cost to provide the proposed shuttle service is summarized in the following table:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Bus Type (Mid/Large)</th>
<th>Max. # Buses</th>
<th>Hourly Rate</th>
<th>Daily Hours</th>
<th>Annual Days</th>
<th>Total Annual Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Mid</td>
<td>2</td>
<td>$49.45</td>
<td>17.25</td>
<td>250</td>
<td>$213,260</td>
</tr>
<tr>
<td>Centro</td>
<td>Large</td>
<td>2</td>
<td>$64.35</td>
<td>17.25</td>
<td>250</td>
<td>$277,500</td>
</tr>
</tbody>
</table>

Note: Daily Hours includes the hours required to provide peak hour service multiplied by the number of vehicles.

The primary challenge with this, and all suburban options, is that the frequency is dependent on high speed travel on highways. Should an accident or excessive traffic congestion occur at any point on the route, the entire operation will be negatively impacted. It is likely that even on this relatively short suburban route, any major schedule disruptions will affect all service for the entire time period.

d. General Summary of Advantages and Disadvantages

**Advantages**

The site is easily accessible both from a major highway and local roads and is surrounded by a number of amenities. Safety and security concerns would be minimal with existing lighting and adjacent uses. The potential ridership demand could be met at this location. Existing Centro routes would provide additional transit options for Hill commuters. This option would require minimal capital investment to provide additional wayfinding signs which should be coordinated with the property owner.

The site is currently served by Centro, but a dedicated University Hill service would provide improved service to existing riders as well as attract additional riders. If a University Hill stop is maintained on the existing Centro routes it would provide additional flexibility for users.
**Disadvantages**
Since the park and ride would be located on privately-owned property, site availability could be altered by development plans or changes in the future. Signage in the parking area that contains the existing Centro Park-N-Ride shelter states that parking is for Wegmans customers only, which may deter some potential users. Amenities such as restrooms and an all-weather shelter would only be available at nearby buildings, such as the supermarket.

iv. **Option 2 – Liverpool (P-4 and P-6)**
The Town of Clay is a suburban location approximately 8.0 miles northwest of University Hill. Two existing Centro Park-N-Ride locations were considered along Oswego Road, County Route 57. The Seneca Mall site (P-4) and the Liverpool Wegmans site (P-6) are approximately 1.5 miles apart from each other.

a. **Seneca Mall Site P-4**

**Assumptions**
The Seneca Mall, owned by Galileo Apollo IV SUB, LLC, is located on County Route 57, 3.0 miles north of the interchange with the New York State Thruway (I-90). The site is accessed by a signalized driveway. The Seneca Mall Centro Park-N-Ride is located in the northwestern section of the mall parcel and is designated by a small sign on a light pole in a parking area, generally removed from existing retail establishments. The Park-N-Ride area is shared with a Baptist Church.

**Evaluation**
This suburban location is approximately 2.0 acres but is part of the larger Seneca Mall parcel. The intent of the suburban location is to capture some of the existing commuters on County Route 57 prior to accessing I-90, approximately 3.0 miles away. By removing commuters in single-occupancy vehicles from the section of County Route 57, there will be a minor increase in capacity on this road segment. The signalized site driveway with County Route 57 appears to have adequate capacity to accommodate the potential users.

Due to the setback from the road, small signs and the presence of out parcel buildings, the park and ride site is not visible from County Route 57. The Seneca Mall parcel is zoned Regional Commercial 1 and is currently used for a neighborhood shopping center.

Centro currently serves the Park-N-Ride through Route 46: Liverpool – Route 57 and Route 48: Liverpool – Morgan Road. These routes provide morning and afternoon commuter service to University Hill after serving Downtown Syracuse. These transit routes provide additional service for potential riders. There may also be commuters travelling from the existing Park-N-Ride that would benefit from direct express service.
There may be perceived safety issues at this location. The existing designated park and ride location is set-back and not visible from County Route 57. It is also isolated from the existing retail uses. There is existing lighting in the parking area; however, there is no shelter or other pedestrian accommodations within the parking areas.

b. Liverpool Wegmans Site P-6

**Assumptions**
The Liverpool Wegmans Park-N-Ride is located in a retail plaza, owned by Wegmans Food Markets Inc. The plaza is on County Route 57 and the existing Centro Park-N-Ride shelter is located between a vacant building (previously occupied by Wegmans) and a new Wegmans. The park and ride shelter is well signed. The site is accessed from County Route 57 via signalized driveway.
Evaluation
This suburban location is part of the Wegmans parcel which is just under 75.0 acres in size. The site is approximately 1.5 miles north of an I-90 interchange and has good access to a major commuter corridor, Route 57. Similar to the Seneca Mall site, this site would capture some of the existing commuters on County Route 57 prior to accessing I-90, thereby increasing the road capacity. The signalized site driveway with County Route 57 appears to have adequate capacity to accommodate the users.

The existing shelter is visible from County Route 57 but the deep setback makes it difficult to read the signs. The current zoning of the site is Regional Commercial 1 and it is being used as a neighborhood shopping center.
Similar to the Seneca Mall site, Centro currently serves the Park-N-Ride through Route 46 and Route 48. These transit routes provide additional service for potential riders.

There are no perceived safety issues at the site. The site has adequate lighting and landscaping and the Wegmans is open 24 hours.

c. **Facility Assumptions**

There are approximately 1,900 employees within a five mile radius of the Liverpool sites. Assuming that the park and ride could capture 10% of that population, it would need to accommodate 190 vehicles.

**Evaluation**

**Seneca Mall Site P-4**

The parking area associated with the existing park and ride currently contains approximately 210 spaces. This number does not include the parking areas in front of the other retail stores in the mall. It also does not include the three most southeastern rows of the parking lot, which are used by the neighboring church. With an assumed ridership and parking demand of 190, this location has adequate supply to meet the demand. During a site visit on a typical weekday morning, there were no vehicles parked in the designated park and ride area. It should be noted that an increase in use of this magnitude would likely require renegotiation of the agreement with the facility host.

The use of this site as a park and ride is generally compatible with the surroundings. However, the uses on site do not represent desired park and ride amenities. These uses include a number of department and specialty stores, a bank, and an organic café and market. The café and market may not meet the needs of all potential users.

Development costs would include the installation of signs identifying the plaza as a park and ride location and directing internal traffic to the parking area. The site should also be equipped with a small shelter. In keeping with the existing agreement, it is assumed that there would be no operations and maintenance costs but any improvements would be discussed with the property owner.

**Liverpool Wegmans Site P-6**

The parking area associated with the vacant Wegmans building is immediately available for park and ride users. There are approximately 350 spaces, sufficient capacity to accommodate the 190 potential users.

Development costs would include the installation of signs identifying the plaza as a park and ride location and directing internal traffic to the
parking area. These improvements would be coordinated with the property owner. It is assumed that there would be no maintenance or operations costs.

The use of this site as a park and ride is compatible with surroundings, and, as with the Seneca Mall site, could support existing businesses. The Wegmans has a pharmacy and market café. Other uses on site include a bank and McDonald’s.

d. Shuttle

Assumptions

Operational Overview

*Inbound (to University Hill) Schedule:*
First bus departs Liverpool park and ride at 5:30 AM.
Last bus departs Liverpool park and ride at 9:30 AM.
Vehicles will depart every 30 minutes.
Roundtrip distance is approximately 27 miles and approximate travel time is estimated at 60 minutes.

*Outbound (to Liverpool Park and Ride) Schedule:*
First bus departs Syracuse University at 3:00 PM.
Last bus departs Syracuse University at 6:30 PM.
Vehicles will depart every 30 minutes.
Roundtrip distance is approximately 27 miles and approximate travel time is estimated at 60 minutes.

Vehicle Requirements

Maximum parking demand is estimated at 190 spaces. For evaluation purposes, the maximum number of passengers who will park in a one hour period is estimated at 30% of total parking demand, or 57. Based on the proposed schedule, one vehicle departs the Liverpool park and ride facility every 30 minutes. This proposed service schedule will require two buses with a minimum of 40 passenger seats. This yields a maximum capacity of 80 passengers who may originate their trip each hour.

Route Description

The following routes description is based on origination at the Seneca Mall park and ride, since it represents the more conservative case, being farther from University Hill. The final determination of which site is used would have minimal impact on the shuttle routes and, in the case that a closer site is used, would generally improve route times or keep them constant.

The inbound route would operate during AM hours, originating at the Liverpool park and ride facility, stopping at each of the six University Hill institutions, terminating at the Syracuse University Main Shuttle Stop. The
vehicle would then return directly to the Liverpool park and ride facility. The first stop, Hutchings Psychiatric Center, is approximately a 19 minute ride. The final stop at Syracuse University is approximately a 34 minute ride.

The outbound route would operate during PM hours, originating at the Syracuse University Main Shuttle Stop, stopping at each of the five additional University Hill institutions, and terminating at the Liverpool park and ride facility. The vehicle would then return directly to the Syracuse University Main Shuttle Stop. The passengers on University Hill would all be picked up within approximately 16 minutes. Those passengers boarding at Syracuse University would have a total ride of approximately 34 minutes, and those boarding at Hutchings Psychiatric Center would have a total ride of approximately 18 minutes.

**Evaluation**

The long distance of this route and the desire to maintain a maximum of 30 minute headways effectively precludes a time cushion between return to and departure from the park and ride facility. While the extended highway travel period may allow the operator to maintain the proposed schedule, it is likely that in-practice delays would occur. Additionally, the tight schedule would require that passengers are queued and board immediately upon vehicle arrival at the park and ride facility. Little or no gathering time would be available for passengers.

Using three vehicles on this route would alleviate the headways challenges and provide passengers with acceptable headways. The challenge is that the cost of three vehicles is not justified given capacity needs. The buses would be underutilized. Smaller capacity buses could be used, but this is an inefficient solution and would result in a net higher cost for this service.

The length of this route would result in total commute times (travel by car to park and ride facility plus bus trip to University Hill destination) in excess of 35 minutes for some passengers. Assuming an average commute time of five minutes to the Liverpool park and ride facility, a passenger traveling to the first inbound University Hill stop at the Hutchings Psychiatric Hospital would have a 24 minute total commute. That same passenger traveling to Syracuse University, however, would have a 39 minute total commute.
The cost to provide the proposed shuttle service is summarized in the following table:

<table>
<thead>
<tr>
<th>Table 4.3. Liverpool Park and Ride (P-4/P-6) – Shuttle Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Private</td>
</tr>
<tr>
<td>Centro</td>
</tr>
</tbody>
</table>

Note: Daily Hours includes the hours required to provide peak hour service multiplied by the number of vehicles.

The shuttle route to this facility is the longest of all sites that were evaluated. Because of the long route, there are more opportunities for delays such as traffic congestion, accidents, or construction that may delay daily service, than may be found on other routes.

Centro currently provides service from the Seneca Park-N-Ride to the University Hill area on three routes; Route 46: Liverpool – Route 57, Route 48: Liverpool – Morgan Road, and Route 246: Oswego. The Wegmans Park-N-Ride is a subset of the Seneca Mall service.

Centro AM inbound service begins from the Seneca Mall at 5:47 AM. Between 5:47 AM and 9:05 AM there are 12 routes to University Hill. Each of these routes stops at SUNY Upstate and 10 stop at Syracuse University. The average trip time is 48 minutes, but there is a wide range. The minimum trip time is 33 minutes, and the longest is over one hour. The average departure frequency is 18 minutes between buses. Again, this varies greatly, from four minutes between departures to as much as 52 minutes. Six additional routes are provided between 10:08 AM and 5:29 PM. They are about 1 1/2 hours apart and trip time averages about 55 minutes.

Between 3:19 PM and 7:58 PM there are 10 outbound Centro trips from University Hill to the Seneca Mall park and ride facility. Four of the trips do not stop at Syracuse University. All stop at Upstate Medical University. The average trip time is 41 minutes. The shortest is 30 minutes and the longest is 56. Between 4:00 PM and 5:15 PM a bus departs University Hill about every 15 minutes.

Centro provides a reasonable amount of service between the Seneca Mall Park-N-Ride and the University Hill area. Based on the foundation of service outlined above, a cooperative service between Centro and the participating institutions and businesses would likely prove beneficial to both parties. In this scenario, Centro would address frequencies, stop locations within the University Hill area, and service hours to more closely resemble the recommended routes and schedules found in the appendices.
The partnership with the Hill institutions and businesses would provide Centro with revenue and additional passenger ridership.

e. General Summary of Advantages and Disadvantages

Advantages
Both Liverpool sites evaluated in this analysis are located just north of I-90 and are easily accessed from County Route 57. The Liverpool Wegmans site is 1.5 miles from I-90 and the Seneca Mall site is 3.0 miles. The potential parking demand could be met at both locations. Existing Centro routes would provide additional transit options for Hill commuters.

The uses at the Liverpool Wegmans site are consistent with amenities desired by potential park and ride users, including a grocery store with an in-store café and pharmacy and a bank. Existing lighting, landscaping and shelter helps to minimize safety concerns. Since the old Wegmans building is currently vacant, the entire parking area is presumed to be available for use in the short-term.

Disadvantages
Since the Park-N-Ride locations are located on private property, site availability could be altered by development plans or changes in the future. Likewise, a change in demand could affect availability of parking spaces.

Both sites would require additional signage to increase visibility from County Route 57 and provide wayfinding internal to the plazas. The Seneca Mall site would also require the installation of a small shelter.

The Seneca Mall site does not provide the desired amenities identified potential users of the park and ride facility. There are also perceived safety and security issues due to the isolation of the Park-N-Ride location. The location of this facility, south of Soule Road, and the less dense population at the north end of County Route 57 limit its commutershed and potential to decrease traffic.

Given the required shuttle travel time, the evaluation criteria of a total commute time of 35 minutes cannot be met. A separate shuttle service may not be necessary given the existing frequent Centro service. However, a disadvantage of the existing Centro service, as it relates to University Hill, is that it is not always consistent in terms of the number of University Hill stops or frequency of service. The number of routes may also confuse potential users, particularly those not familiar with transit use.
v. Option 3 – Camillus (P-16)
   a. Site

   Assumptions
   The existing Centro Park-N-Ride in the suburban Town of Camillus is located on West Genesee Street (NYS Route 98). The Park-N-Ride is located in the Camillus Commons shopping plaza, owned by Buffalo Main St LLC. There are a number of access points to the Commons via West Genesee Street and Kasson Road.

   Evaluation
   The Camillus site is part of the Lowes parking area in Camillus Commons (57.0 acre parcel) and is located approximately 1.0 mile south of the NYS Route 5 interchange on West Genesee Street, proximate to a major commuting corridor. There appears to be adequate capacity at the site access and adjacent roadways to accommodate users. The existing shelter

Camillus Centro Park-N-Ride
Source: Bing Maps 2009 and C&S Engineers
is not visible from West Genesee Street due to the presence of outparcel buildings and setback from the road. There is no sign, on the shelter or in the vicinity, to indicate that the shelter accommodates a Centro Park-N-Ride location. The parcel is zoned Commercial and used as a regional shopping center.

The site is served by Centro Route 36: Camillus and Route 236: Auburn. Both routes currently serve University Hill after local stops and service to downtown Syracuse. These routes serve as additional transit service to University Hill commuters.

There are no perceived safety issues at this site. Pedestrian accommodations such as sidewalks and marked crosswalks exist throughout the parking areas along with lighting and landscaping. A shelter is provided for Centro users.

b. **Facility Assumptions**

There are approximately 1,500 employees within a five mile radius of Camillus Commons. Assuming that the park and ride could capture 10% of that population, it would need to accommodate 150 vehicles.

**Evaluation**

The existing park and ride is located in the parking area associated with the Lowes Home Improvement store. This area includes approximately 600 spaces. This number does not include the parking areas in front of the Walmart Supercenter or other adjacent uses. With an assumed potential parking demand of 150, the park and ride could be accommodated and still leave 450 spaces for use by the Lowes store. It should be noted that an increase in use of this magnitude would likely require renegotiation of the agreement with the facility host.

The use of this site as a park and ride is generally consistent with the surroundings. Camillus Commons includes the Lowes Home Improvement store, a Walmart Supercenter, Bon Ton, restaurants, P&C market, pharmacy, gas station and a bank. These amenities are among those desired by potential park and ride users.

Similar to other suburban park and ride locations, development costs would include additional signage to identify the location of the facility and provide way finding internal to the plaza. Any improvements or associated costs would be coordinated with the property owner. It is assumed that there would be no maintenance or operations costs.
c. Shuttle

**Assumptions**

**Operational Overview**

**Inbound (to University Hill) Schedule:**
First bus departs Camillus park and ride at 5:30 AM.
Last bus departs Camillus park and ride at 9:30 AM.
Vehicles will depart every 30 minutes.
Roundtrip distance is approximately 23 miles and approximate travel time is estimated at 50 minutes.

**Outbound (to Camillus park and ride) Schedule:**
First bus departs Syracuse University at 3:00 PM.
Last bus departs Syracuse University at 6:30 PM.
Vehicles will depart every 30 minutes.
Roundtrip distance is approximately 23 miles and approximate travel time is estimated at 50 minutes.

**Vehicle Requirements**

Maximum parking demand is estimated at 150 spaces. For evaluation purposes, the maximum number of passengers who will park in a one hour period is estimated at 30% of total parking demand, or 45. Based on the proposed schedule, one vehicle departs the Camillus park and ride facility every 30 minutes. This proposed service schedule would require two buses with a minimum of 28 passenger seats. This yields a maximum capacity of 56 passengers who may originate their trip each hour.

**Route Description**

The inbound route would operate during AM hours, originating at the Camillus park and ride facility, stopping at each of the six University Hill institutions, and terminating at the Syracuse University Main Shuttle Stop. The vehicle would then return directly to the Camillus park and ride facility. The first stop, Hutchings Psychiatric Center, is approximately a 16 minute ride. The final stop at Syracuse University is approximately a 28 minute ride.

The outbound route would operate during PM hours, originating at the Syracuse University Main Shuttle Stop, stopping at each of the five additional University Hill institutions, and terminating at the Camillus park and ride facility. The vehicle would then return directly to the Syracuse University Main Shuttle Stop. The passengers on University Hill would all be picked up within approximately 12 minutes. Those passengers boarding at Syracuse University would have a total ride of approximately 28 minutes, and those boarding at Hutchings Psychiatric Center would have a total ride of approximately 16 minutes.
**Evaluation**

This service option provides reasonable access to University Hill institutions. Most passengers would have a ride of 20-25 minutes. Based on the desired commute times as expressed by the survey respondents, the majority of passengers desire a total average commute time of approximately 35 minutes. This commute time would include travel to the park and ride facility and the shuttle ride to University Hill. The average commute time from this facility meets the desired target. By extending the ‘cushion’ between arrival at the Camillus park and ride facility and departure back to University Hill to 7-10 minutes, the chance of schedule disruption would be reduced, and a reasonable 30 minute frequency could be maintained. Passengers would also have additional time to gather at the Camillus park and ride facility, which should reduce the number of passengers who miss their desired shuttle ride time.

The Centro AM service from Camillus to the University Hill area begins at 5:47 AM and ends at 7:53 AM. There are a total of seven trips. The buses leave an average of once every 21 minutes, with frequencies ranging from 8-35 minutes. There is one additional trip to University Hill two hours later at 9:53 AM. The proposed University Hill shuttle service covers four hours (5:30 AM – 9:30 AM) with trips at 30 minute intervals for a total of nine inbound trips.

The Centro service only provides one route, 136x at 7:18 AM, that stops at SUNY Upstate, Crouse & Waverly (VA Hospital and Crouse Hospital), and College Place & Euclid Ave (Syracuse University). The proposed University Hill shuttle service stops at each University Hill institution on each trip. Only three of the seven existing trips stop at SUNY Upstate after making three previous stops. It takes the Centro bus about 35 minutes to reach SUNY Upstate from Camillus. The proposed University Hill shuttle service estimates 20 minutes to the same stop, a savings of up to 15 minutes.

Centro PM service from University Hill to Camillus Commons begins at 2:49 PM and ends at 5:27 PM. There are six trips from SU or SUNY Upstate to Camillus. They average approximately 43 minutes each with three stops in between the two locations. Only two trips originating at SUNY Upstate travel to Camillus Commons, the Centro trip is scheduled for 34 minutes, and the same trip using the proposed University Hill shuttle service is estimated at 18 minutes.

The proposed University Hill shuttle service improves upon the existing transit service by expanding hours of operation, reducing travel time and increasing the number of stops on the Hill.
The cost to provide the proposed shuttle service is summarized in the following table:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Bus Type (Mid/Large)</th>
<th>Max. # Buses</th>
<th>Hourly Rate</th>
<th>Daily Hours</th>
<th>Annual Days</th>
<th>Total Annual Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Mid</td>
<td>2</td>
<td>$49.45</td>
<td>15.00</td>
<td>250</td>
<td>$185,440</td>
</tr>
<tr>
<td>Centro</td>
<td>Large</td>
<td>2</td>
<td>$65.00</td>
<td>15.00</td>
<td>250</td>
<td>$243,750</td>
</tr>
</tbody>
</table>

Note: Daily Hours includes the hours required to provide peak hour service multiplied by the number of vehicles.

The primary challenge with this, and all suburban options, is that the frequency is dependent on high speed travel on highways. Should an accident or excessive traffic congestion occur at any point on the route, the entire operation will be negatively impacted. It is likely that even on this relatively short suburban route, any major schedule disruptions will affect all service for the time period.

d. **General Summary of Advantages and Disadvantages**

**Advantages**

The site is easily accessible from local roads and is 1.0 mile from NYS Route 5. Existing Centro routes would provide additional transit options for Hill commuters.

The site has adequate parking capacity to meet the potential demand and the existing retail uses in the Commons are consistent with those identified as desirable by potential park and ride users.

Safety and security concerns would be minimal with existing lighting and pedestrian accommodations within the Commons.

The proposed University Hill shuttle service would provide improved service over the existing Centro operation. Improvements include hours of operation and travel time as well as the number of stops on the Hill.

**Disadvantages**

Since the existing park and ride is located on private property, site availability could be altered by development plans or changes in the future. Signage improvements would be necessary to make the site visible from West Genesee Street and to clearly designate the park and ride area.
vi. Option 4 – Kennedy Square Vicinity Sites (A1, A2 and A3)
Local Sites A1 and A2 are part of the former Kennedy Square site. Site A3 is located immediately south of Site A1.

a. Kennedy Square Vicinity Site A1
i. Site (A1)
   Assumptions
   Site A1 is generally bound by East Fayette Street, Forman Avenue, East Water Street and South Crouse Avenue. There are two separate parcels with an Empire Flower Supply, Inc. storage/warehouse facility and a P.E.A.C.E. facility on the northwest corner of the block. These are not included in site A1.

   The southern portion of site A1 is currently being demolished for the construction of the Biotechnology Research Center (BRC). According to the 2009 Traffic Impact Assessment for the facility, the BRC development will accommodate its own parking demand as well as the SUNY Upstate employees currently parking in site A3. The development plan for the BRC also depicts the future extension of Irving Avenue through the parcel to East Water Street. Therefore, it is assumed that site A1 will be divided by the Irving Avenue extension, leaving two potential sites: A1-east and A1-west. Access to either of these sites would be from East Water Street or the north end of the Irving Avenue extension.
According to the BRC plans, land at the corner of South Crouse Avenue and East Fayette Street will contain a 107 space surface parking lot. It is assumed that spaces in this surface lot would be included in the development of a parking facility on the A1-east lot. The east lot will be bound by East Fayette Street, the Irving Avenue extension, East Water Street and South Crouse Avenue. The A1-west lot will be bound by the BRC, the P.E.A.C.E. property, East Water Street and the Irving Avenue extension.

**Evaluation**

Site A1, a local site owned by SUNY Upstate, is 9.9 acres in size. Based on its full market value in 2009, the entire A1 parcel is assessed at $11,189,349. However, part of the parcel is being redeveloped to include the BRC.

The site has access to I-81 from the Adams Street and Harrison Street exits and there is access onto I-690 East and off I-690 West from McBride Street. Reserve capacity appears to exist on the adjacent local roads, but the highway access points experience congestion during peak periods. There is little to no visibility of the site from I-81 or I-690.

The site is approximately 0.6 miles from the center of the Hill, which equates to a 12 minute walk. Sidewalks are present on all roadways surrounding the site. Other pedestrian amenities, however, are generally lacking. The University Hill Transportation Study identified South Crouse and Irving Avenues as key pedestrian corridors and suggested improvements, including the development of a consistent street edge, for these corridors.

The parcel is zoned Residential Class B and still contains some vacant apartment buildings. The current zoning, Residential Class B, would need to be changed to accommodate the reuse of the parcel for a mix of uses and eliminate setbacks for a potential wrap building. It is anticipated that the site is being rezone as part of the BRC development. The parcel would also need to be sub-divided or land leases provided for future development.

The site is served by Centro Route 443 and is located two blocks north of the Connective Corridor.

There are no perceived safety issues associated with this site.
Facility (A1)

Assumptions

If existing structures were cleared, the A1 site could be used for short-term surface lots or developed with parking structures wrapped by a multi-use building. Based on site layout and the potential for pedestrian traffic, South Crouse Avenue would be the most desirable location for a building wrapping a parking facility. With this layout, the garage width would be reduced to 165 feet. It is assumed that the access to a parking facility would be on East Water Street or the Irving Avenue extension.

In addition to the park and ride demand documented in the evaluation criterion, the A1-east site would need to accommodate the 107 spaces proposed in the BRC plans.

The A1-west site is large enough to accommodate the assumed minimum dimensions (200’ x 200’) for a garage and a building wrapping the structure. It is assumed that the site would be wrapped on the Irving Avenue extension with vehicle access on East Water Street.

Due to the close proximity of the sites, the proposed parking structure height will be the same for all sites. Existing building
heights in the area range from a one story church to the Renaissance Hotel with over 20 floors. The U-haul building and the existing apartment buildings on site A2 have eight floors. The Center of Excellence building has six floors and the SUNY Upstate’s Biotechnology Research Center (BRC) is proposed to have five floors. Therefore, the maximum number of floors for a parking garage assumed for these sites is eight floors.

**Evaluation**

The evaluation of facility criteria was conducted separately for A1-east and west but the surrounding uses for both sites include surface parking areas, a local corner grocery store, various commercial/industrial uses, the Center of Excellence, and the future BRC. The University Hill Transportation Study and the traffic impact assessments associated with the Center of Excellence and BRC were considered in the facility evaluations.

**A1-East**

As a surface lot, site A1-east would be able to accommodate 450 parking spaces without a wrap building. With 107 spaces allocated to the BRC, 345 spaces would be available for the park and ride patrons. If a 3-floor, 36,725 square foot per floor building was constructed on South Crouse Avenue to wrap the surface lot, the park and ride parking supply would be reduced to 205 spaces. In each of these surface configurations, the parking supply represents significantly less than the minimum or maximum projected demand.

With an assumed wrap building on South Crouse Avenue and approximately 310 spaces available per floor of a garage, four and eight floors would be needed to meet the minimum and maximum parking demands, respectively. The height of this garage structure would be reasonable given the surrounding building characteristics. Consistent with the Land Use and Transportation Concepts for the University Hill Transportation Study, the development of a wrapped parking structure on this site would replace the proposed BRC surface lot and actively engage pedestrians on South Crouse Avenue.
Table 4.5. Kennedy Square Site A1-East Parking Supply Evaluation

<table>
<thead>
<tr>
<th></th>
<th>Surface</th>
<th>Garage # Floors to Meet Min Demand (1,060)</th>
<th>Garage # Floors to Meet Max Demand (2,160)</th>
<th>Max Demand Met On-Site</th>
<th>Wrapping Option/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennedy Square Site A1 – East</td>
<td>No Wrap Option 1</td>
<td>450 (345)</td>
<td>310</td>
<td>4</td>
<td>2,267*</td>
</tr>
<tr>
<td></td>
<td>Wrap Option 2</td>
<td>310 (205)</td>
<td>310</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

xxx(yyy): xxx = number of spaces available on site, (yyy) = number of spaces available for park and ride use
* Max park and ride demand plus 107 spaces required for BRC = 2,267 spaces

An 8-floor garage, which would provide a total of 2,480 spaces, more than the maximum demand, on A1-east, is estimated to cost $59.6 million. A wrap building on South Crouse Avenue, providing a total of 110,175 square feet, is estimated to cost $26.5 million. The total construction cost is estimated to be $86.1 million including contingencies. The estimated operations and maintenance costs are $750,000 and $1.8 million per year for the garage and wrap building, respectively.

A1-West
A surface lot without a wrap building on A1-west could accommodate 250 spaces. A surface lot with a 3-floor, 17,550 square foot per floor wrap building on Irving Avenue Extension could accommodate 185 spaces. Again, in each of these configurations, the parking supply represents significantly less than the minimum or maximum projected demand.

With a wrap building located on the Irving Avenue Extension, the parking structure would be compatible with and capitalize on the proposed BRC development. A 6-floor or 12-floor garage would be needed to meet the minimum and maximum parking demand requirements. Based on the surrounding buildings, a maximum height of 8 floors would be recommended. Therefore, the maximum parking supply for a garage on the west lot of A1 would be approximately 1,480 spaces, 400 spaces more than the minimum demand.
Table 4.6. Kennedy Square Site A1-West Parking Supply Evaluation

|                      | Surface | Garage # Floors to Meet Min Demand (1,060) |  | Garage # Floors to Meet Max Demand (2,160) |  | Proposed Max Demand On-Site | Wrapping Option/Notes |
|----------------------|---------|-------------------------------------------|  |-------------------------------------------|  |-----------------------------|----------------------|
| Kennedy Square Site  | 250     | 185                                       | 185 | 6                                         | 12 | 1,480                       | Wrap on Irving Ave ext |
| A1 - West            | Wrap Option 1 | Wrap Option 2 | # Spaces per Floor | # Floors to Meet Min Demand (1,060) | Option 3 | # Floors to Meet Max Demand (2,160) | Option 4 | Proposed Max Demand On-Site | Option 5 | Wrapping Option/Notes |

An 8-floor structure on the west lot of A1, which would provide a total of 1,480 spaces, is estimated to cost $35.6 million. A 52,650 square foot wrap building on the Irving Avenue extension is estimated to cost $12.7 million, for a total construction cost of $48.3 million including contingencies. The estimated operations and maintenance costs are $450,000 and $850,000 per year for the garage and wrap building, respectively.

b. Kennedy Square Vicinity Site A2
   i. Site (A2)

**Assumptions**

Site A2 includes the entire block bounded by East Water Street, South Crouse Avenue, University Avenue and what would be the continuation of East Washington Street to the south. It is assumed the access would be off East Water Street.
Evaluation
Site A2, a local site owned by SUNY Upstate, is a 4.1 acre site located one block east of site A1 (1000-56 East Water Street and University Avenue. Based on its full market value in 2009, the A2 parcel is assessed at $3,052,071.

The site has access to I-81 from the Adams Street and Harrison Street exits and there is access onto I-690 East and off I-690 West from McBride Street. Reserve capacity appears to exist on the adjacent roadways, but the highway access points experience congestion during peak periods. The site is not visible from any major roadways.

Site A2 is 0.6 miles or a 12 minute walk from the Hill. Sidewalks are present on all roadways surrounding the site.

The site is currently zoned Residential Class B, and contains vacant apartment buildings. The site would need to be rezoned to accommodate a mix of uses and eliminate setbacks for a potential wrap building.

The site is served by Centro Route 443 and is located two blocks north of the Connective Corridor but not near a rail line.

Until site A1 is fully developed, site A2 will be isolated by vacant buildings, commercial uses and green space which may contribute to perceived safety issues.

ii. Facility (A2)
Assumptions
Like site A1, if existing structures were cleared, the site could be used for short-term surface lots or developed with parking structures wrapped by a multi-use building. Consistent with site A1, it is assumed that a wrap building would face South Crouse Avenue. Vehicular access to this site would be on East Water Street since it has the lowest potential for pedestrian activity.

No additional parking demand would need to be accommodated on this site.

As stated for site A1, the maximum number of floors for a parking garage assumed for site A2 is also eight floors.

Evaluation
The block to the east of site A2 is a City park with green space, a baseball field and tennis courts. There are also commercial uses
surrounding the site. These uses are not indicative of those desired by users. The University Hill Transportation Study and the traffic impact assessments associated with the Center of Excellence and BRC were considered in the facility evaluation for site A2.

Without a wrap building, 595 spaces could be accommodated on site A2. That number would be reduced to 520 if a 3-floor, 19,500 square foot per floor mixed-use building was built along South Crouse Avenue. This falls significantly short of the minimum or maximum projected demand.

Assuming there could be 520 spaces per floor of a garage, three floors would be needed to meet the minimum demand and five floors would meet the maximum demand of the park and ride facility. The height of the structure needed to accommodate the maximum demand, five floors, would be reasonable given the surrounding building heights.

| Table 4.7. Kennedy Square Site A2 Parking Supply Evaluation |
|-------------|------------|-------------|------------|-------------|
|              | Surface    | Garage      | Max Demand | Wrapping    |
|              | No Wrap    | Wrap        | # Floors   | On-Site     | Option/Notes |
|              | Option 1   | Option 2    | to Meet Min Demand |    |     |
|              | Spaces per Floor | Floor | (1,060) | (2,160) |     |     |
| Kennedy      | 595        | 520         | 520        | 3           | 5    | 2,160 | Wrap on South Crouse Avenue |
| Square Site  |            |             |            |             |     |      |                             |
| A2           |            |             |            |             |     |      |                             |

The cost of the 5-floor parking structure on site A2, which could accommodate a total of 2,600 spaces, is estimated to cost $62.4 million with another $14.1 million for a 58,500 square foot wrap building on South Crouse Avenue. Combined, these two facilities represent a total construction cost of $76.5 million including contingencies. The estimated operations and maintenance costs are $780,000 and $940,000 per year for the garage and wrap building, respectively.

c. Kennedy Square Vicinity Site A3
   i. Site (A3)

   **Assumptions**

   Site A3 is an existing surface parking lot bound by East Fayette Street to the north, Irving Avenue to the east, Forman Avenue to the west and Wellington Place to the south. The site is comprised of two parcels acting as one: one owned by Wellington Place LLC
and the other owned by Paul and Sylvia Norton. Acquisition of the other three parcels on the southeast corner of the block was considered, but since one parcel is an active church, another is being used as a storage/distribution facility and both parcels are in a corner that can be efficiently designed around, it is assumed these parcels will remain. Access to site A3 would remain on Wellington Place.

**Evaluation**

Site A3 is comprised of two parcels with two different owners and are being used together to form the parking area used by SUNY Upstate. The local site is located at 800-08 East Fayette Street and Forman Avenue and is approximately 2.6 acres. Based on its full market value in 2009, the site A2 parcels are assessed at $461,538.

The site has access to I-81 from the Adams Street and Harrison Street exits and there is access onto I-690 East and off I-690 West from McBride Street. Reserve capacity appears to exist on the adjacent roadways, but the highway access points experience congestion during peak periods. The site is not visible from any major roadways.

Site A3 is 0.5 miles from the center of the Hill, which equates to a 12 minute walk. Sidewalks are present on all roadways surrounding the site. The noted land use is vacant commercial for
both parcels. Currently zoned Business Class A and parking is a permitted use of its zoning.

The site is serviced by Centro Route 443 and is located one block north of the Connective Corridor but not near a rail line.

There are some measures in place to address any perceived safety issues. The lot is currently fenced and access to the lot is provided on Wellington Place with a manned vehicular access gate and shelter on-site.

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### ii. Facility (A3) Assumptions

Site A3 would have short- and long-term potential for a park and ride facility since it is currently being used as a shuttle lot for SUNY Upstate with a shelter and security measures in place. With its proximity to the BRC, it is assumed any parking facility would be wrapped on East Fayette Street. If desired, a wrap building could also extend along Irving Avenue to tie into the church. Due to the shape of the parcel, a garage would not extend into the northeastern corner of the lot between the wrap building and church parcel.

As previously discussed, SUNY Upstate plans to accommodate the vehicles currently located on site A3 as part of the redevelopment.
of the BRC site. Therefore, the existing parking on site A3 will not need to be accommodated in the new park and ride facility.

As stated for site A1, the maximum number of floors for a parking garage assumed for site A2 is also eight floors.

**Evaluation**
The BRC will be north of the site opposite East Fayette Street, but the site is surrounded by surface parking areas to the east and west and the rear of buildings with frontage on East Genesee Street to the south. The University Hill Transportation Study and the traffic impact assessments associated with the Center of Excellence and BRC were considered in the facility evaluation for site A3.

According to the traffic assessment completed for the BRC, there are currently 365 spaces in the surface parking lot. If a wrap building was constructed the full length of East Fayette Street, the number of available spaces in a surface lot would be reduced to 245 spaces. This falls significantly short of the minimum or maximum projected demand.

With 205 spaces per floor of a garage, a 5-floor or 10-floor structure would be necessary to accommodate the minimum and maximum demands, respectively. Since the maximum number of floors being considered in the area is 8, the maximum parking demand that can be accommodated in a wrapped garage is 1,640 spaces. This is approximately 500 spaces short of the maximum demand.

### Table 4.8. Kennedy Square Site A3 Parking Supply Evaluation

<table>
<thead>
<tr>
<th></th>
<th>Surface</th>
<th>Garage</th>
<th></th>
<th></th>
<th>Proposed Max Demand On-Site Option 5</th>
<th>Wrapping Option/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Wrap Option 1</td>
<td>Wrap Option 2</td>
<td># Spaces per Floor</td>
<td># Floors to Meet Min Demand (1,060) Option 3</td>
<td># Floors to Meet Max Demand (2,160) Option 4</td>
<td>Wrap on East Fayette Street, Square off site around church parcel, 8 floor max garage height</td>
</tr>
<tr>
<td>Kennedy Square Site A3*</td>
<td>365</td>
<td>245</td>
<td>205</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

* Existing parking spaces based on SUNY Upstate BRC Traffic Impact Assessment
An 8-floor structure on site A3 is estimated to cost $39.4 million with another $24.6 million for the 102,180 square foot wrap building on East Fayette Street for a total construction cost of $64.0 million including contingencies. The estimated operations and maintenance costs are $500,000 and $1.7 million per year for the garage and wrap building, respectively.

d. Shuttle

Assumptions

Operational Overview

AM Circulator Route Schedule:
First bus departs Kennedy Square park and ride at 5:30 AM.
Last bus departs Kennedy Square park and ride at 9:30 AM.

5:30 AM – 6:30 AM: three vehicles will run on the route, departing from the Kennedy Square park and ride approximately every seven minutes.
6:30 AM – 8:30 AM: four vehicles will run on the route, departing from the Kennedy Square park and ride approximately every five minutes.
8:30 AM – 9:30 AM: three vehicles will run on the route, departing from Kennedy Square park and ride approximately every seven minutes.

Roundtrip distance is approximately 3.5 miles and approximate travel time is estimated at 20 minutes.

PM Circulator Route Schedule:
First bus departs Hutchings Psychiatric Center at 3:00 PM.
Last bus departs Hutchings Psychiatric Center at 6:33 PM.

3:00 PM – 4:00 PM three vehicles will run on the route, departing from the Hutchings Psychiatric Center approximately every seven minutes.
4:00 PM – 6:00 PM: four vehicles will run on the route, departing from the Hutchings Psychiatric Center approximately every five minutes.
6:00 PM – 6:33 PM: three vehicles will run on the route, departing from the Hutchings Psychiatric Center approximately every seven minutes.

Roundtrip distance is approximately 3.5 miles and approximate travel time is estimated at 20 minutes.

Vehicle Requirements

Parking demand is estimated to be between 1,060 spaces and 2,160 spaces. For evaluation purposes, maximum demand was assumed. For evaluation purposes, the maximum number of passengers who will park in a one hour period is estimated at 30% of total parking demand, or 648.

Based on the proposed schedule, one vehicle departs the Kennedy Square park and ride facility every five or seven minutes, depending on time of
day. The proposed peak service schedule will require four buses with a minimum total passenger capacity of 60. This yields a maximum capacity of 720 passengers who may originate their trip each hour during peak operations.

**Route Description**

The AM circulator route would originate at the Kennedy Square park and ride facility, stopping at each of the six University Hill institutions in a constant circulator route. All University Hill stops could be completed in approximately 14 minutes, with most passengers completing their ride within about 10 minutes or less, consistent with the evaluation criteria.

The PM circulator route would originate at the Hutchings Psychiatric Center, stopping at each of the remaining five University Hill institutions, and then arriving at the Kennedy Square park and ride Facility. The route would run continuously in a one direction circulator route. All University Hill stops could be completed in approximately 17 minutes. The maximum trip time to return to the Kennedy Square park and ride facility is estimated at approximately 15 minutes with the average trip estimated to be approximately 10 minutes.

**Evaluation**

The Kennedy Square park and ride facility would provide excellent access to the University Hill institutions. The service would be frequent (5-7 minute headways), trip times would be short (typically 15 minutes or less), and the design of the shuttle system would be simple and easy to understand for passengers. The high frequency would provide service for passengers with very little wait time between vehicles, resulting in minimal need for posted schedules and for passenger arrival planning. Most passengers would arrive as their personal schedule requires and typically get on a bus within a few minutes to depart to their final destination.

The cost to provide the proposed shuttle service is summarized in the following table:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Bus Type (Mid/Large)</th>
<th>Max. # Buses</th>
<th>Hourly Rate</th>
<th>Daily Hours</th>
<th>Annual Days</th>
<th>Total Annual Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Large</td>
<td>4</td>
<td>$65.55</td>
<td>28.25</td>
<td>250</td>
<td>$462,950</td>
</tr>
<tr>
<td>Centro</td>
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<td>4</td>
<td>$65.31</td>
<td>28.25</td>
<td>250</td>
<td>$461,250</td>
</tr>
</tbody>
</table>

Note: Daily Hours includes the hours required to provide peak hour service multiplied by the number of vehicles.

Should the institutions desire to do so, it would be relatively simple to incorporate additional stops along the proposed routes. The resulting route would still be manageable and additional vehicles could be added to maintain targeted headways. This would result in a more complete
circulator service that includes many of the identified additional facilities for Crouse Hospital, the VA Hospital, and the Upstate Medical Center, as well as access to retail and dining establishments.

e. General Summary of Advantages and Disadvantages

**Advantages**

All of the Kennedy Square sites are within the 10-15 minute desirable walking distance and are in close proximity or adjacent to two Hill institution development projects. The proximity of the BRC and Center of Excellence would provide the customers needed to support the uses in a wrap building at any of the three sites.

Both sites on A1 and site A2 have short-term potential as park and ride sites once existing buildings are cleared. Site A3 could be used once the existing demand is relocated to the BRC site with existing security measures in place. Parking is an acceptable use on all three sites given the surroundings and no existing demands would need to be accommodated on sites A2 and A3.

The flexibility of the A1 site in terms of size and layout of the site can provide both parking and development opportunities. The size and shape of site A2 would help to make the layout and design of a garage and wrap building efficient and straightforward.

The shuttle service from this site would be frequent (5-7 minute headways), trip times would be short (typically 15 minutes or less), and the design of the shuttle system would be simple and easy to understand for passengers. The service could also be expanded to incorporate an expanded circulator service if desired (see Appendix E).

**Disadvantages**

The shape of site A3 limits the layout options for providing a wrapped structure, precluding this site from meeting the maximum park and ride demand. The zoning of sites A1 and A2 would need to be changed to eliminate the setback requirements. The isolation of the sites may lead to safety and security concerns for users.

Assuming that users are arriving via I-81, the location of these sites, while on the outskirts of the Hill area, would still require the use of the congested Adams Street and Harrison Street exits. A park and ride facility at one of these locations would help to reduce congestion on the local roads in the heart of the Hill but would not help to reduce congestion at the I-81 access points.
vii. **Option 5 – Syracuse Housing Authority Sites (C1 and C2)**

Local sites C1 and C2 are owned by the Syracuse Housing Authority (SHA). Existing buildings range from one to more than 10 floors (SHA buildings on Burt Street). Therefore, the maximum number of floors considered in a garage on this site is 10.

**a. Syracuse Housing Authority Site C1**

i. **Site (C1)**

**Assumptions**

Site C1 is bound by the railroad to the north, south McBride Street to the east, Burt Street to the south, and Oakwood Avenue to the west. The site consists of three parcels. Two parcels are owned by the SHA. These parcels are fenced and include a number of warehouse/storage buildings. The third parcel is a privately owned residence on Burt Street. The location of the residential property would create a large portion of unusable space to construct a surface lot, garage or wrap building around it. Therefore, the use of this site would require acquisition of the existing residential parcel. It may also require environmental mitigation depending on the results of a Phase I environmental assessment.

It is assumed that the primary pedestrian route to and from University Hill would be along Burt Street. Burt Street also serves the adjacent SHA apartments. Therefore, it is assumed that a wrap building would be located on Burt Street. To minimize pedestrian-
vehicle conflicts on Burt Street, vehicle access should be off of Oakwood Avenue.

Due to vacant parcels surrounding the site and a perception of reduced safety, the final design of this site may require additional safety features including enhanced lighting, security cameras and fencing for surface lots.

**Evaluation**

If all three parcels on site C1 were acquired, the total site would be approximately 1.6 acres. The three parcels have a combined 2009 full market value of $198,817.

I-81 can be accessed at Adams Street and Harrison Street via Oakwood Avenue/South Townsend Street, Almond Street or South State Street. Adjacent roadways appear to have reserve capacity to accommodate additional demand. Site C1 would reduce traffic on the Hill but would not necessarily reduce traffic at the I-81 access points which currently experience periods of congestion. Due to its location, the site is slightly visible from I-81 southbound.

Site C1 is located 0.8 miles to the west and below University Hill, which equates to a 15 minute walk.

The existing land uses on the site are warehouse and family residential. Zoning is Industrial/Business Class A and parking is a permitted use.
The site is located on Centro Route 72 and close to the existing rail line, creating potential opportunities if it were to be used for transit purposes in the future.

Located one block to the east of the site, I-81 is perceived as both a physical and psychological barrier between the site and the Hill. The railroad to the north may also be perceived as a barrier, isolating the site. Due to the physical and psychological barriers and limited activity on surrounding parcels, there is a perceived safety concern in the area. There are sidewalks present on most sections of the roadways surrounding the site but conditions are poor in some locations.

ii. Facility (C1)
   Assumptions
   Site C1 has short- and long-term potential for a park and ride facility if existing structures were cleared from the site. Due to the site’s size and shape, however, both a garage and a wrap building could likely not be supported. Therefore, only a surface lot with and without a wrap building on Burt Street was considered.

   Evaluation
   Surrounding uses include a mixture of SHA developments, vacant parcels, and industrial/warehouse uses. There are no known development plans for the vacant parcels in the area, but site C1 was included in the University Hill Site Planning Study.

   The minimum dimensions noted for the most efficient garage (200 ft. x 200 ft.) would not be met with the inclusion of a wrap building. A surface lot without a wrap building could accommodate approximately 230 spaces on site C1. A wrap building on Burt Street (total of 78,780 square feet) would reduce the number of potential spaces to 120. This is significantly less than the total parking demand.
Table 4.10. Syracuse Housing Authority Site C1 Parking Supply Evaluation

<table>
<thead>
<tr>
<th>No</th>
<th>Surface</th>
<th>Garage # Floors to Meet Min Demand (1,060)</th>
<th>Garage # Floors to Meet Max Demand (2,160)</th>
<th>Max Demand On-Site</th>
<th>Wrapping Option/Notes</th>
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</thead>
<tbody>
<tr>
<td>Wrap</td>
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<td>Wrap</td>
<td>Option 3</td>
<td>Option 4</td>
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<td>Wrap</td>
<td>Option 2</td>
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<td>NA</td>
<td>230</td>
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<td>Housing</td>
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<td>Wrap on Burt Street</td>
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<td>Authority</td>
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<tr>
<td>Site C1**</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Site size would not accommodate a wrapped parking structure

The estimated construction costs for a three-floor wrap building to front Burt Street is $19.0 million including contingencies. The operations and maintenance costs for this structure is estimated to be $1.3 million per year.

b. Syracuse Housing Authority Site C2
   i. Site (C2)
      Assumptions
      Site C2 is just west of site C1 and is bound by the railroad to the north, Oakwood Avenue to the east, Burt Street to the south, and South State Street to the west. The site consists of three parcels. The majority of the site is a single, fenced-in parcel owned by the SHA. The SHA site was previously used as a parking lot for SUNY Upstate and a small shelter and guard building remains in the northwest corner. There are two privately owned parcels on Oakwood Avenue. The location of the commercial properties would create a large portion of unusable space to construct a surface lot, garage or wrap building around it. Therefore, to maximize the use of this site, the acquisition or relocation of the existing commercial parcel is required. These parcels have existing businesses, a liquor store and market, which would need to be relocated or integrated into wrap buildings on site.
Similar to Site C1, Burt Street is assumed to be the primary route for pedestrians and the ideal location for a structure wrapping the garage. Vehicle access could be off of Oakwood Avenue or South State Street. However, South State Street would be preferable to minimize impacts to residences on South Townsend Street. As noted for Site C1, development of this site may require additional security measures to overcome perceived safety concerns.

**Evaluation**

If all three parcels are acquired, the total site would be approximately 2.7 acres. The three parcels have a combined 2009 full market value of $395,266. There would potentially be additional relocation costs for the two existing businesses.

I-81 can be accessed at Adams Street and Harrison Street via Oakwood Avenue/South Townsend Street, Almond Street or South State Street. Adjacent roadways appear to have reserve capacity to accommodate additional demand. Site C2 would reduce traffic on the Hill but would not necessarily reduce traffic at the I-81 access points which currently experience periods of congestion. Due to its location, the site is slightly visible from I-81 southbound.

Site C2 is approximately 0.8 miles located to the west and south of the Hill, which equates to a 15 minute walk. As with site C1, I-81 and the railroad are physical and psychological barriers between the site and the Hill.
The SHA parcel is zoned Residential Class B and the two remaining parcels are zoned Business Class A. Parking is a permitted use for all parcels. The Residential Class B zoning would need to be changed to accommodate reuse of the parcel for a mix of uses and eliminate setbacks for the wrap building.

The site is located on Centro Route 72 and close to the existing rail line creating potential opportunities if it were to be used for transit purposes in the future.

Due to the topographical and psychological barriers and limited activity on surrounding parcels, there is a perceived safety concern in the area. There are sidewalks present on most sections of the roadways surrounding the site but conditions are poor in some locations.

Syracuse Housing Authority Site C2 – Existing Facilities
Source: C&S Engineers

ii. Facility (C2)
Assumptions
Two options were considered for the wrap building: Burt Street only or Burt Street and South State Street. Access to the site would be from South State Street or Oakwood Avenue depending on the option chosen.
Evaluation
Surrounding uses include SHA developments, vacant parcels, a liquor store, and a small market. These uses are not indicative of those desired by users. There are no known development plans for the vacant parcels in the area, but site C2 was included in the University Hill Site Planning Study.

On site C2, a surface lot with no wrap building could accommodate approximately 390 spaces. A wrap building (total of 84,045 square feet) on Burt Street would reduce the number of potential spaces to 285 and the number of spaces would be 235 if the State Street side of the site was also wrapped (total of 122,655 square feet). As with other sites, the capacity supplied by a surface lot configuration falls well short of the parking demand.

With a wrap building on Burt Street, the garage would need four floors to meet the minimum future parking demand and eight floors to accommodate the maximum demand. The minimum and maximum required number of floors increases to five and 10, respectively, if the structure is wrapped on South State Street as well.

<table>
<thead>
<tr>
<th>Table 4.11. Syracuse Housing Authority Site C2 Surface Parking Supply Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td>Syracuse Housing Authority Site C2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 4.12. Syracuse Housing Authority Site C2 Garage Parking Supply Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Syracuse Housing Authority Site C2</td>
</tr>
</tbody>
</table>
If the wrap building were constructed along Burt Street only, an 8-floor structure on site C2, which could accommodate a total of 2,280 spaces, would be sufficient to meet demand. The parking facility in this configuration is estimated to cost $54.8 million, with another $20.2 million for the wrap building. The estimate for the total construction cost is $75.0 million including contingencies. The estimated operations and maintenance costs are $690,000 and $1.4 million per year for the garage and wrap building, respectively.

If the wrap were constructed along Burt Street and South State Street, a 10-floor structure with a total of 2,350 spaces, would be required to meet demand. The parking portion of this facility is estimated to cost $56.4 million, with another $29.5 million for the wrap building. The total construction cost is $85.9 million including contingencies. The estimated operations and maintenance costs are $710,000 and $2.0 million per year for the garage and wrap building, respectively.

c. **Shuttle Assumptions**

**Operational Overview**

**AM Circulator Route Schedule:**
- First bus departs SHA park and ride at 5:30 AM.
- Last bus departs SHA park and ride at 9:30 AM.
- 5:30 AM – 6:30 AM: three vehicles will run on the route, departing from the SHA park and ride approximately every seven minutes.
- 6:30 AM – 8:30 AM: four vehicles will run on the route, departing from the SHA park and ride approximately every five minutes.
- 8:30 AM – 9:30 AM: three vehicles will run on the route, departing from the SHA park and ride approximately every seven minutes.

Roundtrip distance is approximately three miles and approximate travel time is estimated at 20 minutes.

**PM Circulator Route Schedule:**
- First bus departs Upstate Medical University at 3:00 PM.
- Last bus departs Upstate Medical University at 6:33 PM.
- 3:00 PM – 4:00 PM three vehicles will run on the route, departing from Upstate Medical University approximately every seven minutes.
- 4:00 PM – 6:00 PM: four vehicles will run on the route, departing from Upstate Medical University approximately every five minutes.
- 6:00 PM – 6:33 PM: three vehicles will run on the route, departing from the Upstate Medical University approximately every seven minutes.
Roundtrip distance is approximately three miles and approximate travel time is estimated at 20 minutes.

**Vehicle Requirements**
Parking demand is estimated to be between 1,060 spaces and 2,160 spaces. For evaluation purposes, demand will be estimated at the maximum. For evaluation purposes, the maximum number of passengers who will park in a one hour period is estimated at 30% of total parking demand, or 648.

Based on the proposed schedule, one vehicle departs the Syracuse Housing Authority park and ride facility every five or seven minutes, depending on time of day. The proposed peak service schedule will require four buses (three buses during off peak period), with a minimum total passenger capacity of 60. This yields a total maximum capacity of 720 passengers who may originate their trip each hour during peak operations.

**Route Description**
The AM circulator route would originate at the Syracuse Housing Authority park and ride facility, stopping at each of the six University Hill institutions in a constant circulator route. All University Hill stops would be completed in approximately 15 minutes, with most passengers completing their ride within about 10 minutes or less, consistent with the evaluation criteria.

The PM circulator route would originate at the Upstate Medical University, stopping at each of the remaining five University Hill institutions, and then arriving at the Syracuse Housing Authority park and ride Facility. The route would run continuously in a one direction circulator route. All University Hill stops could be completed in approximately 13 minutes. The maximum trip time to return to the Syracuse Housing Authority park and ride facility is estimated at approximately 15 minutes with the average trip estimated to be approximately 10 minutes.

**Evaluation**
The Syracuse Housing Authority park and ride facility would provide excellent access to the University Hill institutions. The service would be frequent (5-7 minute headways), trip times would be short (typically 15 minutes or less), and the design of the shuttle system would be simple and easy to understand for passengers. The high frequency would provide service for passengers with very little wait time between vehicles, resulting in minimal need for posted schedules and for passenger arrival planning. Most passengers would arrive as their personal schedule requires and typically get on a bus within a few minutes to depart to their final destination.
The cost to provide the proposed shuttle service is summarized in the following table:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Bus Type (Mid/Large)</th>
<th>Max. # Buses</th>
<th>Hourly Rate</th>
<th>Daily Hours</th>
<th>Annual Days</th>
<th>Total Annual Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Large</td>
<td>4</td>
<td>$65.55</td>
<td>28.50</td>
<td>250</td>
<td>$467,050</td>
</tr>
<tr>
<td>Centro</td>
<td>Large</td>
<td>4</td>
<td>$65.26</td>
<td>28.50</td>
<td>250</td>
<td>$465,000</td>
</tr>
</tbody>
</table>

Note: Daily Hours includes the hours required to provide peak hour service multiplied by the number of vehicles.

Service from this site could be modified to provide an expanded circulator service (see Appendix E).

d. General Summary of Advantages and Disadvantages

Advantages
Both sites are within a 15 minute walking distance from the Hill and relatively close to I-81, making for quick access from a major commuter highway. The surrounding local roadways appear to have reserve capacity which would provide easy access to and from the sites. Since both sites are not located on the Hill, a park and ride facility here may reduce traffic on the Hill.

The current zoning allows for parking as a permitted use on both sites. A wrap building on site C2 may provide relocation options for the displaced uses currently on site.

Site C1 has short-term potential with minimal improvements (additional lighting, site clearing, etc.) since it is currently fenced with a small shelter and guard building on the premises.

The shuttle service from this site would be frequent (5-7 minute headways), trip times would be short (typically 15 minutes or less), and the design of the shuttle system would be simple and easy to understand for passengers. The service could also be expanded to incorporate an expanded circulator service if desired (see Appendix E).

Disadvantages
The real and perceived barriers created by I-81 and the housing buildings between the sites and the Hill may create safety concern for users. Both sites would require significant security improvements, such as lighting and cameras. Significant pedestrian improvements would also be necessary to provide walkable areas around the sites and to the Hill. The perceived isolation may also limit leasing opportunities for filling a wrap building.

Both sites would require the acquisition of business or residential properties to become feasible park and ride locations. Even with the
acquisition of the residential property on site C2, the size and shape of the site would not allow for the construction of a wrapped structure.

The location of these sites, while on the outskirts of the Hill area, would still require the use of the Adams Street and Harrison Street exits from I-81. A park and ride facility at one of these locations will help to reduce congestion on the local roads in the heart of the Hill but will not help to reduce congestion at the I-81 access points.

viii. Option 6 – Teall Avenue (K)

a. Site

Assumptions
The Teall Avenue site, owned by the Syracuse Industrial Development Agency (SIDA), is located within the city limits. The parcel is adjacent to I-690 East between Teall Avenue and Peat Street. Existing access to the site is via City Crossroads Drive off Peat Street.

![Teall Avenue Site K](Image)

*Source: Bing Maps 2009 and C&S Engineers*

**Evaluation**
The Teall Avenue site, a location at the city limits, is 7.6 acres and is visible from I-690. The 2009 full market value for the site is $976,331.
The site has fairly direct access from the Teall Avenue exit from 690. The local roadways appear to have adequate capacity to accommodate users but the highway access points experience periods of congestion. The site is highly visible from I-690 but not from Teall Avenue or Erie Boulevard. The use of this site as a park and ride facility would require significant site and access improvements as well as environmental mitigation depending on the results of a Phase I environmental assessment. Since Teall Avenue has direct access to both direction of I-690, it would be beneficial to provide an additional driveway on Teall Avenue.

It is approximately 1.3 miles from the Hill, which equates to a 30 minute walk. Pedestrian accommodations are not consistently available between the Hill and the site. The site is currently being used as a brush dump by the city but the land use is recorded as billboard and it is zoned Industrial Class A. Parking is a permitted use on this site.

There are no pedestrian accommodations on or near the site and the site is not serviced by any Centro routes. Due to the lack of pedestrian activity in the area, lack of pedestrian accommodations, and existing uses, there are perceived safety concerns in the area.

b. Facility
Assumptions
With the lack of pedestrian facilities or generators in the area, it is assumed that a wrap building would not be feasible at this location. The facility would not have any street frontage and the potential for leasing out space in the building would be limited. For the same reasons, extra security measures (fencing, lighting and cameras) would be necessary to address perceived safety concerns.

Even though a wrapped structure would not be feasible at this location, both a surface lot and garage were considered. Buildings in the area are mainly one or 2-floor commercial or industrial buildings. Therefore, it is assumed that the maximum number of floors for a potential park and garage on the Teall Avenue site is two.

The costs associated with any environmental mitigation or other site preparation measures are not included in the construction costs for this site.

Evaluation
Surrounding uses are commercial or industrial with a post office branch and strip mall (containing a variety of uses not included on the preferred list of amenities by the users – bottled water supplier, glass shop, car and truck rentals, etc) on Teall Avenue. These uses are not among those noted
as being desirable to users. There are a number of vacant parcels adjacent to the site but no known development plans in the area.

Without a wrap building, the 7.6 acre parcel could accommodate 1,105 spaces, or just more than the minimum parking demand associated with a park and ride facility. To accommodate the maximum demand, a 2-floor parking garage would be necessary.

Table 4.14. Teall Avenue Site K Parking Supply Evaluation

<table>
<thead>
<tr>
<th></th>
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<th>Garage</th>
<th></th>
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<tr>
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<td># Floors to Meet Min Demand (1,060)</td>
<td># Floors to Meet Max Demand (2,160)</td>
<td>Max Demand On-Site</td>
</tr>
<tr>
<td>Teall Avenue Site K</td>
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<td>NA</td>
<td>1,105</td>
<td>NA</td>
<td>2</td>
</tr>
</tbody>
</table>

**Site size would not accommodate a wrapped parking structure**

A 2-floor parking garage on the Teall Avenue SIDA site, which could accommodate a total of 2,210 spaces, is estimated to cost $53.1 million including contingencies. The estimated operations and maintenance costs for this structure is approximately $670,000 per year.

c. Alternative Site

There are a number of properties on the northeast corner of Teall Avenue and Erie Boulevard that are currently vacant that could be a feasible alternative for a park and ride facility. One such alternative is a site comprised of eight parcels, owned by KBG-I LLC, that totals approximately 10.5 acres. The 2009 full market value for the eight parcels was assessed at $1,302,893. The site fronts both Teall Avenue and Erie Boulevard and therefore has better access and visibility from the adjacent roadways than the SIDA site. All of the parcels are zoned Industrial Class A and noted as vacant commercial uses except for one that is listed as being used for auto body. There could be environmental concerns with the properties since prior uses include gas stations and auto body facilities.

As a surface lot without a wrap building, this site could accommodate 1,545 spaces. The number of spaces is reduced to 1,420 spaces when a wrap building is included on Teall Avenue. The minimum parking demand for the park and ride facility could be accommodated with a surface lot and the maximum demand could be accommodated with a two-floor parking garage and wrapping on Teall Avenue. The wrap building could be extended along Erie Boulevard to enhance pedestrian activity;
however, this would further reduce the area available to accommodate parking demands.

![Teall Avenue – Optional Site](source: Bing Maps 2009 and C&S Engineers)

### Table 4.15. Teall Avenue Alternative Site Parking Supply Evaluation

<table>
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<tr>
<th></th>
<th>Surface</th>
<th>Garage</th>
<th># Floors to Meet Min Demand (1,060)</th>
<th># Floors to Meet Max Demand (2,160)</th>
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</table>

The 2-floor parking garage, with a total of 2,840 spaces, and wrap building on the optional Teall Avenue site is estimated to cost $68.2 million and $23.1 million, respectively, for a total of $91.3 million including contingencies. The estimated operations and maintenance costs are $860,000 and $1.6 million per year for the garage and wrap building, respectively.
d. Shuttle

Assumptions

Operational Overview

Inbound (to University Hill) Schedule:

AM Circulator Route Schedule:
First bus departs Teall Avenue park and ride at 5:30 AM.
Last bus departs Teall Avenue park and ride at 9:30 AM.
5:30 AM – 6:30 AM: four vehicles will run on the route, departing from
the Teall Avenue park and ride approximately every seven to eight
minutes.
6:30 AM – 8:30 AM: seven vehicles will run on the route, departing from
the Teall Avenue park and ride approximately every four to five minutes.
8:30 AM – 9:30 AM: four vehicles will run on the route, departing from
the Teall Avenue park and ride approximately every seven to eight
minutes.
Roundtrip distance is approximately 8 miles and approximate travel time
is estimated at 30 minutes.

Outbound (to Teall Avenue) Schedule:
First bus departs Syracuse University at 3:00 PM.
Last bus departs Syracuse University at 6:30 PM.
3:00 PM – 4:00 PM four vehicles will run on the route, departing from
Syracuse University approximately every seven to eight minutes.
4:00 PM – 6:00 PM: seven vehicles will run on the route, departing from
Syracuse University approximately every four to five minutes.
6:00 PM – 6:30 PM: four vehicles will run on the route, departing from
Syracuse University approximately every seven to eight minutes.
Roundtrip distance is approximately eight miles and approximate travel
time is estimated at 30 minutes.

Vehicle Requirements

Maximum parking demand is estimated at 2,160 spaces. For evaluation
purposes, the maximum number of passengers who will park in a one hour
period is estimated at 30% of total demand, or 648.

Based on the proposed schedule, one vehicle departs the Teall Avenue
Park and Ride facility approximately every 4.5 minutes. The proposed
peak service schedule would require seven buses with a minimum seated
passenger capacity of 47. This yields a total maximum capacity of 658
passengers who may originate their trip each hour during peak operations.
This projected route requires travel along highways, so it is therefore
recommended that no passengers stand during the trip.

Route Description

The inbound route would operate during AM hours, originating at the
Teall Avenue park and ride facility, stopping at each of the six University
Hill institutions, terminating at the Syracuse University Main Shuttle Stop. The vehicle would then return directly to the Teall Avenue park and ride facility. The first stop, Hutchings Psychiatric Center, is approximately a nine minute ride. The final stop at Syracuse University is approximately a 20 minute ride.

The outbound route would operate during PM hours, originating at the Syracuse University Main Shuttle Stop, stopping at each of the five additional University Hill institutions, and terminating at the Teall Avenue park and ride facility. The vehicle would then return directly to the Syracuse University Main Shuttle Stop. The passengers on University Hill would all be picked up within approximately 14 minutes. Those passengers boarding at Syracuse University would have a total ride of approximately 20 minutes, and those boarding at Hutchings Psychiatric Center would have a total ride of approximately six minutes.

**Evaluation**

The Teall Avenue park and ride facility is considered a hybrid between a suburban facility and University Hill facility because of its distance from the University Hill area (approximately 8 miles round trip). The extended distance requires more buses than a closer facility might need to meet shuttle capacity requirements. This would result in higher transportation costs than those for a like-sized facility that was situated closer to University Hill. Further, because the vehicles require highway travel to meet the schedule estimates, passengers would not typically be allowed to stand during bus trips due to safety concerns.

The Teall Avenue park and ride shuttle capacity requirement is estimated at 648 maximum passengers per hour. However, the maximum hourly vehicle capacity is estimated at approximately 658. For the purposes of this analysis the difference is negligible, but the closeness of the two estimates indicates that capacity may become an issue depending on passenger trends. The high frequency of trips (every 4 to 5 minutes) would alleviate much of this concern, as the worst case scenario would be that a passenger who could not board a vehicle because it is full would only have to wait another five minutes. Additionally, it is possible that in practice a vehicle with more than 47 seats could be identified by the service provider for use on this route, which would further reduce the capacity concerns.

The proposed schedule provides service at relatively high frequency with limited wait time between vehicles, resulting in minimal need for posted schedules and for passenger arrival planning. Most passengers would arrive as their personal schedule requires and typically get on a bus within a few minutes to depart to their final destination.
The trip times and service to most University Hill institutions would be met. Adding additional stops to this route to make it a circulator route on the Hill, such as Upstate’s University Health Care Center, or Crouse Hospital’s Madison/Irving, or East Genesee Street, would not be practical on this route as the added route distance and time would negatively impact route times beyond stated time preferences.

The cost to provide the proposed shuttle service is summarized in the following table:

Table 4.16. Teall Avenue (K) – Shuttle Costs

<table>
<thead>
<tr>
<th>Operator</th>
<th>Bus Type (Mid/Large)</th>
<th>Max. # Buses</th>
<th>Hourly Rate</th>
<th>Daily Hours</th>
<th>Annual Days</th>
<th>Total Annual Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Large</td>
<td>7</td>
<td>$65.55</td>
<td>43.25</td>
<td>250</td>
<td>$708,800</td>
</tr>
<tr>
<td>Centro</td>
<td>Large</td>
<td>7</td>
<td>$66.07</td>
<td>43.25</td>
<td>250</td>
<td>$714,400</td>
</tr>
</tbody>
</table>

Note: Daily Hours includes the hours required to provide peak hour service multiplied by the number of vehicles

e. **General Summary of Advantages and Disadvantages**

**Advantages**

The site provides quick and easy access to I-690 via Teall Avenue and would reduce traffic traveling to and from the Hill area, including at the I-81 access points. Use of this site would alleviate congestion on local roads within University Hill and the Adams Street and Harrison Street exits from I-81.

The size of the site could accommodate the minimum park and ride demand with the installation of a surface lot and the maximum demands could be met with a 2-floor garage. The existing zoning for the site allows for parking as a permitted use.

The alternative site would meet the park and ride demands while providing the opportunity for a wrap building. The alternative side would also improve access to nearby uses such as the post office.

**Disadvantages**

Before the site could be developed, significant site improvements would be necessary. Safety and security improvements, such as lighting, shelters and possibly security cameras would also need to be added due to the isolation of the site.

The lack of roadway frontage and pedestrian generators in the area would not make the inclusion of a wrap building feasible. Without a wrap building, there is no potential to provide amenities for the park and ride users. Some limited amenities, such as the post office and gas stations, are located nearby.
The shuttle service from this site would be frequent (8 minute headways), but trip times could be as high as 20 minutes. Therefore, several of the stops would exceed the maximum shuttle time of 15 minutes.

ix. Option 7 – Alliance Bank Stadium (D)
    a. Site

**Assumptions**
The Alliance Bank Stadium site, owned by Onondaga County, is located within the city limits. The stadium is bound by a rail line to the north and west, a warehouse/distribution center, and the Regional Market to the south and properties fronting Hiawatha Boulevard to the east. Existing access to the site is via Alliance Bank Parkway, Grant Boulevard, and Second North Street.

According to the Alliance Bank Beautification Plan developed for Onondaga County, there are 1,235 spaces in the main parking area, with an additional 300 spaces adjacent to the stadium for staff and VIP Suite guests. These spaces need to be maintained for stadium use. The plan also indicates improvements to naturalize the wetland area between the parking area and the uses to the south and creating a “parkette” to improve pedestrian access from Hiawatha Boulevard to Alliance Bank Parkway. The need to accommodate stadium parking and accommodate the proposed “parkette” precludes the ability to provide a mixed-use structure on the site.

Based on the Syracuse Chiefs schedule, there were 12 home games that started before 6:00 pm on weekdays in 2009 and there will be nine
daytime weekday home games in 2010. Discussions with the Chiefs’ General Manager indicate that Opening Day and Education Day (both daytime home games) can reach attendance levels of up to 9,000, but typical daytime weekday home games are generally lower. It is assumed that games starting at 7:00 pm or later will not conflict with users of the park and ride facility since gates open one hour before game time and park and ride evening operations would end by 6:00 pm.

**Evaluation**

The Alliance Bank Stadium stands on a 30.5 acre parcel at the city limits which is visible from I-81 and easily accessible via Hiawatha Boulevard or Genant Drive. Local roadways appear to have adequate capacity to accommodate users. The parcel is currently zoned Industrial Class A.

The site is adjacent to the Regional Transportation Center which is a hub for rail and bus operations in Syracuse. The rail line could serve University Hill in the future.

The location of the parking area compared to the surrounding uses isolate the site and may require additional safety/security measures for operations as a park and ride facility. Additional lighting may need to be provided and costs may be incurred for using the lighting when the stadium is not in use.
Since SUNY Upstate recently operated a park and ride system from this site, two shelters with seating exist at the most northern end of the site. There are sidewalks along Alliance Bank Parkway but none leading to the stadium from there or from Hiawatha Boulevard. The Beautification Plan for the site does recommend pedestrian accommodations to improve walkability throughout the site.

b. Facility Assumptions
As the Beautification Plan indicates, the existing parking supply must be maintained and the site is constrained by wetlands at the south end. The only way to accommodate both the parking demand and a wrap building would be to construct a garage. Construction of a garage or wrap structure would require coordination with the County and the current users. For purposes of this analysis, it is assumed that the existing surface lot will remain.

The use of this site would require a lease agreement with the County. Existing lease agreements for surface parking in the University Hill and downtown areas range from $25 to $60 per space per month. SUNY Upstate’s previous short-term lease at Alliance Bank Stadium was approximately $17 per space per month. Although the final lease agreement would be negotiated, for planning purposes it is assumed that the monthly lease per space would be $30.

Due to the varying attendance at daytime weekday home games, parking may be limited on the 10 to 15 days during the spring and summer. Alternative arrangements would need to be made for users of the facility.

Evaluation
Surrounding land uses include a warehouse/distribution center just south of the stadium, which separates the site from the Regional Transportation Center. The transportation center contains a Dunkin Donuts, Subway, bank and other amenities. The parking area for the stadium is bound by the rear of industrial and commercial properties facing Hiawatha Boulevard. As stated previously, the Alliance Bank Stadium Beautification Plan was considered in the evaluation of this site.

There are 1,235 spaces in the main parking area which would accommodate the minimum parking demand of 1,060 spaces. Anticipating full use of the facility, the annual leasing cost is $444,600.
c. Shuttle

Assumptions

Operational Overview

Inbound (to University Hill) Schedule:
First bus departs Alliance Bank Stadium park and ride at 5:30 AM.
Last bus departs Alliance Bank Stadium park and ride at 9:30 AM.
Vehicles will depart approximately every 7.5 minutes.
Roundtrip distance is approximately 10 miles and approximate travel time is estimated at 30 minutes.

Outbound (to Alliance Bank Stadium) Schedule:
First bus departs Syracuse University at 3:00 PM.
Last bus departs Syracuse University at 6:30 PM.
Vehicles will depart approximately every 7.5 minutes.
Roundtrip distance is approximately 10 miles and approximate travel time is estimated at 30 minutes.

Vehicle Requirements

Maximum parking demand is estimated at 1,235 spaces. For evaluation purposes the maximum number of passengers who will park in a one hour period is estimated at 30% of total parking demand, or 371.

Based on the proposed schedule, one vehicle departs the Alliance Bank Stadium park and ride facility approximately every 7.5 minutes. The proposed service schedule will require four buses with a minimum seated passenger capacity of 47. This yields a total maximum capacity of 376 passengers who may originate their trip each hour during peak operations. This projected route requires travel along highways, so it is therefore recommended that no passengers stand during the trip.

Route Description

The inbound route would operate during AM hours, originating at the Alliance Stadium Bank park and ride facility, stopping at each of the six University Hill institutions, terminating at the Syracuse University Main Shuttle Stop. The vehicle would then return directly to the Alliance Stadium Bank park and ride facility. The first stop, Hutchings Psychiatric Center, is approximately a six minute ride. The final stop at Syracuse University is approximately an 18 minute ride.

The outbound route would operate during PM hours, originating at the Syracuse University Main Shuttle Stop, stopping at each of the five additional University Hill institutions, and terminating at the Alliance Stadium Bank park and ride facility. The vehicle would then return directly to the Syracuse University Main Shuttle Stop. The passengers on University Hill would all be picked up within approximately 14 minutes. Those passengers boarding at Syracuse University would have a total ride
of approximately 20 minutes, and those boarding at Hutchings Psychiatric Center would have a total ride of approximately six minutes.

**Evaluation**

The Alliance Bank Stadium park and ride facility is considered a hybrid between a suburban facility and University Hill facility because of its distance from the University Hill area (approximately 10 miles round trip). The extended distance requires more buses than a closer facility might need to meet shuttle capacity requirements. This will result in higher transportation costs than those for a like-sized facility that was situated closer to University Hill. Further, because the vehicles require highway travel to meet the schedule estimates, passengers are not typically allowed to stand during bus trips due to safety concerns. This further increases the need for additional vehicles on the route.

The relatively high frequency will provide service for passengers with very little wait time between vehicles, resulting in minimal need for posted schedules and for passenger arrival planning. Most passengers will arrive as their personal schedule requires and typically get on a bus within a few minutes to depart to their final destination.

The cost to provide the proposed shuttle service is summarized in the following table:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Bus Type (Mid/Large)</th>
<th>Max. # Buses</th>
<th>Hourly Rate</th>
<th>Daily Hours</th>
<th>Annual Days</th>
<th>Total Annual Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Large</td>
<td>4</td>
<td>$65.55</td>
<td>31.25</td>
<td>250</td>
<td>$512,110</td>
</tr>
<tr>
<td>Centro</td>
<td>Large</td>
<td>4</td>
<td>$64.80</td>
<td>31.25</td>
<td>250</td>
<td>$506,250</td>
</tr>
</tbody>
</table>

Note: Daily Hours includes the hours required to provide peak hour service multiplied by the number of vehicles.

d. **General Summary of Advantages and Disadvantages**

**Advantages**

The parking at Alliance Bank Stadium was recently used as a park and ride facility for SUNY Upstate employees and the feedback regarding its operations was positive. With existing shelters and lighting in place, this site would provide short-term potential as well as long-term opportunities.

The site is adjacent to a well-known area attraction and I-81 is easily accessible via Hiawatha Boulevard or Genant Drive. The site’s rail access could serve University Hill in the future. The location of the site would help to reduce congestion on the Hill and the I-81 access points.

The site meets the minimum parking demand.
Disadvantages
Parking availability would be impacted 10 to 15 days in the spring and summer months when there are daytime games.

Proposed plans for the site would not allow for a garage or wrap building to be constructed in order to not impact wetlands and maintain existing parking supply. The location of the wetlands and lack of pedestrian access to adjacent roadways isolate the site from surrounding uses, such as the Regional Transportation Center.

Additional costs associated with the installation of a park and ride facility at this site would include safety and security measures, such as increased lighting operations. Directional and identification signage would also need to be installed to notify users of its location.

The shuttle service from this site would be frequent (7.5 minute headways), but trip times would be as high as 20 minutes. For a few stops, the location of the site does not meet the 10-15 minute shuttle ride criteria.

C. Evaluation Summary
The Phase 1 and Phase 2 evaluation sections are summarized in Table 4.18, Options Matrix.
<table>
<thead>
<tr>
<th>Facility Assumptions</th>
<th>Parking Lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Surface Lot</td>
<td>Yes</td>
</tr>
<tr>
<td>New Surface Lot</td>
<td>No</td>
</tr>
<tr>
<td>Potential to Meet Minimum Demand?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* Costs documented under potential surface lots are for wrap buildings only. Cost for construction of lot itself estimated at $4,000 per space as indicated in Section 4.B.ii.
5. Recommendations

The goal of the *University Hill Park and Ride Feasibility Study* is to advance an integrated parking strategy by assessing the development potential for a single, remote, mixed-use facility including shared institutional parking, structurally integrated supportive land uses, and shuttle service to major institutions. Ideally, this remote facility would accommodate demand generated by new development, replace existing parking on the Hill to make land available for new development, or shift employee parking to preserve nearby spaces for patients and visitors. The remote nature of the facility would benefit traffic operations in the area by removing cars from congested Hill streets. Further, the wrapped design would also include supportive land uses on site, enliven the streetscape and supply needed services for commuters and residents. The remote parking facility would support University Hill institutions as they advance green initiatives by encouraging alternative modes of transportation, including carpooling, walking and transit.

In the process of defining programming needs and parameters, it was determined that there was a desire for two types of facilities:

1. A suburban park and ride, close to a commuters residence, and
2. A park and ride within walking distance of the Hill.

Therefore, this recommendations section identifies several candidates for park and ride facilities including both suburban and near-Hill locations.

Recommendations have also been categorized as either short- or long-term. The identification of short-term recommendations allow for immediate implementation to alleviate some demand while allowing a transition period to implement Transportation Demand Management programs and reduce the overall demand for parking. Short-term recommendations are relatively easy to implement and could be completed within a year. They do not require construction and therefore minimize capital costs (with the exception of the need to expand the Centro storage facility to accommodate new vehicles). All of the short-term recommendations are remote and would reduce congestion not only on the Hill but also on the interstate ramps providing access to and egress from the Hill. Due to their remote location and the consolidation of commuters from single-occupancy vehicles to high-occupancy buses, these sites would reduce vehicle miles travelled (VMT) and associated green house gas (GHG) emissions.

The long-term recommendation focuses on the desire to have a park and ride facility within walking distance of the Hill and incorporating a wrapped design to enliven the streetscape and provide needed amenities for commuters and adjacent land uses. This option would require land acquisition and the design and construction of both a parking structure and wrap building. It would also require the identification or establishment of an entity to own and operate the facilities. It is anticipated that this option would take several years to implement.

Although the long-term option would reduce congestion on the Hill, vehicles accessing a facility near the Hill would still travel the interstates and other major corridors. The proximity of a close-in park and ride facility would not significantly reduce vehicle miles travelled and associated GHG emissions.
A. Short-Term

Recommended short-term options include:

1. Direct transit service from Fayetteville/DeWitt Park-N-Ride (P-8)
2. Modifications to existing Centro service at Liverpool Centro Park-N-Ride (P-6)
3. Direct transit service from Camillus Park-N-Ride (P-16)
4. Establishment of park and ride at Alliance Bank Stadium with direct transit service (D)

Since several of the recommendations involve Centro Park-N-Ride service, it is generally recommended that Centro undertake a reexamination of its park and ride system and policies to determine if modifications are needed to better serve its passengers and the major employment areas.

Both the Fayetteville/DeWitt Park-N-Ride and the Camillus Park-N-Ride options address the desire for a suburban facility and:

- provide adequate service to meet the evaluation criteria of an overall commute time of 35 minutes or less,
- are visible from major roads for wayfinding,
- do not have any perceived safety issues due to adjacent active uses,
- have adequate parking capacity to meet ridership demand, and
- provide adequate supportive land uses.

It is recommended that direct transit service be provided from the Fayetteville/DeWitt and the Camillus Park-N-Rides to University Hill. It is also recommended that multiple stops on the Hill be served to meet the needs of all institutions and businesses. The recommended service every 25 minutes with morning departures from 5:30 to 9:40 AM and evening departures from 3:00 to 6:45 PM is an enhancement of the existing Centro service.

Given the distance from the Hill, it was determined that the evaluation criteria of an overall commute time of 35 minutes or less could not be met from Liverpool. Therefore, the establishment of direct transit service from Liverpool is not recommended. However, since there are a significant number of Hill employees (1,900) that could be served by a Liverpool Park-N-Ride facility it is recommended that the following modifications be made to the existing Centro operations to better serve commuters. These modifications would significantly improve service to University Hill and would benefit other Centro users in Liverpool.

- Focus Park-N-Ride service from one location. Due to on-site amenities, described in Section 2, it is recommended that the Liverpool-Wegmans Park-N-Ride be the preferred site over Seneca Mall.
- Shift existing Centro Park-N-Ride service from Seneca Mall to Wegmans.
• Simplify the route structure so that the schedules are easy to read. All routes serving University Hill should stop at both SUNY Upstate and Syracuse University, providing improved access for all employees.

The Centro Park-N-Ride sites are already established and may be familiar to some commuters. It is recommended that additional signage be installed to identify the presence of the Park-N-Ride facilities within the plazas and provide internal way finding.

To be successful, the implementation of direct Park-N-Ride service needs to be coupled with the implementation of a Transportation Demand Management (TDM) program (See Section 6, Implementation).

Although the Alliance Bank Stadium site does not meet the desire for a suburban or near Hill location, it has successfully been used as a temporary park and ride facility for employees at SUNY Upstate. The Alliance Bank Stadium option cannot serve all five proposed University Hill stops within the 15 minute shuttle ride evaluation criteria. Some distant stops, like Syracuse University, could be as much as 20 minutes. However, if Syracuse University chooses not to participate in the use of the facility, the number of stops can be reduced and service time improved.

The Alliance Bank Stadium option provides adequate parking capacity to meet the minimum demand. It is visible from I-81 and easily accessible from major roads. It is located along an existing rail line that could serve the University Hill area in the future.

The Alliance Bank Stadium has limited supportive land uses. There are some amenities in the adjacent Transportation Center but they are not visible or walkable from the parking facility.

There are some disadvantages of the short-term recommendations. All of the short-term sites are suburban in character or in the case of Alliance Bank Stadium, relatively isolated. The sites are generally not easily accessed by pedestrians.

The short-term recommendations have the greatest potential to reduce VMT and associated GHG emissions. Estimates of potential annual reductions in VMT and GHG emissions are provided in Table 5.1. Refer to Appendix F for assumptions and calculations.

<table>
<thead>
<tr>
<th>Table 5.1. Short-Term Recommendations – Reduction in VMT and GHG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual VMT</strong></td>
</tr>
<tr>
<td>Fayetteville/DeWitt Centro Park-N-Ride (P-8)</td>
</tr>
<tr>
<td>Liverpool Centro Park-N-Ride (P-6)</td>
</tr>
<tr>
<td>Camillus Centro Park-N-Ride (P-16)</td>
</tr>
<tr>
<td>Alliance Stadium (D)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>
The Syracuse Housing Authority Sites (C1/C2) and Kennedy Square Sites (A1/A2/A3) were considered as sites for potential short-term surface lots. With the exception of Kennedy Square Site A3, the sites would require existing structures to be cleared and the surface lots constructed. This process would be costly and could only be justified if the sites were acquired for a long-term use. The development of these sites would most likely take at least a year to complete. Portions of the Kennedy Square Site A1 will also be used through 2011 as construction staging for the BRC. In addition, surface lots on sites C1 and C2 combined or sites A2 and A3 combined would not accommodate the minimum parking demand. Kennedy Square Site A3 has 365 spaces that would be available in 2010 when the existing users are relocated to the BRC parking lots. However, this site by itself would only accommodate 34% of the minimum parking demand and would not justify the cost of a direct shuttle service. There is the potential to incorporate this site into one of the recommended short-term shuttle routes; however, the additional travel and stops will exceed the travel time evaluation criteria.

i. Parking Capacity

The recommended options have the potential to provide the following parking capacity:

Table 5.2. Short-Term Recommendations - Parking Capacity

<table>
<thead>
<tr>
<th>Site</th>
<th>Potential Parking Capacity/Ridership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fayetteville/DeWitt Park-N-Ride (P-8)</td>
<td>215</td>
</tr>
<tr>
<td>Liverpool Centro Park-N-Ride (P-6)</td>
<td>190</td>
</tr>
<tr>
<td>Camillus Park-N-Ride (P-16)</td>
<td>150</td>
</tr>
<tr>
<td>Alliance Bank Stadium (D)</td>
<td>1,235</td>
</tr>
<tr>
<td>Total</td>
<td>1,790</td>
</tr>
</tbody>
</table>

Note: The parking capacity for suburban Park-N-Ride locations is the assumed ridership.

The combined capacity of these four sites is 1,790 spaces. This meets the minimum parking demand of 1,060 spaces and is approximately 80% of the maximum parking demand.

ii. Capital Costs

Though these options require no immediate capital expenditure, some minimal capital investment is recommended. This includes enhanced signage to direct commuters to the location of the park and ride facilities. In addition, any new service provided by Centro would require new storage facilities to accommodate additional vehicles. The capital cost for these new facilities is currently not available.

The use of existing parking facilities significantly reduces development costs. For example, if a facility with the same capacity as Alliance Bank Stadium (1,235 spaces) were constructed on Syracuse Housing Authority Sites C1 and C2 the capital costs would be $24.7 M for the garage and another $20.2 M for a wrap building for a combined capital cost of approximately $45 M. Even if a surface lot was developed, it would cost approximately $5.0M.
iii. Operating and Maintenance Costs
The following table summarizes the annual operating costs for the recommended options. Additional capital and operating funding would be needed for Centro to operate the services due to fiscal constraints.

Table 5.3. Short-Term Recommendations – Operating Costs

<table>
<thead>
<tr>
<th>Site</th>
<th>Lease</th>
<th>Shuttle Operations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Centro</td>
<td>Private Operator</td>
</tr>
<tr>
<td>Fayetteville/DeWitt Centro P-N-Ride (P-8)</td>
<td>$277,500</td>
<td>$213,260</td>
<td></td>
</tr>
<tr>
<td>Liverpool Centro Park-N-Ride (P-6)</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Camillus Centro Park-N-Ride (P-16)</td>
<td>$243,750</td>
<td>$185,440</td>
<td></td>
</tr>
<tr>
<td>Alliance Stadium (D)</td>
<td>$440,600</td>
<td>$506,250</td>
<td>$512,110</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>$440,600</td>
<td>$1,027,500</td>
<td>$910,810</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,351,400 - 1,468,100</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: There is no operating cost assumed for the Liverpool option since it is a modification of an existing service.

iv. Operations Plan
In Section 4.B.ii, the Shuttle Cost Assumptions describes three options for providing shuttle services:

1. Partner with Regional Transportation System – Centro
2. Outsource to a Private Contractor
3. Operate Internally

For the short-term options, it is recommended that a partnership be established with Centro. Centro currently provides service from the suburban park and ride locations and would be most cost effective in terms of providing service to Alliance Bank Stadium. It would simplify management if all four options had the same service provider.

The primary disadvantages of using Centro would be that they cannot provide charter service for participating institutions and the acquisition of buses to serve new routes would require the expansion of the Centro storage facility.

B. Long-Term
Since the short-term recommendations address the desire for a suburban location, the long-term option focuses on the desire to provide a site within walking distance of the Hill. To support institutions’ goals to reduce VMT and GHG emissions, it is recommended that the long-term option be put into practice following the implementation of the short-term recommendations, including a TDM program. If the TDM program and short-term recommendations are successful, the overall parking demand will be reduced allowing a smaller park and ride facility to be constructed.

The sites, within walking distance, that were considered include Syracuse Housing Authority Sites (C1/C2) and Kennedy Square Sites (A1/A2/A3). It is recommended that
a park and ride facility and associated wrap structure be constructed on Kennedy Square Site A2. This site is recommended over the other options for the following reasons:

- Sites A1, A3 and C1 could not accommodate the maximum parking demand.
- Site C2 could accommodate the maximum parking demand; however its use would require the relocation of existing businesses, there are perceived safety issues with the site that would require additional security measures and it is separated from the Hill by I-81, a physical and psychological barrier.
- Site A2 could accommodate the maximum parking demand, it is supportive of adjacent institutional development at the Syracuse Center of Excellence and SUNY Upstate’s Biotechnology Research Center and the wrap structure would reinforce the pedestrian corridor on South Crouse Avenue.

Kennedy Square Site A2 is a 12-minute walk from the center of the Hill. The site is served by Centro Route 443 and is located two blocks north of the Connective Corridor. The recommended shuttle service meets the evaluation criteria and could be modified to provide the additional circulator service. The circulator service would provide transportation between the individual institutions, additional facilities owned or operated by selected institutions, existing surface and garage parking that may not be displaced by the park and ride facility, and, to a lesser extent, retail and dining establishments.

i. Parking Capacity
   The parking at this site would vary based on the actual demand when the option is pursued. The site has the ability to accommodate the maximum demand of 2,160 spaces if the short-term recommendations are unsuccessful in reducing the parking demand.

ii. Capital Costs
   As documented in Section 2, the capital costs for a new facility include property acquisition of approximately $3.0 M. The cost to construct a new parking facility would vary based on the final parking demand. The maximum parking demand could be met with a garage structure at a capital cost of $62.4 M. A wrap building adds $14.1 M in capital costs, for a total capital cost of $76.5 M. This assumes a wrap building on South Crouse Avenue. If desired, a second wrap building could be provided on University Avenue.

   If the shuttle service is provided by Centro, new storage facilities would be needed to accommodate additional vehicles. The capital cost for these new facilities is currently not available.

iii. Operations and Maintenance Cost
   The total annual operating and maintenance costs would be approximately $2 M. The estimated operations and maintenance costs are $780,000 and $940,000 per year for the garage and wrap building, respectively. The annual shuttle operating
cost to serve this site would be $462,950 by a private operator and $461,250 with Centro.

iv. Operations Plan
Unlike the short-term recommendations, this recommendation requires the construction, maintenance, and operation of a parking facility and associated wrap building. It is recommended that a parking authority be established for this purpose. The parking authority could be developed by a partnership of the participating institutions and businesses or through a Transportation Management Association (TMA) that serves the University Hill area. It is recommended that a private operator be used to provide the shuttle service. The use of a private operator would allow the potential expansion to include a circulator service limited to employees and visitors to the institutions. It would also provide institutions with a provider for charter service.
6. Implementation Plan

A. Policy/Programmatic Framework

To be successful, the development of a park and ride facility should be a part of a broader transportation strategy that includes several programmatic elements:

Transportation Demand Management (TDM) Program. TDM is a collection of strategies to reduce vehicle trips and encourage alternative modes. Strategies include:
- financial incentives (e.g. rewards programs)
- transit programs
- carpool programs
- guaranteed ride home/occasional parking permits
- car or bike-sharing programs
- guaranteed ride home program
- education and promotion

A Guaranteed Ride Home program must be included to bring people to their cars for specific and pre-defined reasons, when the shuttle is not providing service. Reasons would include, but not be limited to, family emergencies, employee illness, or other major event. Each institution will be paying for these rides, so they could establish their own rules. The usage should be limited to a maximum number per employee. The service may be provided by internal resources (Public Safety, facilities, etc.) or through a contract with a local taxi service.

TDM is an integral part of encouraging alternative modes and promotion is a significant part of its success. There is a need to provide transportation education through employee orientation, human resource benefits material, and employee communications. A successful TDM program would encourage use of park and ride facilities and reduce the overall parking demand for the University Hill area.

TDM programs could be implemented in a few different ways:

1. Voluntary TDM Program – Institutions and companies who wish to provide choices for their employees or who are committed to a sustainable environment, may voluntarily commit to the implementation of TDM programs. Information regarding TDM Programs and their benefits should be provided to all major employers with a request that they consider implementation of some of the strategies in an effort to support a sustainable transportation system downtown and provide options for their employees.

Signatories to the American College and University Presidents’ Climate Commitment have committed to develop a plan to achieve climate neutrality including reducing GHG emissions associated with transportation. Current signatories on University Hill include:
2. Requirement for TDM Program as part of Large Project Approval – To provide consistency and equitability throughout University Hill and downtown, it may be necessary to require the implementation of TDM Programs. The development and approval of a TDM Program could become a part of the project review and approval process. The City would need to establish a policy regarding what size employers or what size project would require a TDM program. Subsequent monitoring of the program would also be required to ensure compliance with the original agreement.

3. TDM Programs Managed through a Transportation Management Association (TMA) – TMAs are non-profit, member-controlled organizations that provide transportation services in a particular area, such as a commercial district, medical center or industrial park. They are generally public-private partnerships, consisting primarily of area businesses with local government support. TMAs provide an institutional framework for TDM Programs and services and are usually more cost effective than programs managed by individual businesses. TMAs allow small employers to provide services comparable to those offered by large companies.

Regional or local governments, chambers of commerce or management of a major facility (such as a mall or hospital) could help create a TMA and provide seed funding. Developers or facility managers may be required to establish a TMA to mitigate local congestion and parking problems. TMAs are typically funded through dues paid by member businesses and government grants.12

B. Funding Sources
The short- and long-term recommendations could be funded through a combination of the following potential funding sources:

1. User fees
User fees should be established that encourage use of park and ride facilities by offering a cost savings over existing market rates on University Hill. User fees for suburban Park-N-Ride options should simply consist of the transit fee. User fees for both the Alliance Bank Stadium and Kennedy Square options should include both the cost of parking and shuttle service.

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12 [http://www.vtpi.org/tdm/tdm44.htm](http://www.vtpi.org/tdm/tdm44.htm), accessed December 5, 2007
2. Contribution by affiliated institutions and businesses
   Each vehicle should be equipped with the ability to electronically track each passenger’s affiliation and report that information for cost allocation purposes. Each participating institution should be assessed a proportional share of the facility’s capital, operating, and maintenance costs.

3. Contribution by a TMA
   If a TMA is established for the area, the TMA could provide funding support for the recommended options.

4. Lease agreement for the wrap buildings
   For any wrap option, the lease agreements for the associated wrap building should provide the funding for this structure’s debt service and operating costs.

5. Grants
   - The New York State Energy Research and Development Authority (NYSERDA) is a source of potential funding through its Project Opportunity Notices (PONs). Each PON varies but recent PONs have focused on ways to reduce vehicle miles travelled.
   - The Grant Program sponsored by EPA’s Office of Environmental Education supports environmental education projects that enhance the public’s awareness, knowledge, and skills to make informed decisions that affect environmental quality.
   - Through Centro, transit operating costs including vehicle acquisition and the required storage facility expansion, may be eligible for grants through the Federal Transit Administration.
   - There is the potential for funding through future reauthorization of federal transportation legislation and the emphasis on improving livability and environmental sustainability.

C. Timeline
   It is recommended that the short-term recommendations, including TDM programs at participating institutions, be implemented in 2010. Active marketing and promotion of the short-term recommendations should continue for the following two years. In 2013, the recommended options should be evaluated to assess if they are being used to their maximum potential and if modifications are necessary. At that time, the anticipated parking demand for the University Hill area should be reassessed to determine if the combination of the short-term recommendations and the TDM programs have reduced the parking demand. Once the parking requirements are determined, the Kennedy Square Site A2 option should be pursued to meet the remaining demand.
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