



Memorandum

To: Andrew Altman, Deputy Mayor for Economic Development, City of Philadelphia
From: Sam Schwartz Engineering
Date: September 9, 2008
Re: Sugar House Philadelphia Transportation Review
Project No: CP-08-090

Introduction

At the request of the Philadelphia Department of Commerce, Sam Schwartz Engineering (SSE) performed a review of transportation-related impacts, methodology, design, and mitigations related to the Sugar House casino development as presented in the *Sugar House Casino Updated Traffic Impact Analysis* (December 2007) prepared by Gannett Fleming. This review consisted of a quantitative analysis of the planned Phase I development of the casino and a qualitative review of the other development phases because only Phase I is guaranteed to be developed at this time. According to the traffic impact analysis, the other development phases would not be built until they were dictated by market demand. The size of development planned for each phase is listed below:

- Interim – Total Area: 1,275,550 SF
 - 1,500 Slot Machines
 - ~2,330 Parking Spaces
- Phase I – Total Area: 1,524,750 SF
 - 3,000 Slot Machines
 - 2,880-2,930 Parking Spaces
- Phase II – Total Area: 3,070,550 SF
 - 5,000 Slot Machines
 - 500 Hotel Rooms
 - Event Center
 - 4,500+ Parking Spaces
- Phase III – Total Area: 3,318,500 SF
 - 5,000 Slot Machines
 - 1,264 Hotel Rooms
 - Event Center
 - 4,500+ Parking Spaces

The development would be located on the east side of Delaware Avenue, between Frankford Avenue and Shackamaxon Street, bordering the Delaware River to the south.

The following memorandum describes the flawed methodology and inaccurate assumptions—an overestimation of project-generated vehicle traffic, underreporting of pedestrian volumes, underutilized transit connections, etc—contained in the *Traffic Impact Analysis* lead to a poorly designed project inappropriate for an urban waterfront undergoing rapid revitalization.

New York
611 Broadway, Suite 415
New York, NY 10012
T: 212.598.9010 F: 212.598.9148

New Jersey
24 Commerce Street, Suite 1425
Newark, NJ 07102
T: 973.639.9629 F: 973.639.9191

Windsor-Detroit
374 Ouellette Avenue, Suite 501
Windsor, ON N9A 1A8
T: 519.560.3500 F: 519.560.3600

Traffic Analysis

Several assumptions used as the basis of the Sugar House traffic analysis are flawed, resulting in an overly auto-centric design. A summary of these assumptions and their resulting impact on the traffic analysis is presented below.

Trip Generation

Sugar House's trip generation overestimates the volumes of vehicles that would be accessing the development by not sufficiently linking trips between components:

- 20% of the planned hotel rooms are assumed to be occupied by non-casino guests. Typically, the hotel components of casino developments are fully occupied by casino guests—meaning that the hotel itself would generate few additional trips to the site.
- 40% of the planned event center trips are assumed to be made by non-casino visitors. Most casino event centers experience a higher percentage of shared traffic with their host casinos.

In addition, a number of the expected person trips would likely be linked with the Foxwoods casino, located 2.8 miles south of Sugar House. In other words, a portion of Sugar House visitors would have originally been bound for Foxwoods, or vice versa, and should have been considered as background traffic, not Sugar House generated traffic.

No Build Network

While the trips generated by the Sugar House casino may have been overestimated in the traffic analysis, the volumes within the background roadway network may have been underestimated. According to the Philadelphia City Planning Commission, approximately 20 large-scale, primarily residential, developments are planned for the Delaware River waterfront in the coming years. Sugar House only specifically accounted for one of these developments—Waterfront Square (780 units), located adjacent to Sugar House—within their No Build traffic network. Other planned projects would bring hundreds of new users to the waterfront but were not examined individually.

Of greater concern than the added vehicular traffic, these projects would generate large numbers of pedestrians using area parks, sidewalks, bike lanes, and the planned esplanade. These added people would have an impact on the operation of area facilities as well as vehicular movements within the area. For example pedestrians impact vehicular delay by conflicting with turning vehicles and activating pedestrian call buttons, which are installed along Delaware Avenue.

In addition to excluding the pedestrians that would be generated by background projects, no background growth of existing pedestrian volumes is assumed at all. It is standard transportation planning practice when developing a no build traffic network to assume an annual growth of both vehicles *and* pedestrians, usually at an established rate for the study area.

New York
611 Broadway, Suite 415
New York, NY 10012
T: 212.598.9010 F: 212.598.9148

New Jersey
24 Commerce Street, Suite 1425
Newark, NJ 07102
T: 973.639.9629 F: 973.639.9191

Windsor-Detroit
374 Ouellette Avenue, Suite 501
Windsor, ON N9A 1A8
T: 519.560.3500 F: 519.560.3600

Synchro Analysis

While Sugar House's original Synchro¹ files were not provided to SSE, we were able to use the Synchro output files contained in Appendix E of the traffic report to recreate their analysis.² SSE found errors contained within the analysis that are summarized below:

- The traffic network was not analyzed as a whole but was broken into two sections, or files. One of the benefits of analyzing traffic operations with a program like Synchro is that it is capable of examining an entire network of intersections and determining the impact that each would have on the others. This benefit was not realized fully in the Sugar House analysis. Consequently, these intersections have not been accurately examined.
- Pedestrians were not included in the analysis which results in underreported delays, as pedestrian activation of "WALK" signals on Delaware Avenue would significantly affect vehicle delay and turning movements. This is despite the presence of substantial pedestrian volumes:
 - 5% of casino-bound trips were assumed to be made by pedestrians or transit users, resulting in 81 people crossing adjacent intersections during the Friday evening peak hour (although this appears to be an underestimation based on the site's location and existing neighborhood commuting patterns).
 - Nearby Penn Treaty Park attracts significant volumes of pedestrians, particularly in summer months when casino visitation would peak. This would only increase in the future when no build projects are built.
 - The planned Sugar House esplanade would itself be a pedestrian draw from adjacent residential neighborhoods, west of I-95 (Fishtown, Northern Liberties, etc...).
 - Pedestrians were not even counted in the data collection process at some locations, such as Spring Garden and Second streets which is adjacent to an El station used by 710 pedestrians during the weekday peak hour.³
- Progression factors were not accounted for in the analysis resulting in an incorrect representation of vehicular queuing.
- A queuing analysis was performed for two area-wide peak hours (Friday evening and Saturday afternoon) but not for the casino peak hours, when queues for turns from Delaware Avenue into the development would be greatest.

Parking Garage

The initial development phase of the casino would see the construction of a 3,000-space parking garage for casino visitors and employees. As Phase I consists of a casino with 3,000 slot machines, the proposed garage actually provides more parking than recommended by the Pennsylvania Gaming Control Board (four spaces for every five slots). By building such a large supply of parking, Sugar House may actually be encouraging visitors and employees to drive to the site who would have otherwise walked or used transit.

¹ Intersection capacity analysis software.

² The recreated Synchro network SSE analyzed does not represent a completely accurate representation of the analysis Sugar House performed. Certain elements of a network (timing offset plans, storage bay lengths, heavy vehicle percentages, etc...) are not displayed on the output sheets and do have a limited affect on the capacity analysis. SSE approximated these items based on typical analysis values and project assumptions.

³ 2008 ridership volumes for the Spring Garden Station on the Market-Frankford Line provided by SEPTA.

Traffic Assignments

Certain traffic assignments described in the traffic impact report are illogical and unrealistic. For instance, during Phase I of the casino development operations, vehicles approaching the site from the south on I-95 are routed towards the site via exit 25 at Richmond Street, where they would travel an extended route onto southbound Delaware Avenue and approach the casino from the north. This route suggests that vehicles would travel an additional 4.5 miles farther than needed if they utilized the most direct route from exit 20—this results in a additional ~3 million vehicle miles traveled (VMT) per year on local roadways.

Sugar House asserts that this routing plan would be accomplished through highway signage which may be sufficient to guide first-time casino visitors; however, repeat visitors would most likely realize the indirect nature of the directional signage and instead leave I-95 at exit 20—which is also the route suggested by MapQuest and other driving direction websites.

The result of routing vehicles from this direction is that volumes of vehicles making certain movements into the project site are lower than they should realistically be expected to be. This translates into fewer turning conflicts in the analysis and, ultimately, underreported vehicle delays.

Pedestrian/Bicycle Conditions

The Sugar House traffic mitigations and site design, as currently proposed, neglect the pedestrian environment along this waterfront site. This is due to an auto-centric transportation plan that neglects the pedestrian experience in favor of drivers:

- Pedestrian crossing lengths are increased at locations where sidewalks are narrowed and turning lanes are added (such as Delaware Avenue and Shackamaxon Street) while the walk time provided is decreased.
- It will take two signal cycles for pedestrians to cross Delaware Avenue at the site, where people could be stranded in the median for up to 1.5 minutes. This is an unacceptable wait time, as 30 seconds is generally considered the tipping point at which pedestrians begin to become frustrated and jaywalking increases dramatically.
- Dual left-turn lanes are proposed at certain locations, greatly increasing the likelihood of vehicle-pedestrian conflicts and the lengths of crossings.
- Neckdowns, which shorten crossings and provide pedestrian reservoir space in congested areas, are proposed to be removed from Delaware Avenue.
- On-street parking, which calms traffic, will be removed from Delaware Avenue.

In addition to neglecting the pedestrian environment adjacent to the project site, bicycle conditions would be compromised by the proposed reduction of the painted bicycle lanes on Delaware Avenue from 5 feet to 4 feet wide. Five feet is generally considered the minimum acceptable width for an on-street bike lane where substantial truck traffic is present or vehicles operate at high speeds.⁴

⁴ AASHTO. *Guide for the Development of Bicycle Facilities*, 1999.

Transit Connections

Given the close proximity of the Market-Frankford Line station at Girard Avenue to the project site, a much higher share of casino visitors should be encouraged to utilize transit. In fact, the project site is only a nine minute subway ride from City Hall followed by a ten minute walk, yet Sugar House offers no plan to highlight this connection or encourage visitors to utilize it. The Sugar House traffic analysis assumes that 5% of visitors would utilize transit or walk to the site; with proper promotion and prioritization of adjacent transit facilities, this percentage could be greater. Aside from visitors, casino employees should be specifically targeted to take transit to the site with incentive programs, like transit checks, and by limiting available parking or only providing off-site employee parking facilities.

As a benefit to the 5% transit share, Sugar House plans to reroute the SEPTA 43 bus line that currently runs along Delaware Avenue, directly into the site. The proposed route change would have the public bus line turn off of Delaware Avenue at Penn Street, circle the casino site, and then return to Delaware Avenue at Shackamaxon Street. This change would be only a minor benefit to bus riders who are bound for the casino while it would be a major disadvantage to other bus riders, who would endure longer ride times, possible extended layovers at the Sugar House site, and extended walk times for riders from the adjacent neighborhood who would otherwise board/alight on Delaware Avenue at Frankford Avenue.

Currently, 38% of nearby residents take transit, walk, or bike to work on a daily basis⁵—this is a high percentage for the Philadelphia metro area that approaches rates seen in Center City and should be seen as an indication that not all development in the area has to be auto-centric to succeed. Further, it is clear from commuter travel data that a greater percentage of employees of the casino could be expected to take alternative transportation modes to the site—a fact that should be recognized in the proposed number of parking spaces planned and encouraged by casino operators.

Site Design

As it currently stands, the design of the Sugar House site is inappropriate for a waterfront location adjacent to a dense urban central business district.

Parking Garage

Phase I of the development would see the construction of nearly 3,000 parking spaces for a facility with 3,000 slot machines (Pennsylvania Gaming Control Board recommends just four spaces for every five slots). The resulting oversized garage would be built entirely above ground on the Delaware Avenue side of the site, in a building larger than the Phase I casino facility. It will effectively overwhelm the view of the site from the adjacent neighborhood and people passing on Delaware Avenue.

As described above, a large portion of area residents currently commute to work via transit or walking/biking. It is reasonable to expect that a similar share of the casino employees would utilize similar means to travel to their jobs at Sugar House. Building such an excessive supply

⁵ United States Census 2000 data for Philadelphia County tracts 128, 129, 130, 142, 143, 144, 158.

of parking spaces may, in fact, encourage employees/patrons to drive who wouldn't (i.e., induced demand).

Site Plan

While the current site plan calls for a waterfront esplanade to be constructed along the length of the site that would be open to the public, it may be predominately used by casino visitors because it is barely visible from outside of the site. Overall, the project would visually and physically block the river for three city blocks, or approximately 1,200 feet.

An opportunity exists with the development of the casino to open the riverfront at this location for the first time in decades. A more pedestrian friendly and open site plan could actually encourage people to visit the waterfront as its own attraction. By extending the local street network farther towards the water, Sugar House could become an important extension of the community. Frankford Avenue and Shackamaxon Street could be continued to the esplanade as vehicular streets or as pedestrian-only promenades that are lined with retail and lead to a truly public riverfront park. Sugar House could be developed in a way that serves as a standard for all future waterfront construction in Philadelphia.

To guide the way to this newly created destination, intersections on Delaware Avenue should be normalized, where possible, simplifying pedestrian crossings and adding crosswalks to all sides of the intersections with Frankford Avenue and Shackamaxon Street.

Summary

SSE believes that poor methodology and inappropriate assumptions were used in the analysis. The result is an auto-centric, suburban transportation plan in a downtown urban location.

While limited transportation demand management (TDM) measures are planned as part of the development (e.g., off-peak employee shift changes), the number of vehicle trips to the site could be greatly reduced to allow for a more pedestrian-centric design.

In fact, the opportunity exists to completely rethink the nature of the local waterfront and its surrounding transportation network. A preliminary analysis indicates that Delaware Avenue, in the area of the project site, could be reduced to only two travel lanes in each direction with a manageable impact on intersection delay.⁶ The extra right-of-way could be used to widen sidewalks on either side of Delaware Avenue, create fully separated (class I) bicycle lanes, or accommodate bus-only lanes.

Additional TDM measures, listed below, should be further studied, funded, and implemented:

- Casino-funded shuttle bus service from the Girard Avenue station to the project site
- Shuttle bus service from Center City hotels and other tourist destinations
- Water taxi service from New Jersey and Philadelphia waterfront attractions
- Coordination with SEPTA to increase bus service
- Transit incentives for employees and visitors (e.g., free transit passes)

⁶ An idea put forth by Penn Praxis in *A Civic Vision for the Central Delaware*, 2007.

- Off-site employee parking facility and carpooling incentives
- On-site bicycle parking and access
- Casino incentives to spread trips through the week
- Parking management plan (e.g., flexible pricing, high-occupancy vehicle spaces)

By promoting non-automotive travel to the casino, improvements could be made to the site design and surrounding transportation network—accommodating vehicles, pedestrians, transit and bicycles. This could allow for a reduction in the size of the on-site parking garage and a shift in the Delaware River's overall development patterns.

M:\CP-08-090\Office Data\Reports\Sugar House Traffic Review Memo 20080909 Draft.doc

New York

611 Broadway, Suite 415
New York, NY 10012
T: 212.598.9010 F: 212.598.9148

New Jersey

24 Commerce Street, Suite 1425
Newark, NJ 07102
T: 973.639.9629 F: 973.639.9191

Windsor-Detroit

374 Ouellette Avenue, Suite 501
Windsor, ON N9A 1A8
T: 519.560.3500 F: 519.560.3600