

**Date:** January 28, 2015

**To:** Eli Cooper, Transportation Manager, City of Ann Arbor  
**From:** Project Team

**Subject: Ann Arbor Station—Assumptions for Intercity Parking Access**

The purpose of this memorandum is to document assumptions regarding parking access to a new Ann Arbor intermodal passenger rail station. These assumptions are informed by origin and destination estimates prepared by MDOT consultants for the Chicago-Detroit/Pontiac passenger rail corridor (C-D/P) Tier 1 Draft Environmental Impact Statement (DEIS)<sup>1</sup>, Amtrak parking estimates based on C-D/P ridership estimates, responses to a 2011 Michigan Department of Transportation (MDOT) passenger rail survey, and travel patterns in urbanized Washtenaw County.

The C/D-P DEIS estimates that in 969,000 annual boardings and alightings will be made at Ann Arbor Station in the year 2035 full build scenario. This estimate represents approximately 485,000 annual riders using the station. To meet this demand, Amtrak initially requested over 2,200 parking spaces in Ann Arbor to meet the demand. The Federal Railroad Administration (FRA) questioned Amtrak's parking assumptions, concluding that this request was based on a national formula for parking access that is not reflective of transportation mode shares in Ann Arbor and neighboring communities. In addition, several participants at Ann Arbor Station

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<sup>1</sup> The Draft EIS is available at <http://greatlakesrail.org/~grtlakes/index.php/site/public-hearings>. Appendix E contains ridership forecasts and the transportation analysis zones (TAZs) associated with the origin and destination estimates.

community meetings expressed dismay at the idea of locating so many parking spaces near downtown Ann Arbor.

Amtrak subsequently revised its estimate to approximately 870 spaces for year the 2035 full build. This revised estimate reflects urban transportation assumptions for greater Ann Arbor. While Amtrak provided no methodology for their revised estimate, the Project Team assumes that it acknowledges the high percentage of trips in Ann Arbor and Ypsilanti made by walk, bike and public transit modes.

In response to FRA's questioning and stakeholder feedback, the Project Team has reviewed transportation patterns in Ann Arbor and Ypsilanti to adjust station parking assumptions. The Team also coordinated with the transportation modeling consultant for C-D/P, Transportation Economics and Management Systems, Inc. (TEMS), to understand how the model can assist in estimating the demand for parking at Ann Arbor Station. The results of this analysis are described in subsequent sections.

**Intercity Rail and Commuter Rail**

The C-D/P Tier 1 DEIS considers rail travel along the Amtrak *Wolverine* line corridor between Chicago and metropolitan Detroit. It does not provide assumptions for an additional proposed passenger railroad/public transit service in the corridor: commuter rail between Ann Arbor and Detroit. This commuter rail service has been proposed by the Southeastern Michigan Council of Governments (SEMCOG) and train equipment has been secured for a trial service.

The Project Team has concluded that station parking at Ann Arbor Station should be provided for intercity rail and, if co-located at the station, intercity bus passengers only. While the proposed Ann Arbor-Detroit commuter rail corridor is anticipated to connect with Ann Arbor Station, parking for this service is expected to be provided only

at stations outside downtown Ann Arbor. These include stations currently proposed by the commuter rail project sponsor (SEMCOG) and potential additional stations in Washtenaw County. The Project Team suggests that SEMCOG consider adding one or more additional stations located east or west of Ann Arbor Station. Suggested candidate locations include areas near highway interchanges to accommodate regional park and ride access (such as at US 23 near Washtenaw Community College and I-94 west of Chelsea), an alternative Ann Arbor Station location not selected as the preferred intercity rail station site, and cities and towns west of Ann Arbor.

### **Transit and Non-Motorized Travel in Ann Arbor and Ypsilanti**

According to the US Census American Community Survey (ACS), approximately 30% of Ann Arbor residents travel to work by transit, walking or biking.<sup>2</sup> Assuming that Ann Arbor Station charges some fee for parking, this same percentage seems applicable for station access by city residents who are not full-time students.

### ***Travel Patterns To and From Ann Arbor University and College Campuses***

Trips to school (university and college) in Ann Arbor are weighed more heavily toward non-automobile modes than work trips. The ACS does not survey for trips to school, so the Project Team performed its own analysis of these trips. This analysis focusses exclusively on the University of Michigan Ann Arbor campuses.

Over 43,600 students were enrolled at the University of Michigan Ann Arbor (U-M) in the fall of 2014<sup>3</sup> Of these students, nearly 30%

<sup>2</sup>

[http://download.ctpp.transportation.org/profiles\\_2014/transport\\_profiles.html](http://download.ctpp.transportation.org/profiles_2014/transport_profiles.html)

<sup>3</sup> University of Michigan (2014). "University of Michigan - Ann Arbor - Enrollment by Degree Level" (PDF). University of Michigan Office of Budget & Planning. October 20, 2014. Available at [http://obp.umich.edu/wp-content/uploads/pubdata/factsfigures/enrollment\\_umaa\\_fall14.pdf](http://obp.umich.edu/wp-content/uploads/pubdata/factsfigures/enrollment_umaa_fall14.pdf).

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(about 13,000) lived on campus.<sup>4</sup> Most of these on-campus students likely walk or bike to school (an estimated 10,000). May other students also walk or bike to school from non-campus housing (perhaps another 5,000).

In addition to students, over 25,700 staff members worked at the Ann Arbor campuses in 2014.<sup>5</sup> The combined total of students and staff was about 69,400.

In 2010, nearly 35,000 students and staff rode U-M buses on a daily basis.<sup>6</sup> This volume reflects total trips, with generally half of those in the morning and half in the evening. These trips are made by an estimated 17,500 individuals using the buses daily and represent travel by about 25% of students and staff. In addition, a few thousand of the approximately 11,000 daily Ann Arbor Area Transportation Authority (AAATA) bus trips are to or from the campuses.<sup>7</sup> The Project Team estimates that roughly 5,000 daily AAATA trips are campus trips, representing about 2,500 travelling individuals. Combined, roughly 20,000 students and staff used transit each day to reach the campuses, or roughly 29% of daily campus visitors.

Between the 15,000 or so students walking or biking to campus and the 20,000 students and staff riding transit to campus, roughly 50% of campus visitors commute by non-automobile modes.

The 2011 MDOT survey of Amtrak passengers in Michigan notes that 14% of *Wolverine* line passengers reported as university/college students.<sup>8</sup> Many of these are assumed by the Project Team to be

<sup>4</sup> University of Michigan Housing, at <http://www.housing.umich.edu/about>.

<sup>5</sup> University of Michigan, at [http://obp.umich.edu/wp-content/uploads/pubdata/factsfigures/facultyhrdef\\_umaa\\_fall14.pdf](http://obp.umich.edu/wp-content/uploads/pubdata/factsfigures/facultyhrdef_umaa_fall14.pdf)

<sup>6</sup> SEMCOG 2010.

<sup>7</sup> Project Team assumption based on SEMCOG 2010 reporting.

<sup>8</sup> 2011 MDOT Intercity Passenger Rail Survey, page 17.

U-M students. If 50% of U-M students and staff travel to campus using non-automobile modes, a similar percentage of campus visitors are assumed to access the station using these same modes. This assumes that transit, non-motorized, and taxi/shuttle modes are readily available and convenient during the hours of railroad operation.

The C-D/P Tier 1DEIS assumes 2,830,000 annual *Wolverine* line riders in the full build scenario; this figure represents boardings only. If 14% of these riders are higher education students, then nearly 400,000 of these riders would be higher education students<sup>9</sup> 485,000 annual train passengers on the line are expected to use Ann Arbor Station, and more than half the higher education students on the line attend U-M Ann Arbor and nearby colleges and universities. Given that, roughly half the Ann Arbor Station passengers can be assumed to be students.

### ***Non-Student Ann Arbor Residents***

The Project Team assumes that Ann Arbor residents will access the station using similar travel modes to their work commute trips, with 30% of these trips made by non-automobile modes. The non-automobile mode share assumed for all Ann Arbor travel to and from the station is 40%, the median percentage of campus and city non-automobile travel. Many others will be dropped off and picked up at the station, via personal automobiles, rather than park a vehicle at the station. In all, close to 50% of Ann Arbor residents will likely access via non-auto modes.

<sup>9</sup> C-D/P DEIS Appendix E, page E-110.

### ***Ypsilanti Residents***

In Ypsilanti, about 20% of work trips were made by non-automobile modes in 2000.<sup>10</sup> Given strong transit connections, a similar percentage can be expected to access the multi-modal station without a car. The city's resident student population will increase the non-auto access share. A separate analysis for student travel between Eastern Michigan University and Ann Arbor Station has not been performed, though students and staff are expected to have convenient access to public transit linking with the station. The Project Team assumes 30% of all trips between Ypsilanti and Ann Arbor Station are assumed to be made by non-automobile modes. When passenger drop-off and pickup is added, the non-parking percentage increases—40%, perhaps.

### **Estimated Origins and Destinations of Ann Arbor Station Riders**

Projected Ann Arbor Station ridership in the full build 2035 scenario is 969,000 boardings and deboardings. The C-D/P origin and destination model prepared by TEMS does not differentiate between Ann Arbor Station access trips to and from Ann Arbor and Ypsilanti as opposed to other communities. Nor does the TEMS model differentiate between riders originating from one station or zone compared to another. Rather, it shows total estimated passenger rail travel between zones. TEMS describes the model as a “triangulation” as opposed to a traditional origin and destination structure.

The student travel analysis in this memorandum suggests that half the station trips are made by higher education students, and these students are based primarily in Ann Arbor and Ypsilanti. If an additional quarter of the trips represent residents of and visitors to the urbanized core of Washtenaw County, then at least 75% of Ann Arbor Station users reside in or visit Ann Arbor and Ypsilanti.

<sup>10</sup> US Census ACS Journey to Work survey 2000, accessed from [http://download.ctpp.transportation.org/profiles\\_2014/transport\\_profiles.html](http://download.ctpp.transportation.org/profiles_2014/transport_profiles.html).

Another factor to consider regarding parking requirements is the region of trip origin. For example: A round trip originating from southeast Michigan may include a car trip to and parking at Ann Arbor Station. A round trip from Chicago to Ann Arbor will not require a parking space at Ann Arbor. The C-D/P model tells us little about the direction of travel between linked station pairs.

The 2011 MDOT Intercity Passenger Rail Survey found that 88% of respondents on the *Wolverine* line traveled from Michigan to points outside Michigan (primarily Chicago).<sup>11</sup> However, in the same study “only 69 percent of *Wolverine* passengers reported a home residence in Michigan, with 22 percent of *Wolverine* passengers reporting a home residence in Illinois.”<sup>12</sup> It is possible that some of the respondents were students attending Michigan colleges or universities but identifying home residences in Illinois.

The Project Team’s impressions of directional travel indicate that the majority of Ann Arbor Station rail round trips start in Ann Arbor—near 90%. This round-trip travel flows predominantly from Ann Arbor to points west. 10% or less of Ann Arbor round trips appear to originate from stations other than Ann Arbor. This directional flow may change as service increases and additional trips are available during commuting hours to Ann Arbor destinations. Many of these trips are expected to be captured by the proposed commuter rail service, which would be scheduled and priced for commute trips.

### Assumed Parking Requirements

This section describes how the travel analysis is used to derive parking estimates. All stated figures represent the year 2035 full build scenario for the Chicago-Detroit/Pontiac passenger rail corridor and associated activity at Ann Arbor Station.

<sup>11</sup> 2011 MDOT Intercity Passenger Rail Survey, page 14.

<sup>12</sup> *Ibid*, page 30.

- Annual passengers at Ann Arbor Station: approximately 485,000 (which is half of the boarding of and alighting from trains at the station)
  - 90% of round trips originating at Ann Arbor Station = 436,500 round trips potentially requiring parking at the station
- 75% of station riders are assumed to be residents of Ann Arbor and Ypsilanti. Of the 436,500 travelers that originate round trips from Ann Arbor, these residents represent about 327,400 riders.
  - Approximately 85% of these riders are likely Ann Arbor residents (278,290). 50% are assumed to not park at the station (139,000).
  - Approximately 15% of these riders are likely Ypsilanti residents (49,000). 40% are assumed to not park (19,600).
    - $327,400 - 139,000 - 19,600 = 168,800$  annual Ann Arbor and Ypsilanti resident passengers who would be inclined to park at the station.
- The remaining 25% of station passengers (81,850) are dropped off or park. If 20% are dropped-off/picked-up, then **16,400** extended area passengers are inclined to park.
- $168,800 + 16,400 = 185,200$  annual passengers inclined to park at the station.

Of the 185,200 passengers inclined to park at the station, many would arrive with more than one passenger per car. If 1.5 occupants per vehicle parking is assumed, it reduces the parking demand by 1/3 (demand for 123,300 annual parked vehicles). This averages to 2,370 parked cars per week.

If trip purposes documented in the 2011 MDOT survey carry over, then about 70% of the travel will be recreational with heavy weekend

peaking. This indicates demand for 1,660 recreational, longer-term parking spaces each week, which may equate to weekend parking demand.

An aggressive transportation demand management program would reduce the demand for on-site parking. Higher on-site parking charges and shuttles to utilize parking capacity elsewhere in Ann Arbor—especially on weekends—may reduce the demand for on-site weekend parking by 50%. This results in a **peak demand for approximately 830 parking spaces**, a number very similar to Amtrak’s revised request for 870 parking spaces. No spaces would be specifically provided for commuter rail customers, though capacity would likely be available for commuter trips on most weekdays.

***Additional Accommodation for Intercity Bus Passenger Parking at Ann Arbor Station:***

Intercity bus service tends to attract travelers without access to a car. Travel patterns in peer regions shows a demand for express bus services to major airports, for which the parking demand is high. Should this travel mode grow substantially, an additional bus terminal with station parking near highway interchanges would likely be added. No more than 25 aggressively priced intercity bus parking spaces are likely required at Ann Arbor Station.