



# Memorandum

DATE: October 25, 2018  
TO: (b) (6), BWRR  
FROM: (b) (6)  
SUBJECT: SCMAGLEV Ridership Report Revenue and Operations Estimates Addendum

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This memorandum presents the results of Louis Berger's analysis of fare revenue and operational employment and operational economic impacts for the Baltimore-Washington SCMAGLEV project. The methodologies used to conduct the analyses precede the estimates.

## Estimated Fare Revenue

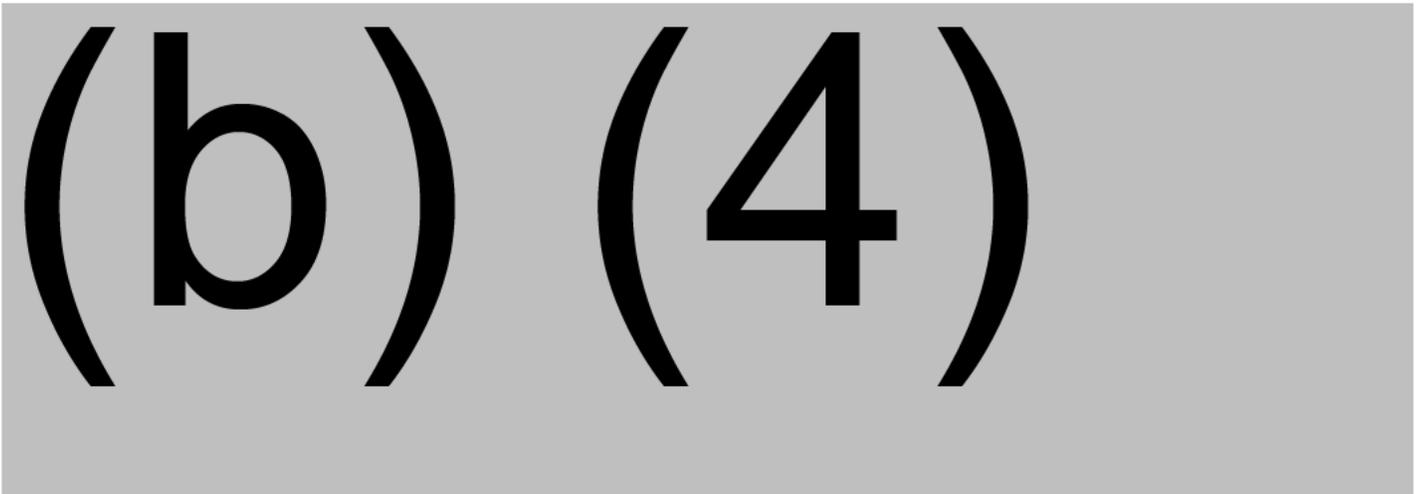
### Methodology

The Project's *Draft Ridership Report* (August 8, 2018) provides the detail on the estimated ridership between the three SCMAGLEV stations: Washington, DC, Baltimore/Washington International Thurgood Marshall Airport, and Baltimore, MD. A sensitivity analysis has been conducted on a range of fares as the first step in establishing the SCMAGLEV ridership demand forecast. A varied set of fares ranging between \$27.00 and \$81.00 depending on trip purpose and travel distance was used to generate a base case ridership demand forecast assuming station locations at Cherry Hill (Baltimore), BWI and Mount Vernon Square (Washington). The *Draft Ridership Report* (in Figure 7-2, and copied here for convenience as Figure 1) shows the projected base case ridership demand forecast for the proposed SCMAGLEV service between the 2025 and 2050 model years.

The ridership forecasts in Figure 1 assume a 2-year ramp up period where actual ridership is 40 and 80 percent, respectively, of steady state growth levels predicted by the travel demand model. Ridership following the end of the ramp up period grows from approximately 16.3 million annual trips in 2027 (45,000 daily), to approximately 24.5 million annual trips (67,000 daily) at the model's forecast horizon of 2050 – corresponding to an annualized average growth rate of 1.8 percent over that time frame.

The sensitivity analyses in the *Draft Ridership Report* were developed at the recommendation of the independent peer review panel to test the utility and functioning of the ridership model from replacing input derived from the stated-preference survey and other best practice research with inputs that represent possible occurrences.

**Figure 1. SCMAGLEV Ridership Demand Forecast**



### **Comparative Modes of Transportation**

As part of the analysis, comparative modes of transportation were examined to validate and benchmark the range of ticket pricing expected to be offered by SCMAGLEV service.

**Amtrak** - Ticket pricing was reviewed for current Amtrak Acela Business Class fares between Washington and Baltimore, wherein the Business Class is the basic class of service on Acela trains. Acela fares were obtained from Amtrak's website through monitoring of two-week advance purchase pricing for weekday travel during the week of March 15-20, 2018. Two-week advanced fares were obtained to avoid fluctuations in fares, typically upward, on or just prior to the actual day of travel. Published Acela fares during that week ranged between \$44 and \$68 per ticket with the median of \$52 per ticket.

**Ridesharing Services (Uber and Lyft)** - Ride sharing continues to increase in popularity and has become a common mode of transportation, especially for the Millennial generation and business and non-business travelers. Uber and Lyft are the leaders in this market segment and fares were obtained during peak and off-peak hours for travel between the segment pairs based on fare ranges published on the providers' websites ([uberestimate.com/prices/](http://uberestimate.com/prices/) and [lyft.com/fare-estimate](http://lyft.com/fare-estimate)) during March 2018 and October 2018. Ride Sharing fares between the SCMAGLEV operating segments fell into the ranges outlined in Table 1 below.

**Table 1. Ride-Sharing Services Sample Fare Ranges**

	Peak Fares	Off-Peak Hour Fares
Baltimore to Washington	\$70-\$79	\$59-\$69
Baltimore to BWI	\$28-\$29	\$22-\$24
BWI to Washington DC	\$60-\$66	\$50-\$52

**Traditional Private Car Services (Cab & Private Car Services)** - Traditional car services between the segments were also reviewed. Both public cab services and private car service fares were obtained from general (taxifarefinder.com) and specific taxi and private car company websites during peak and off-peak hours for travel between the segment pairs during March 2018 and October 2018. Fares for these services between the SCMAGLEV operating segments fell into the ranges outlined in Table 2 below.

**Table 2. Traditional Private Car Services Sample Fare Ranges**

	Peak Fares	Off-Peak Hour Fares
Baltimore to Washington	\$100-\$125	\$89-\$118
Baltimore to BWI	\$58-\$60	\$32-\$54
BWI to Washington DC	\$84-\$106	\$73-\$99

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## **Estimated Operational Impacts**

### **Methodology**

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To estimate the net growth in jobs, labor income, gross regional product, and sales associated with operating and maintaining SCMAGLEV, an input-output modeling system (IMPLAN) was used. IMPLAN is a widely used and accepted input-output modeling tool. IMPLAN allows the user to generate area-specific multipliers that take into account inter-industry linkages and the relationships between industries and consumers across 440 sectors.

IMPLAN estimates the following effects associated with operations and maintenance spending.

- Direct: jobs, income, sales, and gross regional product created directly from the expenditures, such as hiring construction workers.
- Indirect: jobs, income, sales, and gross regional product created by secondary activity related to the expenditures, such as the jobs generated in the professional services industry in support of the larger construction project.
- Induced: jobs, income, sales, and gross regional product created by additional spending through the economy. These are the employment effects that occur when employees spend their wages in other industries, for example, retail purchases.

The employment and economic effects are calculated in IMPLAN using capture rates provided by IMPLAN based on trade-flows data and models.

### **Results**

Operation and maintenance expenditures will generate permanent jobs in the rail industry and its supplying industries. Household spending by workers in the rail industry and supplier industries will generate additional jobs throughout the region.

The operations and maintenance economic benefits (b) (4) are summarized in Table 3.

**Table 3. Estimated Operations & Maintenance Economic Benefits**

Employment	Gross Regional/Domestic Product (million)	Economic Output or Sales (million)
1,350 -2,080	\$115-\$145	\$330 - \$520