

MEMORANDUM

To: Metro Atlanta Rapid Transit Agency Board

From: Tamanna Goware

Date: Nov 1, 2017 11:55 pm

Subject: Proposal for new MARTA Rail line using Location Allocation Modeling

This exercise was aimed at introducing new line for MARTA employing GIS data in the Atlanta region and analyzing the proposed line and predicting potential ridership using Location Allocation Modeling.

Proposed Line:

Orange (East/West bound Line)

Eastbound to Snap finger Woods/ Westbound to King Memorial

This line was proposed on the East/West belt connecting Gresham Park, Panthers Ville, and Snap finger Woods. The length of the line is 14 miles. The Freeway intersection between I-85 and I-20 inspired to bring up this line. This intersection resembles in congestion with the one seen over I-85 towards North Springs which may result in higher ridership.

Methodology

The origination of the line is King Memorial Station on Blue line; there are more stations closer to mixed land use areas (Downtown) which become sparse over the line to the farther end. The stations were chosen by the number of businesses and residence in the ½ mile distance of the proposed stop. The eight new stops from West to East are:

1. Memorial Dr. Station
2. Mooreland Ave Station
3. Glen Emerald Station
4. Eastland Heights Station
5. Boulder Crest Station
6. Blue Lake Station
7. Flakes Mill Station
8. Snap finger Woods Station

According to the Location allocation model the best 4 stops are Memorial Dr., Mooreland Ave, Boulder Crest and Snap finger Woods Station based on Demand count and Demand Weight. The comparison of top 10 Marta Stops based on demand weight is as follows:

Table 1: Comparison of Top Ten Marta Stops

Rank	MARTA Station	Demand Weight
1	Peachtree Centre Station	156080
2	North Ave Station	71192
3	Civic Centre Station	61922
4	Georgia State Station	49515
5	Five Points Station	47016
6	Garnett Station	34836
7	Midtown Station	33707
8	Brookhaven Oglethorpe Station	32203
9	Decatur Station	29039
10	King Memorial Station	17344

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Observations

Visual Interpretation of map with freeway:

- The map shows intersection of I-85 and I-20 which is usually congested and can contribute to increased MARTA ridership in the Snap finger area.
- Also, the two stops Blue Lake Station and Flake Mill Station are located near more commercial area thus getting a biased analysis as population was the considered weight.

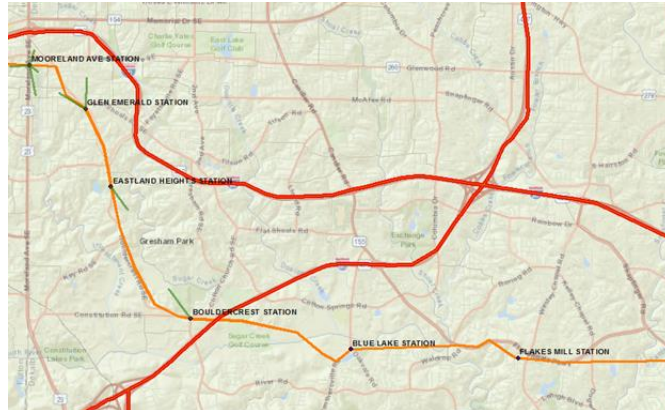


Figure 1: Map of Freeway Impact on Station Demand

Cost Analysis:

The proposed line is 14 miles in length, resulting in a total capital cost of \$6.3 billion. Considering the compound demand weight for the new line with the 4 best stations the daily recovery is \$5863.25. A recovery of \$2.1 million per year which is very low compared to the capital investment. Thus, the payback period of the investment is too high.

Conclusion

The proposed line showed a potential for drawing new riders but at the same time cost analysis indicates an extremely high capital cost making the this line non profitable in practice. With the given constraints and Analysis based on location and costs the proposed line is not practically feasible.

Attachments:

1. MARTA System Map with new line highlighted (Orange Line)
2. Map with spider lines from chosen station
3. Map with spider lines of Top Demand Stations

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