Assessing The Potential For Transit-Oriented Development Outside Sacramento’s Urban Core

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Abstract
This study looks at the potential for transit-oriented development (TOD) around Sacramento Regional Transit light rail stations outside of Sacramento’s denser, urban core. The examination raises the question: Which suburban light rail station has the highest potential for successful transit-oriented development? Thirty-five light rail stations outside the urban core of Sacramento were assessed based on two criteria: (1) street network connectivity and (2) land use of the surrounding areas. Corridor land use and network connectivity scores were compiled and a composite score for all stations was calculated. After conducting the first phase of analysis, Arden/Del Paso, Globe, Cosumnes River College, City College and Mather Field/Mills were selected for the second phase of the analysis, the field observations. The criteria for each category uses elements gathered from literature review.

Methodology
To assess the potential for TOD in suburban/non-urban core SacRT light rail stations, analysis was conducted in two stages:
1. Street centerline and parcel/land use data from the City and County of Sacramento and the Sacramento Area Council of Governments was collected. Using the street centerline data, a network dataset was constructed for use with ESRI’s ArcGIS. Network Analyst was used to construct a service area of 0.5 miles. Intersections (nodes) and street centerline segments (arcs) were counted and applied to an index of connectivity index (Beta index) as well as an Eta index, which measures interaction density. The land use was calculated using both an Entropy Index, which quantified the land use type diversity into a ratio. The scores for both were combined to rank the sites.
2. In the second stage, data was collected at the station level from the field for characteristics within those categories: (1) physical features, (2) urban design/form and (3) sense of place. Within each of the categories, five criteria were given a score from low to high. The Min-Max Stretch scores were compiled and a composite score for all the variables was created to rank the stations from largest values (best) to smallest (worst).

Stage 1: Results
Significantly from large expanses of developable land concentrated in close proximity to the station. The station also has a considerably high entropy level which indicates that within a 0.5 mile distance of the station there is a wide diversity of land use types that could support advance in TOD. City College station near Sacramento City College and Mather Field/Mills station in Rancho Cordova were selected as well. The inclusion of City College and Mather Field/Mills in the station level site analysis in the second stage serves the purpose of seeing if the criteria in the second analysis are only attributable to the characteristics of the first stage.

Stage 2: Results
After field analysis was conducted, it was apparent that the stations were more alike than previously assumed. A factor that stood out was the amount of directions possible from a light rail station. This was influenced primarily by proximity to crosswalks, intersections and structural barriers that made walking inconvenient. In the case of Mather Field/Mills, many neighborhood blocks are physically close to the station but because of the neighborhood design, a potential rider may have to walk twice as far if not further. The ability to walk in multiple directions and access a variety of streets is essential for neighborhood walkability. Globe Station had six possible directions of travel from the station, compared to City College.

Discussion
There are many obstacles for transit-oriented development near SacRT light rail stations. Some sites have less obstacles than others, but every stop examined in this analysis has at least one significant shortcoming. Except for stations in older suburban communities like East Sacramento, North Sacramento and Land Park, housing development projects for the past 60 years have been oriented toward automobiles. Transit-adjacent development is the predominating relationship that public transportation has with land-use outside of the urban core. To successfully transition to TOD, connectivity must be improved in more recent suburbs that abandoned the grid system. Infrastructure changes are already underway in many parts of the Sacramento region. Incorporation of bicycle lanes and “Complete-Streets” improvements, which widen sidewalks and create a landscape conducive to pedestrian usage, help to improve the transition from transit-adjacent to transit-oriented. Communities like Rancho Cordova, are making efforts to create transit dependency by activating a historic train station to operate as a community art center and constructing a satellite campus for Folson Lake College across the street from the station. Making a station desirable through infrastructure improvements and construction of community amenities can make SacRT stations places people enjoy rather than endure.

Conclusion
This study assumed that neighborhoods with shorter street segments and a high intersection density would be ideal for creating communities that will rely on walking, biking and public transportation as their primary method of daily travel. With these considerations in mind, and the proximity of available open land, this study takes the position that the Globe Avenue Station possesses the necessary characteristics for a successful transit-oriented development.

References

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