Appendix C: Analysis of Land Use and Travel Demand

Prepared by Capital Area Council of Governments

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Overcoming jurisdictional and boundary issues that constrain transit service is challenging. Competing interests, ideologies, and inconsistent data make it difficult for policymakers to agree on a coordinated approach. Acknowledging these limitations, the Regional Transit Coordination Committee (RTCC) commissioned the Capital Area Council of Governments (CAPCOG) to develop a comprehensive regional dataset that encourages a more informed dialog. Ultimately, the RTCC hopes this dialog will lead to changes in institutional structures, services, and performance that improve regional mobility.

Mapping Transit Supply

Much of the transit debate centers on how much service is required to support our region. That is – does transit supply satisfy transit demand? Anecdotal stories describe underserved customers as well as empty busses and vans. This report does not dispute the validity of these stories; it serves as a complimentary analysis on which to hold a more informed dialog.

CAPCOG utilized publicly accessible datasets to quantify supply and demand in the Capital Area (i.e. Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, and Williamson Counties). Transit supply in our region generally falls into three categories:

- Fixed routes,
- Point-to-point, and
- Curb-to-curb.

Capital Metro Transit Authority (CMTA), the Capital Area Rural Transit System (CARTS), and Texas State University all operate fixed transit routes (e.g. regular city service). These buses serve clients along a linear route at predetermined intervals or times. CMTA's North Lamar 1L/1M that operates within the dense neighborhoods along Lamar and Congress is a good example of fixed route transit. In addition CMTA's new MetroRail Red Line will provide service along a fixed route. Fixed route transit service offers the most frequent service, serves the majority of transit customers, and operates in the most densely populated areas of our region.

CMTA and CARTS also provide point-to-point transit service. These buses serve clients who are traveling between predetermined points (e.g. most commonly a city or park & ride). CARTS' intercity service that travels between outlying communities and Austin is a good example of point-to-point transit. Point-to-point transit service offers less frequent service, serves fewer customers, but operates across a much larger and less populated portion of our region than fixed route and rail transit.

CMTA, CARTS, Volunteer Caregivers, Meals on Wheels and More, commercial taxis, and a host of other organizations provide curb-to-curb service. The buses, vans, and vehicles serve clients who are traveling from one user-defined location to another (e.g. from home to the hospital and back). The most prominent example of curb-to-curb service is CMTA's MetroAccess Service and CARTS' demand response service. While curb-to-curb transit providers operate throughout the Capital Area, each provider observes geographic boundaries specific to their program.

For the purposes of this study, CAPCOG focused on transit supply as represented by fixed routes and point-to-point service. These types of transit supply are more easily defined relative to transit demand. A lack of publicly accessible geographic data on curb-to-curb service coupled with the number and variety of providers made it difficult for CAPCOG to analyze curb-to-curb service. As the RTCC's Lead Agency, the Capital Area Metropolitan Planning Organization (CAMPO) has identified analyzing existing conditions relative to curb-to-curb service (i.e. paratransit) as an additional activity included in the current Capital Area RTCC Work Plan.

Mapping Transit Demand

While the transit supply is explicit (i.e. as represented by a bus route and schedule) the demand is only implied. Explicit demand as quantified by existing ridership statistics for CMTA and CARTS do not properly address the RTCC's directive to identify customers that are not served by the existing supply of transit services. Just because you don't ride the bus, doesn't mean you wouldn't if it met your needs. There are a number of potential customers in communities that do not have service that might consider transit if a viable option were available.

Also, each individual considers a number of factors when choosing to ride transit, ride their bike, walk, or drive their own vehicle. Personal income, vehicle ownership, fuel costs, location, and convenience are just a few of the many factors each customer takes into account. Predicting customer behavior relative to these factors is beyond the scope of this study. Acknowledging this, CAPCOG focused on the potential, or implied, demand as represented by the catalyst for the majority of trips in the Capital Area – our residents' daily commute to and from work.

CAPCOG mapped transit demand as represented by household and employment density per quarter mile. Staff captured household density by assimilating CAPCOG's 9-1-1 address points; and employment density by assimilating infoUSA's 2005 Business Listings database. This results in a region-wide grid with quarter mile cells that can be thematically mapped according to household and employment density. Theoretically, the greater the household and employment density, the greater the potential demand for transit service.

CAPCOG also analyzed potential transit demand as represented by worker commute sheds. Using the US Census Bureau's 2004 Longitudinal Employer-Household Dynamics data, CAPCOG assimilated individual worker commutes by ZIP code. The resulting data provides insight into potential demand as expressed via our workforce's daily origin and destination trips.

Analyzing Transit Supply and Demand

CAPCOG analyzed transit supply relative to transit demand within the CMTA service area, within the Austin urbanized area, and within the CARTS service area (i.e. the Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Travis, and Williamson Counties). The attached Transit Demand: HH and Emp. Density map illustrates the relationship between supply and demand as represented by fixed routes overlaid on household and employment density.

Within the CTMA service area, the Transit Demand Map demonstrates a strong relationship between fixed routes and medium to high household and employment density. In most cases a fixed route passes through cells with dense neighborhoods, employment centers, or both. There are a few dense employment centers that are not served by fixed route transit within the Capital Metro Service area:

- The Samsung facility on East Parmer Lane employs approximately 1000 people;
- The AmberOaks Commercial Park at FM 620 and Parmer Lane includes a number of businesses that employ over 2000 people; and
- The Bridge Point development on SH 360 overlooking Lake Austin includes a number of businesses that employ over 1400 people.

Located outside the urban core, expanding existing routes to serve these employment centers may prove difficult.

CAPCOG also analyzed the portion of the Austin urbanized area not included in the CMTA service area. Approximately 200,000 residents and 90,000 employees live or work in this area but do not have a level of transit service comparable with the rest of the urbanized area. Round Rock, Sunset Valley, and West Lake Hills are less dense than the urban core, but still include a number of medium to high employment centers that could be served by transit. Round Rock includes a few dense residential pockets as well. While there appears to be a lot of implied transit demand; the suburban development pattern, established commuting habits, and political resistance will make it challenging to serve these communities. An incremental introduction of either fixed route or point-to-point fee-based transit may prove the most logical path to providing transit service to these underserved communities.

Finally, CAPCOG analyzed the transit supply relative to transit demand within the CARTS service area. CARTS provides point-to-point transit service to a number of these communities via their Community Transit and Commuter Routes services. CARTS also provides fixed route transit in the City of Bastrop; and CARTS and Texas State provide fixed route transit in San Marcos. These communities include our less dense, outlying residential and employment centers.

While there is enough demand to support selected fixed routes, the majority of these communities are better served by CARTS' point-to-point and demand response transit services. The attached spreadsheet of Selected Commute and Labor Sheds by ZIP Code reinforces the point-to-point model of transit service. This spreadsheet allows users to identify where Capital Area residents live and work. For example, you can identify where residents of the 78602 ZIP code work (i.e. the commute shed for the City of Bastrop). Likewise, you can identify where workers in the 78701 ZIP code live (i.e. the labor shed for Downtown Austin). CAPCOG's analysis of labor sheds showed both a persistence of the traditional pattern of residents of peripheral areas commuting to the city center as well as several notable exceptions.

Comparing the commute and labor sheds to CARTS' point-to-point service affirms many of CARTS' existing routes. The data also reveals potential demand that is currently not served by transit. For example, over 2,500 Georgetown resident workers (i.e. the 78626 and 78628 ZIP codes) commute to Austin on a daily basis (i.e. 78701, 78705, 78728, 78758, and 78759 ZIP codes). Another 1,000 Georgetown resident workers commute to Round Rock on a daily basis (i.e. 78664 and 78681 ZIP codes). Lastly, over 6,000 Georgetown residents live and work in Georgetown. CARTS' Community Transit currently provides Georgetown with Local Service on Monday thru Friday; service to Austin on Mon, Wed, and Fri; and service to Round Rock on Tuesdays and Thursdays. Analyzing Georgetown's commute sheds not only validates the current transit supply, it implies the demand for increased transit service (i.e. daily) to Austin and Round Rock as well.

Optimizing Transit Supply and Demand

The RTCC identified overcoming jurisdictional and boundary issues as their highest priority in the Regional Transportation Plan for the Capital Area (the Plan) published in December of 2006. The Plan promotes a seamless transportation system that identifies opportunities to enhance transportation services by promoting efficiencies, eliminating duplication, increasing coordination, and addressing service gaps. In other words, optimizing transit supply and demand will move the Capital Area toward the seamless transportation system envisioned by the RTCC. With this goal in mind, CAPCOG is recommending the RTCC focus their efforts on the following initiatives:

- Encourage a regional dialog utilizing comprehensive data and analysis to foster a more seamless transportation system;
- Promote a more focused growth pattern that incentivizes the integrated development of housing and jobs to improve transit efficiency; and
- Increase regional transit coordination to overcome jurisdiction and boundary issues that constrain transit service.

In addition to the imbalanced transit and supply examples cited in the previous section, a closer look at the HH and Emp. Density map and the Commute and Labor Sheds by ZIP Code spreadsheet reveals similar transit opportunities throughout the Capital Area. The RTCC should strive to use these and other datasets (e.g. health and human service provider customer origin and destination points) to encourage polices which cultivate a more seamless transportation system.

The Texas State Data Center predicts that 1.5 million people will be moving to the Capital Area over the next 25 years. That is double our current population. Do we have the resources to double our roadway capacity as well? Probably not. Rather than assuming that past trends will serve our future needs, initiatives like Envision Central Texas and CAMPO's Growth Concept are striving to create regional visions that account for the influx of new residents while maintaining our quality of life. Their long range plans encourage communities to focus growth into activity centers. These centers (some new, some existing) would be dense, walkable environments, where people can live and work within close proximity to each other. These activity centers will have the added benefit of concentrating demand with supply enabling transit providers to improve efficiency and service while managing costs.

While integrating housing and jobs optimizes demand, increasing regional coordination optimizes supply. The RTCC should increase regional transit coordination through continued implementation of the Plan, encouraging formal coordination agreements, and exploring the need for regional oversight. The current Plan includes a list of 19 action items that support the RTCC goal of a seamless transportation system. Simply completing action items such as removing funding "silos" and developing a uniform cost allocation model would go a long way toward optimizing supply. Unfortunately, many of the action items listed in the RTCC Plan may not be realized without formalized agreements and/or oversight.