

Golden Empire Transit District

Study of Best Practices Regarding Alternatives to Traditional Fixed Route Transit Services

FINAL





**Study of Best Practices Regarding
Alternatives to Traditional Fixed
Route Transit Service**

April 10, 2018

Prepared for:

Golden Empire Transit District
Bakersfield, California

Prepared by:

Stantec Consulting Services, Inc.
Transit Advisory Services

Table of Contents

ABBREVIATIONS	III
1.0 EXECUTIVE SUMMARY	I
2.0 INTRODUCTION.....	1
3.0 DEFINITION OF ALTERNATIVE SERVICE OPTIONS.....	3
3.1 ON-DEMAND RIDE SHARING	3
3.1.1 Austin, TX Ride Austin	3
3.1.2 Boston, MA MBTA RIDE paratransit pilot.....	4
3.1.3 Tampa Bay, FL HyperLINK.....	5
3.1.4 Dublin, CA GO Dublin!	5
3.1.5 Kansas City, MO RideKC Freedom On-Demand.....	6
3.1.6 Austin, TX Capital Metro Pickup	6
3.1.7 Oakville, ON Home to Hub.....	7
3.1.8 Centennial, CO Go Centennial & Go Centennial Access	7
3.2 CAR SHARING	8
3.2.1 Victor Valley Transit and Enterprise Rent-a-Car	8
3.2.2 Denver/Boulder, CO Denver Housing Authority and Boulder Housing Partners.....	9
3.2.3 Montreal, QC DUO Auto + Bus	9
3.3 BIKE SHARE AND PUBLIC TRANSIT	9
3.3.1 Bublr Bikes and Milwaukee County Transit.....	10
3.3.2 Pittsburgh Bike Share and the Port Authority of Allegheny County	10
3.3.3 Los Angeles' Metro Bike Share	11
3.4 AUTONOMOUS VEHICLES	12
3.4.1 San Francisco, CA	12
3.4.2 San Jose, CA.....	12
3.4.3 Concord, CA	12
3.5 OTHER INITIATIVES OF NOTE	13
3.5.1 On-demand Electric Scooters	13
3.5.2 Lyft Shuttle.....	13
3.5.3 Downtown Circulator	13
3.6 CONCLUSIONS.....	14
4.0 BARRIERS, RISKS AND LEGAL RESTRICTIONS	15
4.1 FEDERAL TRANSIT ADMINISTRATION GUIDANCE	15
4.2 GET LABOR AGREEMENT.....	15
4.3 LEGAL RESTRICTIONS	16
4.4 ACCESSIBILITY	17
4.5 BARRIERS TO USE OF RIDE HAILING SERVICES-PAYMENT	17
4.6 ADMINISTRATION OF SERVICE	18
4.7 RISKS.....	19
5.0 STRATEGIES FOR IMPLEMENTATION & COMMUNITY ACCEPTANCE.....	20

5.1	SERVICE SUBSTITUTION	21
5.1.1	Home to hub recommendations	21
5.1.2	Microtransit recommendations	26
5.1.3	Potential Downtown Bakersfield Circulator.....	28
5.2	SERVICE AUGMENTATION	31
5.3	PROMOTE ACTIVE TRANSPORTATION.....	32
5.3.1	Improving Bicycle Use and Bicycle Access to GET Service	33
5.3.2	Improving Walking Access to GET Service	33
5.4	VOLUNTEER TRANSPORTATION PROGRAMS	34
6.0	TECHNOLOGY.....	36
6.1.1	On-Demand/ Dynamic Scheduling Software Packages.....	36
6.1.2	Trip Planner	36
6.1.3	Advanced Fare Payment Systems	36
6.1.4	Mobile Transit System Notifications and Service Disruption Alert Systems.....	37
6.1.5	Software-as-a-Service	37
7.0	EVALUATION OF SUSTAINABLE IMPACTS AND OPPORTUNITIES	39
7.1	BATTERY ELECTRIC BUSES.....	39
7.2	CAP AND TRADE STRATEGIES.....	40
8.0	STRATEGIES THAT REALIZE MOBILITY OBJECTIVES.....	42
8.1	FAMILY OF SERVICES CONCEPT	42
8.2	ACCOUNT MANAGEMENT FARE PAYMENT	44
9.0	POLICY RECOMMENDATIONS	47
10.0	CONCLUSION.....	49

Abbreviations

ADA	Americans with Disabilities Act
GET	Golden Empire Transit District
FTA	Federal Transit Administration

1.0 EXECUTIVE SUMMARY

Public transit agencies across the globe are looking to new ways of delivering mobility to residents beyond traditional fixed-route service. Golden Empire Transit District (GET), the public transit agency in Bakersfield, CA provides nearly 17,000 unlinked weekday trips on its traditional fixed-route service, and while its annual ridership has been declining since 2012, GET is interested in taking a leading role in piloting new and fresh ways to deliver mobility in order to improve financial sustainability and grow ridership.

The transportation strategies that are most successful are those that personalize the travel experience. Much of the success of ride hailing services like Uber and Lyft is that these services are customer-focused, allowing for the collection of data from each trip that helps make the service more effective and efficient.

Technology and changing lifestyles has also influenced transportation choice resulting in the popularity of active transportation. Bicycling and walking are supportive of public transit use and must be considered part of the total family of services that transit agencies such as GET promote to the areas they service.

Stantec Consulting Services, Inc. (Stantec) has reviewed best practices for alternative service delivery from across North America. Based on this review and supplemented by the analysis of service performance of GET fixed-route and GET-A-Lift services, Stantec identified areas of opportunity for alternative service delivery methods for GET to improve financial sustainability, while also aimed at right-sizing service based on demand.

For alternative service delivery methods, technology plays a crucial role in enabling multimodal travel prevalent in these methods. We found that agencies are piloting different methods with varying degrees of success, including:

- On-demand ride sharing
- Car sharing
- Bike sharing and public transit
- Autonomous vehicles
- Other means like electric scooters, Lyft shuttle and downtown circulators.

Stantec reviewed different barriers, risks, and legal restrictions and noted that GET has the capability to deploy these alternatives since barriers can be overcome; none of the risks have consequences that are severe; and the legal restrictions to these alternatives are decreasing rapidly.

Based on its review, Stantec recommends the following strategies for implementation:

- Service substitution with home to hub service can be implemented for routes 82 and 84 which are low productivity routes. Home to hub can be used to provide service quality and can save an estimated \$375,000 annually.
- Microtransit solution as replacement for route 47 and x92 to improve cost recovery of these route.

- Piloting a home to hub service in the low-density areas of southwest Bakersfield to provide mobility where no transit service exists currently.
- Promoting active transportation, cycling and walking, as a transport cocktail with GET service.
- Demonstrating a volunteer transportation approach to determine if a representative number of GET-A-Lift trips can be accommodated using this service concept, particularly those that are ambulatory or dialysis trips.

The above recommendations hinge on GET embracing technology, including new on-demand scheduling software, trip planning software, advanced fare payments, and software-as-a-service. Furthermore, for the above recommendations to be successfully implemented, GET must focus on delivering *mobility*, and this requires new ways of thinking and taking a leading stance on using family of services for trip delivery, and committing to an account management fare payment.

Finally, to accommodate emerging mobility services and to adapt the agency's services to the changing lifestyles of those who live in its service area, GET must change the methods by which it designs and delivers services including offering services that are not traditional to transit but allow the agency to meet local travel needs with the most effective and efficient mode of service.

As such, Stantec proposes the following policy recommendations:

1. GET will design and deliver a variety of mobility options to meet the mobility needs of those who live, work, study and visit its service area.
2. GET will develop and implement partnerships with service providers in both the private and public sectors to develop and deliver the service alternatives prioritized in the current study.
3. GET will commit to the use of technologies that encourage the use of the services suggested in the current study especially those that can reduce the cost of planning and delivering these services and are accommodating of how the public uses technology in their daily lives.
4. GET will develop new service standards that incorporate these new services and technologies. GET will utilize analytics with the data collected from the technologies that are deployed to improve the rider experience, to increase the productivity of all of its services and to develop service design and social media marketing strategies to attract new riders to these services.
5. GET will adopt new mobility services that first complement existing fixed route and ADA-complaint services. New service pilots or introductions will be prioritized by the following:
 - Potential cost savings
 - Ability of the service to meet the needs of target populations to mitigate disparate impacts and/or disproportionate burdens

By approaching travel and mobility holistically and from a fresh angle, GET can truly work towards its mission to “consistently provide safe, accessible, reliable, courteous and affordable” *mobility* for the greater Bakersfield area.

2.0 INTRODUCTION

The most successful organizations are those that have a keen understanding to the needs of their customers. These organizations thrive because they match their products and services to the needs of those they are attempting to serve—from Apple with well-designed technology to Walmart that offers everyday low prices to Amazon that provides a convenient way to purchase any product without having to leave your keypad. Those organizations that the public respects have achieved that success by using their knowledge to deliver the right products or services at the right price.

In the past decade, public transit agencies have been challenged to keep their market share as the enticement of low-pricing by automobile manufacturers and the lure of new travel options like Lyft and Uber have made even the most dependent transit rider consider other travel options. Despite the interest in emerging mobility services, the majority of these services have yet to make a profit and some such as the microtransit providers Bridj and Leap, have actually gone out of business. The current situation seems that public transit agencies, as well as providers of new technology-focused forms of transportation, would be better served by working together leveraging each other's strengths.

The transportation strategies that are most successful are those that personalize the travel experience. Much of the success of ride hailing services like Uber is that these services are customer focused allowing for the collection of data from each trip that helps make the service more effective and efficient.

Technology and changing lifestyles has also influenced transportation choice resulting in the popularity of active transportation. Bicycling and walking are supportive of public transit use and must be considered part of the total family of services that transit agencies such as Golden Empire Transit District (GET) promote to the areas they service.

You will see in this report that Stantec Consulting Services Inc. (Stantec) recommends that GET use emerging mobility services (bikeshare, microtransit, ride hailing, home-to-hub, on demand and volunteer transportation services) that complement GET's high quality, fixed-route and ADA-compliant services. We recommend an integrated approach in which GET partners with the City of Bakersfield, Kern County, private transportation providers and the community to demonstrate the solutions we have proposed refining them to ensure they deliver measurable value.

For many years, Bakersfield has underinvested in its transit service resulting in lost ridership and lost opportunity. Cities with similar geographic areas and populations (Salem, Oregon; Tulsa, Oklahoma; Reno, Nevada and Chattanooga, Tennessee, among others) that have invested in transit by providing reliable service with short wait times over a reasonable span of service have seen a return in their investment in their services with greater economic activity, reduced congestion and a stable quality of life. Public Transit services in these cities have returned \$3 for every \$1 that was invested in service.¹

The most significant challenge to GET in implementing these new mobility options may be internal. Even the largest and most innovative transportation agencies face difficulties adjusting to this new world of individual transportation choice. To overcome that challenge, Stantec suggests an internal education program that changes the focus of GET from moving vehicles to moving people meaning that all the family of services that GET will offer are promoted by the agency's frontline employees who are the face of the agency to the community it serves.

¹ Hicks, Faulk and Kroll-Fixed Route and Demand Response Bus Systems: Financing Methods, Benefits and Costs

New mobility services will not replace services such as GET's route 22. A bus service along a densely populated corridor with multiple destinations is still the most effective and efficient mode. In fact, routes 21 and 22, the best performing routes in the fixed route network, have sufficient ridership to warrant transition of the two services to Bus Rapid Transit (BRT). The type of BRT service that could be sustained along these two routes is called BRT Lite in which buses may operate in mixed traffic instead of having dedicated bus lanes, the service would have dedicated stops with shelters, seating, lighting, and real-time passenger information with passengers paying their fare before they take their rides to insure that service speed is maintained. Routes 21 and 22 would benefit from traffic signal priority and/or preemption even today as improving travel time would attract more riders to GET.

However, there are many opportunities to replace all or part of an existing GET route with a home-to-hub or microtransit solution that can be more convenient for those going to Costco.

By adopting new services, GET will improve the experience for its riders. Offering more mobility options will be especially rewarding to the riders of GET-A-Lift service who now are constrained to make a ride request and wait for a van. Increasing options to this ridership group alone will not only provide more freedom to seniors and people with disabilities, but it can reduce GET-A-Lift operating cost by controlling demand for the service. Microtransit options such as home-to-hub will reduce travel time and ameliorate system productivity.

GET has been a prudently operated organization that provided the best levels of service that it could with the resources allocated to the agency. That may not be the best strategy for the agency in the future as technology is changing the way that the public makes its transportation choices. For GET to remain viable, it must adopt those technologies and demonstrate those emerging mobility services that are better suited to the way people live their lives. GET has laurels to rest on by consistently delivering service that its riders depend upon, but now is a time for the agency to be more ambitious.

By embracing the change recommended by Stantec in this report, GET is truly acting in the public interest for its services will become more equitable, efficient, and sustainable. In achieving those principles, GET solidly positions itself as an agency for the future.



3.0 DEFINITION OF ALTERNATIVE SERVICE OPTIONS

Presently, a broad of range new and established methods exist to deliver transportation services as a supplement to fixed-route services and demand-response ADA services. The increasing diversity of options means that for agencies like GET that serve both urban and sparsely populated areas (~111 square miles), trips can begin to be delivered in more efficient ways for both riders and agencies.

In 2017, GET provided about 5.4 million trips on 14 fixed routes, 1 limited route, and 1 express route to 495,019 people. Furthermore, with GET-A-Lift services delivered curb-to-curb, GET provides a limited range of mobility options and is interested in expanding its offering of varied services to deliver more trips to more people, in efficient and effective way. This section provides some examples of current non-traditional service delivery methods from transit agencies all over North America.

3.1 ON-DEMAND RIDE SHARING

Transit agency initiatives with on-demand services are perhaps the most prolific new form of alternative service delivery model we are seeing. In general, these initiatives consist of partnerships with existing transportation network companies (TNC) or offer similar services using off the shelf TNC technology providers. Although there are many different TNC companies and TNC technology solutions, Uber and Lyft occupy a large part of the ride-sharing on-demand market and as such are commonly found in partnerships with transit agencies piloting alternative delivery services. However, Uber and Lyft have also been disqualified from certain projects due to the nature of them not being able to reliably supply ADA-compliant transportation options.

As the following examples illustrate, an on-demand ride sharing scheme has the potential for reduced costs and improved rider experience when compared to traditional service offerings. However, operating outside of a partnership with transit agencies, one caveat of traditional ride sharing services have been found to increase traffic congestion and lower use of public transit^{2,3}. Peer examples are included in this report for illustrative purposes and to benefit from the lessons learned. As every community is different, the summary of our peer analysis should not be interpreted as Stantec advocating that all of these are viable options in the Bakersfield context.

3.1.1 Austin, TX | Ride Austin

Ride Austin began in June 2016 as a response to Uber and Lyft abruptly leaving the Austin market out of protest over new legislation passed by the City that required drivers to be finger printed⁴. Ride Austin is powered by the Via app which is a ridesharing company that both runs their own systems as well as partners with other agencies to launch their own. Ride Austin began as a pilot in a smaller area of the City offering rides to passengers who began and ended their trips in the pilot area. The service carried passengers from their door to their destination, sometimes picking up multiple passengers along the way heading to the same location.

² <https://www.mapc.org/farechoices/>

³ http://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf

⁴ <http://money.cnn.com/2016/05/08/technology/uber-lyft-austin-vote-fingerprinting/index.html>

What makes Ride Austin most unique among other ridesharing companies is that it is a non-profit and provides donations to local charities through their smartphone app, which allows users to “round up” the cost of their trip and direct the extra cost to a charity of their choosing. Since launching, the service has raised more than \$250,000 for charity⁵. Ride Austin is also very open with their data, willing to release and discuss details of their operation in the hopes it can help others better offer ride sharing systems. For example, the system has required over \$7 million dollars in donations and several in-kind service donations to get the system up and running and where it is today⁶.

The service was well received with the community logging over 2 million trips in their first year of operation. However, when Uber and Lyft returned to the Austin market in 2017 Ride Austin saw a 62% decrease in ridership compared to the week before Uber and Lyft returned⁷.

Lessons Learned

Ride Austin demonstrates that it is possible to have a successful ‘community-first’ ridesharing option, though significant capital is required to launch a service and there is significant competition in the ride-sharing space.

3.1.2 Boston, MA | MBTA RIDE paratransit pilot

In the fall of 2016, the Massachusetts Bay Transportation Authority (MBTA) began an on-demand paratransit pilot program that allowed 400 of their registered paratransit users to use Uber and Lyft services instead. Through partnering with ridesharing companies, the MBTA sought to improve customer experience and reduce operating costs in comparison to the existing conventional paratransit service.

The service is structured such that the rider pays the first \$2 of the fare and the MBTA subsidizes the rest up to a maximum of \$40 – the rider would be responsible for paying the amount of fare more than \$42 dollars. Benefits to the rider include a lower base fare (\$2 down from \$3.15 and \$5.25) as well as the ability to book trips instantly instead of a day ahead as was the case with the conventional system. The pilot was initially successful with ridership increasing slightly from 10-13 trips per person per month and the cost of offering the service down from \$30 per trip to \$9 per trip⁸. The MBTA has now extended the pilot up to April 2018 and has allowed all registered paratransit users to use the pilot⁹. There has been no indication from the MBTA at this point as to how they may revise their fare structure or the details of how the service will continue after the pilot period.

Lessons Learned

The MBTA has illustrated through this program that partnering with ride sharing companies to supplement paratransit offerings has the potential to reduce operating costs, increase system use and improve customer experience.

⁵ <http://www.rideaustin.com/roundup/>

⁶ <http://www.rideaustin.com/faq/>

⁷ <https://jalopnik.com/when-it-comes-to-ride-hailing-apps-nice-guys-are-finis-1797432944>

⁸

https://d3044s2alrsxog.cloudfront.net/uploadedfiles/About_the_T/Board_Meetings/Final%2012.13.2016%20FMCB%20Second%20Annual%20Report.pdf

⁹ <https://mbta.com/accessibility/the-ride/on-demand-pilot>

3.1.3 Tampa Bay, FL | HyperLINK

The Hillsborough Area Regional Transit Authority (HART) began the 'HyperLink' pilot in November 2016¹⁰ which used a 'door-to-bus' smartphone app that allowed HART transportation users to travel between their origin or destination and designated bus stops for \$1. Riders wishing to connect to travel between origins and destinations other than bus stops may do so for \$3 provided the trip is completed within one of the designated 'HyperLINK Zones'. Payment can be made through the app or by cash¹¹ and the fare amount is consistent with other HART fares which range from \$1-\$3 for conventional fares and \$4 for paratransit fares.

HART originally considered partnering with existing ride sharing companies such as Uber and Lyft but there were concerns that these companies could not ensure ADA-compliant conditions for their passengers. To satisfy this condition HART contracted Transdev to operate the program and to which they pay a subsidy of \$7 per ride¹². The funding for the program comes from a \$400,000 grant from the Florida Department of Transportation as well as an additional \$400,000 matched by HART¹³. HyperLink has now completed its pilot stage and HART now operates the program as part of their family of services. A cursory evaluation of HART financials reveals no budget information for the service.

Lessons Learned

The HyperLINK program demonstrates a novel use of ride sharing technology to solve the first/last mile connections through a program managed by the public transportation agency. Through a competitive bid process, HART found a vendor that could satisfy their specified conditions including ADA-compliance.

3.1.4 Dublin, CA | GO Dublin!

In January 2017, the Livermore Amador Valley Transit Authority (LAVTA) launched the GO Dublin! ride sharing pilot program - a partnership between the LAVTA and ride sharing companies Uber, Lyft and DeSoto¹⁴. The program sought to deliver a lower cost transit service to low-density suburban areas of Dublin by removing a fixed bus route in lieu of offering riders a 50% discount off the cost of their ride share trip, up to a maximum of \$5, provided the trip origin and destination are within the city limits.¹⁵ Additionally, riders must choose the communal travel option from the ride sharing carriers (i.e. UberPool, Lyft Line, DeSoto Share).

Riders have the freedom to select the ride share provider of their choice, giving the user the option to find the right trip for their needs. For example, only the DeSoto service allows the ability to pay cash for trips and has wheelchair accessible vehicles.

The LAVTA experience with GO Dublin! has been positive. Ridership is above what it was on the original fixed route with costs decreasing from roughly \$15 per person per trip to \$3 per person per trip¹⁶. Originally slated to end in June 2017, the pilot has been extended to June 28, 2018.

¹⁰ <http://www.gohart.org/Style%20Library/GoHart/pdfs/FY2016.pdf>

¹¹ <http://www.gohart.org/Pages/Hyperlink.aspx>

¹² <http://www.gohart.org/PlanningDocuments/COA%20Final.pdf>

¹³ <http://www.govtech.com/fs/transportation/Tech-Enables-Better-On-Demand-Services-for-Transit-Agencies.html>

¹⁴ <https://www.eastbaytimes.com/2017/01/16/dublin-how-to-get-ride-discounts-on-lyft-uber/>

¹⁵ <http://www.wheelsbus.com/godublin/>

¹⁶ http://www.wheelsbus.com/wp-content/uploads/2017/03/4_PS-Minutes-102317.pdf

Lessons Learned

The GO Dublin! pilot illustrates a relatively easily implemented alternative format to fixed route transit services in low-density settings by partnering with ride share companies to provide on-demand service options.

3.1.5 Kansas City, MO | RideKC Freedom On-Demand

In May 2016 the Kansas City Area Transportation Authority (KCATA) launched a one-year pilot, named RideKC Freedom-On-Demand, which sought to improve KCATA's paratransit offering by partnering with three local taxi companies to allow paratransit and senior riders the ability to hail taxis from a smartphone app. The program offers ADA qualifying riders a subsidized rate of \$3 for up to 8 miles and an additional \$2/mile for any additional miles. Seniors 65 years of age or older benefit from a rate of \$5 for the first 8 miles and an additional \$2/mile for any additional miles. Previously, senior riders were not eligible to use KCATA's paratransit services. Both ADA qualifying and senior riders can benefit from the subsidized rate up to a maximum of 4 times per day and all trips must be completed within one of several designated service areas¹⁷.

In May 2017, the pilot program was extended and opened up to the general public. The same subsidized rate applies to seniors and ADA qualifying riders though the general public pays the complete fare. KCATA hopes that any proceeds generated through general public fares would help finance the subsidized trips. Early results show that the cost per trip to KCATA has dropped from \$27.13 to \$15.80¹⁸.

RideKC Freedom-on-demand is a partnership between KCATA and Transdev. Together they rely on MCDATA's taxi dispatch system which includes everything from apps to tracking and dispatch controls¹⁹.

Lessons Learned

The RideKC Freedom On-Demand pilot demonstrated a novel approach to improving paratransit service and customer service while also lowering operating costs by partnering with local taxi companies and leveraging existing ride sharing technology.

3.1.6 Austin, TX | Capital Metro Pickup

In June 2017, Austin's Capital Metro Transportation Authority (CapMetro) partnered with Via to pilot a new ride sharing service in Austin²⁰. The pilot program operated between 9am and 6pm on Tuesdays, Thursdays and Saturdays – using 2 ADA compliant vehicles from the existing paratransit service in a single neighborhood as a community circulator approach. There was no cost to use the service for riders. Using a smartphone app, riders can request a vehicle which will arrive within 15 minutes. The vehicle will then pick up the passenger as well as others heading to the same area.

The pilot was an immediate success with the agency reaching six-month ridership goals within the first two months²¹. In October 2017, CapMetro expanded the service span to between 7am and 7pm Monday to Saturday and committed to funding the program until June 2018. The service also added 3 additional vehicles and expanded the service area to

¹⁷ <http://ridekc.org/mobility-services/ridekc-freedom-ondemand>

¹⁸ <http://ridekc.org/blog/ridekc-freedom-on-demand-winning-over-riders>

¹⁹ <http://mtdata.us/industry/taxi/>

²⁰ <http://austin.culturemap.com/news/innovation/06-01-17-new-ride-hailing-service-pickup-test-capital-metro/>

²¹ https://capmetro.org/uploadedFiles/New2016/Public_Involvement/Board_Meetings/November-2017_Board-Meeting-Agenda-Packet.pdf

include a regional rail station in the hope of obtaining some commuter traffic²². A full report will be available once the pilot program concludes which will include financial metrics on the cost of the program. Currently the only costs to operate the program are the regular hourly rates of the drivers and administrative staff as well as the normal vehicle costs such as fuel and maintenance. The software for the pilot is being provided free of charge²³.

CapMetro considered partnering with existing ride share or taxi companies, but found that when large events were in town (i.e. sports game, SXSW Interactive Festival, etc.) there was no capacity to serve their riders and they couldn't reliably guarantee an appropriate level of service²⁴.

Lessons Learned

The Pickup program demonstrates a relatively simple and low-cost method for testing and introducing an on-demand alternative to public transportation. The program also illustrates some of the benefits of a public transportation agency running their own service as opposed to partnering with an existing transportation network company.

3.1.7 Oakville, ON | Home to Hub

In 2015, Oakville Transit introduced a Home to Hub program which allowed residents in newly developed areas of the Town to be picked up at their homes and transported to a nearby transit terminal. Bookings for the service must be made at least 2 days ahead and can be made up to 10 days in advance by calling or emailing the transit agency, or through a mobile app. The service is fully integrated with the existing transportation network meaning riders pay the conventional fare when accessing the home to hub service and transfer onto the regular fixed-route network when they arrive at the terminal without extra charge. The program initially started in one area of the town as a pilot but has since expanded to four areas within the town, replacing low-productivity fixed route and evening services in favor of a microtransit at a substantially lower cost.

Rather than leveraging a microtransit provider such as Uber or Lyft, Oakville Transit uses their existing fleet of paratransit vehicles to service this program and Home to Hub trips are comingled with paratransit trips.

Lessons Learned

The program in Oakville demonstrated a relatively low-cost approach to expanding the service area of their existing fixed-route system by adding a flexible route transportation option.

3.1.8 Centennial, CO | Go Centennial & Go Centennial Access

The Go Centennial pilot project ran from August 2016 to February 2017, and was a public-private partnership between the City of Centennial, CH2M, the Denver South Transportation Management Association (DSTMA)/Southeast Public Improvement Metropolitan District (SPIMD), Lyft, Via Mobility Services (Via) and Xerox (Conduent). The goal of the program was to address the first and last mile problem of getting travelers to and/or from transit stations. To do so, the model applied a demand-responsive mobile platform to provide efficient transportation connections between a local light rail station (Dry Creek LRT) and a neighboring service area.

²² <https://www.capmetro.org/About-Capital-Metro/Media-Center/News-Stories/2017-News-Stories/4294969763/>

²³ <http://capmetrotx.igq2.com/Citizens/SplitView.aspx?Mode=Video&MeetingID=1675&Format=Agenda> (2:38)

²⁴ <http://capmetrotx.igq2.com/Citizens/SplitView.aspx?Mode=Video&MeetingID=1675&Format=Agenda> (2:36)

The program itself temporarily replaced an existing 'dial-a-ride' service which required advanced bookings and was serviced by the transit agencies existing paratransit fleet. Instead, riders were able to book a free ride on Lyft's communal ride system – Lyft Line – to get between the rail station and their origin or destination. Additionally, during the pilot, ADA eligible riders were able to use an additional pilot program named 'Go Centennial Access' which provided service between origins and destinations within the service area other than the light rail station – this was to replace the existing paratransit service that would have normally been offered by the paratransit fleet²⁵.

The results of the pilot were positive. Users of the system reported a 25% reduction in wait times for service and 95% of those surveyed indicated they were "satisfied" or "highly satisfied" with the service. The total costs per trip to operate the pilot (user fees + subsidies) were reduced 78% for the Go Centennial service (from \$21.14 to \$4.70 per trip) and 86% for the Go Centennial Access program (from \$47.82 to \$6.82 per trip)²⁶.

Lessons Learned

The conclusions from this pilot offer clear insight into the benefits of replacing conventional 'dial-a-ride' services operated by conventional transit fleet in lower density areas with an on-demand service operated by a TNC. The feedback from riders also illustrated the benefits in customer experience this type of program offers.

3.2 CAR SHARING

Car sharing is differentiated from conventional car rentals in that cars can be reserved and rented automatically and immediately through a technology platform and that the rental period can be on the order of minutes or hours as opposed to days. Examples of car sharing companies include ZipCar, Enterprise Rent-a-Car, and Car2Go. The general principle of partnerships between transit agencies and car sharing providers rests on the notion that a car sharing services provide a convenient and low-cost method of accessing an automobile which can be used to accomplish trips that would have otherwise been unfeasible using exclusively public transit.

3.2.1 Victor Valley Transit and Enterprise Rent-a-Car

In 2016, the Victor Valley Transit Agency (VVTA) partnered with Enterprise Rent-a-Car in Needles, CA to establish a car share location at a centrally located credit union in Downtown Needles. The cost for rental is \$5/hour or \$40/day and includes fuel costs. A membership is required to use the service, and members can use either a credit card or the SOLE PayCard to pay rental fees. The car must be returned to the location it was picked up from.

Under this pilot, VVTA passengers could now take the service into the City and hop into a car to complete any number of errands before parking the car back in its designated spot and taking the return trip home on public transit.

The success of the program is still in operation, although details on the relative success of the program have not yet been published. We do know that the VVTA expects to finance the car share program up to \$20,000 for the 2017-2018, down from \$32,400 the year before²⁷.

²⁵ <http://go.centennialco.gov/>

²⁶

http://www.centennialco.gov/uploads/files/Government/Itteam/Go%20Centennial%20Final%20Report_for%20web.pdf

²⁷ <http://vvta.org/reports/>

Lessons Learned

Co-locating car share locations with transit hubs can be a low cost and effective way to increase the reach of public transit riders when they arrive at a location. This can be especially appealing in lower density geographies.

3.2.2 Denver/Boulder, CO | Denver Housing Authority and Boulder Housing Partners

In 2014, the Denver Housing Authority (DHA) and Boulder Housing Partners (BHP) partnered with eGo CarShare to provide a suite of multi-modal transportation options to residents in selected affordable housing neighborhoods. The multi-modal options include subsidized transit passes, bike share memberships and car share rental costs. Car share rental costs at these locations are discounted 50% for residents of the housing complex.²⁸

Lessons Learned

There are also many social welfare agencies interested in multi-modal transportation options who have determined that there is a crossover between public transit and car share users. GET could look out for partnership opportunities with local community groups to offset the costs of car sharing partnerships.

3.2.3 Montreal, QC | DUO Auto + Bus

In 2008, the public transportation agency of Montreal, Quebec (STM) partnered with the car sharing company Communauto to provide the DUO Auto + Bus program. Under this program, subscribers get access to both the public transportation network as well as the car sharing program on an annual basis. When selecting this option, subscribers receive a \$3.45 rebate on their monthly transit pass and the car share membership drops from \$40/month to \$8/month. Additionally, the refundable \$500 membership fee for Communauto users is waived²⁹.

Lessons Learned

Many urban residents are moving to no-vehicle households and in turn rely on a suite of various transportation options. Marketing agreements and fare/rental cost reduction agreements between transit agencies and car sharing operators could make both transportation options more attractive to the end user.

3.3 BIKE SHARE AND PUBLIC TRANSIT

Bike share systems have expanded around the world over the last decade. These systems have proven to provide a timely and healthy transportation option with a relatively low cost of implementation both on the capital and operating sides. Indeed, this transportation solution has been leveraged to reduce origin to destination travel time, provide multi-modal connectivity, and increased levels of cycling to improve public health^{30,31}.

There are two primary types of bike share systems: dockless and docked. Dockless systems are a more recent advent in the bike share world and rely on GPS-enabled bicycles that are located through a smartphone app and can be generally

²⁸ <http://carshare.org/affordable-housing-multi-modal-toolkit/>

²⁹ <http://www.communauto.com/duo/en/index.html>

³⁰ <https://www.sciencedirect.com/science/article/pii/S014362281300132X>

³¹ <https://doi.org/10.1136/bmj.d4521>

parked everywhere once the trip is complete. This contrasts with dock-based systems where bikes are deposited and retrieved from fixed-location stations. There are benefits and drawbacks for both systems^{32,33}, although because dockless systems are relatively newer there are less examples upon which to draw for integration with public transit systems.

3.3.1 Bublr Bikes and Milwaukee County Transit

In 2017, Bublr Bikes and the Milwaukee County Transit System (MCTS) partnered on a fare integration pilot which allowed users of both systems to link their accounts and to unlock bikes with their existing transit pass. Technically, the MCTS and the Bublr system both used RFID enabled cards, however they operated on different frequencies. This allowed for an opportunity to 'augment' existing MCT cards with a new RFID sticker from Bublr which could be easily affixed to the transit card³⁴. As MCT buses approached stops with adjacent bike share stations, the presence of these stations was announced along with the regular connections to other routes³⁵.

Lessons Learned

A keen understanding of the technological infrastructures that supported both the transit agency and the bike share system lead to a low cost opportunity to integrate the two systems. Marketing partnerships between the organizations allowed for a fluid and integrated travel experience for users of both systems.

3.3.2 Pittsburgh Bike Share and the Port Authority of Allegheny County

In 2017, Pittsburgh Bike Share (PGH) partnered with the Port Authority of Allegheny County (PAAC) on a pilot for integrating a fare structure between the two systems allowing for seamless single fare multi modal travel. Users of the PAAC system can optionally use a chargeable card – named the ConnectCard – to access the system. The pilot with PGH allowed ConnectCard holders to sync their transit account with their PGH account by scanning the ConnectCard at any PGH station kiosk to unlock a bike and ride for free for up to 15 minutes. If the rider exceeds the 15 minute trip limit then an extra charge would apply.

Technically, the first time a ConnectCard holder accesses a PGH kiosk, the kiosk would then query a database of ConnectCard holders provided by PAAC to ensure the ConnectCard account was active and in good standing, returning the mobile phone number of the holder. If an existing PGH account is found, the accounts would be linked, otherwise a new account was created automatically. The kiosk would then text the user to confirm the account credentials³⁶.

Lessons Learned

Early results demonstrated a significant increase in bike share ridership. This suggests that transit riders are connecting to bike share as an effective first/last mile solution.

³² <http://nabsa.net/wp-content/uploads/2017/09/Dockless-Regulation-Preliminary-Guidance-1.pdf>

³³ <http://nabsa.net/kb/dockless-bikeshare-in-north-america-nabsa-position-paper/>

³⁴ <https://www.ridemcts.com/about-mcts/news/the-busler-card>

³⁵ <https://nacto.org/event/nacto-bbsp-webinar-linking-bike-share-transit/>

³⁶ <https://nacto.org/event/nacto-bbsp-webinar-linking-bike-share-transit/>

3.3.3 Los Angeles' Metro Bike Share

The Metro Bike Share program launched in July 2017 under the management of Metro – Los Angeles' Public Transportation agency. Metro Bike Share is the first bike share system in North America which is owned and operated by the public transportation agency. As such, fare integration was implemented from the outset with users able to access any of Metro services – including bike share – with a single RFID enabled card³⁷.

Lessons Learned

It is still too early to tell what benefits beyond service planning can be gained from a bike share program and transit service operated by the same agency. However, the multi-modal offering would allow for a relatively simple comprehensive review of ridership and mode splitting preferences between riders.



³⁷ <https://bikeshare.metro.net/>

3.4 AUTONOMOUS VEHICLES

The technologies and policies that will allow for implementing autonomous vehicle (AV) services are developing rapidly. Over the last three years, we have seen almost 100 municipalities pilot or prepare to pilot AV service delivery methods around the world – over half of which have a particular focus on solving transit planning or transportation problems such as first/last mile connectivity and mass transit³⁸.

The technology is still in its infancy and piloting the use of AV as an alternative service delivery is only now beginning. Although AV technology will not immediately be applicable to GET, drawing lessons learned from the over 35 municipalities in the US looking at AV solutions could provide compelling results in the future. To illustrate the nature of AV piloting, we have included a short description of the 3 active pilots currently taking place in California.

3.4.1 San Francisco, CA

The San Francisco pilot focuses on filling gaps in transit networks and overnight service. The first pilot will be on Treasure Island, a former naval base that is being redeveloped to have 8,000 housing units and other commercial and recreational destinations around the island. With support from a recently awarded federal transportation funding grant, San Francisco will invest \$2 million over the next four years to test three driverless shuttles connecting transit stops, residences and other key destination within the area. Delivery of vehicles for initial testing is expected in 2018, with a full launch of passenger service planned for 2020³⁹.

3.4.2 San Jose, CA

In June 2017, City officials released an RFI to solicit ideas for piloting AVs at several locations across the city. In December 2017 the City released the results of the RFI and intends on moving forward on two transit and paratransit pilots. The first project is a first/last mile circular connection between two transit centers and could be ready to begin as soon as 2018. The second project would use 'luxury shuttles' between key destinations in the City such as the convention center, San Jose City College and the Valley Medical Center and could be ready as soon as 2019^{40,41}.

3.4.3 Concord, CA

In 2017, the City of Concord began relationships with Starship Technologies and Marble Robotics to pilot AV freight delivery systems. The pilot would allow these companies to offer AV delivery services with robots designed to transport household essentials such as "groceries, meals and sundries."⁴² The robots are designed to transport themselves along sidewalks and range in size from a grocery store shopping basket (Starship Technologies) to a grocery store cart^{43,44}.

³⁸ <https://avsincities.bloomberg.org/global-atlas/about>

³⁹ <https://www.sfmta.com/sites/default/files/projects/2017/ATCMTD%20Grant%20Application.pdf>

⁴⁰ <https://www.youtube.com/watch?v=b9zicwr2YMs&feature=youtu.be&t=675>

⁴¹ <http://winchesternac.com/2017/12/08/city-of-san-jose-autonomous-vehicle-december-2017-update/>

⁴² http://cityofconcord.org/about/citynews/releases/2017/09_28_2017.asp

⁴³ <https://www.marble.io/>

⁴⁴ <https://www.starship.xyz/>

3.5 OTHER INITIATIVES OF NOTE

While preparing this report, we came across a small number of other interesting new mobility initiatives that may be of interest to GET.

3.5.1 On-demand Electric Scooters

A relative new-comer to the on-demand market is the company Bird Rides which offers app-based electric scooter rentals for \$1 plus \$0.15 per minute⁴⁵. Bird operators collect scooters at the end of the day and charge them up before placing them around the city in the morning before the morning commute. Originally beginning in Santa Monica, CA in 2017, the service has expanded to nearby Venice Beach as well as San Diego⁴⁶. To date, the service has been well used, although concerns have been raised about both rider and bystander safety. Depending on the relative success of this new service, GET may see Bird move into Bakersfield where it may provide additional opportunities for first/last mile connections.

3.5.2 Lyft Shuttle

In 2017, Lyft began a new fixed-route service, Lyft Shuttle, which operates with designated stops and routes⁴⁷. Currently, the service only operates in Chicago and San Francisco and only during peak hour commuting. In essence, Lyft uses the origin-destination data accrued from the use of their other services to find routes where public transit alternatives are either too full or where there are gaps in service. It may be a long time before Lyft Shuttle comes to Bakersfield, though GET could nonetheless consider this model in subsequent route alternatives and substitutions.

3.5.3 Downtown Circulator

Downtown circulator services are most often operated to promote a downtown's retail and entertainment activities. Others are operated to accommodate a shortage of parking or to provide a safe means of getting workers from remote lots to their places of work.

Downtown circulators tend to perform poorly if measured by passengers per revenue hour and in terms of cost recovery. Most downtown circulators across the United States are free to ride, or are operated through Business Improvement Districts or are subsidized by downtown interests. A report on downtown circulators across North America found that most cities with populations of less than 500,000 had daily ridership below 1,000⁴⁸.

Downtown Bakersfield is home to some major employers (Mercy Hospital, Kaiser Permanente) and numerous restaurants and retail shops. Activity, based on Stantec's in-field observations during a previous project, is concentrated to the weekday between the hours of 7 am and 6 pm.

A circulator in Bakersfield's downtown area (between 24th St., Union Ave., California Ave., and F St.) could stimulate economic activity and could help with the congestion that occurs during the morning and afternoon peak hours. Stantec is pragmatic in its assessment of the potential of a circulator service because the downtown Bakersfield simply does not have

⁴⁵ <https://www.bird.co/>

⁴⁶ <https://www.ft.com/content/9225a6fc-073b-11e8-9650-9c0ad2d7c5b5>

⁴⁷ <https://www.lyft.com/shuttle>

⁴⁸ TCRP Synthesis 87, Practices in the Development and Deployment of Downtown Circulators. 2011, Washington, DC.

a significant daytime population or enough residential activity to supplement ridership that could be created by the downtown workforce.

It has been Stantec's experience working with downtown circulators (in Los Angeles, Dallas, Columbus, Charleston and others) that these services are most successful if they are designed and operated with the participation of downtown interests. Any consideration of a downtown Bakersfield circulator should only come after discussions with the City of Bakersfield, major downtown employers and landowners. Stantec would also recommend to GET that the service should only be considered if it was subsidized by these downtown interests to a significant portion of the direct operating cost.

Further evaluation of a downtown circulator can be found in Section 4.1.3

3.6 CONCLUSIONS

In this section we have seen many examples of alternative transportation options that GET could leverage to implement an alternative service delivery model of their own. We have seen many solutions focused on the first/last mile with bike share, car share and ride share partnerships forming the bulk of these programs. Other solutions have focused on service substitution for lower performing and/or higher cost fixed route service. More still have examined a commingling of ADA and non-ADA services to improve the efficiency and flexibility of conventional paratransit services.

In these examples, GET can be inspired with the confidence that working and effective service alternatives exist and have been proven to be successful in other jurisdictions. The challenge for GET is to see how these examples, along with the recommendations in this report, could be adopted and successfully integrated in the Bakersfield context.

4.0 BARRIERS, RISKS AND LEGAL RESTRICTIONS

The barriers, risks and legal restrictions associated with alternatives to traditional fixed-route transit vehicles are changing as the number of options to traditional fixed route transit services increases every day. In the perspective of Stantec, GET has the capability to deploy these alternatives since barriers can be overcome; none of the risks have consequences that are severe; and the legal restrictions to these alternatives are decreasing rapidly.

4.1 FEDERAL TRANSIT ADMINISTRATION GUIDANCE

The Federal Transit Administration (FTA) still posts guidance that includes several provisions for promoting private sector participation in transit programs. The new Trump Infrastructure Plan contains multiple references to private sector participation although the plan contains no specific directives as to how that participation would be accomplished.

The major FTA obstacle to implementation of alternatives to traditional fixed route transit service would be 49 U.S.C. 5333 (b), formerly known as Section 13C of the original Urban Mass Transportation Act, requiring that when federal funding is used to acquire, improve and operate a mass transit system that the interests of mass transit employees are to be protected. Coincidentally, labor protection has come up only when ride hailing services were proposed to replace demand responsive paratransit service operated directly by transit agencies. The Amalgamated Transit Union and the Transport Workers' Union, the two largest unions representing transit workers in the United States, have both objected to the use of ride hailing services and accessible taxis when those services replaced paratransit services operated by transit agency employees. There has been no labor opposition to deploying these services when they are used as 'first and last' mile solutions according to the research conducted by Stantec and our own experience in working with transit clients to deploy alternative services.

Stantec has advised clients to impose language in operating agreements that service providers adhere to all federal, state and local operating requirements. Most important of these when dealing with ride-hailing providers is to require that the companies adhere to Title VI requirements, discussed later in this section of the report under Legal Restrictions (Section 3.3).

4.2 GET LABOR AGREEMENT

Stantec reviewed the current labor agreement between GET and Teamsters Local 517 for the purposes of determining if the agreement allows for provision of alternative services. The existing contract does not present a barrier to the development and implementation of alternatives to GET's fixed route service.

There are several articles of the existing contract that allow for the use of private transportation services:

1. Article XXX-Part-Time Employees-Contract Operators – This article states that contract operators may be used to provide all demand response and fixed route transportation services. The number of contract operators is limited to 17 but that is an adequate number to provide alternative service. This article also defines Flex Operators who may operate all new and expanded fixed route and paratransit service.

2. Article XXXII-Management Prerogatives – This article allows the District to retain the sole and exclusive right to determine the type and kind of service to be rendered to the public as well as the right to schedule, plan and control operations.

It appears that the agreement with the Teamsters Local 517 does not present a barrier to the implementation of service alternatives; however, Stantec recommends that the union be notified of GET's plans to offer alternatives to conventional fixed route service to maintain good relations with the bargaining unit.

4.3 LEGAL RESTRICTIONS

The California Public Utilities Commission (PUC) administers safety oversight and enforcement of passenger carriers such as ride hailing, taxi, limousines and microtransit services. In 2013, the PUC issued rules allowing ride hailing and microtransit services requiring these carriers to ensure that drivers undergo training, criminal background checks and have commercial liability. The PUC, however, did not increase the number of safety investigators to handle the size of the ride hailing and microtransit fleets now operating in California. With the growth of ride hailing all across the State of California, the PUC issued further regulations in 2017 that designated ride hailing services with regulations that were separate and apart from taxi and limousine services.

One of the major tests of the PUC's regulation of alternatives to traditional fixed route transit service came in 2016, when the Golden Gate Transportation District filed an official protest with the regulatory agency in opposition to Chariot's application to provide microtransit service in the Bay Area. Golden Gate's primary opposition to Chariot's operation was that it was pilfering riders using the designated stops of Golden Gate Transit and San Francisco MUNI resulting in delays to both of those services. A peer microtransit service called Leap, ceased operations in May 2015 because it ran afoul of the PUC as well as the City of San Francisco.

Even with the new regulations in California, transit agencies that are deploying ride hailing services to supplement their own fixed route or paratransit service are having to enforce Title VI compliance when third parties provide services to transit agencies that are recipients of FTA funding. Ride hailing drivers can elect to refuse a ride based upon the rider's background or on the location of the pick-up, a practice that could possibly discriminate against the disabled, elderly, low income and minorities. Members of Stantec's team developed a new contract for the provision of accessible (paratransit) service in Toronto for the Toronto Transit Commission and that agreement required ride hailing services to mandate that drivers who sign up to provide accessible service pick up every assigned trip regardless of the rider's profile or location.

The California Department of Insurance has developed with the Insurance Industry ride-hailing coverage that enables those using their own vehicles for these services to have increased levels of coverage to accommodate the carriage of passengers.

The City of Bakersfield also charges limousine and taxi services that operate in the city for permits and vehicle inspections. Those organizations operating alternative services under contract to GET would be required to submit for PUC and City of Bakersfield permits and inspections and to have the required minimums of commercial liability insurance.

4.4 ACCESSIBILITY

Providing accessible services to the public is part of the mission of public transit agencies. It is important that the vehicles providing services as part of an alternative service offering to conventional fixed route service be accessible. Car and vanpools are exempt because they are not alternatives to conventional fixed route service however first and last mile and microtransit solutions would present a potential risk.

Uber has been slow in dealing with the accessible vehicle requirement although its application has a special tab that allows the public to call for a vehicle that can accommodate the needs of the disabled. Lyft has developed accessible solutions and has partnered with hospitals and other healthcare providers to accommodate the needs of the disabled.

Should GET decide to offer ride hailing or microtransit solutions in substitution or to supplement fixed route service, it must oblige the needs of those with cognitive or physical disabilities.

4.5 BARRIERS TO USE OF RIDE HAILING SERVICES-PAYMENT

Taxi services are already a significant competitor to GET services in Bakersfield. From Stantec's discussion with taxi providers in Bakersfield, taxi service is the primary 'fall back' service to those who ride GET fixed route and GET-A-Lift services. Taxi riders in Bakersfield primarily pay their fares with cash, although all taxi services offer payment by credit card.

The majority of those using taxi services have similar demographic profiles to those who ride GET services. Stantec's 2017 Onboard Survey for GET revealed that 76% of current riders do not have access to a vehicle for their travel and 63% of riders have household incomes under \$35,000. While Uber and Lyft operate in Bakersfield, they both require the establishment of an online account that is associated with a credit card for payment. Based upon the demographics of GET riders, it is doubtful that many meet that credit card requirement.

If GET was to contract with ride hailing services, it would be required to negotiate an agreement with these services as to how their services would be administered and provided to GET riders. Ride hailing services are not currently structured to be paid like transit service or taxi contractors that are paid monthly after submitting invoices for the service rendered. The most logical solution for payment of first and last mile solutions for transit using these services would be the establishment of an account management system, a form of open payment just beginning to be implemented in transit discussed in next section. GET's current provider of mobile payment solutions, Token Transit, does not currently offer an account management payment solution as a debit, credit or employer benefits credit card is required as a form of payment.

As fare payment in transit evolves, the most logical solution would be to have riders pay into a central account from which they could pay for all alternatives without the barrier presented by the need for a credit or debit card. Under this fare payment method, the rider uses a single personalized fare credential that is recognized to pay the fare. That credential may be a smart card, a bar code on a mobile payment application such as Transit Token or in the future it may simply be the rider carrying a smart phone that have Near Field Communication capability meaning that the rider's smart phone can communicate contactless with a validation device on board any GET vehicle. Those devices recognize the rider by his or her profile and deduct the appropriate fare for the service. If the rider is eligible to receive a reduced fare, the system would recognize the rider, deducting a reduced fare while also capturing the trip data.

The closest payment solutions to Account Management in the United States are Utah's and Philadelphia's Open Payment Systems that allow riders to use credit or debit cards to pay for agency fare products. Both agencies have not solved the problem of the unbanked without credit and debit cards but a solution to that problem is being worked on for the next generation of open payments using the account management approach. Many transit agencies around the world are already using the account management approach allowing for the use of credit and debit cards with near field communication which can communicate directly with validation devices, and for payments from third party sources such as insurance, program and direct payments into the accounts of those without credit and debits cards with the latter having smart cards specially encoded for payment purposes

4.6 ADMINISTRATION OF SERVICE

Each of the alternative services discussed in this report can be offered to the public by GET. GET however must consider the implications of administering these services as each has a different level and complexity of oversight.

GET has a small administrative staff that oversees its fixed route and paratransit services. Adding more services, even those that are application based, requires some level of oversight. For instance, substituting a microtransit solution for underperforming GET fixed route service would require administrative oversight in the form of issuing a Request for Proposals, selecting a contract service provider and overseeing the contractor's performance. Some of the alternatives, like bike and car sharing, can be provided with less oversight but at a minimum GET will want to capture data from these services to evaluate their performance and value.

Adding to GET's overhead—its administrative cost—must be evaluated in relation to the value in savings, ridership, revenue and public support that the agency would receive or earn as a result of offering alternatives. Most of the agencies now providing these alternatives (Austin, Dallas, LA Metro, etc.) started with much larger staffs than GET and have added to those staffs to oversee alternative service programs.

While adding to the staff may be offset by the value received from these services, Stantec wishes to emphasize that there is cost associated with the oversight of these services, even if they are driven by technology. Indeed, no service substitution strategy can be done on a pure turnkey basis; oversight is always required.

Technology certainly drives down administrative costs, except for one area—fare payment. All the alternatives to fixed route transit services discussed in this report have different forms of payment. Vanpools are subsidized to a certain level and then riders traditionally pay the driver a fee for gasoline, insurance and other remaining operating costs. Bike and car share services require the creation of an account that is tied to a debit or credit card. Volunteer transportation services are driver reimbursed meaning the driver is paid a flat mileage fee for each trip.

Each and every alternative service has a different protocol for payment and use. This has required transit agencies across North America to develop tailored solutions for each mode of service resulting in costly solutions from multiple suppliers. This payment/use problem has been identified by Uber, which recently bought the bike sharing service JUMP to provide Uber users with another travel option that can be accessed through the Uber application. GET riders have a payment

option with Transit Token however that solution requires a credit or debit card which many GET riders cannot obtain because they are low income. Adding alternatives would also increase GET's administrative costs however if the value to be derived from these alternatives warrants that investment, it should be made.

4.7 RISKS

The risks associated with the deployment of service alternatives are both objective and subjective. The major subjective risk is that the services are so successful in their performance that they marginalize the provision of conventional fixed route service. Some cities (Arlington, Texas and Innisfil, Ontario, Canada) have decided not to provide conventional fixed route services to their constituents but to offer only on demand solutions. Objective risks are associated with safety and equity. Ride hailing services have had a high record of passenger safety issues especially prior to regulations imposed by organizations like the PUC. When major accidents have taken place using ride hailing and microtransit services, riders are often searching for resolution with organizations that are purposely hard to identify and communicate with. The equity risk has not yet been faced by those transit agencies providing services using ride hailing solutions. There has not been a Title VI complaint as of the writing of this report associated with the inability of a rider to access these services because they are financially unable to obtain a credit card. Stantec believes that the absence of a fare payment solution that solves that problem will likely precipitate such a challenge at some time.

None of the risks identified have ever materialized at a peer transit agency of GET. Many of the pilot projects that involve ride sharing or microtransit are still demonstrations, so they have been shielded from these risks. In Austin, the use of on demand service using a hybrid agency/third party contracted model has resulted in measurable improvements with a 60% increase in ridership and a 50% increase in rider per hour and mile according to Capital Metro. That agency's experiment demonstrates the wisdom of taking incremental steps when implementing alternatives to conventional fixed route service as Capital Metro operates the service itself in an area that previously had underperforming fixed route service using a proven technology solution.

Stantec takes another look at risk. Transit agencies like GET face the risk of becoming irrelevant to the communities they serve if they do not explore the alternatives to conventional fixed route services. GET provides fixed route and ADA-compliant paratransit service that meet the travel needs of a sizable portion of the rural, suburban and urban areas the agency serves. Stantec believes it is in the best interests of the agency, its employees, its riders and the taxpayers of the Bakersfield Region, that support the agency with their tax dollars, that GET explore travel options that would expand the transportation services available to those who live, work and visit Bakersfield.

5.0 STRATEGIES FOR IMPLEMENTATION & COMMUNITY ACCEPTANCE

Bakersfield is a typical medium-sized American City that was built to benefit from the use of cars. Streets are wide and inviting although main thoroughfares become clogged during weekday rush hours. Parking is ample with the supply exceeding demand. With the ease of auto and an abundance of free parking, ridership of public transit service has declined steadily in Bakersfield since 2009 when GET provided 7.5 million rides.

GET buses serve a significant portion of the Bakersfield population, especially students, low-income and minority populations. On an average weekday almost 17,000 trips are provided on GET buses⁴⁹, meaning that only about 1 percent (1%) of Bakersfield's population of 495,019⁵⁰ utilizes transit.

GET wants to demonstrate new modes of travel that could reverse the agency's ridership trend while also making its services more effective and efficient. These new services must be provided in the public interest—accessible to all, are provided at equitable fares and to be sustainable.

To achieve these goals, Stantec has developed its Strategies for Implementation so that the type and level of service is best matched to demand. On-demand services certainly have an advantage from a cost perspective over GET fixed route bus service at night, weekends and other times when there are few people traveling. Maps in Appendix 1 show various characteristics of the GET service area, including service area demographics, along with route performance and GET-A-Lift trip patterns that informed many of the strategies below.

Stantec has developed a series of strategies that accomplish the following:

- **Service Substitution:** Utilizing on-demand microtransit or ride hailing services to replace underperforming routes and segments of other routes that GET currently operates with fixed-route bus service.
- **Promoting Active Transportation:** Bike sharing, increased bike ownership, Safe Routes to School, Walking Clubs and Cooperative Promotions with Healthcare Providers all have great potential in Bakersfield based on the number of student, low-income, minority, senior and disabled residents.
- **Co-Mingling/Home to Hub Strategies:** Providing a service that complements both GET's fixed route and GET-A-Lift services, co-mingling the riders of accessible services with regular riders can increase productivity while luring new riders to GET service.
- **Volunteer Programs:** Expanding the span and geographic reach of GET-A-Lift services by using volunteer drivers. The drivers would receive a stipend for their expenses.

Stantec has selected these service alternatives because they can be implemented by GET without the need for additional staff and they complement GET's existing services.

⁴⁹ Annual Route and System Performance Report-2016-2017.

⁵⁰ United States Census. One percent is estimated by roughly 17,000 boardings or unlinked passenger trips made by 5,000 unique riders making round trips with transfers.

The services also respond to unmet needs and they are supportive of the City of Bakersfield's initiative to introduce emerging mobility services.

5.1 SERVICE SUBSTITUTION

Stantec reviewed GET's FY 2016-2017 Route and System Report to identify those routes that could be candidates for service substitution. That review identified the following routes as candidates for deploying service alternatives for the entire or segments of routes 47, 82, and 84.

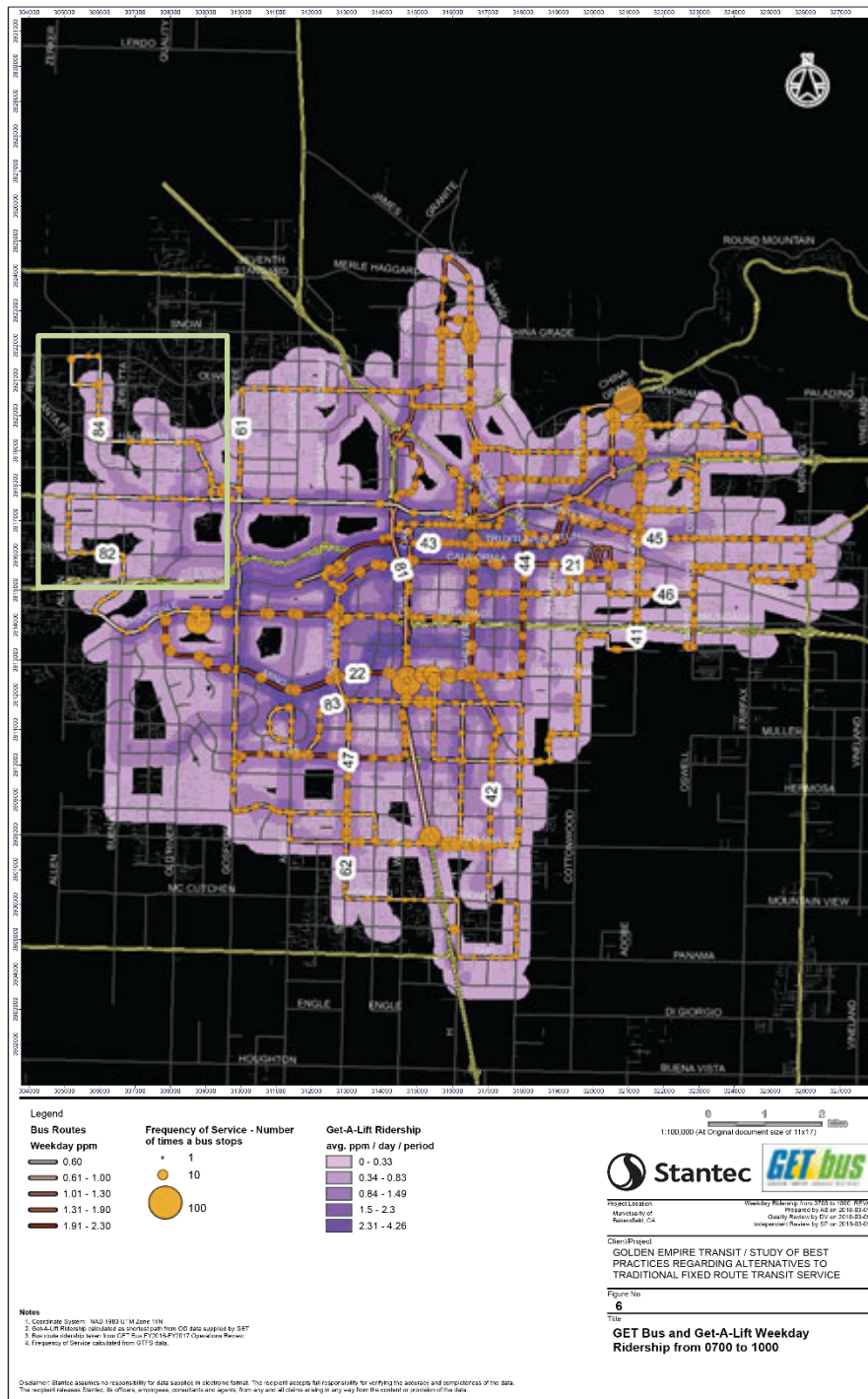
Stantec also added Route 92 to the list as a potential. Despite Ikea's subsidy of \$105,985 in fares annually, the route is currently costing GET over \$300,000 to operate annually. The heavily peaked nature of the service, meaning usage is heaviest at peak periods of the day, also lends to the potential to provide the service with a microtransit solution.

5.1.1 Home to hub recommendations

A tradeoff between coverage of neighborhoods that typically results in low ridership, because of characteristics such as low residential density, poor walkability and fragmented street network, households with high incomes and thus high car ownership, and high-frequency routing aimed at providing service to large ridership, is a common source of difficulty for any transit agency. Coverage routes or "policy routes" as they are known in some communities, because of their low patronage, require higher subsidies (per passenger) compared to routes that carry more riders. As a result, transit agencies need to either accept the low productivity and high cost of such routes, or develop new strategies to reduce the cost of providing service while still ensuring that customers who rely on transit are still able to move about the city.

Currently, conventional GET transit and paratransit are operated independently of each other in Bakersfield. With low ridership in certain parts of the city on conventional transit and underutilized capacity on GET-A-Lift vehicles, the business case for comingling conventional and paratransit riders exists through a comingled "home to hub" offering. Comingling has had considerable uptake and success with many US properties to help derive greater productivity from their specialized transit fleets. Where fixed-route service is suggested to be removed, the introduction of a subscription-based comingled service is proposed. This new, innovative service model would take advantage of underutilized specialized transit service vehicles to provide a more flexible and low-cost means of transit service in as an affordable alternative to providing fixed route conventional services in low demand, low ridership areas.

After analyzing route-by-route productivity (passengers per revenue hour and related subsidy per passenger), Stantec has identified routes 82 and 84 as ideal candidates for service substitution with a 'home-to-hub' strategy. These routes were selected for several reasons, including the fact that they are among the least productive and require the greatest passenger



subsidies, and that they serve low-density neighborhoods with high-income households. As such, the demand for transit in the northwestern areas of the city served by routes 82 and 84 is low and thus operating fixed-route service is cost prohibitive.⁵¹

Furthermore, an analysis of GET-A-Lift service and trip manifests revealed that these neighborhoods see significant travel demand, particularly during weekday morning periods with duplicative origins and destinations as conventional fixed route services provided on routes 82 and 84; this presents an interesting opportunity for the elimination of fixed route with replacement via a home to hub solution (see boxed area in map, left). Nevertheless, as is the case for most paratransit trips, vehicles are rarely fully loaded, implying that excess capacity abounds.

By scheduling GET-A-Lift trips at set departure times, the few customers currently using routes 84 and 82 can be picked up at their homes, co-mingled paratransit riders aboard GET-A-Lift vehicles, and then dropped off at a

⁵¹ Routes 82 and 84 provide service to Liberty, Centennial, and Frontier High Schools, respectively. While Stantec notes that these routes have low average loadings per trip (82, 5.1, and 84, 4.2), trips before school starts and after school ends may have high demand. Further analysis is required at the trip and direction level for these routes around bell times, and could help determine the appropriateness of school trippers. Nevertheless, these schools are served by Kern County School District school buses.

transfer hub that already has bus service; in the case of the 82 and 84, these hubs could be CSUB (service from routes 21, 22, and 61) and/or the Downtown Transit Center (many services). Another option for a hub could be the Walmart located at 8400 Rosedale Hwy, but only in the event that service is not totally eliminated from the alignment of routes 84 and 82 in between Walmart and the Downtown Transit Center. In this case, the Walmart could act as a hub for routes 61 and 84/82 (eastbound only).

A home-to-hub service that is open to all passengers meaning, the riders of regular fixed route GET bus services as well as GET-A-Lift riders is acceptable under FTA Guidance. Similar service concepts in Austin, Texas and Centennial, Colorado operate using a subscription approach under which riders can book trips in advance. The FTA limits the number of ADA compliant service trips that are subscription trips to no more than 50% of the available ADA trips that a transit agency provides daily.

To ensure that the home-to-hub service remains a more cost-effective alternative compared to fixed route service operation, it is recommended that GET offer the home-to-hub service on a subscription basis and only at peak travel times of the day. Doing so affords GET the opportunity to combine trips as best as possible while also helping to dispel the notion that this service is a replacement to the taxi industry. As the popularity of the home-to-hub service grows, there may come a tipping point where it becomes necessary to increase fares to be commensurate with the premium service that is offered, however with the existing levels of demand, it is recommended to maintain fare parity with fixed route service. Eventually, if demand continues to grow, it may become necessary to revisit the possibility of fixed route service subject to predefined productivity measures and triggers (service standards) being met.

Business case for home to hub

To evaluate the feasibility of home-to-hub, several options were evaluated in the form of a high-level financial analysis. These options were designed to build off of one another, starting with the lowest-hanging fruit of route 84 given its low passengers-per-hour, and eventually being expanded to include route 82. The options are as follows:

- **Option 1:** Eliminate route 84 and replace with home-to-hub services west of Coffee Rd. and north of Rosedale Hwy.
- **Option 2:** Also eliminate the portion of route 82 in between Walmart and CSUB, and extend the home-to-hub services south, as far as the Kern River.
- **Option 3:** Also eliminate the remainder of route 82 east of Walmart, and extend the home-to-hub services east, as far as Highway 99.

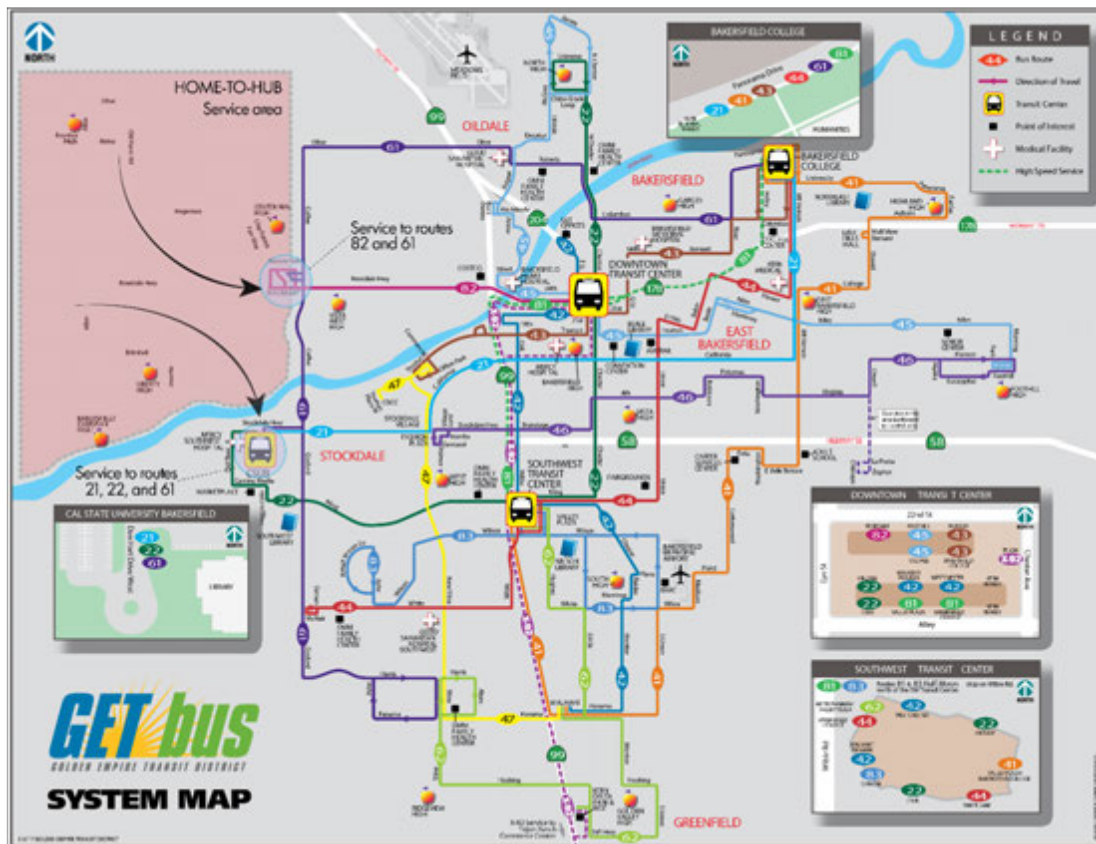
In each of these three options, it is the intention that home-to-hub service is not offered to residents living within 0.25 miles of a fixed route bus stop. This is most evident in Option 3, where residents living nearby the alignment of route 61 would not qualify for home-to-hub services.

The first step of the financial evaluation is to understand how much it currently costs GET to provide fixed-route service in these areas. By multiplying annual revenue-hours with the average cost-per-hour of operating conventional service, route 84 costs approximately \$700,000 per year while route 82 costs approximately \$775,000 per year (slightly more than half of which is applicable to the portion of the alignment running between Walmart and CSUB).

The second step is to estimate the number of annual home-to-hub trips, which will be used in turn to estimate the costs of providing home-to-hub service. Home-to-hub trips were estimated using two methods. First, the population of residents living in the areas with proposed fixed-route service eliminations was estimated, and this figure was multiplied by an assumed average of 1.15 trips per person per year based on National Transit Database (NTD) data of other neighborhoods of a similar size where on-demand services exist, but fixed-route service is not prevalent. And second, the home-to-hub ridership was estimated based on fixed-route boardings and alightings along the route segment proposed for elimination. These two ridership estimates were averaged in an effort to minimize the propagation of uncertainties in the financial evaluation.

Finally, the home-to-hub ridership estimates were multiplied by the average cost-per-trip for GET-A-Lift, and then adjusted based on the ratio of average distance to the nearest hub compared with the average distance for a GET-A-Lift trip. It is recommended that GET implement home-to-hub service for the options where the cost of providing home-to-hub service is less than the cost of fixed-route service. Based on the analysis, it is recommended that GET implement options 1 and 2, and not implement option 3. That is, route 84 should be eliminated and route 82 should be truncated in between Walmart and CSUB. Both Walmart and CSUB should then be leveraged as hubs, with the idea that residents are taken to whichever of these two hubs are closer to their point of origin (see map below). The results of the home-to-hub financial analysis are shown below in Table 1. **Annual cost savings of implementing options 1 and 2 are estimated to be approximately \$375,000 per year.**

Home-to-hub services also have the added benefit of utilizing the additional GET-A-Lift buses that are available to operate this type of service on weekends, night and especially holidays when demand for service is reduced. Operating a smaller vehicle such as a GET-A-Lift van for home-to-hub service reduces GET's direct vehicle operating cost by 8 to 12% of the cost of operating a 40-foot, heavy-duty transit bus. These savings, according to Transportation Research Board studies, are achieved from burning less fuel and reduced wear and tear on vehicle drive trains and component parts.



Home-to-hub alternative service substitution with elimination of route 84 and route 82 shortened at Walmart. Corresponds to Option 2 below.

Table 1: Financial feasibility of introducing home-to-hub service (figures shown below are annual costs)

	Fixed-Route Est. Costs	Home-to-Hub Est. Costs	Est. Cost Savings
Option 1	\$700,000	\$475,000	\$225,000
Option 2	\$450,000	\$300,000	\$150,000
Option 3	\$325,000	\$450,000	(\$125,000)
Options 1+2	\$1,150,000	\$775,000	\$375,000

5.1.2 Microtransit recommendations

We also considered alternative service substitution for other routes with low performance metrics, including routes 47 and 92. Route 47, in 2016-2017, had an average of 10 passengers per revenue hour, and together with the fact that it doesn't operate evenings, makes it a candidate for a microtransit solution. Similarly, 92, which provides express, service from downtown to Tejon Ranch Commerce Center, carries about 6 passengers per revenue hour. This places 92 last in terms of productivity, which isn't surprising given its role as a commuter route, and as such, it has a limited market and only peak-hour and peak-direction demand. Given the limited demand and service provided, a microtransit solution could be piloted to determine if cost efficiencies can be gained for the 92.

As these route alignments are not separate from the rest of the route network to the extent that routes 82 and 84 are, they are not suitable for a home-to-hub solution, but microtransit is appropriate. In the case of 92, a TNC can be contracted to provide service on a cost-per-trip basis between Southwest Transit Center and the Tejon Ranch Commerce Center. Just because IKEA is contributing slightly more than \$100,000 per year for service does not mean that it is in GET's or the riders' best interests to continue a fixed-route service. In this case, IKEA's monetary contribution can be reallocated more effectively and efficiently to a microtransit solution that may better benefit riders. In the case of route 47, ridership has been low and there is significant overlap with other fixed routes such as routes 21, 61, and 62. It also does not connect to any of GET's four primary Transit Centers, so there are a relatively small number of riders who would be totally dependent on route 47 and unable to make their trip using a different combination of GET fixed routes.

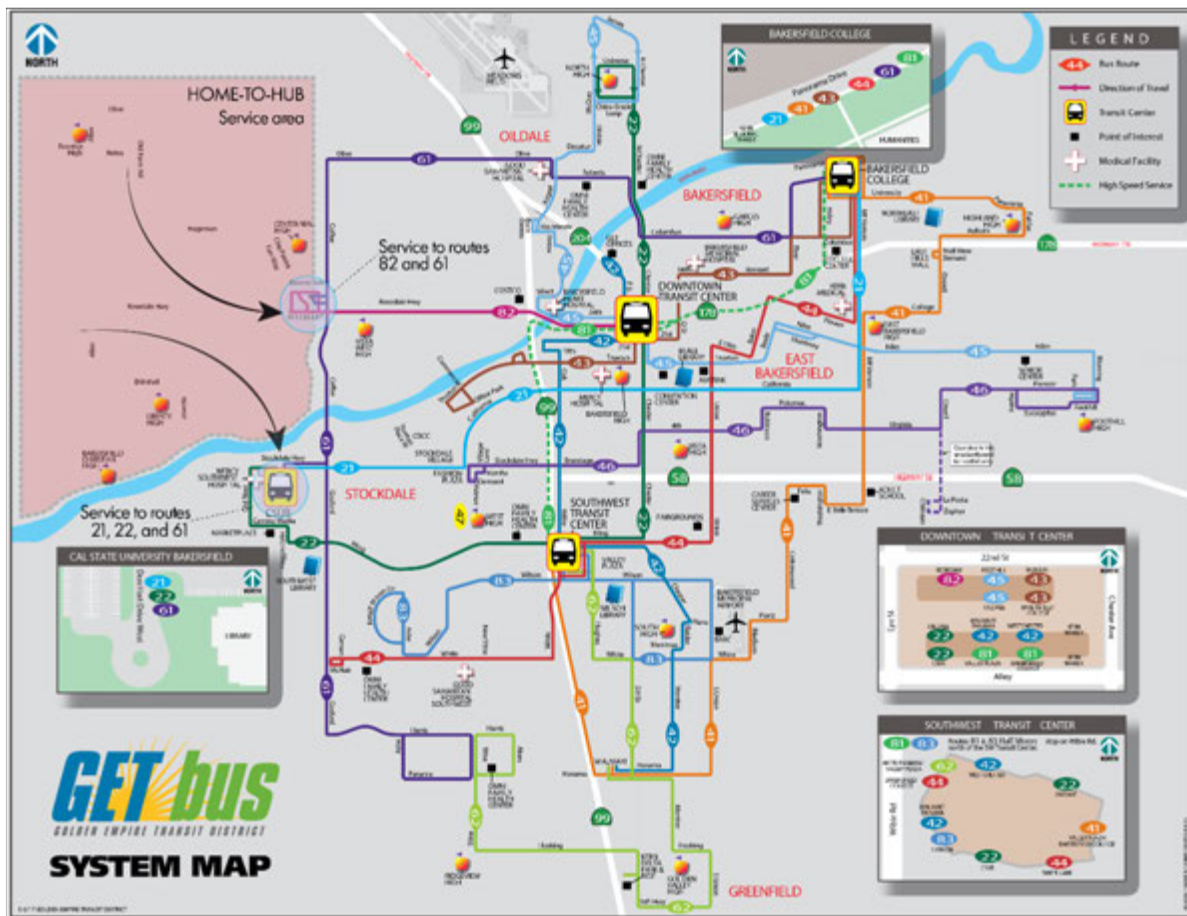
A high-level financial analysis was also completed for these microtransit options. A similar procedure was followed as for calculating the savings for home to hub whereby fixed-route costs were estimated, microtransit trips were estimated, and ultimately the microtransit operating costs were estimated. Due to the uncertainty involved with forecasting the contracted per-trip costs, particularly in the case of 92 involving long distances, a conservative scenario and an ideal scenario were modeled in which the per-trip costs were estimated at \$11.85/trip and \$7.90/trip respectively. The \$7.90/trip assumes that GET's negotiations will be in line with the industry average across the peer properties reviewed in Section 2.1, and that the longer driving distances will be offset by the efficient grouping of passengers. The \$11.85/trip assumption is an estimate that is 50% higher than average to account for the long distances and/or the possibility that GET's bargaining power might be more limited relative to the peers. In both the conservative scenario and the ideal scenario, the annual costs of operating 92 as a fixed route are greater than the alternative of operating microtransit in lieu.

In the case of route 47, the largest uncertainty resides in the extent to which riders will be left stranded as opposed to using the other routes intersecting and running parallel to route 47 to reach their destinations. Using a spatial analysis, we determined that although there are slightly in excess of 100,000 boardings/alightings per year on route 47, approximately 15,000 boardings/alightings are at transfer locations and only approximately 40,000 boardings/alightings are at stops that are not located within 0.25 miles of a nearby fixed-route. In the conservative scenario, it was assumed that microtransit trips would be granted to/from all stops that are not at a transfer point (presumably the balance would make their trip using a different combination of fixed routes). In the ideal scenario, it was assumed that microtransit trips would only be granted to users whose origins or destinations are accessible by route 47 and are not within 0.25 miles of a nearby fixed-route. Similar to the case of 92, in both instances the annual costs of operating route 47 as a fixed route are greater than the alternative of operating microtransit in lieu.

The results of the microtransit financial analysis are shown below in Table 2. **Annual cost savings of implementing microtransit in lieu of both routes X-92 and 47 are estimated to be in the range of \$100,000 to \$600,000 per year.**

Table 2. Financial feasibility of introducing microtransit service (figures shown below are annual costs)

	Fixed-Route Est. Costs	Microtransit Est. Costs	Est. Cost Savings
Route X-92	\$275,000	Conservative: \$250,000 Ideal: \$125,000	Conservative: \$25,000 Ideal: \$150,000
Route 47	\$775,000	Conservative: \$700,000 Ideal: \$325,000	Conservative: \$75,000 Ideal: \$450,000
Both Routes	\$1,050,000	Conservative: \$950,000 Ideal: \$450,000	Conservative: \$100,000 Ideal: \$600,000



Service with home-to-hub and removal of X-92 and 47.

5.1.3 Potential Downtown Bakersfield Circulator

There has been expressed interest in a downtown circulator in Bakersfield. A report published in 2011 examined circulator services across North America, including downtowns, resorts, and other tourist areas. Some important attributes for successful circulator service include:

- Stable funding, particularly through partnerships with local business is essential for success
- Unique branding, particularly if the target market is tourists
- Marketing of the circulator service
- Simple linear routes, at high-frequency that connect many destinations
- Free fares
- Flexibility regarding changes in routing, schedule, etc. in response to changing downtown conditions
- Defining the main target market, i.e., downtown workers, tourists, students, etc.

- Defining success according to local values, i.e., traffic reduction, rides per hour, encouraging transit use, etc.

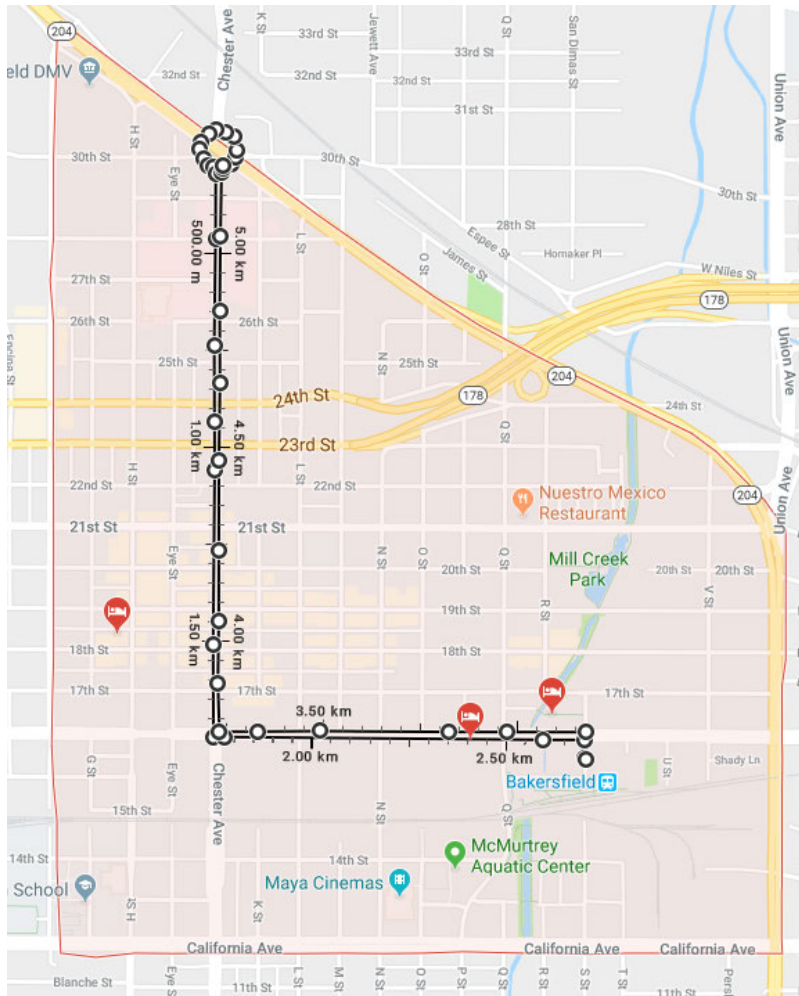
The major barriers or reasons for failure include:

- No funding and/or high costs
- Low ridership and productivity
- Lack of interest from the community and stakeholders
- Unforeseen maintenance expenses related to operating unique buses in some cases

Finally, ridership and productivity (rides per hour) tend to be low, particularly for cities with populations less than 500,000. Most common start times (for weekdays) were during the 6 am hour and end times during the 6 pm hour, with frequencies ranging between 10-20 minutes.

Overall, a survey of agencies operating circulators supports the notion that circulators are difficult to plan and operate, are costly and usually have low ridership. Unless the target market is well defined, and the necessary partnerships are formed for marketing and financial support, circulator services can end up being financial drains on transit agencies.

Using the prevailing lessons and service concepts from the 2011 TCRP, we performed some high-level cost estimates for a potential downtown Bakersfield circulator. The map below shows a potential route that is simple and linear, running along two main streets, Truxtun Ave. and Chester Ave.



*Potential route for a downtown circulator. Highlighted area is downtown service area.
Source: Google Maps, 2018*

The hypothetical downtown circulator route travels between the Bakersfield Amtrak station, west along Truxtun Ave. to Chester Ave., travels north along Chester until the roundabout and loops around heading back south along Chester, and then east along Truxtun to the Bakersfield Amtrak. This potential route connects locations such as the train station, Bakersfield City Hall, hotels, many employers like Adventist Health, Bank of America, health care locations, and retail and restaurants.

The route's round trip is approximately 4 miles in length, and given the average operating speed of 12.6 miles per hour, assumes a round trip time of about 20 minutes (including some recovery time). The TCRP report notes that a 20-minute round trip is common for circulators.

To estimate operating costs, we took a conservative approach and set headways at 20 minutes, the longest acceptable headway for circulators, and assumed operations between 7 am and 6 pm. Operating this service would require two buses and nearly 14 revenue hours per day, at an estimated operating cost per day of \$1,100. On an annual basis, assuming that the circulator would not operate on evenings and weekends, the estimated annual operating cost is \$288,000. As most

similar circulators are a free service, this cost would be borne entirely by GET and subsidy per passenger would likely be high in relation to other GET services.

The cost of such service could be optimized by reducing length of the route or service span, as well as by decreasing service frequency. However, the roundabout at the northern end and the train terminal at the southern end of the proposed route provide natural anchors and looping locations for the route. While service span could be modified to fit better with the profile of the targeted market and local downtown conditions, headways for circulator are typically 10 to 15 minutes, and increasing frequency would increase operating costs. Together with the fact that most of the downtown core, between F St. and Q St., and between 24th St. and Truxtun Ave. is within a 15-minute walk, suggests that most people would likely walk rather than wait for a bus with a frequency of 20 minutes.

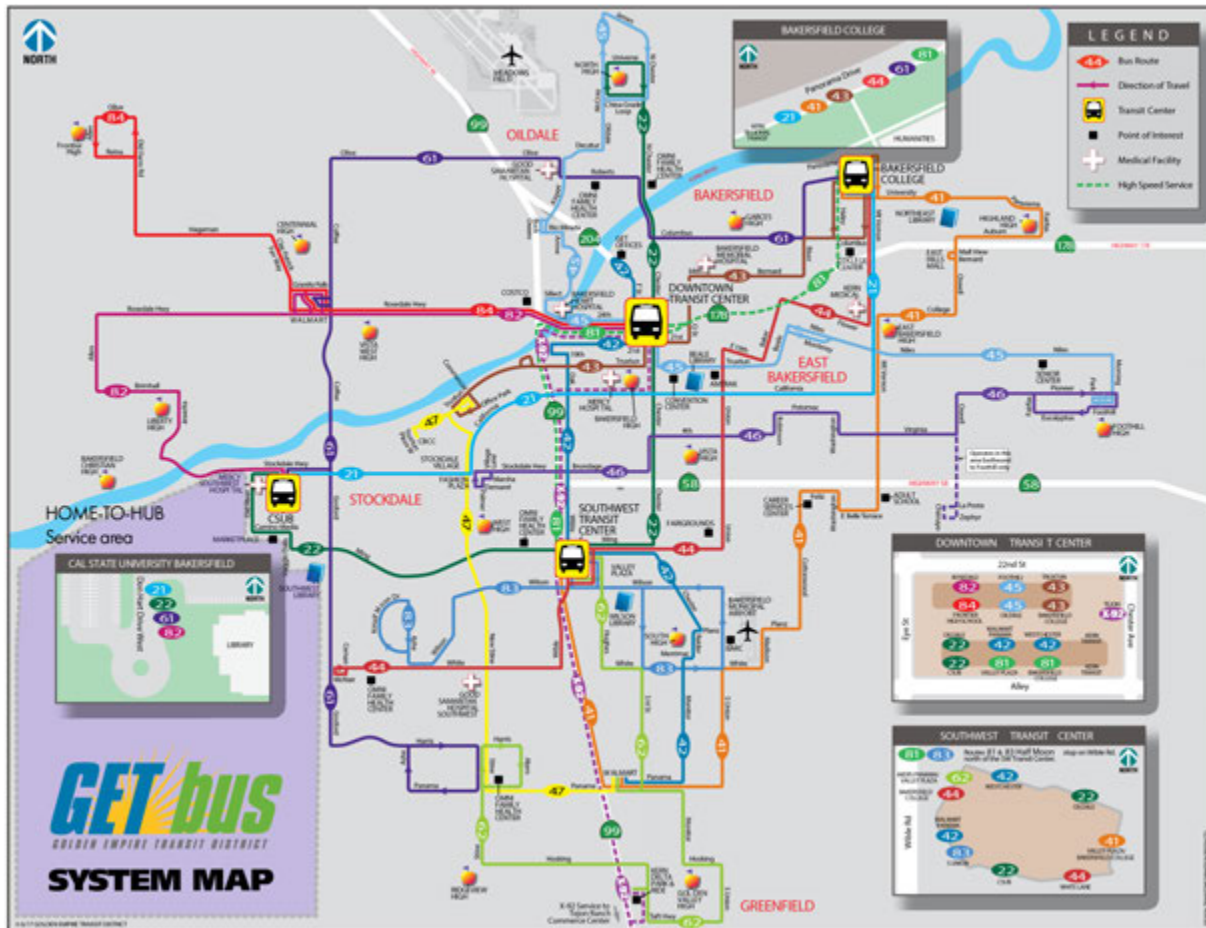
For reasons of equity, lack of potential demand and market, and compactness of the downtown core, Stantec stands firm on its recommendation that GET only consider the operation of a circulator if the service is subsidized by broader downtown interests.

5.2 SERVICE AUGMENTATION

The introduction of home to hub service in the northwest of Bakersfield is a means of providing an alternative service such as to not disenfranchise existing riders of routes 84 and 82. In addition, home to hub service is a strategy for attracting new riders to GET. Residents living in neighborhoods such as Crystal Ranch, for example, are in the vicinity of routes 84 and 82 but are perhaps too far away from a fixed route bus stop for transit to be a viable travel option. However, with the introduction of home to hub, these residents will be able to benefit from the service to the same extent as existing riders of routes 84 and 82, and therefore it is expected that home to hub will service a greater number of people.

On a similar premise, it is worth considering that the home to hub concept can be extended to areas of Bakersfield not presently served by GET such as in the southwest of Bakersfield in neighborhoods such as Tevis Ranch, Southern Oaks, and Terra Vista. Service augmentation through the introduction of home to hub can be funded through the cost savings permitted by implementing home to hub and microtransit solutions as discussed above in sections 4.1.1 and 4.1.2. In total, approximately 40,000 residents could be positively impacted by this additional home to hub service in unserved areas in the southwest of Bakersfield. Viable hubs include CSUB as well as the southeast corner of Gosford Rd. and White Ln., both of which are serviced by multiple routes. CSUB is already a transit center, and in the case of the Gosford/White intersection, the shopping complex acts as a destination for home to hub riders while they wait for their transfers to/from fixed routes 44 or 61.

Following a similar evaluation as conducted in section 4.1.1, GET might expect to deliver approximately 44,000 trips per year in the long-term. The financial impact would be approximately \$325,000 in incremental net costs, which is lesser in magnitude than the \$375,000 of cost savings permitted by replacing fixed route 84 and a portion of fixed route 82 with home to hub service. The recommendation of whether or not to implement home to hub service in the southwest of Bakersfield depends on GET's budget combined with its service planning priorities; that is, the extent to which increasing coverage in the southwest is a more pressing need than improving service frequencies on selected fixed routes, for example.



5.3 PROMOTE ACTIVE TRANSPORTATION

In a city like Bakersfield that has little density, active transportation (walking and bicycling using bike and walking paths or on street bikeways) can provide another commuting alternative as well as low cost first and last mile access to transit.

Active transportation has to be tailored to the population it is intended to serve. In Bakersfield this means different services for different populations. Students at Bakersfield College would probably use shared bikes to get to their classes from off-campus housing. Seniors may prefer to walk to medical checkups at Mercy Hospital but are concerned about the safest route to take. Parents would like their middle school children to walk to school instead of chauffeuring them to Junior High.

GET's promotion of active transportation is to support *Kern County's Active Transportation Plan* and the City of Bakersfield's *Bicycle and Pedestrian Safety* efforts. It is also self-serving in that active transportation is the most effective first mile, last mile solution that can bring riders to GET services whether they traditional or new service alternatives.

Transit agencies can and should play a role in Active Transportation, as these modes of travel are more effective for short trips, especially those taken in neighborhoods like East Bakersfield. The role of GET in active transportation is to make bicycling and transit, and walking and transit trips easier and safer.

5.3.1 Improving Bicycle Use and Bicycle Access to GET Service

To increase the amount of bicycle and transit use, GET should support and work in collaboration with the City of Bakersfield Bike Sharing Initiative. Bakersfield has won a \$900,000 Caltrans Grant to develop a Bike Share Program for the City and GET should play a pivotal role in that program by the following:

- **Siting City BikeShare Docking/Pick Up Stations at GET Transit Hubs:** To maximize use of the City's BikeShare program as well as its effectiveness as a last and first mile solution, bike docks should be located at GET's major transit hubs-Downtown, Bakersfield College, CSUB, Valley Plaza Mall, the Marketplace, the Shops at Riverwalk. Incorporate the availability of BikeShare into GET signage and user information.
- **Make BikeShare Free to Transit Riders:** One of the obstacles to increasing the use of BikeShare programs is the need to sign up for the programs using a credit or debit card. Cities like Pittsburgh have overcome this problem by allowing transit riders to use their bus passes to access bike sharing (this is discussed in the peer review in Section 2.3). This would require that bike share docks be programmed to acknowledge a GET transit pass, such as by accepting a magnetic strip GET pass or by reading a bar coded GET pass on the agency's new mobile payment application from Transit Token, both of which have been done for other BikeShare Programs. Stantec recommends that the first 15 minutes of BikeShare use be free of charge to those with prepaid GET products to facilitate first/last-mile connectivity. Beyond the 15 minutes, users would be expected to pay for the use of the bike.
- **Provide Bike Parking/Storage at GET Transit Hubs:** In addition to siting BikeShare docks at GET Transit Hubs, the agency should provide for secure bike parking and storage at its major transit hubs. Because of cost and the need for maintenance, Stantec suggests that these parking and storage units be sited with the cooperation of the Bike Bakersfield and be limited to only those locations that would service ten or more bikes per weekday.
- **Bike Racks:** GET should evaluate its bike rack needs to maximize the number of bicycles that can be accommodated on its exterior racks. GET should consider the need for accommodating electric bicycles that are growing in popularity.
- **Public Education and Outreach:** GET should partner with the City of Bakersfield, Bike Bakersfield and independent bicycle shops to promote bicycle access to GET fixed route service.

5.3.2 Improving Walking Access to GET Service

There is one thing that transit riders have in common-they all walk to the train or to the bus. Getting to and from the bus stop safely is part of the GET passenger experience.

The first step to improve walking access to GET services is to ensure that GET has done the best job it can of locating its stops by locating stops at places with these attributes:

- Wide sidewalks

- Slow speed areas away from high speed traffic locations such as near to highway on and off ramps
- Good lighting that adds to passenger safety when waiting for a bus before and after sundown
- Additional amenities such as shelters, benches or trees for shade in the hot summer sun in Bakersfield

Improving the location of GET fixed-route bus stops and their accessibility would also encourage ambulatory riders of the GET-A-Lift Service to use less costly accessible bus service.

GET does not have a significant number of shelters along its bus routes that would support increasing walking access to its services. Purchasing and maintaining shelters is an expensive proposition for a transit agency to take on. Stantec recommends to its clients that they develop public private partnerships to realize an adequate number of shelters in their service areas. Stantec is confident that through the use of the Request for Proposals process, GET would receive proposals from Lamar Outdoor, GET's present transit advertising contract and Stott Outdoor, an outdoor advertising company with a significant number of billboards in the Bakersfield Market and an operator of shelter advertising programs in similar sized California cities.

Increasing the number of people who walk to GET service cannot be accomplished by GET alone. Partnering with private, public and community-based organizations would heighten interest in walking to access transit. Stantec recommends that GET partner with these organizations:

- **Kaiser Health:** Kaiser through its Thrive Program promotes healthy living practices including walking as a method to reduce weight and improve fitness. Kaiser could be an education partner for GET to motivate the public to walk to a bus stop and try transit as the first step to a healthy lifestyle.
- **Safe Routes to School:** The Kern County Board of Supervisors obtained grant funding to develop a Safe Routes to School Program in Oildale that could be expanded to the entire GET service area. The Safe Routes Program is a collaborative effort between parents of school age children, school administrators and community leaders to create and maintain a safe environment for children to walk or bike to school on their own. Stantec has worked in implementing Safe Route Programs across the US and we believe it is an effective complement to an effort to increase walking access to GET service.
- **Greenfield Walking Club:** This organization was formed in 2006 by two Spanish-speaking mothers who met for daily walks in order to improve their health. This and other groups can become partners in increasing the number of people who walk to access GET service. Stantec suggests that GET enlist members of this organization to serve as trainers to help encourage the Bakersfield community to walk to access transit service.

Active transportation is a low-cost strategy that complements GET's services while providing travel options that will increase mobility throughout Kern County.

5.4 VOLUNTEER TRANSPORTATION PROGRAMS

The mobility needs of seniors and those with disabilities often go beyond the operating parameters of traditional paratransit programs such as the GET-A-Lift Program. This is particularly true in an area such as Bakersfield that is urban, suburban and rural. In similar areas around North America in which Stantec has worked, volunteer programs have been able to fill gaps in conventional paratransit and social service transportation programs. These programs are 'organic' in that they have

grown because of community commitment to volunteerism. A community the size of Bakersfield is small enough to foster and sustain the volunteer approach that Stantec is recommending.

The healthcare industry has supported these programs as a solution to older and disabled patients missing health care appointments. The insurance industry lauds the practice to reduce medically-at-risk driving by older adults. Toyota has donated its automobiles for use in volunteer programs such as those suggested here by Stantec. The support of the community for volunteer programs is what makes these programs successful. The role of the public sector is to bring the concept forward and to foster its development.

Volunteer transportation programs can supplement the services offered by GET-A-Lift to eligible participants in that program. The VAST, Volunteers Assisting Seniors with Transportation Program, serving the east San Francisco Bay communities of Dublin, Pleasanton and Livermore is an example of a volunteer transportation program that fills in when the ADA-compliant East Bay Paratransit Program and LINK paratransit programs cannot meet the trip requests. VAST is for non-urgent trips supplementing the two ADA-compliant programs. Rides are available Monday through Friday for trips from 8:30am to 5pm. Trips must be booked at least one day in advance for there is no same day or emergency service. Service is free as the program is subsidized to pay for the volunteer's time and car expenses. VAST is one example but there are hundreds of other models on which volunteer transportation programs operate that can base its own volunteer program on.

Stantec recommends that GET form the volunteer program with an organization such as the Kern County's Aging and Adult Services or the Consolidated Transportation Service Agency (CTSA). A volunteer transportation service would serve the needs of all of the participating agencies with each sharing some of the program's cost. In each case a volunteer program would reduce the cost of the transportation service being directly provided by these agencies.

This recommended coordinated approach would help the participating agencies overcome the problems of recruiting volunteer drivers, doing the necessary background checks, establishing a common level of driver compensation and allocating trips based on the availability of volunteers.

The Internal Revenue Service (IRS) allows volunteers to deduct 14 cents per mile for miles driven in the service of charitable organizations. This and other deductions are not enough to retain the loyalty of volunteer driver so Stantec recommends that GET and its program partners reimburse volunteers for their cost of fuel based upon the mileage of the trips provided, vehicle wear and tear at a pre-negotiated rate and any insurance premiums that are required. California has passed legislation (CAL. Code 5239 West) that protects volunteers in service from personal liability when using their cars in the performance of volunteer services.

Stantec recommends that GET demonstrate the volunteer approach to determine if a representative number of GET- A-Lift trips can be accommodated using this service concept, particularly those that are ambulatory or dialysis trips. As part of the demonstration, GET must determine if volunteer programs save the agency over the cost of operating GET-A-Lift. The focus of these trips should be those trips that do not require an accessible vehicle meaning that volunteers should be handling trips for ambulatory riders especially on discretionary trips such as shopping and recreation. An organization that can assist GET in the development of its Volunteer Transportation Program in addition to Kern County and CTSA are the Retired Seniors Volunteer Program that could identify capable seniors to serve as drivers.

The volunteer program is not a substitute for the GET-A-Lift program; rather, it supplements that service by providing overflow relief or providing trips in rural areas that hurt service productivity or are trips that GET-A-Lift would not normally accommodate such as trips that originate outside the service area.

6.0 TECHNOLOGY

What is required for a successful implementation of an alternative to GET's fixed-route service are cost-effective technology solutions that continually enhance the rider experience and grow ridership while providing data and analytics to help make the whole of GET services sustainable.

The use of technology has the potential to impact existing fixed route and GET-A-Lift services as well as the ways in which riders use the transit services. Stantec advises its clients that technology is no longer a "nice to have", but rather "a must" particularly as conventional fixed-route transit services integrate with other transportation modes, including ride sharing, bike sharing and car sharing services, that are predicated on technology and ease of use.

While there is a plethora of emerging transportation technologies that are impacting the provision of transit service around the world, a select portfolio emerges that is of direct benefit to GET to assist in the implementation of alternatives to fixed-route services.

6.1.1 On-Demand/ Dynamic Scheduling Software Packages

Transit agencies are increasingly exploring on-demand or dynamic scheduling software solutions to unlock the opportunities of microtransit. Example of software packages include Via, TransLoc, RouteMatch, and SpareLabs. Examples of technology companies that build custom software solutions include MDData and Softbit Tech.

GET currently operates the ADEPT version 6.2.0.194 software for operating their GET-A-Lift and conventional fixed-route services. GET would need to invest in additional software technology should they wish to implement alternative service delivery solutions such as microtransit or an advanced version of home-to-hub.

6.1.2 Trip Planner

An application such as the one provided by Google Maps or the Transit App that will assist the user in getting where they want to go. Users provide a starting location, optional midpoints, the destination, and whether they would like to depart now, later, or perhaps arrive by a certain time. The trip planner will then produce a personalized plan based on these parameters that outlines both the path and mode(s) of travel. The data required to power a trip planner such as Google's Transit Planner or the Transit App is the GTFS feed.

We note that GET does currently produce a GTFS feed and has an existing trip planning app. However, the current trip-planning app only allows users to select a starting bus stop, and not any other subsequent destinations. GET may consider an improved app whereby riders can more completely plan their trips, especially if the service offerings include any sort of on-demand trip booking.

6.1.3 Advanced Fare Payment Systems

The number of transit payment options has increased with mobile payments, open payments and more. Agencies can now choose between operating branded fare cards; contactless open payment systems (which allow the use of non-affiliated credit and debit cards); mobile phones; wearables or other smart tokens (easily portable devices which can display transit balances, connect to other devices via near-field communication or Bluetooth, etc.), such as the Barclaycard in London, UK;

digital ticketing systems with video-based assistance, such as the NextAgent system in Essen, Germany; smart stations (which provide integrated ticketing platforms enabling connections to other transportation modes such as commuter rail or taxis); or region-wide fare cards which can be used across transportation modes and platforms, such as those used in Sweden and Scotland.

The other payment system often overlooked is account management systems, which are proving to be very effective for the delivery of certain types of services and for certain types of riders. Account management systems are perfect payment solutions for riders of accessible services who are seniors and the disabled that may have challenges using traditional fare products. Mobile and open payment systems can communicate with a back office or central management system to validate the rider's eligibility to ride the service and to deduct the value of the ride the rider is taking from a prepaid account. In addition to accessible service programs, account management payment systems work well with commuter rail and bus programs where riders received some form of subsidy from an employer.

We note that GET has a mobile payment system established through the Token Transit smart phone application. GET may consider building on this existing service to increase the number of options riders have to effect payment.

6.1.4 Mobile Transit System Notifications and Service Disruption Alert Systems

A service that will send a text or notification to the user's mobile device, notifying them of any delays, changes, or disruptions to service. It can be as simple as providing the user with information the user selects, or as complex as using the user's location and riding history to update them on routes they frequently use. Some agencies have embraced Twitter to provide real-time service updates that requires minimal technological investment, but does require staffing resources to be responsive and done well. It should be noted that many systems are using all forms of social media and traditional communication channels, i.e., agency websites, to communicate with passengers. Often communications and/or customer service staff performs these duties in addition to their traditional duties.

We note that GET currently does operate a service alert notification service through their website at (<https://www.getbus.org/rider-info/service-alerts-detours/>) though the service could be improved by providing them real-time on a forum such as Twitter.

6.1.5 Software-as-a-Service

Software as a Service (SaaS) is a model for licensing and delivering software that is typically done on a subscription basis and hosted in a cloud environment. The basic premise contrasts to conventional software that is purchased outright and installed on one or many local computers. Unlike conventional software, the SaaS provider ensures a computing environment to run the software, and provides a mechanism for accessing the software through the web browser or a smartphone/desktop application. Customers of SaaS products generally have options as to how much of the product they wish to purchase, such as the speed and size of the computing environment as well as the desired software functionality. If there is a public facing component to the SaaS product, such as to enable fare payment or trip planning, then often a cloud hosted product can be much faster to load and use for the customer as the infrastructure can be more easily optimized for any number of simultaneous data requests.

With the advent of Cloud Computing and the benefits that derive from organizations not maintaining their own servers and worrying about security and upgrades, Stantec believes the transit industry should consider the advantages of the Cloud and to adopt the concept of software as a service. For too many years, the transit industry was constrained to proprietary

software and hardware that has cost the industry dearly in hardware, installation, configuration, upgrade and licensing costs.

The benefits that users have gained from not buying software but renting it are these:

- **Speedier Time to Benefit:** With software that is already configured and installed the time spent on installation, configuration and set up is minimized.
- **Lower Costs:** Shared software resides in the cloud or shared environment where costs are low compared to traditional models.
- **Scalability and Integration:** Unlike most legacy transit software, software as a service provides scalable solutions that can be integrated much easier with other SaaS solutions.
- **Upgrades:** Providers of software as a service operate on a different model that makes upgrades and new releases available to users at lower costs or they are simply shared.

Stantec urges GET to consider adopting the SaaS approach, especially in the implementation of the service concepts suggested in our report. Using the SaaS model, GET fixed route and GET-A-Lift services would benefit as well.

Ride platform services like ridewithvia.com, transloc.com and moovel.com are all using the SaaS concept providing those benefits detailed above to transit clients. In the Capital Metro Austin On Demand Service Demonstration discussed earlier in our report, the agency uses ride with Via's software.

7.0 EVALUATION OF SUSTAINABLE IMPACTS AND OPPORTUNITIES

Together with alternative service delivery methods, GET can also introduce new technologies to its traditional service offering with ultimate goal of improving its sustainability and reducing its carbon footprint. Overall, by using greener technology such as described below, GET will help improve air quality in Bakersfield, as well as become eligible for different funding schemes, unlocking additional revenue.

7.1 BATTERY ELECTRIC BUSES

Battery electric buses (BEBs) are gaining considerable interest across the industry. Large storage batteries are carried on board and are charged when the bus is parked and connected to a designated power source, either a proprietary system or to a standardized charging point depending on the manufacturer. Electricity for the traction motor is drawn from the batteries. Depending on battery capacity, bus operating range can vary. While a product claim of approximately 150 miles between charging is in the current market offering, other models have shorter ranges requiring lapses for recharging during a daily duty cycle.

Electric buses recharge batteries during regenerative braking. Stationary on route recharging for brief time intervals can also be done at layover or terminal locations. Induction charging while driving is also currently being investigated. Because of the service cycle profiles, it may be necessary to operate with a marginally larger fleet to offset the shorter range (duration of time or daily total run distance) that a battery electric product may have as compared to one of the other types. This enters the area of the service profile of each route and transit agency, vehicle dispatching and utilization methods and possible even labor agreements with the work force. The charging and variety of battery technologies will impact this item. BEBs are often hailed as an “emission-free” vehicles although source of electric power generation needs to be strongly factored in. Off shore and small American original equipment manufacturers with purpose built vehicles have been joined in the marketplace by the domestic firms offering BEB versions of their existing bus platforms. There are currently less than 200 BEBS currently in use across North America. Pilots are underway where we will continue to learn about the viability of this propulsion source.

Changing propulsion types comes with considerable costs

Buses

It is important to recognize that changing to another propulsion type will include significant capital costs regardless of how funds are obtained. While BEBs are currently in vogue, the cost of a BEB is nearly twice that of a CNG bus. Added to the initial purchase cost is the reality that much is still unknown about the long-term “behavior” of these vehicles; this translates into risk for transit agencies that must be managed and provisioned for. The approximate capital cost premiums of BEBs relative to CNG-powered buses are roughly 90%.

Infrastructure

Infrastructure costs such as building code generated modifications, refueling hardware, charging infrastructure, transmission network upgrades need to be factored into the business case. Operating costs will be affected if changes to

daily processes are triggered. This includes changing vehicle and staff deployment, dispatch procedures, employee training and accreditation, service line routines, etc.

In addition, there may be other unforeseen added costs. For example, the agency may need to operate the existing and new propulsion products in parallel either until the fleet is turned over or in perpetuity if two or more types are retained. Infrastructure costs for each respective type are additional and need to be factored in. For working on the bus roof where batteries may be carried in battery electric models, fall arrest and hoisting provisions may need to be fitted in. Electric capacity feed at specific voltage and distribution circuits are required for battery electric buses being recharged while stored in the garage.

Training and maintenance

Training for maintenance personnel (and to a lesser extent for operating personnel) would be needed for a change in propulsion. And if the propulsion type is changed through the normal vehicle life cycle/turnover process (one for one) it would take a full life cycle from introduction of the new propulsion to completely change over the fleet (e.g. 15 years for a 15-year service life). This means that during the turnover period, two propulsion modes would be in use and in need of maintenance.

Summary

It is still relatively early to make accurate life cycle costing between various propulsion types, particularly BEBs. Batteries are constantly improving and will likely realize longer lives and less failures in the future. At the same time, with mass uptake of BEBs comes the necessity to manage and dispose of batteries that have reached their lifespan for transit but may still have a useful afterlife as potentially battery banks for energy storage. Improvements to components through in service trial and error (e.g. better weather proofing) has reduced in service failures and increased mean distance between failures.

7.2 CAP AND TRADE STRATEGIES

California's Cap and Trade program has produced measurable results in reducing greenhouse gas emissions. The inventory of allowances that the State of California auctions has raised some \$6.5 billion that can be used to battle climate change.

Under the California Climate Investment Program that utilizes the proceeds from the Cap and Trade Allowance Auction, transit agencies such as GET can apply for funding for Transportation and Sustainable Communities Program Funding.

The categories that would provide funding for the services and programs suggested by Stantec include the following:

- Active Transportation
- Low Carbon Transit Operations
- Transit Capital

The Bakersfield Region has experienced air quality problems in the past making GET eligible to seek Low Carbon Transit Operations Program funding for the alternatives suggested in this report.

Renewable Energy Working Group

The West Coast of the United States, especially California, has become a world leader in the development and utilization of renewable energy. This commitment to low carbon energy is evident from solar farms, to the Cap and Trade Program to the Golden State's transit agencies that are electrifying their fleets at an accelerated pace. Both BYD and Proterra, the largest domestic manufacturers of pure electric buses, have moved their operations and design centers to the West Coast in order to advance their interests.

GET is well positioned to benefit from this California focus on renewable energy. Formation of an Infrastructure Working Group would benefit GET by mitigating and removing obstacles to the development of a renewable energy infrastructure that would enable GET to move towards a 100% pure electric bus and service vehicle fleet. The Working Group would also enable GET to take advantage of the opportunities that are presented through sharing energy production, distribution and related costs.

The GET Renewable Energy Working Group would work to achieve the following:

- Survey and assess renewable energy infrastructure needs to achieve the goal of a 100% pure electric fleet of buses and service vehicles.
- Exchange information about renewable energy plans and practices to collaborate and coordinate the development of a renewable energy infrastructure, especially in the distribution of renewable sources of energy.
- Collaboratively develop public educational programs that inform and educate the public, renewable energy and technology partners, vehicle and technology manufacturers, frontline employees and transit riders on the benefits of the use of renewable sources of energy.
- Develop a Comprehensive Infrastructure Build Out Plan that allows for the distribution of renewable energy, specifically electricity to power GET's and other municipal transit fleets in Kern County. Included in the plan will be collaborative approach for the joint purchase of pure electric vehicles; plans to repurpose and sell used bus batteries as a means to generate revenue to sustain the renewable infrastructure; collaborative purchase of sustainable sources of power and shared capital and operating cost for the renewable infrastructure.

Potential members of the GET Working Group, with GET being the lead could include:

- The City of Bakersfield
- Kern County
- Pacific Gas & Electric
- Kern Economic Development Corporation
- First Solar
- Mid American Solar
- Pioneer Green Energy
- Bakersfield College
- California State University at Bakersfield
- Sun Edison
- SunPower Corporation
- Chevron
- Bakersfield City School District
- Kern County School District

8.0 STRATEGIES THAT REALIZE MOBILITY OBJECTIVES

GET service should be operated in the public interest, meaning the service is of the highest quality offered at the lowest price to the user and the taxpayer that subsidizes it.

GET can and should realize its own objectives by promoting those new modes of travel that complement the agency's fixed-route services. This is the approach that Stantec has taken to suggest emerging mobility services (such as BikeShare, microtransit, ride hailing, volunteer transportation services) that balance with GET's high quality, fixed-route and ADA-compliant services.

Stantec has been involved in deliberations with Uber, VIA and other emerging mobility services for our other transit clients. From these discussions we understand first hand that there is a great difference between the media hype of new mobility and the reality of the service. For example, Uber subsidizes 59% of the cost of each ride that the service provides.⁵² In 2015, Uber investors, the company is privately held currently, paid \$2 billion to subsidize rides to capture market share. Uber may go public in 2020 with an Initial Public Offering (IPO) of shares at which time the service may have to change its pricing strategy forcing riders to pay a higher portion of the actual cost of their service.

Sounds familiar? Uber may end up with the same challenges that every public transit agency in the nation faces. Stantec's road map for GET to realize its mobility objectives is to suggest pragmatic solutions that GET can implement with minimal capital and operating expenses; that do not abrogate the agency's labor agreement; can save the agency money; can improve the passenger experience and will lure new riders to the agency's services.

The strategies that GET must deploy are customer-driven, beyond those technologies being deployed by the agency today. These are technologies that utilize GET data to predict demand and match levels and types of service to that demand (advanced fare payment, automated passenger counting, automated vehicle locator systems, real time bus information); improve operational efficiency (electric buses, use of renewable energy sources, cap and trade funding, account based fare payment) and improving the rider experience (real time information, mobile account based fare payment, on demand service application, crowd-sourced service options, bus shelters with digital real time information).

Stantec proposes two short-term strategies that can deliver measurable results in moving GET into the future.

8.1 FAMILY OF SERVICES CONCEPT

Many industries have used the Family of Services concept (social service, healthcare, defense contractors, etc.). The concept is to provide as broad an array of services to the customer as possible but from one provider. In transportation, the FTA Mobility Management initiative seeks to optimize all transportation resources in a community through coordination and collaboration.

GET can move towards realizing its Mobility Objectives while also positioning the agency for the future by looking beyond its current service offering to adopt those suggested by Stantec in this report. The GET Family of Services concept is to offer a wide range of transportation services (fixed-route bus; home-to-hub service; ADA-compliant paratransit; active

⁵² Uber 2015 Financial Statement/FAST Company Magazine 12/1/16

transportation; microtransit, volunteer transportation and ride hailing) that equitably meet the travel needs of the broader Bakersfield community.

At the core of the Family of Services concept is the rider. The Family of Services concept changes the focus of the transit agency to moving people rather than moving vehicles. The closer the agency gets to defining individual needs the more effective and efficient its services become.

Stantec's client the Toronto Transit Commission (TTC) embraced the concept in 2017 to first encourage the use of the agency's accessible subway, streetcars, bus and community bus service by senior and disabled riders using the TTC's Wheel-Trans van and taxi service. The TTC promotes the Family of Services concept as providing riders with more independence through flexible service options. With a robust Travel Training Program to support the initiative, the Family of Services concept is converting senior and disabled riders from waiting for scheduled van and taxi trips to walking down the street to catch a bus or streetcar. The TTC has realized that focusing on the needs of individual riders advances the use of technology by riders and educates them to more service options that can improve agency operations.

The success of the Family of Services concept begins inside the agency. The agency focus must change to suggesting choice to riders at every contact point from a call to the customer service center to bus operator interaction with riders. Focus would first be on GET-A-Lift riders to encourage them to switch to fixed route service.

To achieve the Family of Services concept, it is first necessary to train GET staff as to the merits of the Family of Services concept and how to deploy it in Bakersfield. The training is focused on changing the agency culture from the movement of buses and vans to transporting people by the most appropriate means possible, that is, at the lowest cost to the rider with the most direct routing and the shortest travel time.

GET will still offer its current services but as it expands its travel options, the frontline must be continually made aware of the new services as bus operators, street supervisors and customer service representatives are GET's gatekeeper of information to the public. The more they know about agency initiatives, the more they can serve as ambassadors to inform the public about their options.

In addition to bus operators and street supervisors, Customer Service personnel and GET-A-Lift Dispatchers would play key roles. Instead of just providing information to callers, they would serve more as a travel agent providing callers with information about the most appropriate service option to meet the callers' needs. In support of this change, GET would convert its website into an interactive information hub that would link to service applications or allow callers to book and pay for their own trips on these services.

Travel training is a key support service to the Family of Services concept; leveraging GET's existing travel training for fixed route buses for GET-A-Lift services is central for Family of Services. To make the Family of Service concept a success, the travel training support should provide these services:

- A personalized trip planning system that addresses the individual travel needs of each rider. All calls for transportation assistance would be channeled through one GET number for all alternative services. Customer service representatives or dispatchers would guide callers through the resources and options available in their part of the service area. This personalized service provides existing riders as well as potential riders with information on all transportation options so they are able to choose the best option for each of their trips.

- Public education and outreach program to familiarize the public with their transportation options, including fixed route bus, GET-A-Lift, home to hub, microtransit, ride hailing, bike share and volunteer services.
- GET fixed route and service alternative familiarization services designed for individuals who need assistance and practical experience boarding GET traditional fixed route service.
- Ride Ambassador Program to connect customers needing a little extra assistance with a trained volunteer who is familiar with all GET bus services and GET-A-Lift.
- Ongoing support and training for professionals that serve older adults and people living with disabilities. The commitment of social service, healthcare, nursing home or homecare partners is essential to the success of the Family of Services concept. Working with these partners will result in increased awareness of the benefits of the Family of Services concept.

The Family of Services concept has been developed so that those who provide the service embrace the concept and then become its biggest advocates. This approach also provides a valuable aspect to achieving GET's goals for improving the mobility options it offers to Bakersfield because those who provide these services must be committed to their success.

8.2 ACCOUNT MANAGEMENT FARE PAYMENT

As GET expands its service offerings with new mobility options, it must ask some basic questions: What does the agency charge for these services? How does the agency get its fair share of the revenues collected by contractors and partners who provide these services? What is the best fare payment method for each mode?

In the near future, a GET rider may board the route 82 and ride it to Costco by Rosedale Hwy and Highway 99 where they would board an on-demand service like microtransit or a ride hailing service to complete the rest of the ride. The rider would pay a GET fare but have to transition to a native mobile payment application to pay for one of the other services. Rather than have riders deal with the hassle of paying a completely different fare every time they board one of the new services, all trips can be paid for through an Account Management Fare Payment System that handles all payment transactions from what is called the back office. Portland's TriMet already uses an account management approach and San Diego MTS is about to buy a similar system.

Account based fare payment architecture is when all the value is stored in a rider's account. The fare media, be it a smart card, mobile payment application or a device with contactless Near Field Communication capability, serves only as the identifier for the account as no data is written or stored on the media as the processing of the fare payment transaction is handled in the back office. When the rider uses any of the services discussed in this report they pay using the value they have stored in their account. Be it a trip on fixed-route GET service, GET-A-Lift, microtransit service substitution service or an Uber or Lyft ride, the proper fare is deducted from the rider's account balance.

The significance of account management is that it is the only current payment system that can accommodate and centralize fare payment for the types of emerging services suggested in this report by Stantec.

Not only will account management unlock new markets for GET services, it will also make reconciliation of accounts much easier for GET. If standalone fare payment were to be used for all the services recommended, GET accounting would be reconciling BikeShare payments, microtransit payments, ride hailing purchases, volunteer driver reimbursements and more. Under the account management approach, a rider would pay into their account on a monthly or weekly basis. The account

could be paid using a smart phone, similar to the way that people pay their cell phone or other utility bills. For equity reasons, riders could also use a service called Pay Near Me that would allow them to go into 7-11, CVS, Family Dollar or AC Cash Express to add value to their accounts. Riders who receive a Transit Benefit Payment could use the debit cards issued by WageWorks or Eden Red to value their accounts. More importantly for GET, the account management system would enable riders of GET-A-Lift service to directly add to their accounts using Social Security, Medicaid, insurance or other transportation programs stipends.

Account management allows for the use of open, non-proprietary software and hardware meaning that GET would no longer be required to have a specific type of farebox or validator or ticket vending machine. The system would work with any device similar to the way that credit card networks accept credit, debit or other types of payment cards. GET would no longer be required to print paper and distribute fare products because those products would be stored in the rider's account.

Account management reduces the transit agency's costs by eliminating the use of proprietary software and hardware; reducing or eliminating fare evasion; makes reconciliation possible within minutes not days or hours; allows the agency greater flexibility with fare policy meaning that fares can be fixed to the type or cost of service or the time of day and finally Account Management would guarantee the achievement of farebox return requirements by allowing for the collecting of the most appropriate fare for every trip that GET provides.

7.3 Capital Planning

GET would be required to reconsider its short- and long-term capital planning as a result of the agency's refocusing its priorities on a market-driven approach to service design and delivery. Stantec believes that the capital costs of many of the recommendations that it has brought forward can be funded from the following federal and state sources:

FTA 5307, 5311, 5337 and 5339

- Alternatives Analysis
- Bus Rapid Transit
- Capital Asset
- Clean Fuel Bus

State of California

- Transportation Development Act
- State Transit Assistance
- Greenhouse Gas Reduction Fund
- Cap and Trade (LCTOP)

Stantec recommends to GET a pragmatic approach to capital planning using an evaluation criteria for each of the recommended capital investments. The capital projects would be categorized as follows with the suggested criteria

<u>Project</u>	<u>Criteria</u>
Transit Preservation	Condition Use (Ridership) Cost Effectiveness
Service Improvement	Service Quality Mobility Enhancement Cost Effectiveness

Recommended Capital Projects

Fleet Management/Bus Procurement

Transit Preservation/Service Improvement

Stantec strongly suggests that GET develop a Fleet Management Plan that 'right-sizes' the agency's rolling stock to demand and especially to the types of services that are recommended in this report. Of particular importance is the need for GET to demonstrate and embrace electric bus technology as is recommended by Stantec as a long-term sustainability strategy for the agency.

On Demand/Dynamic Scheduling Software

Service Improvement

Stantec suggests that GET procure a comprehensive software solution that can provide the agency with a complete suite of traditional and emerging mobility service scheduling, demand prediction, labor rostering and vehicle assignments. We also suggest that GET research whether it would be more advantageous for the agency to procure the software as a service from an organization such as Via or one of the other on demand software providers.

Accountant Management Fare Payment and Revenue Management

Service Improvement

Another Stantec recommendation is to procure an account management fare payment and revenue management system. As this technology is evolving, Stantec recommends that GET closely follow the experience of agencies like San Diego MTS that are about to pioneer this concept. Stantec recommends that GET schedule this procurement two to three years from the initiation of the service concepts recommended in this report.

9.0 POLICY RECOMMENDATIONS

GET's service design and delivery policies in the past have been influenced by financial resources available to operate service and the tradition of the agency to operate fixed route and ADA-compliant transit services. To accommodate emerging mobility services and to adapt the agency's services to the changing lifestyles of those who live in its service area, GET must change the methods by which it designs and delivers services including offering services that are not traditional to transit but allow the agency to meet local travel needs with the most effective and efficient mode of service.

Stantec recommends that GET adapt amended policies to support a new vision of mobility, and we provide an example of such a vision here:

Vision

To provide effective and efficient transportation services that offer an attractive alternative to single occupant automobile travel. The services may be provided directly by GET or in partnership with private or public partners using the most appropriate technology enhancing the rider's experience while attracting new riders to these transportation services.

The Benefits to Bakersfield and GET

Expanding the mobility services offered by GET has the potential to increase ridership of traditional GET services; to expand the market for shared ride services by luring new and discretionary riders to new services; to encourage healthy lifestyles through the promotion and use of active transportation; to reduce the cost of delivering traditional GET services while increasing the attractiveness of those services to new riders, retain the loyalty of those who ride today and to deliver measurable value to the Bakersfield Region.

Rationale

GET has seen its ridership decline for the past decade. During that period the agency's service area has grown and the lifestyles of the Bakersfield community have changed. Any organization with a declining customer base must reconsider its business model in order to continue as a viable business. With the recommendations suggested in this report GET has the opportunity to not only regain some of that ridership loss it also has the opportunity to provide services at lower cost; redeploy cost savings to services and areas that would attract more riders with higher frequency service; to meet unmet needs with more appropriate types and levels of service and to increase the agency's productivity as well as its financial performance.

Policy Recommendations

1. GET will design and deliver a variety of mobility options to meet the mobility needs of those who live, work, study and visit its service area.
2. GET will develop and implement partnerships with service providers in both the private and public sectors to develop and deliver the service alternatives prioritized in the current study.

3. GET will commit to the use of technologies that encourage the use of the services suggested in the current study especially those that can reduce the cost of planning and delivering these services and are accommodating of how the public uses technology in their daily lives.
4. GET will develop new service standards that incorporate these new services and technologies. GET will utilize analytics with the data collected from the technologies that are deployed to improve the rider experience, to increase the productivity of all of its services and to develop service design and social media marketing strategies to attract new riders to these services.
5. GET will adopt new mobility services that first complement existing fixed route and ADA-complaint services. New service pilots or introductions will be prioritized by the following:
 - Potential cost savings
 - Ability of the service to meet the needs of target populations to mitigate disparate impacts and/or disproportionate burdens

10.0 CONCLUSION

Stantec was retained by GET to study best practices regarding alternatives to traditional fixed route transit. Our review demonstrated many instances of peer agencies across North America using alternative service delivery models that are making those agencies more effective and efficient.

The study reviewed barriers, risks, and legal restrictions of alternative service delivery models. It was determined that no major obstacles are anticipated for an implementation and that the opportunity is ripe in the Bakersfield context.

Among other scope items, the consultant team outlined strategies for implementing alternative service delivery models and achieving community acceptance of them. Specifically, Stantec determined that there are four or five fixed routes that currently have extremely low productivity and would be ideal candidates for home to hub and microtransit strategies. If implemented, these strategies could save GET upwards of \$1,000,000 per annum in operating costs while increasing mobility options for residents, employees, and visitors of Bakersfield.