



**CtrCity**  
ANAHEIM

ANAHEIM CTR CITY  
MICROTRANSIT CONCEPTUAL PLAN

*WORKING PAPER*

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MARCH 2017



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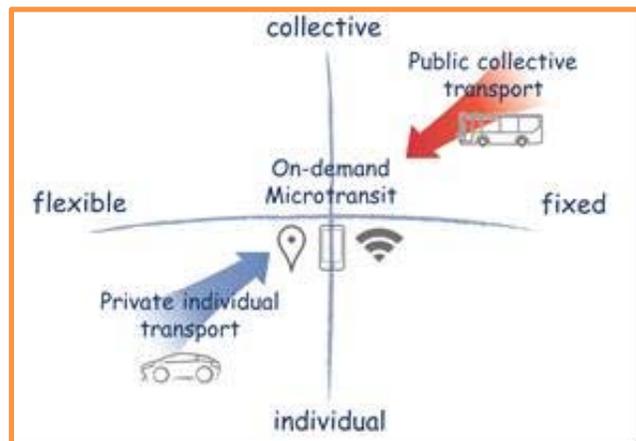
## 1.0 INTRODUCTION

Anaheim Transportation Network (ATN) and the City of Anaheim’s Community Development Department share an interest in creating a microtransit service for CtrCity Anaheim. This objective is consistent with the growing awareness that access to, and individual mobility within the CtrCity area are keys to Anaheim’s continued economic prosperity. Further, current and future developments create untenable parking challenges, traffic congestion and an adverse effect on air quality. Sustainable mobility solutions will assist in addressing these challenges.

Microtransit refers to mostly technology-oriented companies participating in the provision of local passenger transportation services. Microtransit is significant because it represents the first indication of private sector interest in providing transit service since the late 1950s. The industry is still emerging as most microtransit services have been operating for less than five years. It is experiencing rapid growth in communities where offering a full range of transportation services, including conventional fixed route transit, taxicabs and other ride hailing services, car sharing, bike sharing, car and vanpooling, pedestrian facilities and parking.

This working paper focuses on microtransit industry services in compact, high activity areas including urban downtowns, beach communities, destination resorts and regional shopping centers; as well as collaborative arrangements between TNCs and public entities; alternate vehicle types; and use of advanced technologies including real-time customer information, mobile applications, trip planning, and fare payment.

Applied to Anaheim, microtransit service should operate as a sub-system of ART and provide the connectivity to the entire ART network, including The Anaheim Resort, Platinum Triangle and ARTIC. Three service alternatives are considered: On-demand service; fixed route shuttle; and flexibly-route shuttle.



### 1.1 Report Structure

This working paper presents the following:

- Section 2.0 - Existing Conditions. A discussion of the CtrCity service area and existing transportation resources serving the area.
- Section 3.0 - Microtransit: State of the Industry. An overview of the microtransit and ride-share industries.
  - Section 3.1 - Destination District / Downtown Shuttle Case Studies



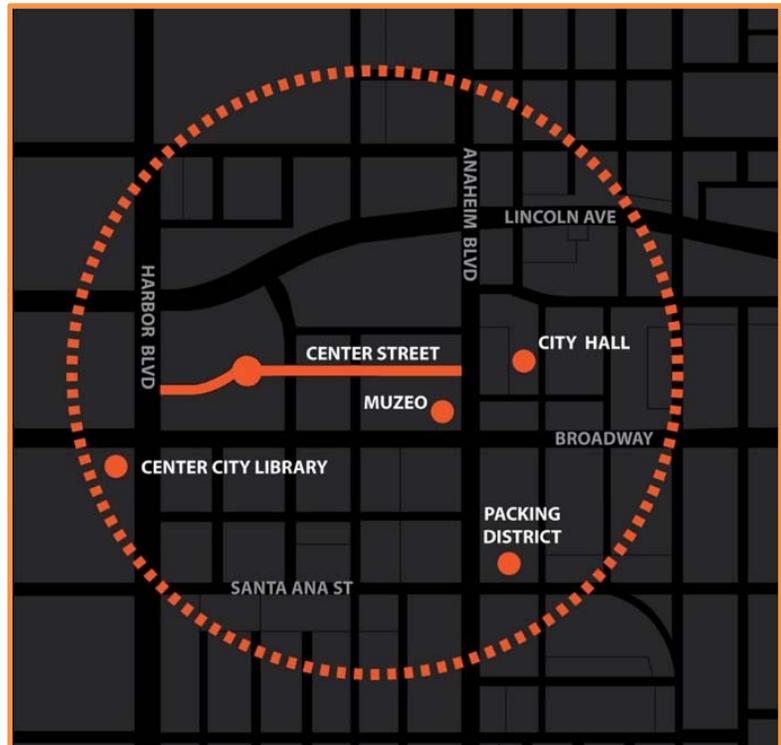
- Section 4.0 – Demand / Ridership Estimates. Commentary on high-level demand/ridership estimates based on the review of trip generation rates from various development types.
- Section 5.0 – Alternate Delivery Concepts / Scenarios. Discussion of alternate delivery schemes for servicing the CtrCity service area.
- Section 6.0 – CtrCity Conceptual Plan. A preferred plan articulating service delivery type, operating characteristics and preliminary cost estimates.

## 2.0 EXISTING CONDITIONS

CtrCity is roughly delineated by a 0.5-mile diameter circle centering on the intersection of S Clementine Street and Center Street Promenade. The area is walkable with sidewalks, intersection crosswalks and traffic controls, and pedestrian amenities. Current trip generators in CtrCity include:

- Central Library
- City Hall complex
- Downtown Community Center
- Farmers Park
- Muzeo Museum and Cultural Center
- Packing District
- Rinks Anaheim Ice Arena
- Senior Center
- Town Square Shopping Center
- Brewery District / Leisuretown

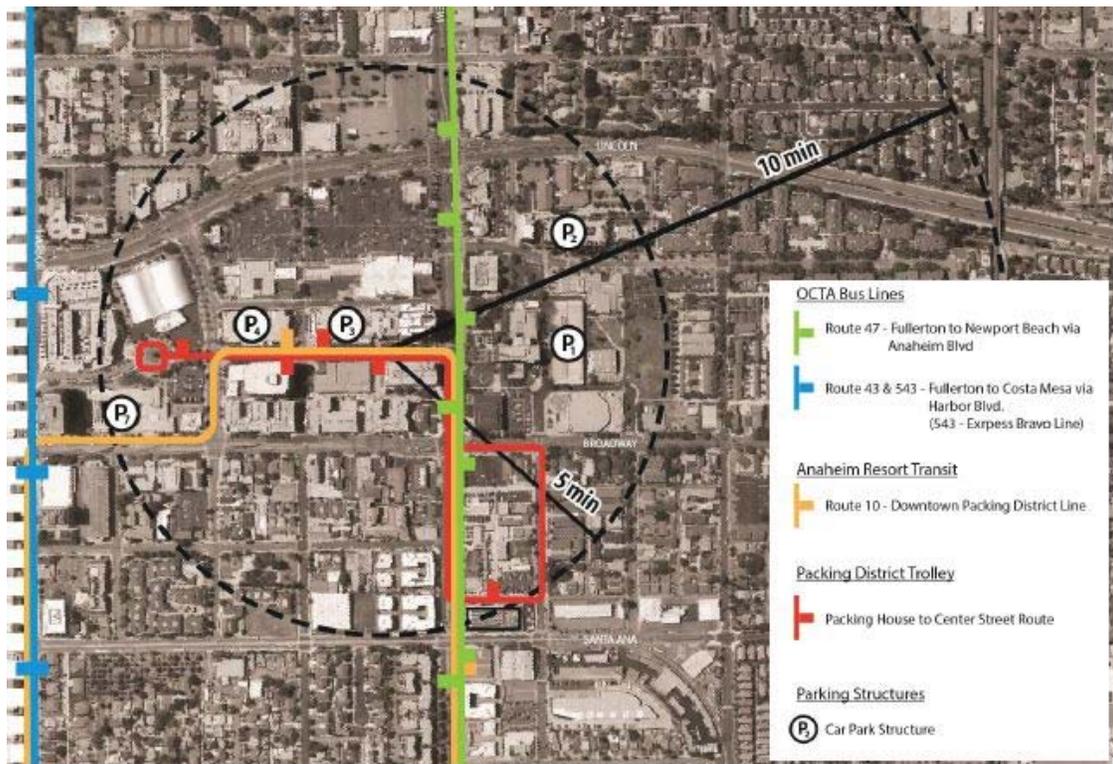
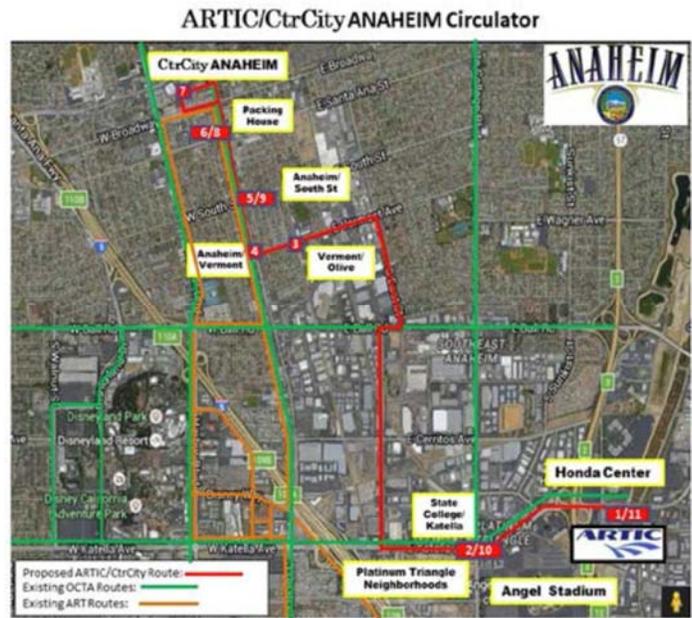
The area is served by three OCTA fixed routes running through the service area: Route 47 on Anaheim Boulevard; Routes 43 and 543 Bravo on Harbor Boulevard; and Route 42 on Lincoln Avenue. Additionally, ART Line 10 Downtown Packing District connects the Resort Area to Center City via Harbor Boulevard,



and circulates in CtrCity via one-way service running north on Anaheim Boulevard, west on E Broadway, and south on Harbor Boulevard. Buses run every 30 minutes daily from 6:15 am until 11:30 pm.

An OCTA Project V funded Proposed ART Route 23 – CtrCity/ARTIC Line. The ATN, in partnership with the City of Anaheim, will create a new public transit service to provide a one-seat service option between ARTIC and CtrCity Anaheim.

Other service providers include *Polly the Trolley*. Introduced in 2015 and operated by the Packing House, a free trolley service linking the Anaheim Packing District and Downtown Center Street Anaheim – linking the two key retail and food service areas as well as remote parking sites for the Packing District. Service was provided Friday to Sunday, 12pm-9pm. Trolley service has since been terminated.



### 3.0 MICROTRANSIT: STATE OF THE INDUSTRY

Microtransit is relatively new market niche with many start-ups resulting in recent business successes and failures. Generally, the defining characteristics of microtransit service include:

- A customized vehicle fleet ranging from individually-owned driven cars driven by independent contractors to electric carts, vans, small and large buses equipped with amenities such as Wi-Fi, USB outlets, and larger seats.
- Customer access facilitated using a mobile phone application to hail a ride or reserve a seat in a group service.
- Use of crowd-sourcing or “big data” analysis to assess demand and form new routes. Microtransit providers adjust routes and stops in real time by aggregating demand to provide the most efficient possible service.
- Higher fares that vary based on demand-supply conditions (*i.e.*, surge pricing), and can be paid using the mobile app.

Private microtransit companies have cost and other advantages relative to public transit systems that make them better able to respond to particular market niches. For example, they are not obligated to meet the same civil rights, public involvement, fare discount and other requirements. Moreover, they can segment the market and target the specific demographic groups best suited to the profitability of their business model.

Among the most successful microtransit providers are on-demand ride hailing and flexible bus service offerings in high density urban corridors where conventional transit service is overcrowded or may not be designed for crosstown (*i.e.*, non-downtown) travel. These services target generally younger and higher income persons than commonly utilize conventional transit by charging higher fares for premium service and amenities.

In California, most microtransit operators are now regulated as transportation network companies (TNCs). These include the two largest ride hailing services operating in the US -- Uber and Lyft; and many smaller firms starting-up various forms of dynamic response bus services accessed by mobile phone application. Such services are growing rapidly because they meet market expectations for convenience of hailing a ride and paying the fare using popular current technologies.

- Uber Technologies Inc. formed in 2009 in San Francisco and operates in over 500 cities worldwide. It develops, markets and operates the Uber car transportation and food delivery mobile apps. Branded service variations include UberPOOL (discount carpooling), UberXL (large sedan), UberSUV, Lux (luxury car), and UberASSIST for persons with disabilities.
- Lyft Mobility Solutions formed in 2012 in San Francisco as a peer-to-peer ridesharing mobile app linking riders with drivers. Lyft has evolved into a hybrid between a taxi company and a ridesharing app to accommodate regulatory requirements in various cities. Currently, Lyft operates in over 85 California cities and 220 communities nationwide. The company offers three branded services: Lyft Line (shared ride); Plain Lyft (exclusive ride); and Lyft Plus (larger cars and SUVs those traveling with suitcases and boxes, or in groups larger than

four. In San Francisco, LyftLine uses “hot spots” encourage passengers to congregate at select intersections in exchange for discounted fares.

- Bridj operates in the most densely developed areas of Boston and the neighboring cities of Brookline and Cambridge. Beginning in 2014, Bridj initiated flexibly routed and scheduled commuter using 14-passenger vans targeting selected crosstown origin-destination pairs that are not directly connected by MBTA rail lines. The most successful example is a direct connection between Cambridge and the Longwood Medical Area, which requires a complicated two-seat rail trip through Downtown Boston or a crosstown local bus to make the trip on public transit. Bridj analyzed traffic data to observe travel patterns and developed a mobile app enabling customers to request and pay for service. Shuttles run as frequently as 10 minutes on some routes. Fares range from \$5.00 to \$8.00, compared with transit fares under \$2.50. Bridj also operates in Washington DC, and recently completed a collaborative demonstration project with KCATA in Kansas City to provide demand-based transit service. The public-private relationship was unique because Bridj supplied the smartphone app enabling customers to reserve and pay for rides on 14-passenger Ford vans operated by KCATA-employed (and union-represented) drivers.



- Chariot operates commuter bus routes in Austin and San Francisco using 14-seat vans. The routes are designed by crowd-sourcing to solicit bookings over the Internet. The routes are branded with distinctive names such as the Lamar Bullet, Market District Mover, Geary Galloper; Mission Possible, Pacific Rush and Great Haight. The company has grown rapidly from four vehicles in April 2014 to 100 vehicles announced in May 2016.
- Downtowner, Inc. partners with cities and local business sponsors to provide localized shuttle services using six-passenger electric Gem Carts custom manufactured by Polaris Industries, and drivers who are trained as tour guides. Currently, Downtowner has operating contracts in five cities, including Manhattan Beach and Newport Beach in southern California. Others include Delray Beach FL, Aspen CO, and Downtown Tampa.
- eTuk USA formed in 2015 as a vehicle supplier and microtransit service provider. The Denver-based company manufactures and customized three-wheel electric vehicles for fleet and individual use, and partners with affiliates to create local eTuk urban mobility transportation services. The first local eTuk operation began in Downtown Denver in 2016.

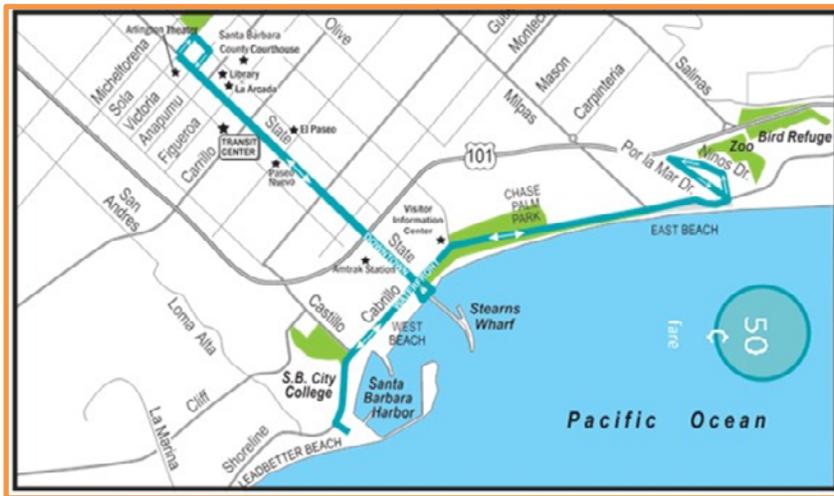
A growing number of public transit agencies are exploring ways to collaborate with microtransit service providers in ways that complement transit service and potentially reduce subsidy costs. Such collaborations generally involve four service types:

- Destination district shuttles, including downtown areas;
- “First mile-last mile” feeder connections between transit lines and employment sites;
- Coverage-oriented transit service in low-density corridors or remote neighborhoods;
- ADA complementary paratransit service.

### 3.1 Destination District / Downtown Shuttle Case Studies

Several examples of downtown shuttle services are described in the following pages. These include both conventional transit shuttles proven to be sustainable over time, as well as more recent collaborations between public entities and private microtransit providers that may yet prove to be sustainable over time.

#### Santa Barbara Downtown / Waterfront Shuttles



The Santa Barbara Downtown Waterfront Shuttle is a positive example of conventional transit shuttle service operating continuously since 1987 with community support. Santa Barbara Metro Transit District (SBMTD) operates the two routes running 1.4 miles north-south on State Street, and 2.1 miles east-west on Cabrillo Boulevard along the Pacific waterfront. Service

frequency ranges from 10-15 minutes during the summer months, to 15-30 minutes year-round.

The shuttles are funded primarily by the City using Measure A, Downtown parking revenues, and Waterfront development funds. Total operating cost in FY 2016 was \$1.2 million, offset by fare revenue of \$144,000, or about 11% of operating costs.

Introduced as a fare-free service in 1987, shuttle ridership peaked above one million passengers in 1992. Ridership dropped over 40% to below 600,000 in 1994 following implementation of a 25¢ fare, and dropped again when the fare increased to 50¢ in 2013. FY 2016 ridership was about 371,000 boardings. Currently, the Santa Barbara City Council is deliberating whether to

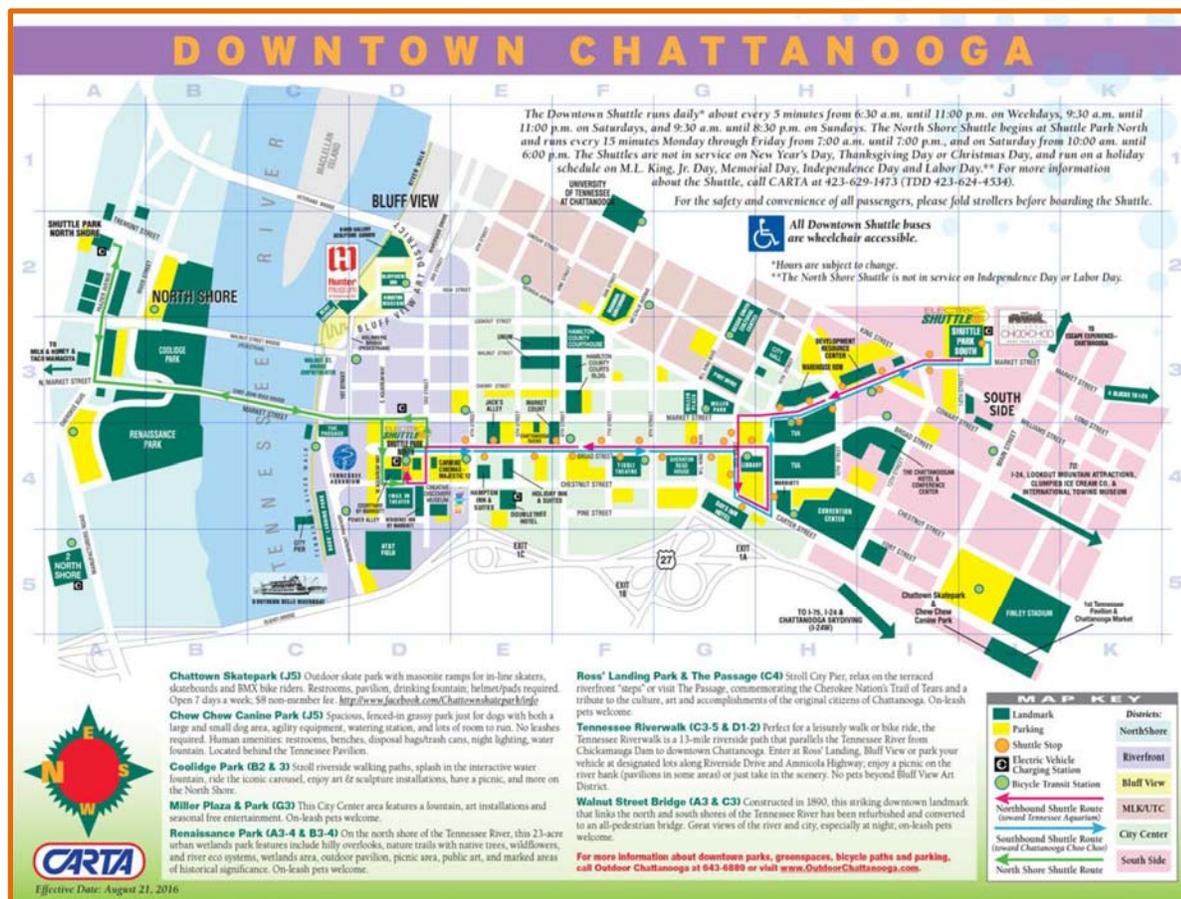
reduce the fare or eliminate it entirely in an effort to improve ridership.



Battery electric-powered replica trolley vehicles have been used to operate the Santa Barbara shuttles for many years. The next generation of replacement vehicles built by BYD Auto are on order and to be delivered in June 2017. Retention of the vintage trolley experience featuring open windows, perimeter seating, and easy on-off doorways was an important procurement objective.

## Chattanooga Downtown Shuttle

Another positive example of conventional transit shuttle service is the Downtown Electric Shuttle operated by the Chattanooga Area Regional Transit Authority (ARTA). The shuttle provides front-door transportation to attractions, convention center, shopping, hotels & employment sites in the Downtown area between the Chattanooga Choo Choo to the Tennessee Aquarium, with stops every block in between. The fare-free service operates about every five minutes on weekdays from 6:30 am until 11:00 pm; on Saturdays from 9:30 am until 11:00 pm; and on Sundays from 9:30 am until 8:30 pm. North Shore Shuttle buses run about every 15 minutes Monday through Saturday, from 10:00 am until 6:00 pm. All Shuttle buses are wheelchair accessible.



## Downtowner Shuttles

This microtransit service provider formed in 2012 to introduce new on-demand passenger service in Delray Beach FL. The service is available to fare-free to customers by direct hailing a ride using a mobile phone application with Android and i-Phone versions. The company uses GEM six-passenger electric vehicles manufactured by Polaris Industries in Minnesota. They resemble regular regular electric cars with windows, doors and air conditioning that make for a more

comfortable experience. Gem Carts are equipped with two iPad screens on which riders can view videos and information about the city, businesses, events, and announcements.

Newport Beach Downtowner began operating on the western portion of the Balboa Peninsula in 2015. The service area expanded eastward from the Newport Beach Pier in July 2016 to include the entire peninsula, as shown in the adjacent map. The service area is approximately four miles long and generally less than 0.5-mile wide.



Manhattan Beach Downtowner -

began operating a six-month service demonstration in February 2017 using six (6) Gem Cart six-passenger vehicles. The fare-free service is hailed directly by users with the Downtowner mobile app. Service is available daily from 11:00 am until 11:00 pm within in a wedge-shaped one square mile service area extending 1.8 miles north-south between El Porto and 1st Streets; and 0.4-mile to 0.9-mile east-west between the beachfront and Pacific Avenue.

The Manhattan Beach City Council approved the pilot program in June 2016, in response to growing concerns about congestion at busy beach-side parking areas. Many downtown businesses, along with the Downtown Manhattan Beach Business and Professional's Association, advocated for service during peak shopping and dining times. Advertising sponsorships for the initial fleet are sold out quickly.



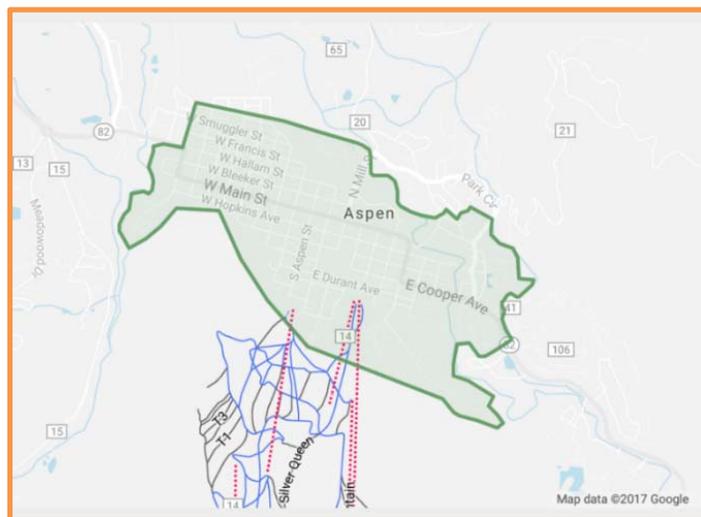
Tampa Downtowner - New microtransit service began operating in October 2016 with 12 six-passenger electric Gem Carts operating on demand within a 2.3-square mile service area in Downtown Tampa. Coverage extends about 1.5 miles north-south between I-75 and Harbour Island; and 1.5 miles east-west between North Avenue and the Ybor Channel. The service area includes the central business district, Tampa Convention Center, University of Tampa campus, Florida Aquarium, Amalie Arena, cruise ship terminals in the Channel District, and Harbour Island hotels and condominiums, remote parking lots and the Marion Transit Center. The vehicles are permitted on all streets and roads where the speed limit is below 35 mph.

The service is available to fare-free to customers by direct hailing a ride using a mobile phone application with Android and i-Phone versions. Tipping is permitted and Downtowner drivers are trained as Tampa tour guides enhance customers’ travel experience. Service is available from 6:00 am to 11:00 pm on weekdays, and from 11:00 am to 11:00 pm on weekends. The pre-start up ridership estimate was 860 riders a day, or about 26,000 per month.



The service is provided by Downtowner Inc. through a sponsorship agreement with the Downtown Tampa Partnership, an organization of over 200 companies and individuals from the business and development community, including public, private and non-profit sector professionals, property owners and others interested in the future of Downtown Tampa. The first-year operating budget is \$1.0 million, of which the City of Tampa is contributing about \$560,000 of Downtown and Channel District community development funds. The Florida Department of Transportation is contributing \$150,000 for three years. The business plan anticipates that the service will pay for itself through sponsorships and advertising.

Aspen Downtowner – In cooperation with the City of Aspen, Downtowner and Smarking, a parking data management provider, are collaborating to implement a holistic travel demand management plan to address congestion in downtown. Downtowner service was introduced in 2016 and is available daily from 11:00 am to 11:00 pm in the area shown on the adjacent map. Coverage extends about 0.8 mile north-south and 1.5 miles east-west across the Downtown grid from the Roaring Fork River to the base of Ajax Mountain.



eTuk Denver - etuk Denver operates seven etuks mostly in the Lower Downtown (LoDo) and River North (RiNo) entertainment districts adjacent to Downtown Denver. The on-demand service is directly hailed with either a mobile phone application, or like a taxicab, and is fare-free. On first Fridays and every Saturday of the month, eTuk has designated stops in RiNo to allow visitors to

explore the entire neighborhood without having to worry about parking multiple times. eTuk Denver also offers sightseeing and brewery tours.

eTuk USA manufactures and distributes small three-wheel electric vehicles known in Asia as a tuk-tuk or electric rickshaw. These vehicles have a cruising speed of 25 miles per hour and can operate for up to 50 to 80 miles between charges, depending on battery selection. Vehicles charge for eight hours on standard 110- to 220-volt systems and garner 60-mile ranges. The vehicle



frames are imported from Thailand, and most other parts manufacturing and final assembly occur in Denver. Two passenger models are available: the eTuk Classic seats three passengers; and the eTuk Limo seats six passengers with two bench seats facing each other. The vehicles are also customized for mobile vending and delivery.



## 4.0 DEMAND / RIDERSHIP ESTIMATES

This sections presents a commentary on high-level demand/ridership estimates based on a three-fold approach

1. A review of trip generation rates from various development types specifically in the CtrCity service area;
2. A profile of parking lot utilization; and
3. Empirical (and anecdotal) research from case studies including demonstrable experience of downtown/area-specific community shuttle operations.

**Trip Generation Model:** The review of trip generation rates provided for cursory research into the range of development types and subsequently an indication of the total number of daily trips generated in the study area.

Exhibit 4-1 presents the assumptions and calculations incorporated in the trip generation model. As illustrated, approximately 22,000 total trips may be anticipated by the respective developments

(including those proposed). Transit mode split ranges dramatically throughout urbanized areas from 37 percent in Washington, DC and 35 percent in Boston to 2 percent in Indianapolis and 3 percent in Dallas. That said, ancillary services such as microtransit in the CtrCity area may target in the .5 to 1 percentage range or 110 to 220 trips per day.

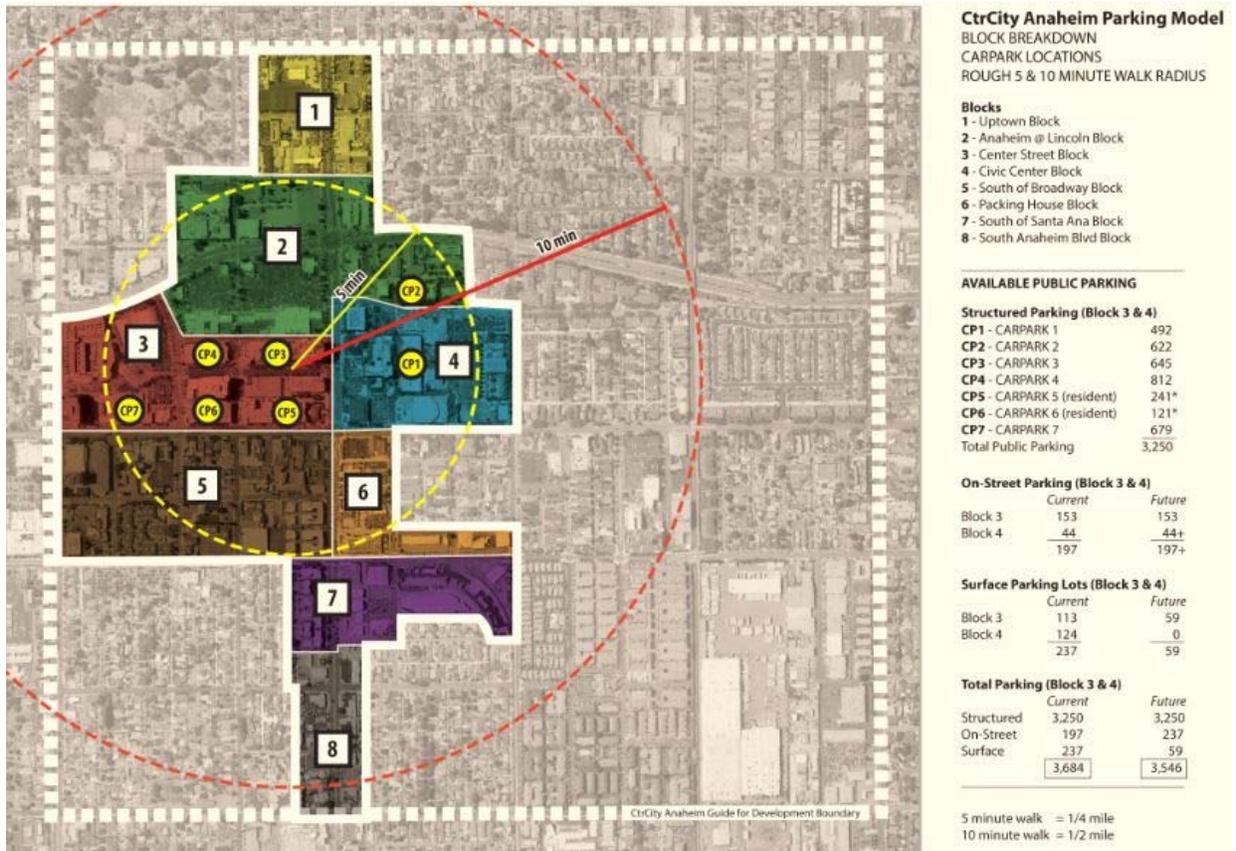
**Exhibit 4-1: Anaheim CtrCity Trip Generation Model**

Property / Development Type	# of Rooms	Retail/Restaurant Square Footage	Health / Institutional / Office	Residential - Multiple Dwelling Unit (>20 units/acre)	Total
CtrCity Retail, Restaurants/Beverage (+BARN)		70,000			
Packing House		42,000			
Health/Office/Institutional (i.e., MUZEO, City Hall, St.Joseph Healthcare, Senior Community Center, etc.)			500,000		
Leisuretown		32,000			
Brewery District	120	59,500			
Hotels	420				
Residential				1,500	
<b>Total Development Units</b>	<b>540</b>	<b>203,500</b>	<b>500,000</b>	<b>1,500</b>	
Development unit of measurement	Room	1,000 sq. ft.	1,000 sq. ft.	Dwelling Unit	
Trip generation rate	0.6	5	0.04	0.58	
<b>Average Daily Trips Generated</b>	<b>324</b>	<b>1,018</b>	<b>20,000</b>	<b>870</b>	<b>22,213</b>
<b>Percent of Total Trips</b>	<b>1.5%</b>	<b>4.6%</b>	<b>90.0%</b>	<b>3.9%</b>	<b>100%</b>
<b>Distribution of Daily Trips Generated</b>					
CtrCity Retail, Restaurants/Beverage (+BARN)	0	350	0	0	
Packing House	0	210	0	0	
Health/Office/Institutional (i.e., MUZEO, City Hall, St.Joseph Healthcare, Senior Community Center, etc.)	0	0	20,000	0	
Leisuretown	0	160	0	0	
Brewery District	72	298	0	0	
Hotels	252	0	0	0	
Residential	0	0	0	870	

While the above noted trip generation calculations reflect development types and inputs including square footage, number of units, etc., it is equally important to acknowledge population figures of other market segments including: the presence of major employers (Anaheim City Hall/2,900 employees, St. Joseph Heritage Medical/800 employees, and Walt Disney Travel Co./500 employees); and the Downtown Community Senior Center, serving over 3,000 seniors.

**Parking Lot Utilization:** Exhibits 4-2 and 4-3 illustrate the location and number of parking spaces in the CtrCity (structured, on street and surface lots) and Packing House surface lots respectively.

### Exhibit 4-2: CtrCity Parking



Source: City of Anaheim

### Exhibit 4-3: Packing House Surface Parking



Source: City of Anaheim

An analysis of preliminary parking lot utilization data provided by the City of Anaheim’s Community and Economic Development Department is summarized as follows:

	<b><u>Packing House Surface Lots</u></b>	<b><u>CtrCity Parking Structures</u></b>
Sunday	exceeds 140% - mid-day	ranges from 10% to 60% - mid-day
Mid-Week	reaching 120% - evening	daytime – reaching 80-% to 90% evening – declines below 60%
Saturday	exceeding 140%	less than 40%

In short, the greatest demand for parking at the Packing House surface lots correspond directly to the availability of parking at CtrCity parking structures. Hence, validating the understanding of utilizing the availability of CtrCity parking structures for remote Packing House parking. Further, the utilization rates indicate an opportunity to provide alternate transportation/mobility options to access both CtrCity and the Packing House areas.

**Industry Experience:** Empirical (and anecdotal) research from case studies (as presented in Section 3.1) provides for a range of operating performance experience. Industry experience includes both conventional transit shuttles proven to be sustainable over time, as well as more recent collaborations between public entities and private microtransit providers that may yet prove to be sustainable over time.

Shuttle operating performance is influenced by specifics of their respective operating environments including: community demographics; parking availability and pricing policies; public policy considerations; area attractions (and trip generators); and shuttle operating characteristics including levels of service, frequency, hours of day, days of week, pricing/fare policy, etc.

Conventional transit shuttle ridership experience ranges from close to 46 trips/hour for Laguna Beach Transit’s festival Trolley to 7.2 trips for hour for San Diego’s Bayfront Shuttle. Microtransit providers including Downtowner services are reported to provide 12 to 20 trips per hour.

The City of Anaheim, in partnership with Anaheim Transportation Network’s 2016 OCTA Project V application for an ARTIC to Downtown “CtrCity” Anaheim route estimated ridership at 6 boardings per hour within twelve months of operation, and 10 boardings per hour within 24 months of implementation.

#### **4.1 CtrCity Ridership Estimates**

Based on the aforementioned (outcomes from trip generation model, a review of current parking utilization and industry experience) a scalable service delivery model as presented in Section 6 will yield initial ridership of 8 to 10 riders per hour within the first twelve months of operation and 12 to 15 riders per hour within twenty-four months of operation. Based on the level of service presented in Section 6 (Conceptual Plan), an average of approximately 4,800 trips per month will be provided within the first twelve months of operation and an average of 7,200 trips per month by the second year of operation. The first year of operation will result in approximately 57,600 trips.

## 5.0 ALTERNATE DELIVERY CONCEPTS

The following alternate delivery concepts were considered for application in the CtrCity service area:

**Direct hailing – purely demand responsive:** Demand-response transit are transportation services in which individual passengers can request a ride from one specific location to another specific location at a certain time. Vehicles providing demand-response service do not follow a fixed route, but rather travel throughout the community transporting passengers according to their specific requests. Direct hailing (e-hailing) would take the form of real-time ridesharing (also known as instant ridesharing, dynamic ridesharing, ad-hoc ridesharing, dynamic carpooling is a service that arranges one-time shared rides on very short notice. This type of carpooling generally makes use of three technological advances:

- GPS navigation devices to determine a driver's route and arrange the shared ride
- Smartphones for a traveler to request a ride from wherever they happen to be
- Social networks to establish trust and accountability between drivers and passengers

These elements are coordinated through a network service, which can instantaneously handle the driver payments and match rides using an optimization algorithm. Examples include Carma Carpool, Lyft, Uber, Sidecar, Downtowner, The Free Ride, and Wingz.

Anaheim residents and visitors would be able to sign up for a ride via an app on their smartphone and within the CtrCity service area, a driver will typically respond within 3 to 4 minutes. If they don't have a phone, riders would be able to hail one of the vehicles from a street corner and at key areas on Center Street, the Packing House or the future Brewery District, for example. For demonstration purposes, the boundaries for an initial area of service may be Harbor Blvd., to the west, Lincoln Ave. to the north, Olive St. to the east and South St. to the south.

Direct hailing (e-hailing) service could be operated directly by ART or through a third-party contract administered by ART/ATN.

**High frequency (10 minutes) – fixed-route shuttles – trolley, small bus or GEM Cart/e-Tuk:** Fixed-route services include any transit service in which vehicles run along an established path at preset times. Typically, fixed-route service is characterized by printed schedules or timetables, and designated bus stops where passengers board and disembark. Near-term routing may include the immediate CtrCity area covering the .6 mile distance from the loop on Center Street



Promenade (west of Clementine St./at the BARN/ICE) to Anaheim Blvd., and south to the Packing House/Santa Ana Street.

A longer term prospect for high frequency fixed route service may be a pilot for the use of autonomous/connected vehicles.

**Hybrid - flex route:** Incorporating elements of, but are not exclusively fixed-route or demand-responsive models. High-frequency fixed route service within a defined zone (immediate CtrCity area covering the .6 mile distance from the loop on Center Street Promenade to Anaheim Blvd., and south to the Packing House/Santa Ana Street) with a set of specific stops. A “point deviation” component would enable accommodating e-hailed trip requests within a broader service area (i.e., Harbor Blvd., to the west, Lincoln Ave. to the north, Olive St. to the east and South St. to the south)

The hybrid model is discussed further in Section 6.0 below.

## 5.2 Ancillary Considerations

While not germane to specific microtransit concepts for the CtrCity area, future consideration should be given to additional mobility management concepts including Carshare and bike share programs.

**Carshare services** allow the short term use of small cars for short trips on an as needed basis. Drivers can sign up for pay-per-ride access to a fleet of cars that will be parked on public streets and available to rent using a smartphone app. Customers will be able to swipe a badge to unlock the car, drive to their destination and leave the car parked in any public parking space. Examples include the car2Go and Zipcar programs.



**Bikeshare program** whereby a subscriber takes a bike out of one station and can dock it at any other station in the system. Short trips are free, with longer trips progressively costing more. This helps ensure that trips stay short and that there are a plentiful number of bikes for new customers. We understand the previously failed experience of Bike Nation in Anaheim. Opportunities to revisit this concept in the CtrCity area may be prudent.



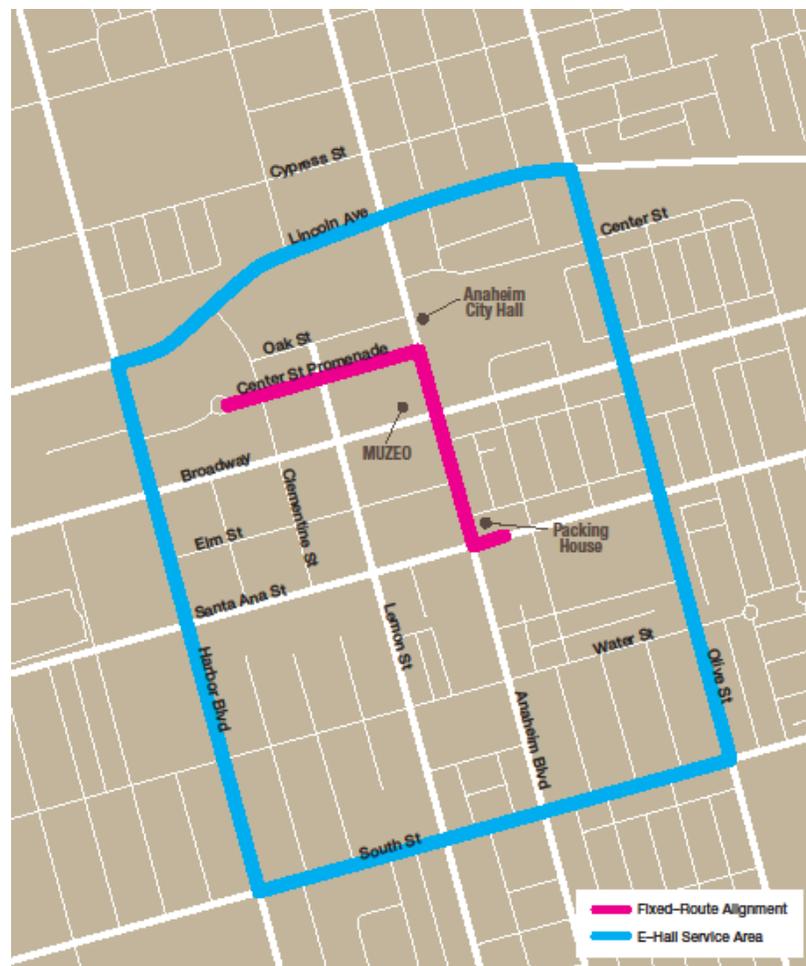
## 6.0 CtrCity CONCEPTUAL PLAN – A PREFERRED APPROACH

Based on outcomes as articulated in previous sections, the following presents a preferred conceptual plan for microtransit service in the CtrCity area. This section provides a description of the preferred service delivery type, operating characteristics and preliminary cost estimates.

### 6.1 Operations / Service Delivery

The preferred approach is that of a hybrid – flex route incorporating elements of, but are not exclusively fixed-route or demand-responsive models. High-frequency fixed route service within a defined zone (immediate CtrCity area covering the .6 mile one-way distance from the loop on Center Street Promenade (west of Clementine St. /at the BARN/ICE) to Anaheim Blvd., and south to the Packing House/Santa Ana Street) with a set of specific stops. A “point deviation” component would enable accommodating e-hailed trip requests within a broader service area (i.e., Harbor Blvd., to the west, Lincoln Ave. to the north, Olive St. to the east and South St. to the south), as illustrated below.

**Fixed-Route and e-Hail Trip Request Service Area**



An initial deployment/pilot service would be provided within the following operating parameters:

Days of Week	Hours of Operation	Frequency	Revenue Hours
Mon.-Thurs.	10:00am to 7:00pm	10 min.	36 rev. hrs.(x 2 vehicles) = 72
Friday	10:00am to 11:00pm	10 min.	11 rev. hrs. (x 2 vehicles) = 22
Saturday	10:00am to 11:00pm	10 min.	13 rev. hrs. (x 2 vehicles) = 26
Sunday	10:00am to 7:00pm	10 min.	9 rev. hrs. (x 2 vehicles) = 18

The above level of service translates to 138 revenue hours per week or approximately 7,200 annual revenue hours.

The CtrCity service area and projected ridership demand estimates are conducive to a four to six passenger shuttle vehicle such as those operated by *Downtowner, Inc.*, *The Free Ride (TFR)* or *eTuk USA*.

Entering into a contractual arrangement with *Downtowner, Inc.* or *The Free Ride* provides the ATN an opportunity to facilitate a cost-effective and ‘fun’ microtransit (demonstration project) solution that is fully scalable. The scalability is an important element in order to gauge customer acceptance and use of a local circulator service and adjust levels of service accordingly.

It is important to ensure the operation of Gem Cart services are in full compliance with City ordinances.

**Fares/Fare Policy:** Consistent with the preferred operating framework, similar microtransit operating examples, and the business model of *TFR* or *Downtowner* services, CtrCity shuttle services would be fare free.

## How It Works

1

Use Mobile App or Website To Request A Ride  
OR  
Head to a Hot Spot Waiting Zone  
OR  
Wave a Car Down Anywhere in the Coverage Area



2

Driver Confirms that he/she is on the way!



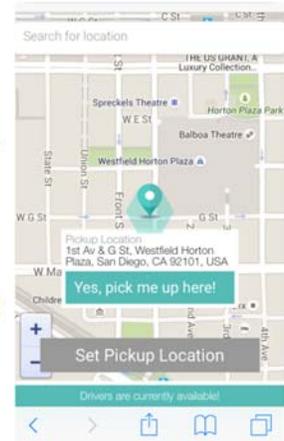
3

Passenger Gets a Free Ride  
Anywhere within the coverage area.



**Technology:** In many ways, the scheduling and dispatching software that is at the heart of most demand-responsive transit operations today is the forerunner of the dynamic technology TNCs and microtransit companies use to make on-demand mobility a reality. Software applications allow riders to determine availability of service and book a trip. On the back end, service providers can also match these user inputs with available vehicles and drivers to provide the most efficient trip.

- Mobile Ride Request App
- Ride Request App is also available as a web-based service for people without smart phones.
- Data is tracked for # of rides, locations, durations, # of riders, times of day, etc.
- Key Spots or waiting areas allow passengers to find the cars without the App. This also helps market the service and reduce battery waste.



In the future, it is possible that the same technology will allow the incorporation of self-driving/autonomous vehicles to further enhance the efficiency of these options.

## 6.2 Preliminary Cost Estimates

The business model for *TFR* or *Downtown* services is such that free rides are provided with revenue (and profit) generated through sponsorships and advertising<sup>1</sup>. The former may include municipal contributions.

Preliminary cost estimates are based on the following (approximate) monthly costs:

- Typically \$3k to \$4k per month per vehicle – operating (depending on number of revenue hours or hours of operation).
- \$4k per vehicle per month - capital

A CtrCity microtransit concept providing close to 7,200 annual revenue hours of service would result in a total annual cost of approximately \$192,000 (inclusive of operating, capital and technology costs) or close to \$27.00/hour. Based on the ridership estimates presented in Section 4.1, this microtransit concept results in a cost per trip of approximately \$3.33.

**Transit agency cost comparison:** For comparative purposes, the following presents capital and operating cost estimates for ART/ATN to operate a comparable level of trolley service:

- a. Capital Cost:
  - Low or zero emission trolley vehicle: \$360,000.
  - Life-cycle cost (10 years) = \$36k/year or \$3k/month
- b. Operating Cost:
  - Fully loaded = \$57.00/hour (labor = \$31.25/hour)

<sup>1</sup> The Manhattan Beach example – their first year of sponsorship/advertising has been sold out.

To provide a comparable level of ART operated service, an annual preliminary cost estimate is calculated as follows:

- Capital Cost: 2 vehicles at \$36k/year each = \$72k.
- Operating Cost: \$57./hour x 7,200 annual hours = \$410,400.
- Total Annual Cost: \$482,400 [\$67./hour]

Based on the ridership estimates presented in Section 4.1, cost scenario results in a cost per trip of approximately \$8.37.

Note, these cost estimates do not include the cost of required e-hail technology.