



**CENTRAL TEXAS
Regional Mobility Authority**

September 7, 2016
AGENDA ITEM #19

Wire One Austin, Presentation by Jared Ficklin as requested by Board Members David Armbrust and Nikelle Meade

Strategic Plan Relevance: Regional Mobility
Department: N/A
Contact: David Armbrust, Board Member
Nikelle Meade, Board Member
Associated Costs: N/A
Funding Source: N/A
Action Requested: None.

Summary:

Wire One Austin, Presentation by Jared Ficklin regarding urban cable.

Backup provided: Board presentation
Wire One Austin: An Urban Cable Mass Transit Vision

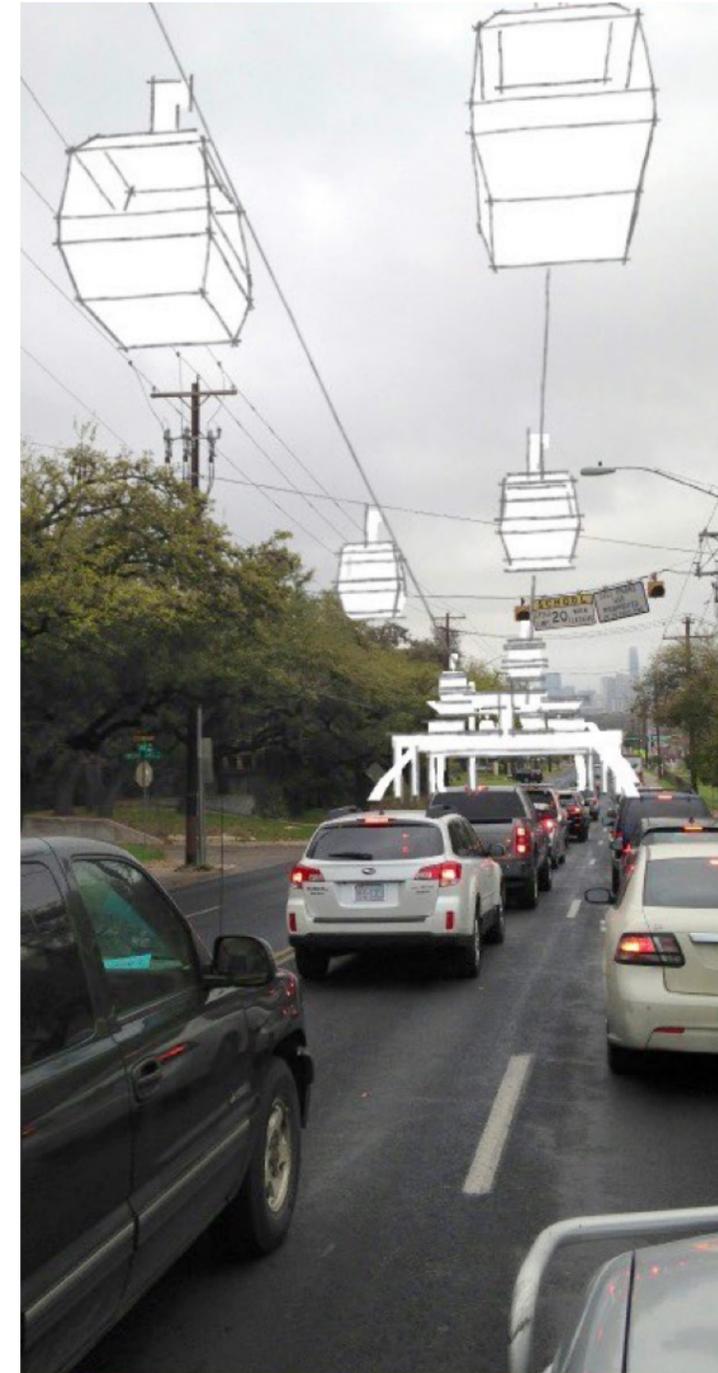


WIRE ONE AUSTIN

An Urban Cable Mass Transit Vision
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THE SHORT CASE FOR URBAN CABLE

South 1st is at capacity, the congestion point for a downtown commute now begins at Ben White. Urban Cable offers an affordable, culturally compatible way to add capacity.



AFFORDABLE

Cost similar or lower than the Red Line
Low cost per rider
Functions like an inexpensive subway

COMPATIBLE

A Mass Transit artery into downtown
Serves downtown commuters
Allows redeployment of bus lines
Predictable Trip Times
Easily included in multi-modal routing
Safe & easy for mobility impaired
Faster than bus

SUSTAINABLE

Removes cars from congestion points
Can be carbon negative
Pedestrian & Bike friendly

ADOPTABLE

Serves tourism
Predictable Trip Times
Safe & easy for mobility impaired
No schedule
Personal space
Climate controlled

URBAN CABLE HAS WORLDWIDE DEPLOYMENTS

Urban Cable has been used around the world including in the U.S. In the modern era there has been a surge in new deployments in Europe, Asia & South America that use Urban Cable as a form of Mass Transit across a wide variety of geography.

The same strengths that help urban cable bridge valleys or cross rivers at low cost are being recognized for their ability to bridge features of urbanization. Such as connecting walkable districts or opening up capacity in areas that are already at high density. A 22 lane freeway or natural greenbelts or rivers can be crossed for little or even no additional cost.

Mid-sized Cities with pre-automotive history are primed for the benefits. Especially those cities that have a dense core and are seeing the urbanization of the first suburbs. Or divided by rivers, freeways or pushed against waterfronts. Cities with need for a circulator at lower cost than subway.



Venlo, Netherlands

The city center and an park area that hosts festivals are connected.



Barcelona, Spain

Two walkable museum districts are connected over a forested park.



Medellin, Columbia

Three lines connect exterior neighborhoods with city center transit lines. Hundreds of thousands of commuters ride Metro Cable daily.

KEY ATTRIBUTES

1,200 people per hour, per direction.
With expansion to 3,600 PPPHD possible.

Like 25 full busses stopping every hour



New capacity added to a route that commuters already use. A central route that can grow into a central circulator.

At last traffic count 30,000 cars a day use this route for a commute into & out of downtown. With the closure of MoPac this number has increased with drivers using South 1st as an alternative route.



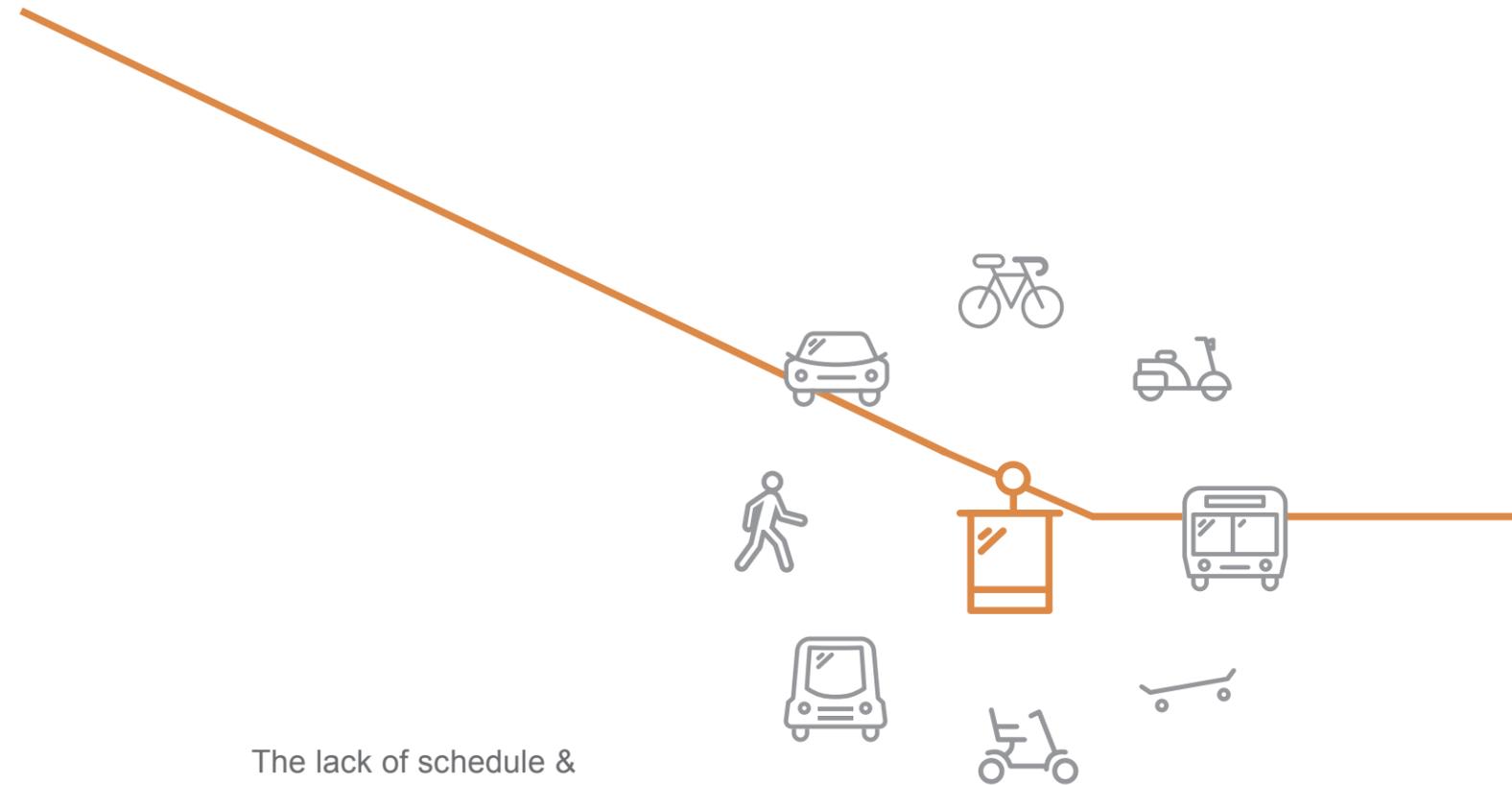
Wire One removes vehicle traffic from peak congestion, eliminates micro trips, parking search trips & services tourism. A meaningful impact on the entire Core.



A 30% to 50% takeover of vehicle trips is possible

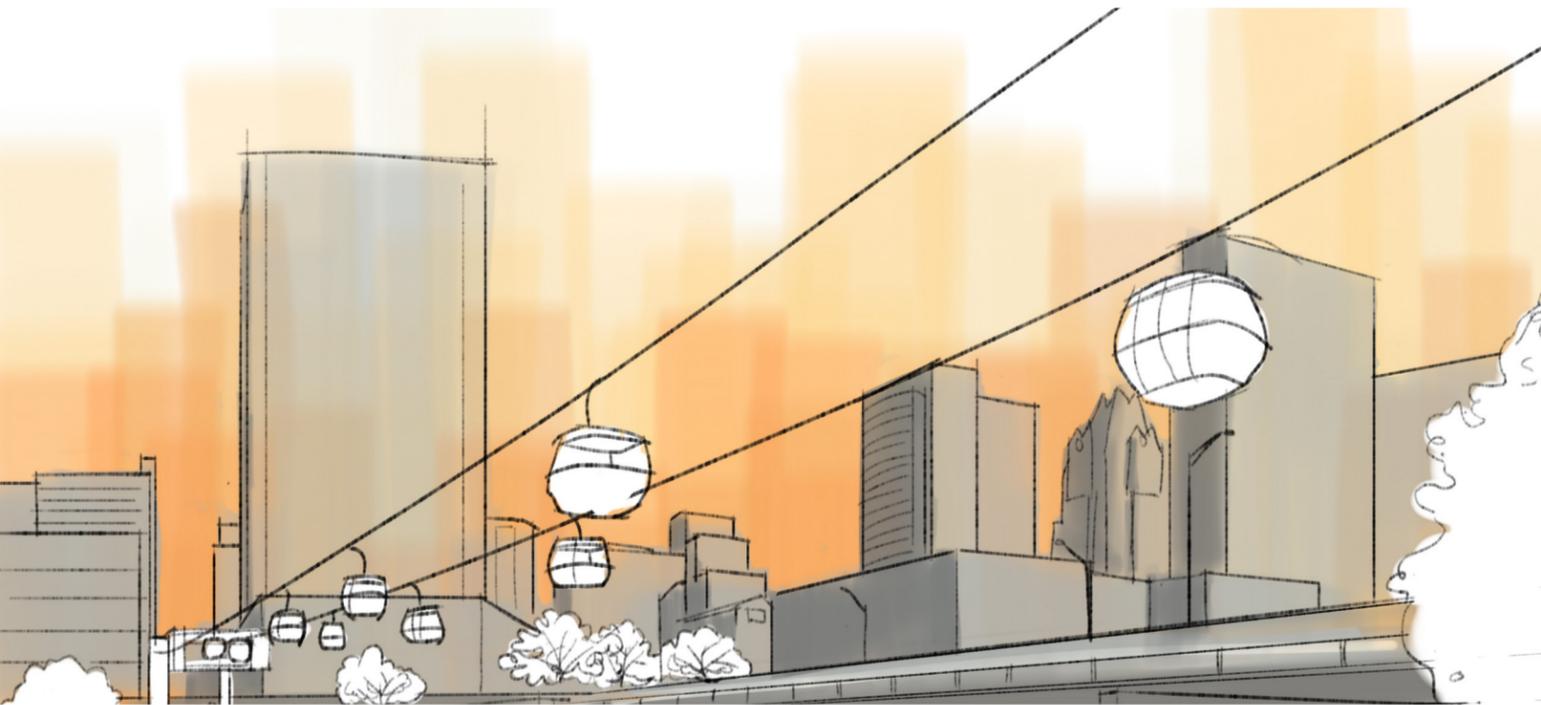
The lack of schedule & continuous operation encourages adoption without asking for cultural or demographic changes. Wire One is an amplifier for car share, biking & pedestrian travel. Wire One is an adaptable back bone for smart transit planning.

5% of residents living along South 1st commute without a car. Some bus commutes can take more than an hour.



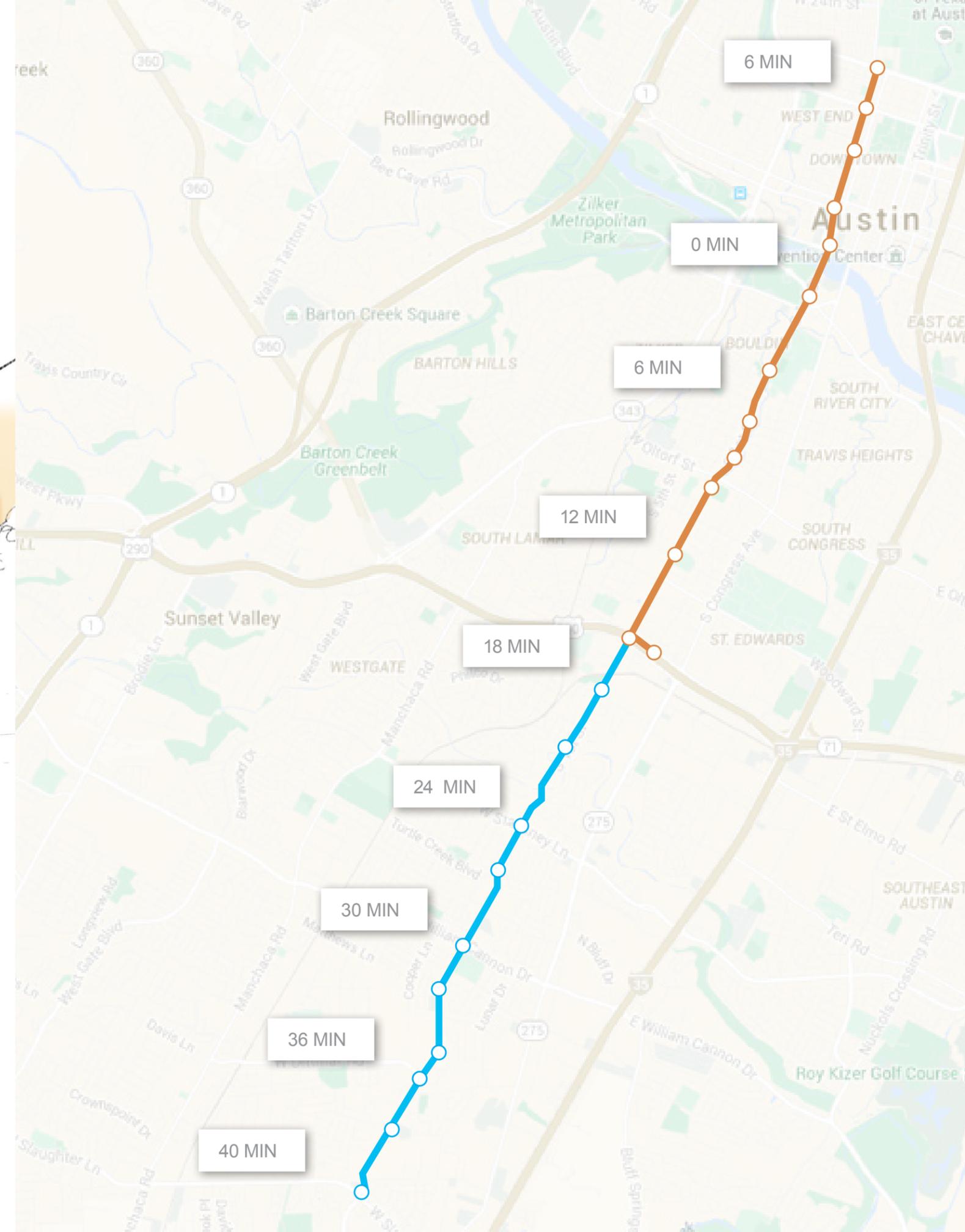
WIRE ONE OVERVIEW

Using High Speed Detachable Mono Cable



Target Capacity: 1,200 Persons Per Hour Per Direction
Expanded Capacity: 6,000 Persons Per Hour possible
19 hours per day run time

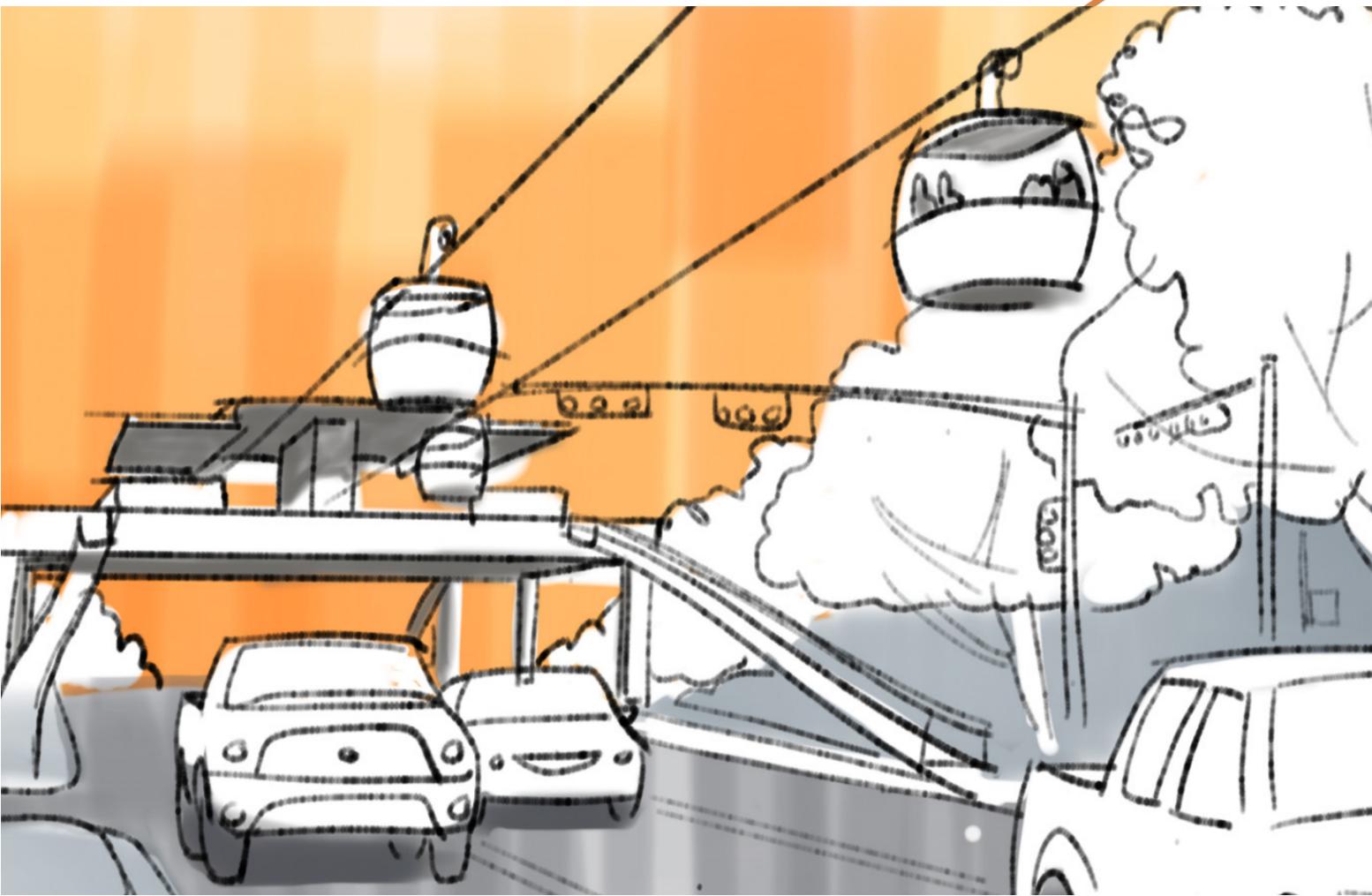
This map is an early draft. Locating stops is something that takes study.
But this is a good representation of what we could accomplish.



CAR PROFILE

Wire One would use 10 person cars similar to what is shown above except with added onboard climate control. Bicycles, strollers, scooters, walkers & wheelchairs can fit in the cabin.

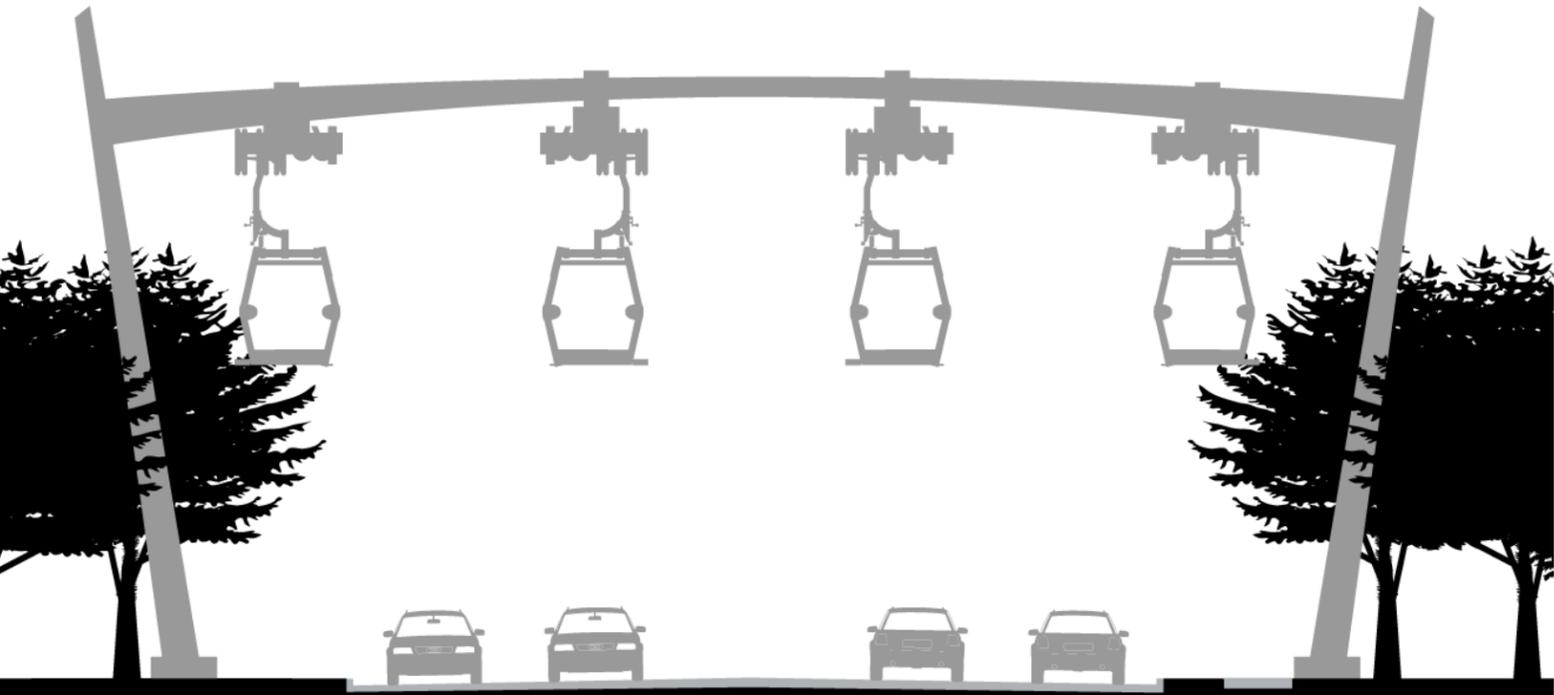
Cars would arrive at a station every few seconds. Boarding is across a flat level deck. There are station attendants to help monitor loading, but for the most part loading is continuous and does not require assistance.



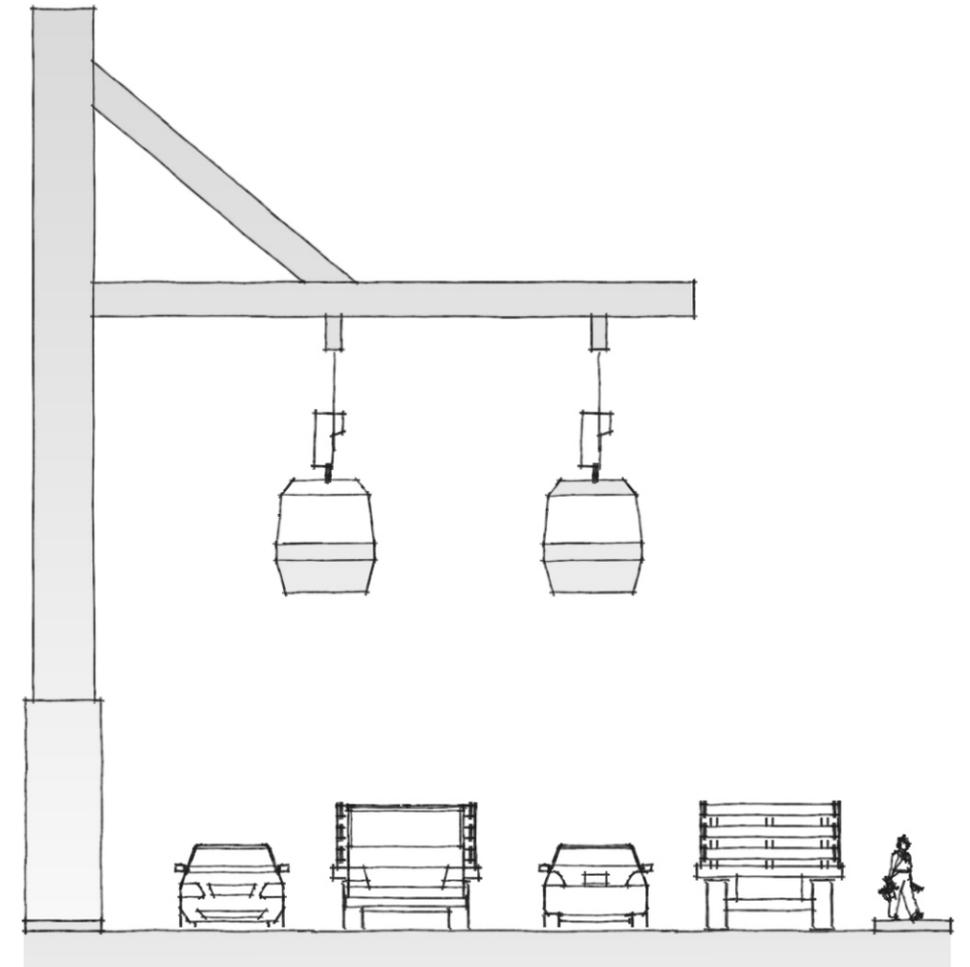
TOWER PROFILE

Wire One would use either cantilevered or bridged towers so the cars could use the eminent domain directly above south first.

This equipment is able to locate in the right of way beside the street without interrupting sidewalk service.

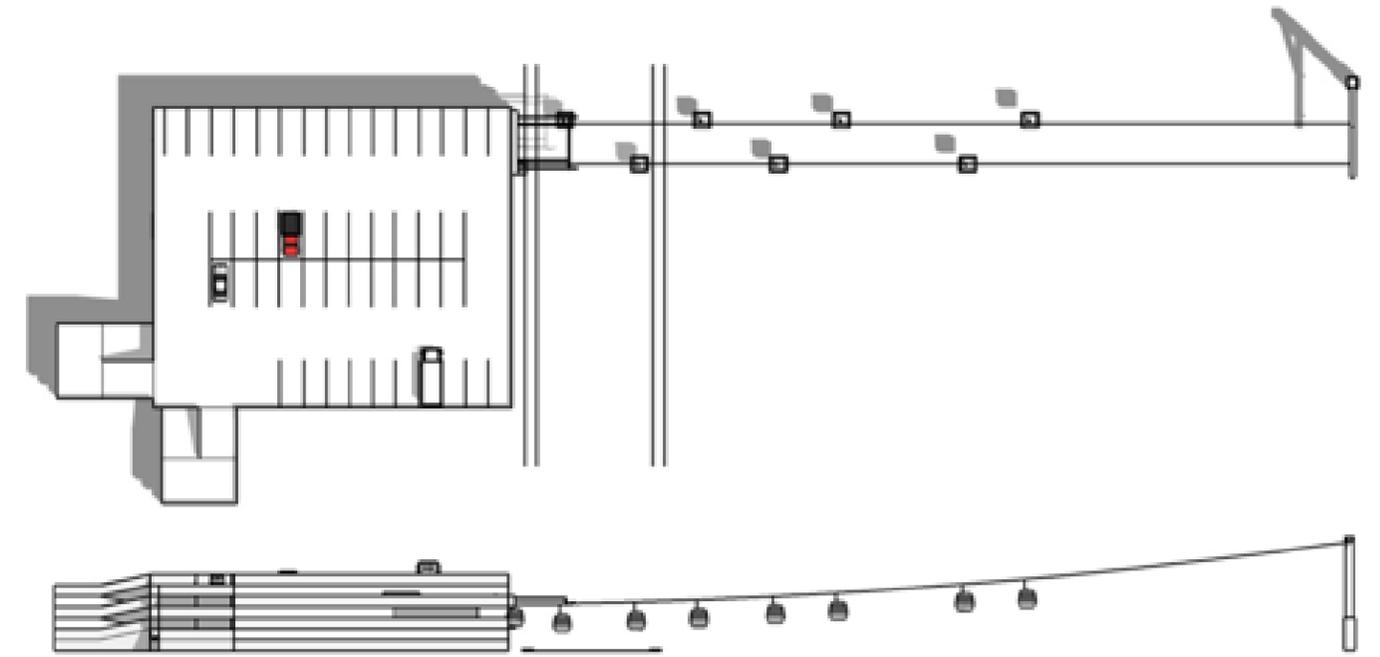


The tower bases themselves in most case are similar to what is used for freeway pylons or power service lines. Cars themselves require a small amount of horizontal clearance and vertical clearance is set by the route profile and safe transportation standards.



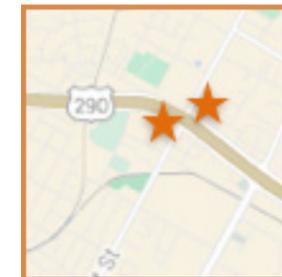
WIRE ONE PARK & FLY STATIONS

Urban Cable can be integrated into structures. For Wire One there are several areas that could be developed by public/private partnership into a combined retail and Park & Fly structure where there is retail and drive up parking on the ground floor with Urban Cable on the second story and garage parking above.

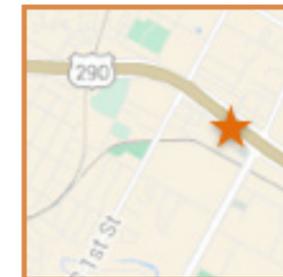


Park & Ride Station

With no schedule the normal drive, park, walk to office commute remains nearly the same with only minutes on Wire One connecting parking with the final walk to the office.



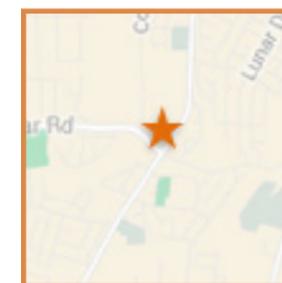
SW & NE Corner of Ben White & South 1st



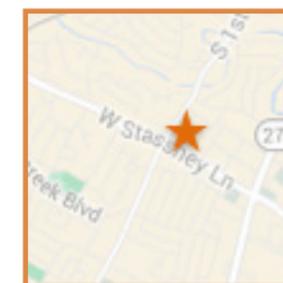
Overtop Ben White Bus Interchange



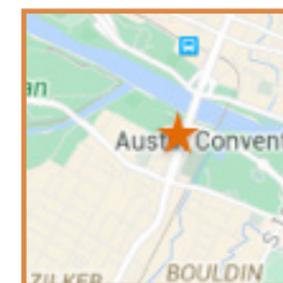
William Canon HEB Shopping Center



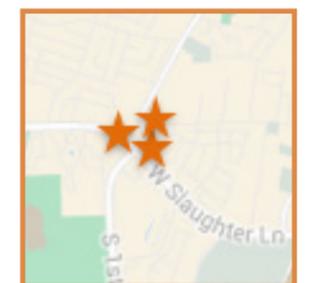
Dittmar & South 1st



Stassney & South 1st Retail Areas



Long Center

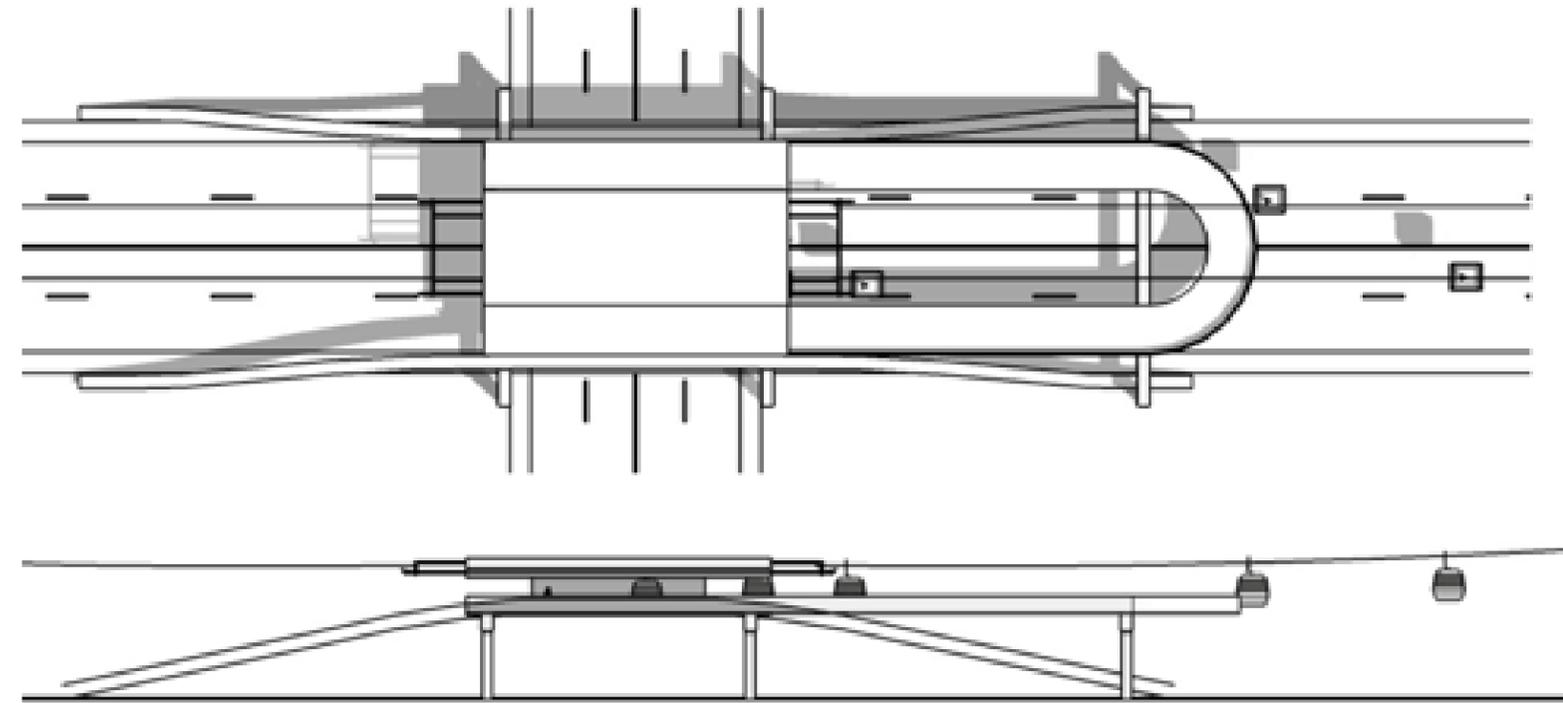


Slaughter Drainage, Red Barn or Car Wash

Examples of areas with Park & Fly potential & areas that have not undergone vertical development.

WIRE ONE PEDESTRIAN CENTERS

Urban Cable can locate over streets or intersections. Wire One would utilize these stations for local stops along South 1st. Such stations if designed correctly can also serve as pedestrian bridges. Ramps can be used for ADA as well as easy use for cycling.



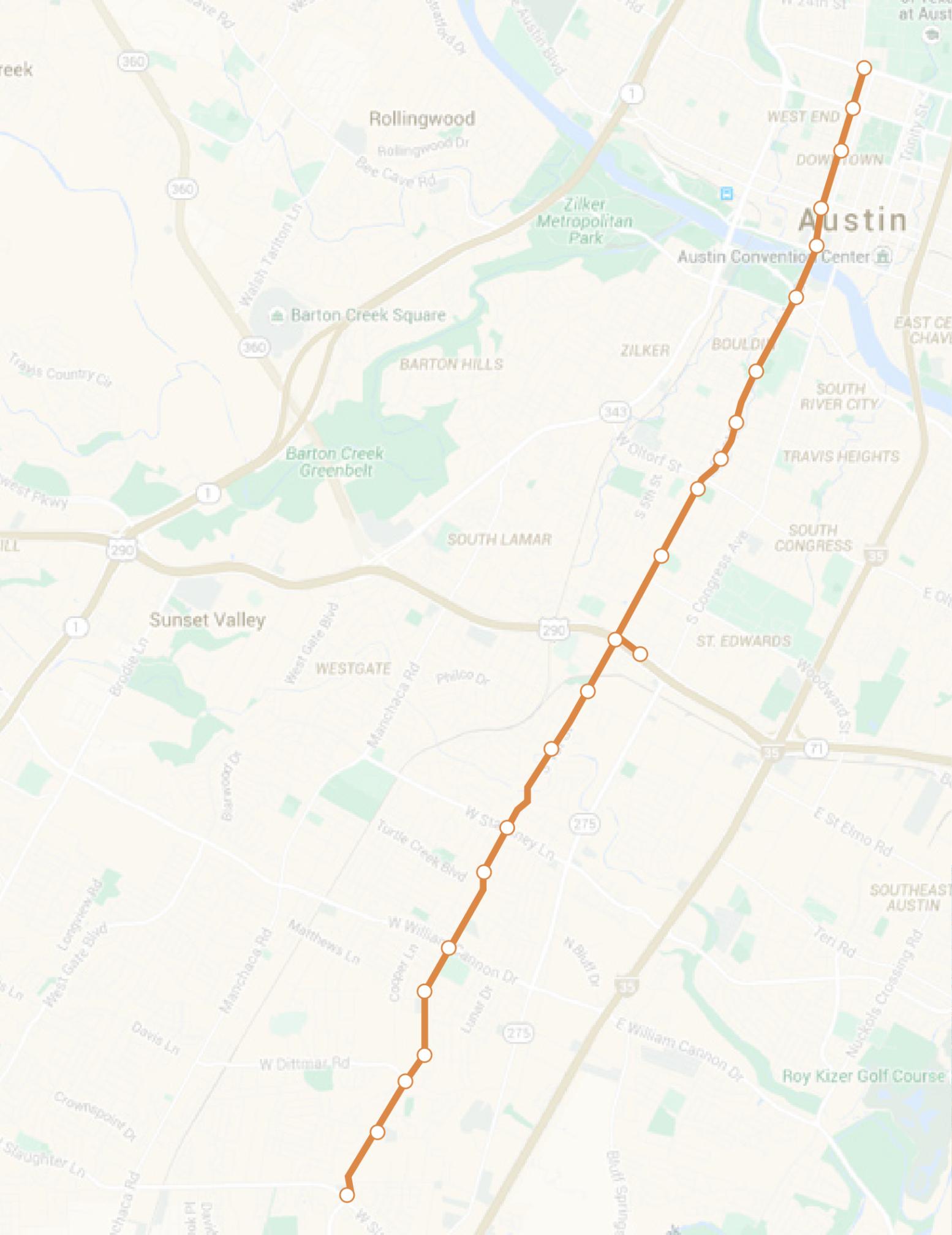
Elevated Station Type 2



A family with a stroller boarding a 6 person car in Zaragoza.



A cyclist boarding a 6 person car.



ROUTING WIRE ONE

Urban Cable offers low cost infill of Mass Transit without displacement. However Urban Cable lays out best in segments that are straight lines. There are cost savings when turns can be made at stops.

South 1st is less developed and has linear geography that favors Urban Cable. Wire One would be a back bone connecting Slaughter to South Campus adding capacity to a route heavily used by the central & southern core of Austin as the path into downtown.

Wire One can cover bus service on South 1st and could be tied into the bus interchange allowing bus re-deployment throughout south Austin to better serve adoption of Transit. Car share can also enjoy routing advantages as services can drop riders at stations rather than add to the congestion on routes into downtown.

Future lines could be added running east west or Point to Point to create Park & Fly or numerous connected walkable districts.





THE 290 BUS INTERCHANGE PARK & FLY



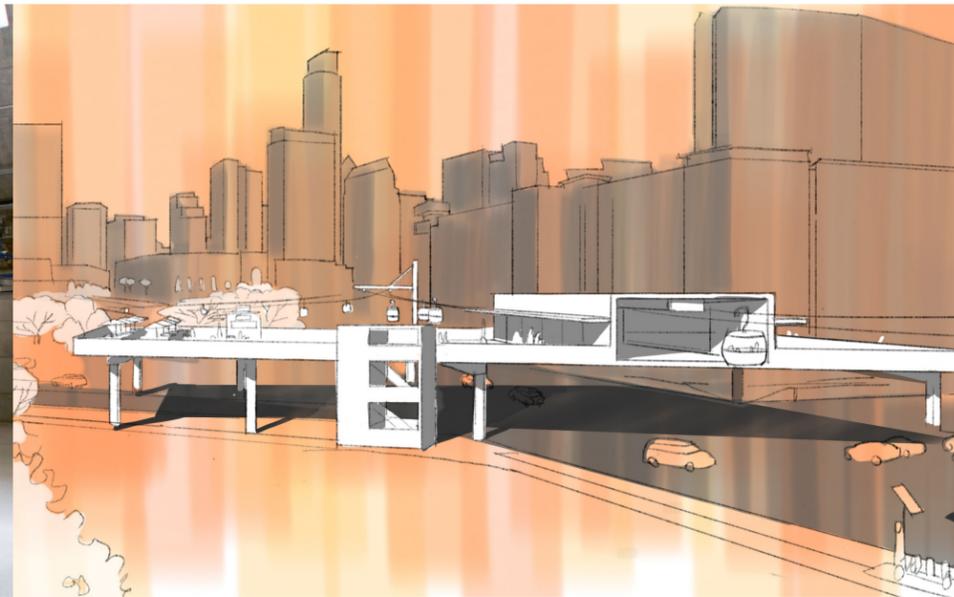
Wire One could overtop the main bus interchange on Ben White with a spur line or end line that connects to the Ben White Interchange. Passengers from buses could transfer to the Wire One into downtown and drivers could park above the bus interchange in order to avoid the wait into downtown or the average \$180 a month parking fees.



With the zoning in place this also a good location for the car service yard. This is where excess capacity is added and removed to a line as well as where cars can be pulled for cleaning and maintenance.

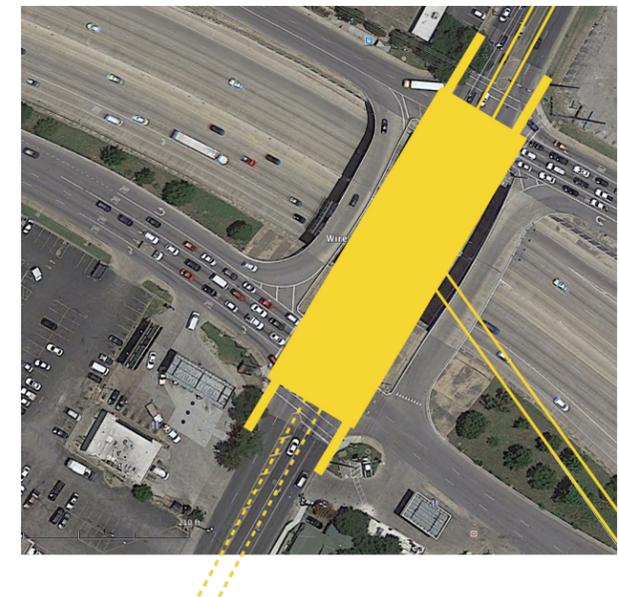


THE PALMER PEDESTRIAN CENTER



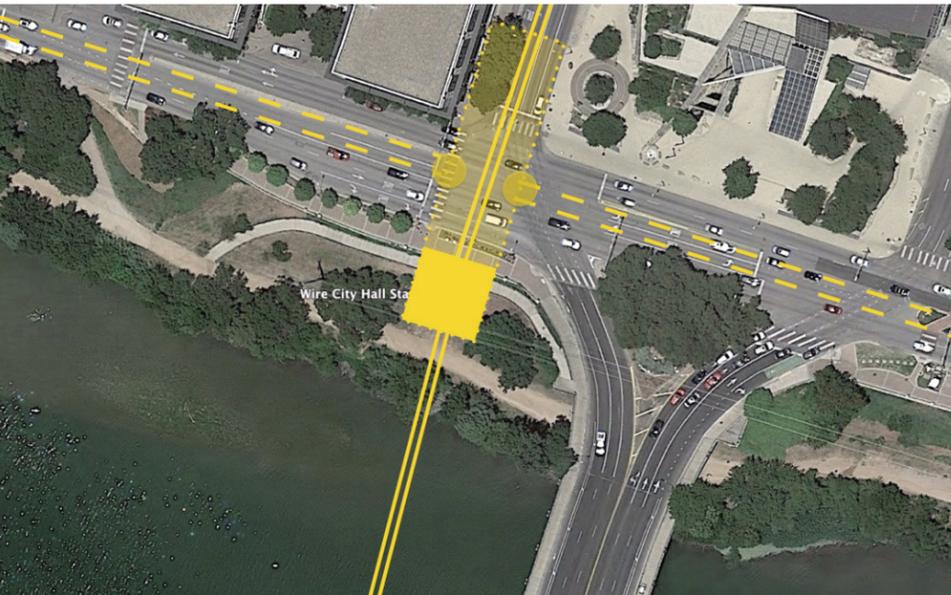
With its proximity to festivals & the Lady Bird Lake Hike & Bike this intersection is an ideal location to build up with a pedestrian center. The center would also allow ramps to bridge easily into one of the main entries for auditorium shores and the Long & Palmer Events Center.

The Pedestrian center could also serve the transfer crowds over the intersection as a large pedestrian bridge.e.





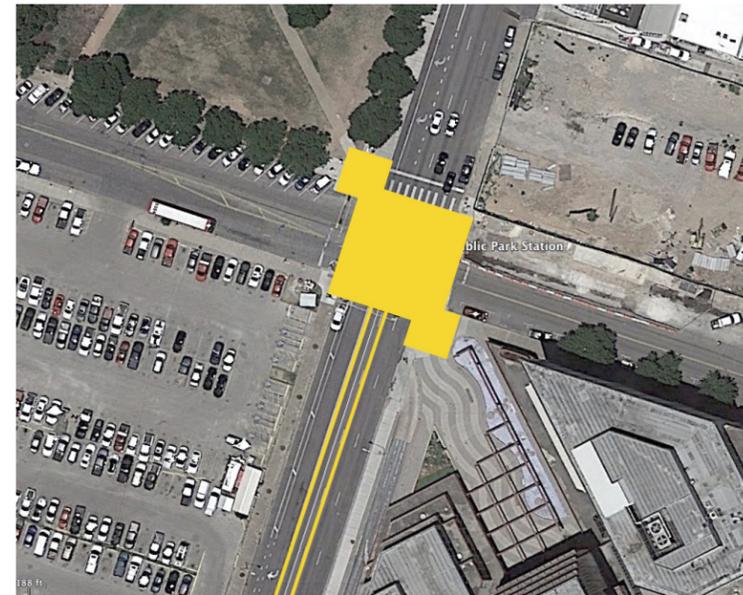
CITY HALL FUTURE INTERCHANGE



At City Hall Wire One shifts over the lake to line up with Guadalupe in order to provide downtown service without interrupting the Congress Avenue view of the capitol dome. This stop offers an opportunity to expand along Caesar Chavez. Starting as a pedestrian center and later becoming an interchange for a line that reaches from Airport to Zilker and the Grounds of ACL.



REPUBLIC SQUARE PARK



Of the Downtown Wire One stops this one is an important stop for tying into tourist activities. A major departure point for Zilker Shuttles during ACL and other activities.





Finally those neighborhoods have an important role in participating in the festival tourism of Austin.

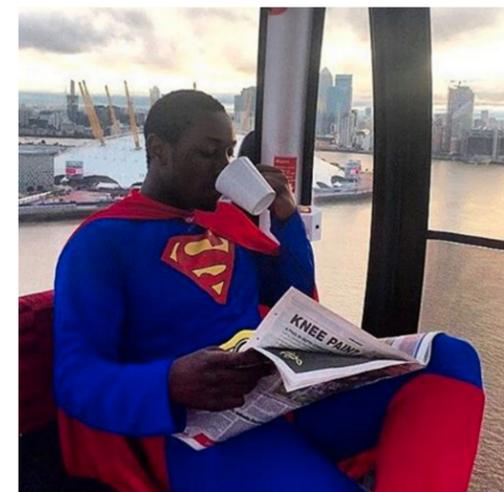
The three pillars of commuters, neighborhood micro-trips and supporting tourism will lead to a better adoption for Wire One than rail or bus.

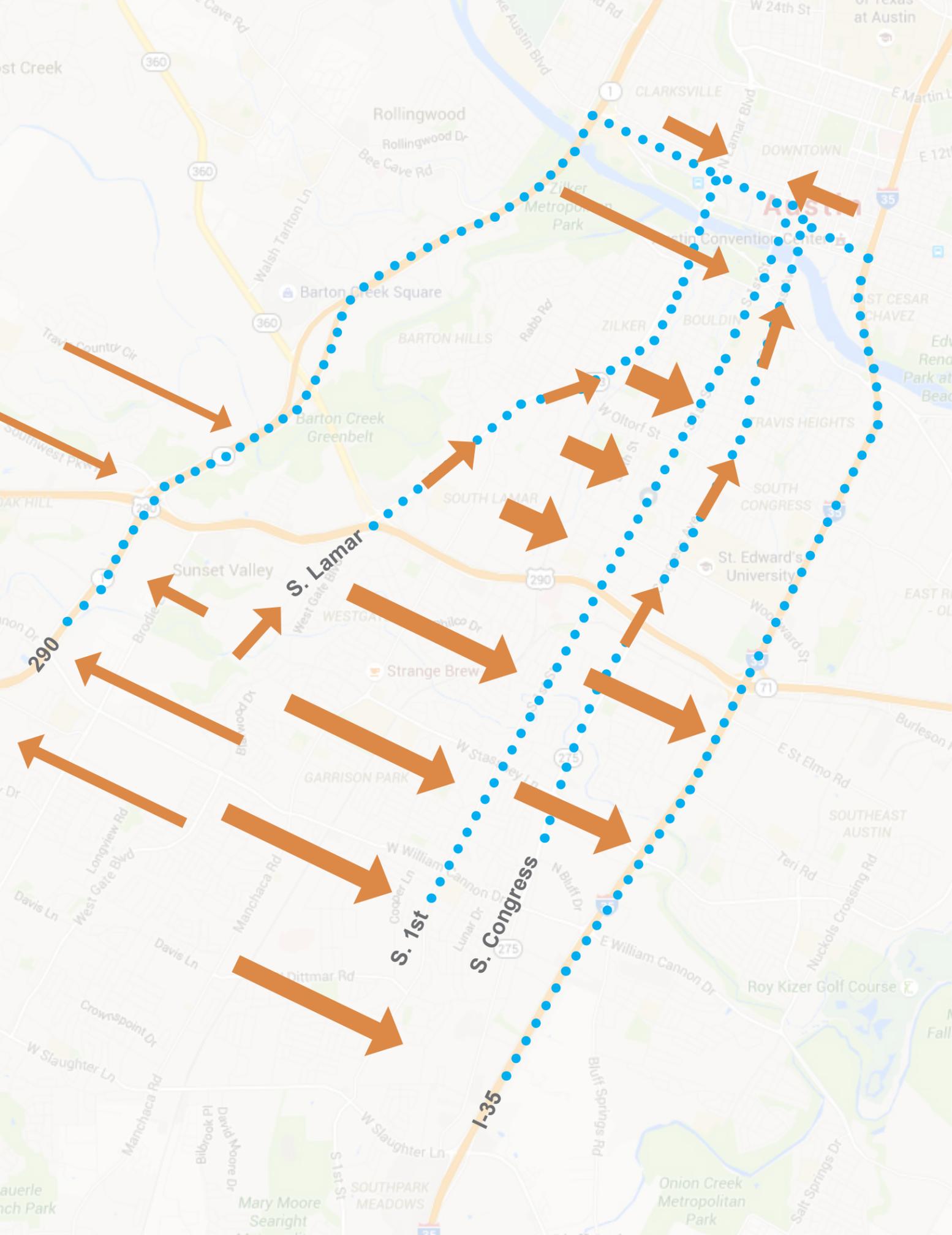
Last the continuous operation lends itself to easy inclusion in route planning software like that used by car share companies or integrations with multi-mode transportation systems & planning. The reach of Wire One will spread to anyone in South Austin planning a trip to Downtown or any destination along the line.

RIDERSHIP

Wire One fosters adoption by borrowing characteristics of the car culture discovered in research. Which is a lack of schedule & a greater availability of personal space. These are inherent in the continuous operation and smaller car design.

Ridership will also be boosted by the ability to locate Wire One on a route that commuters already plan around, South 1st. This makes adoption as an alternative to a car commute feasible. This makes the commuter a real source of ridership. Connecting walkable residential neighborhoods with a walkable downtown and the many shopping districts along South 1st will draw core ridership from the neighborhood micro-trips along Wire One.





CURRENT COMMUTING PATTERNS

**95% BY
CAR & 5%
BY MODES
OTHER
THAN CAR**

Time is an important consideration.
These are the Google/Waze shortest
routes & commuters follow.



WIRE ONE MONO CABLE

Travel Times by Car at 8:40am. As timed by Google Maps from points to City Hall. They do not include time in Downtown Congestion. Parking Time or Time Walking to Work.



vs.



Car times to downtown



Wire One Commute times to downtown



WIRE ONE MONO CABLE

As timed by Google Maps from points to City Hall. They do not include time in Downtown Congestion. Parking Time or Time Walking to Work.

Bus schedules, transfers and the frequent trips into neighborhood routes is a major contributor to these times.



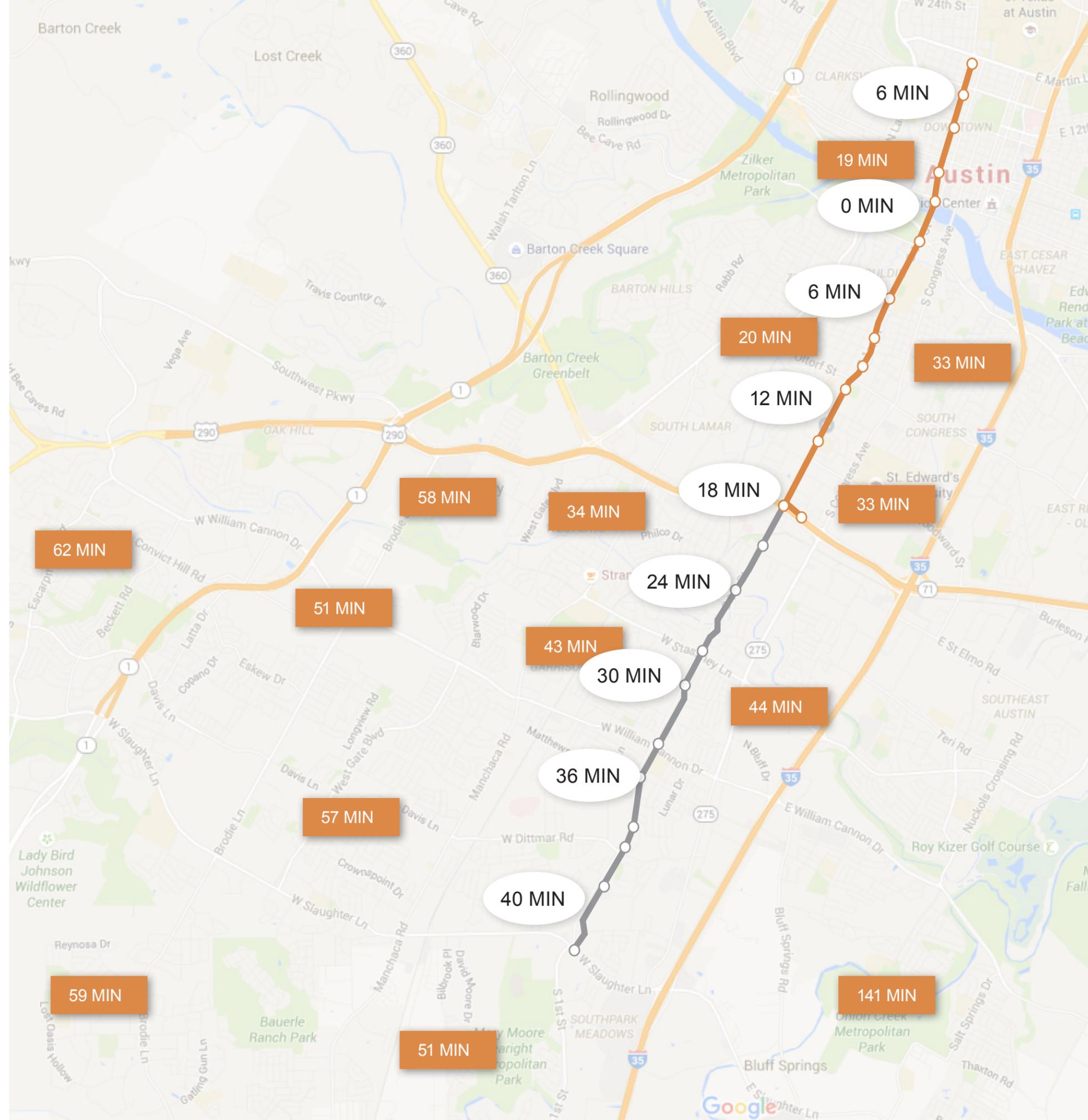
vs.



Bus times to downtown



Wire One Commute times to downtown

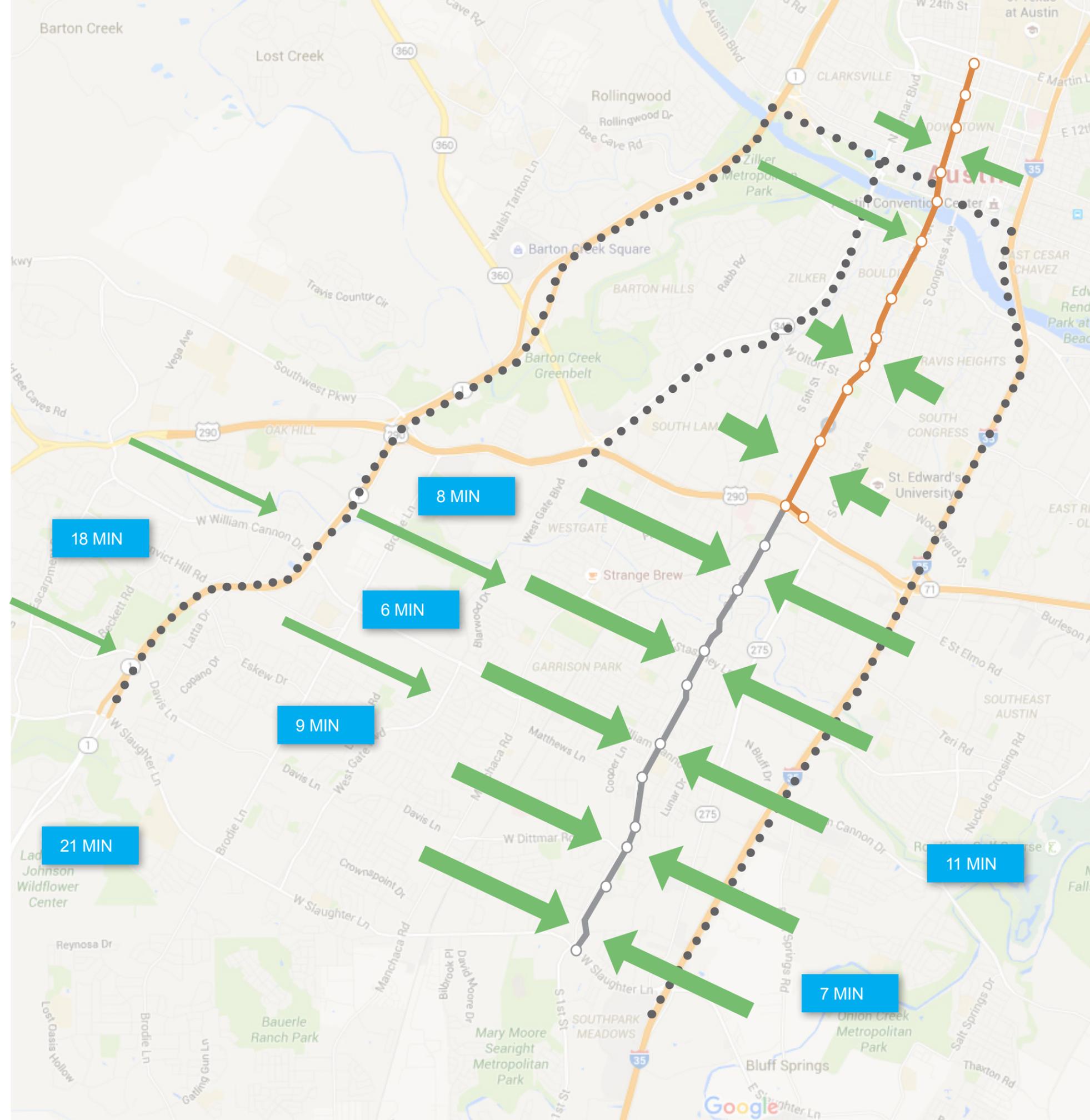


THE WIRE ONE SHIFT

Looking at travel times to South 1st you can see a potential for shift is large in first mile. Building Park & Fly or expanding bus schedule and direct routes begins to make Wire One a shorter commute than MoPac for more distant neighborhoods.

This could create a break over where cost and convenience line up and we begin having a meaningful impact on access to Downtown from the whole of South Austin.

 Car times to Park and Fly





EARLY ESTIMATES

System Phase I	not including Park & Fly	\$300 – \$400 Million
System Phase II	not including Park & Fly	\$200 – \$300 Million
Ridership Model A	75% capacity at peak 25% capacity off peak	5,913,000 per year
O+M		\$3 – \$6 Million
Cost per rider	75% capacity at peak 25% capacity off peak	\$0.51 - \$1.01 per rider

These are wide estimates based on formulas. Costing has enormous variability. More accurate cost would require study. Ridership estimates are at the initial 1,200 pphpd capacity.

Ridership also requires study. But capturing existing bus & tourism traffic will create an instant base of ridership. Commuters will also likely convert.

Beyond Land Use & fees there are financial opportunities in Urban Cable in advertising & naming rights. Emirates Airlines paid London \$56 million for 10 year naming rights.

Consider also the costs not incurred, namely crossing obstacles.

SAFETY, ENVIRONMENT & POLICY

Safety is engineered into Urban Cable. The manufacturers provide service contracts and a program maintenance schedule to ensure both uptime and safe operation. Urban Cable is designed around redundant systems like air travel. In the U.S. there are regulatory and engineering bodies governing safety and policy. In urban applications call boxes like used on college campuses are installed into cars to provide individual safety. Station attendants are required for operation.

Environmental impact is extremely low. The equipment footprint is low. The energy requirements are low. An entire 7 mile line can run off of only a few Kilowatt Hours of electricity provided by the grid. In Austin we can use wind or solar. When measured against reduced car trips Wire One could end up carbon negative. Climate control may impact that formula based on the approach taken. Current thinking is the safest most robust approach

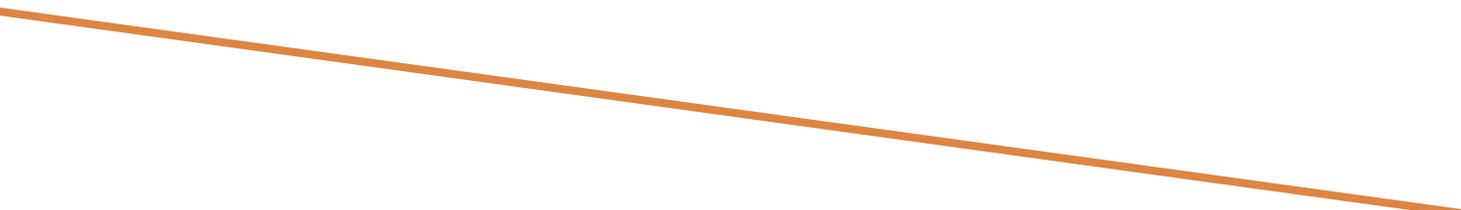
is using small LCNG fueled generators to provide power and climate control. Battery & Ultra capacitor are other approaches with cost and reliability tradeoffs. Choosing an approach for climate controls requires study.

Urban Cable is impacted by winds. Wire One would run safely up to 50 mile per hour winds. In Central Texas we may experience outages due to extreme winds. But those occasions are short and are well predicted.

Urban Cable is quiet relative to transit. The noise from a running a line is less than that of cars or busses on a street. Riding Urban Cable is actually peaceful. Cell reception is typically excellent.

It is unknown how flyover of private property will be handled in the U.S. Therefore Wire One was envisioned to occupy public or City owned property. Flyover of private property is probably negotiated with the owner.





To learn more
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