Mobility Hubs: Prospects for Hawaii

Hawaii Interagency Council for Transit-Oriented Development

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alta

Alta Planning + Design

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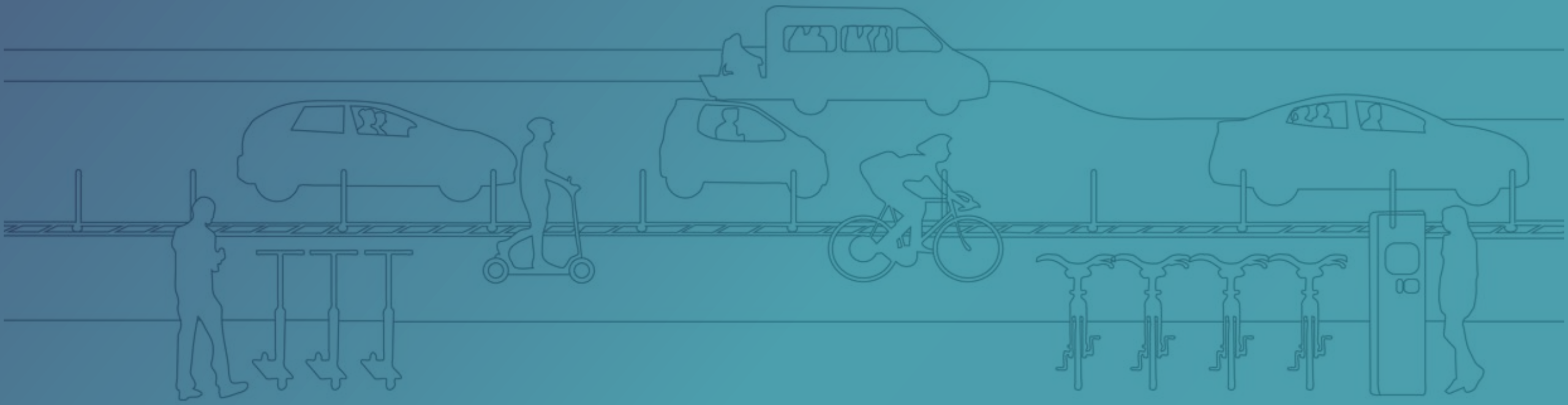
What is a Mobility Hub & what is its purpose?

Defining the mobility hub



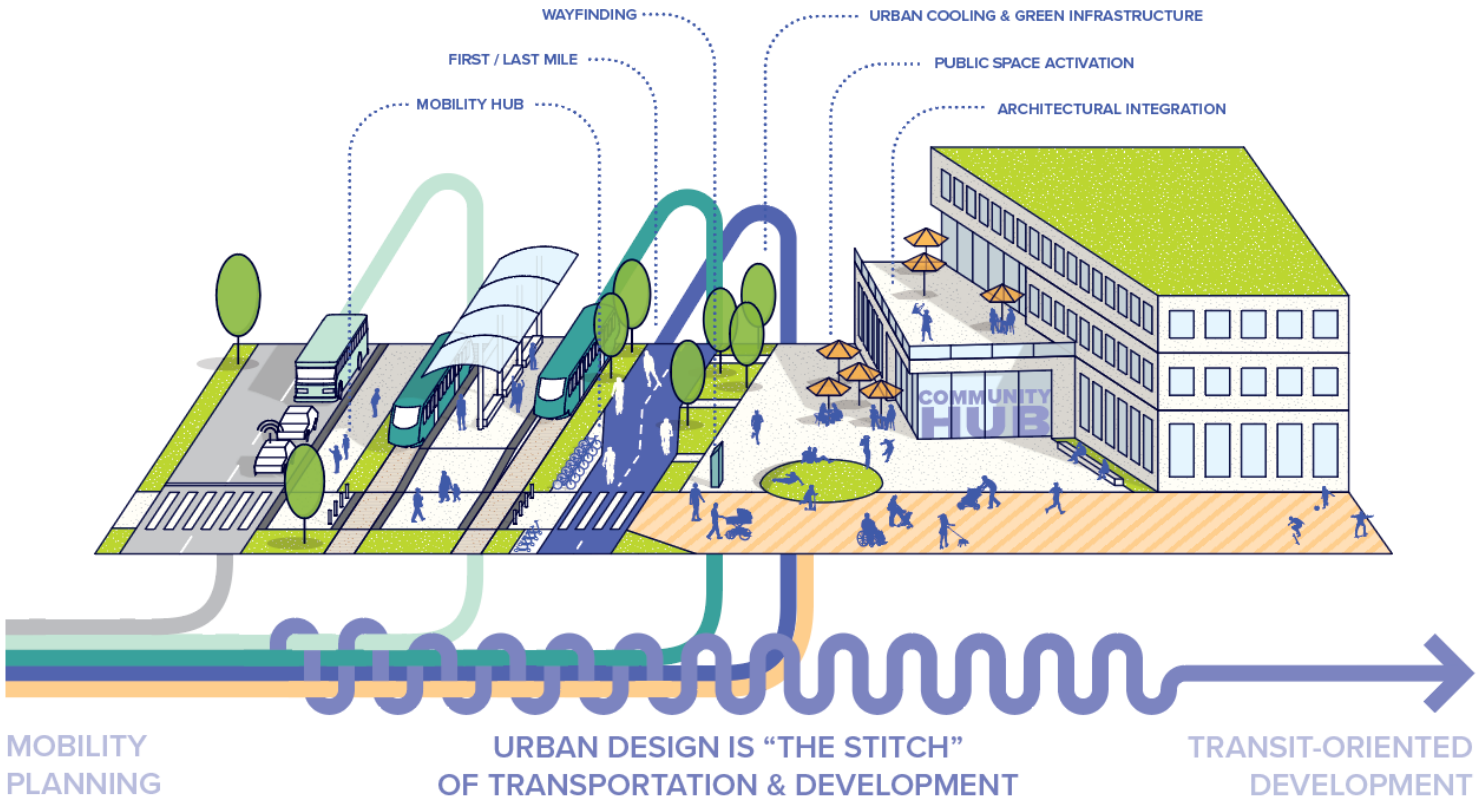
Defining the Mobility Hub

Example:

"A location where mobility options are intentionally linked to transit-oriented development and amenities to make getting around more convenient, seamless, and enjoyable for the purpose of advancing mobility, climate, and equity goals"

Benefits of Mobility Hubs

- Advancing transportation access/mobility, climate, sustainability, resiliency goals
- Co-location of housing, jobs, retail, and community services with public transportation (TOD)
- Utilization of existing assets and infrastructure



Design Decisions

- Integration of two or more transportation services with housing/office/commercial development
- Bike and walking access to the site
- Repurpose/retrofit of existing public facilities
- A sense of place with human-centered design
- Locally relevant and context sensitive programming and amenities
- Fair and equitable access, including universal design
- Cohesive, intentional design that is flexible/adaptable to evolving needs

Integration of Modes, Destinations, and Services

Hawaii Tribune Herald


HART

Go BIKI

Elements of a Mobility Hub

Passenger pick-up and drop-off areas for ridehailing, microtransit, etc

Transit ticket and integrated payment kiosks

Bus, shuttle, or light rail stop

Real time transit information & other shared mode information

Freight loading/ unloading area

Electric vehicle charging (including bicycles & scooters)

Short term bike parking

Long term bike parking

Bikeshare & scootershare parking

Carshare parking and access points

Prioritized walkways

Prioritized bike and micromobility access

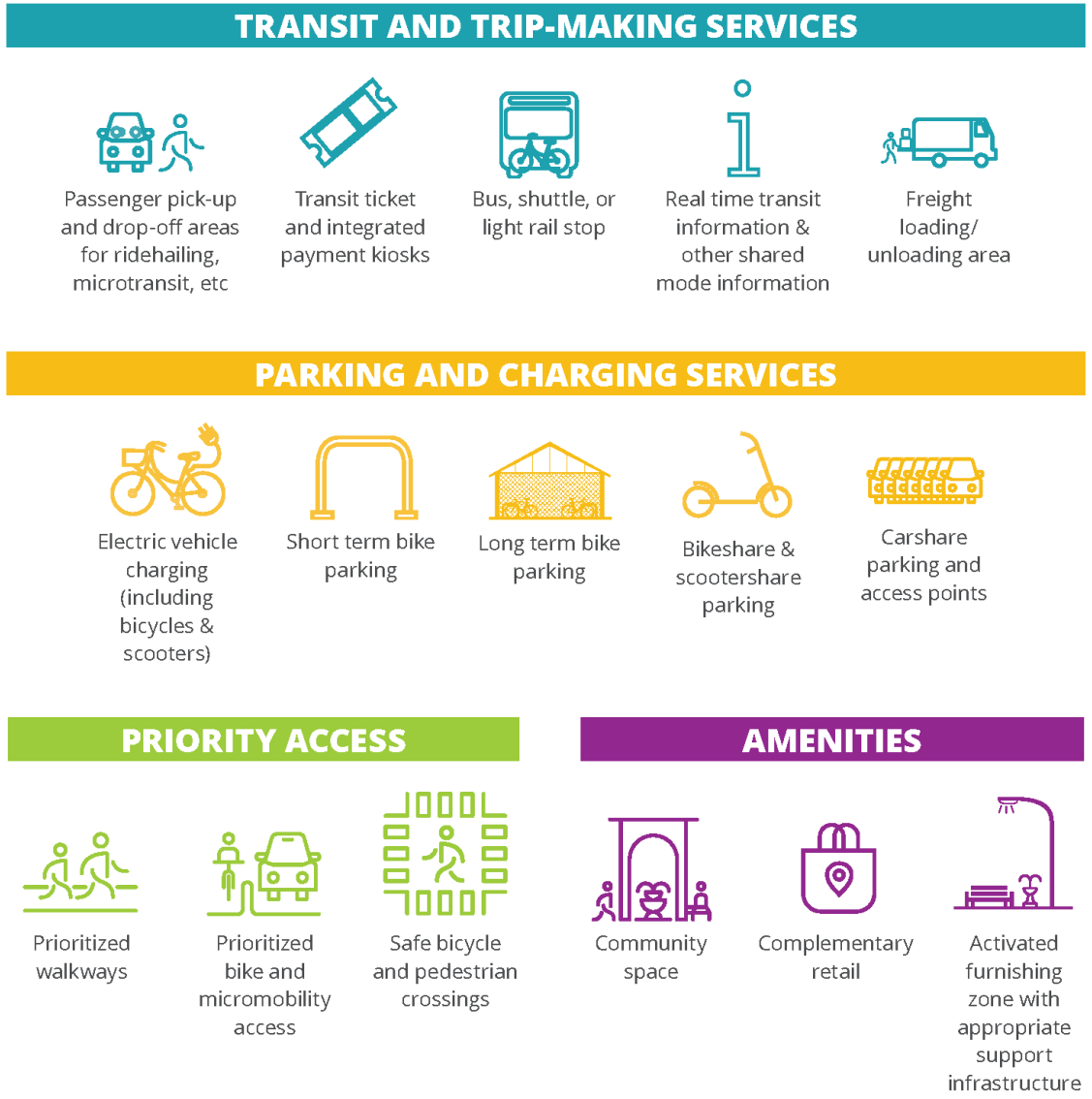
Safe bicycle and pedestrian crossings

Community space

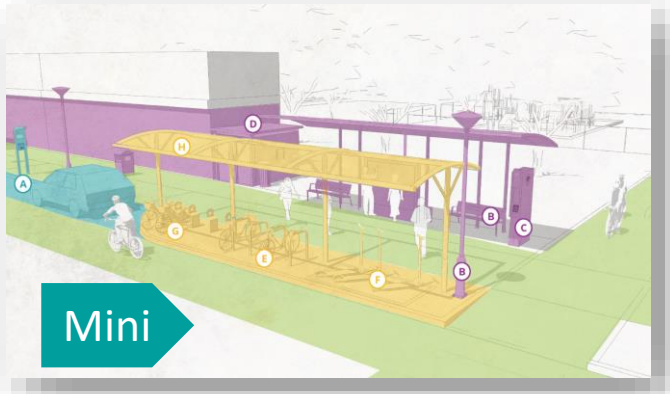
Complementary retail

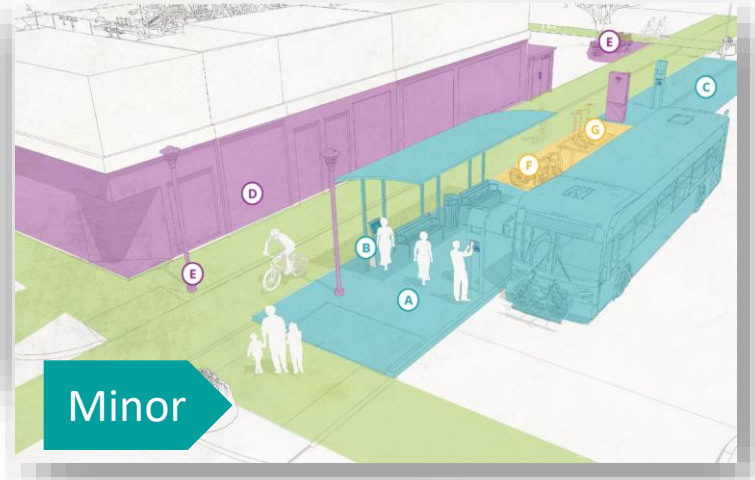
Activated furnishing zone with appropriate support infrastructure

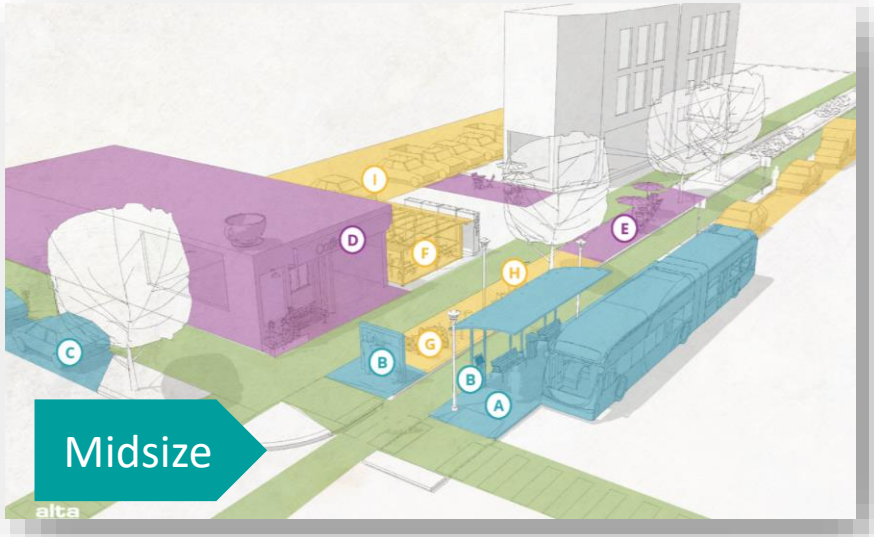
Elements of a Mobility Hub

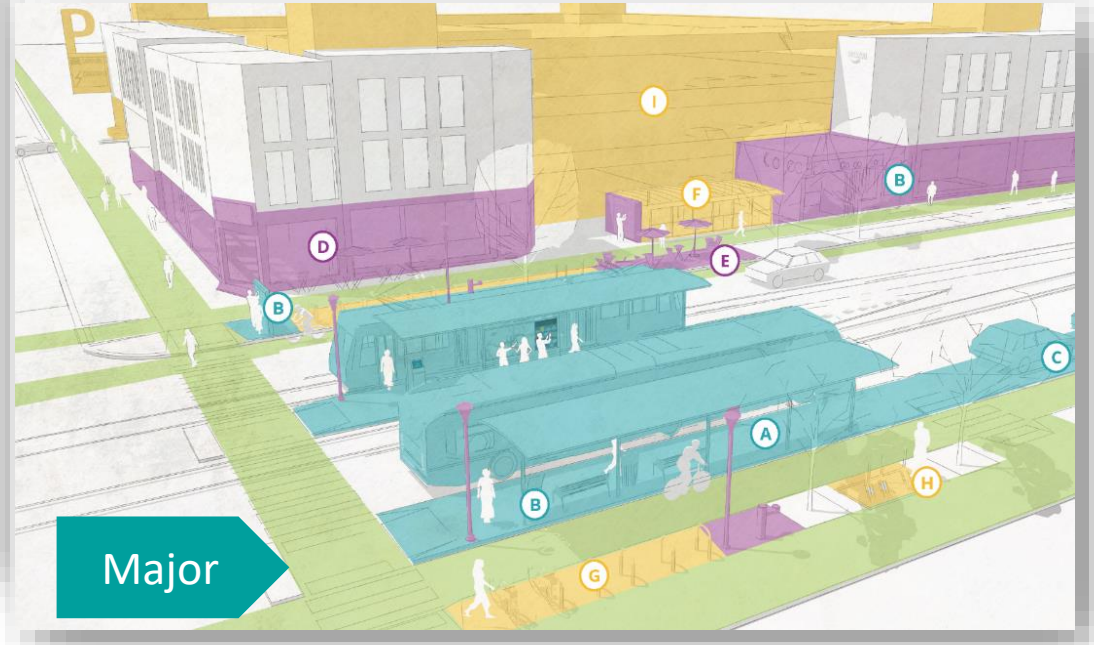


Mobility Hub Typology









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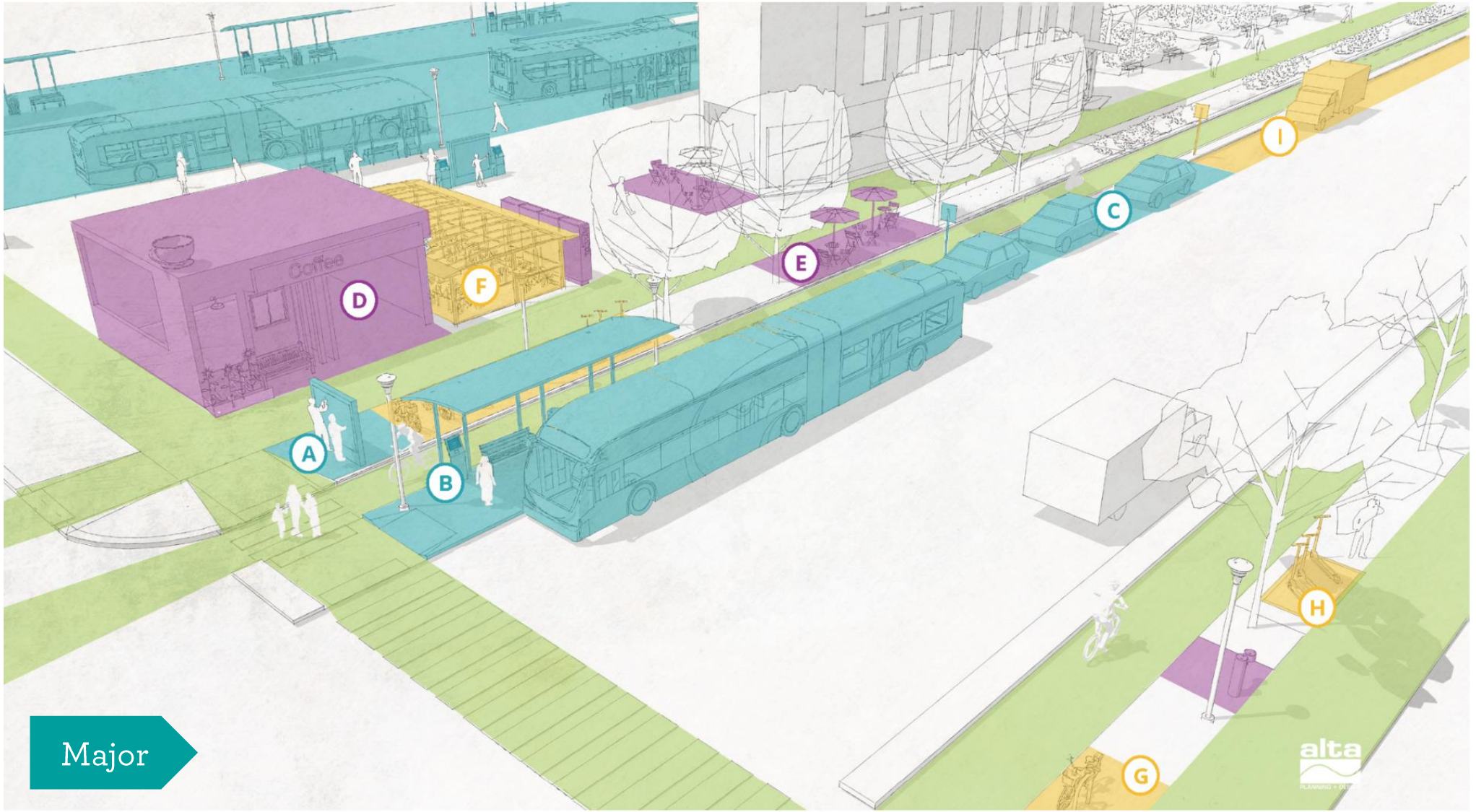

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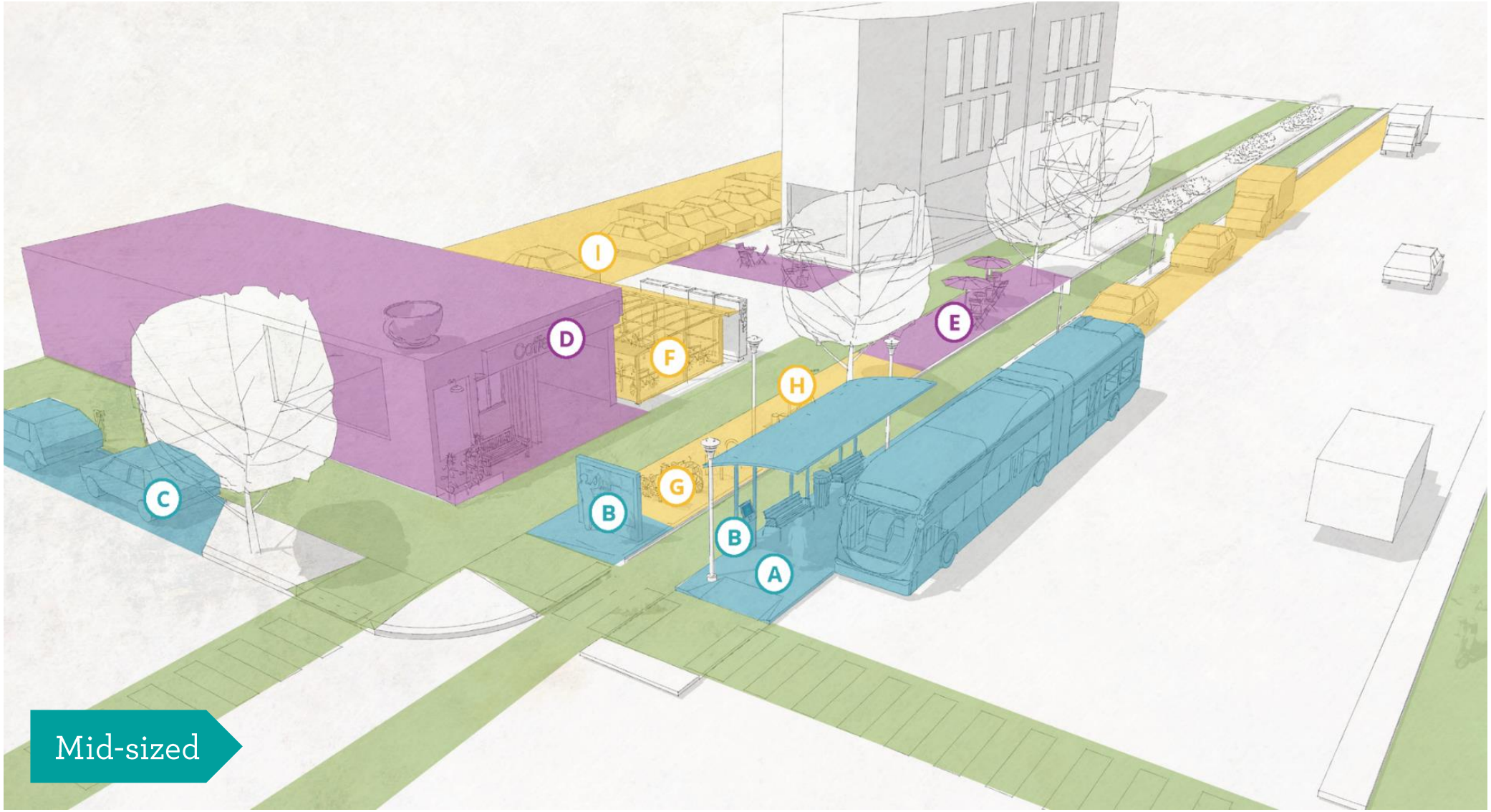

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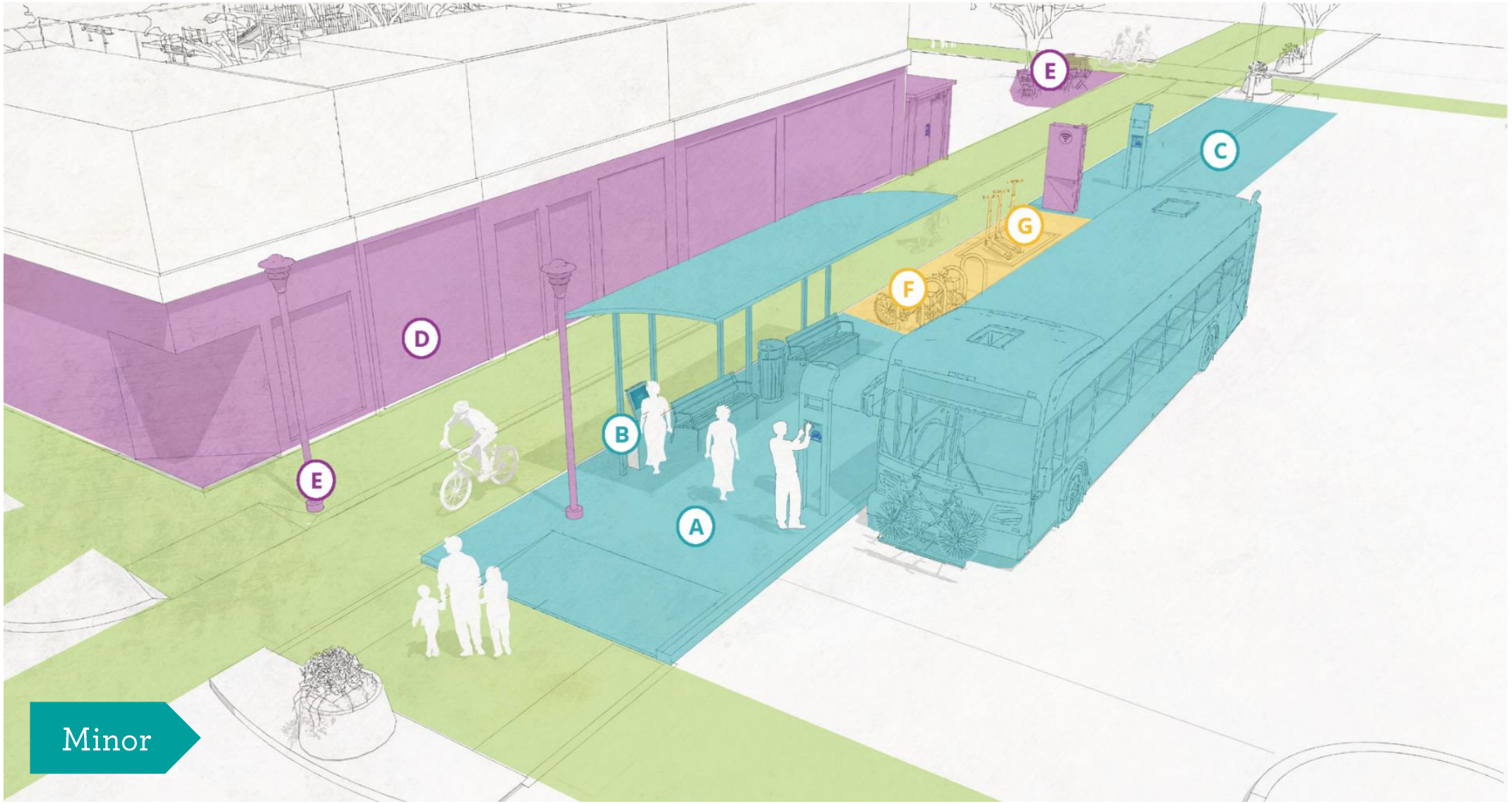

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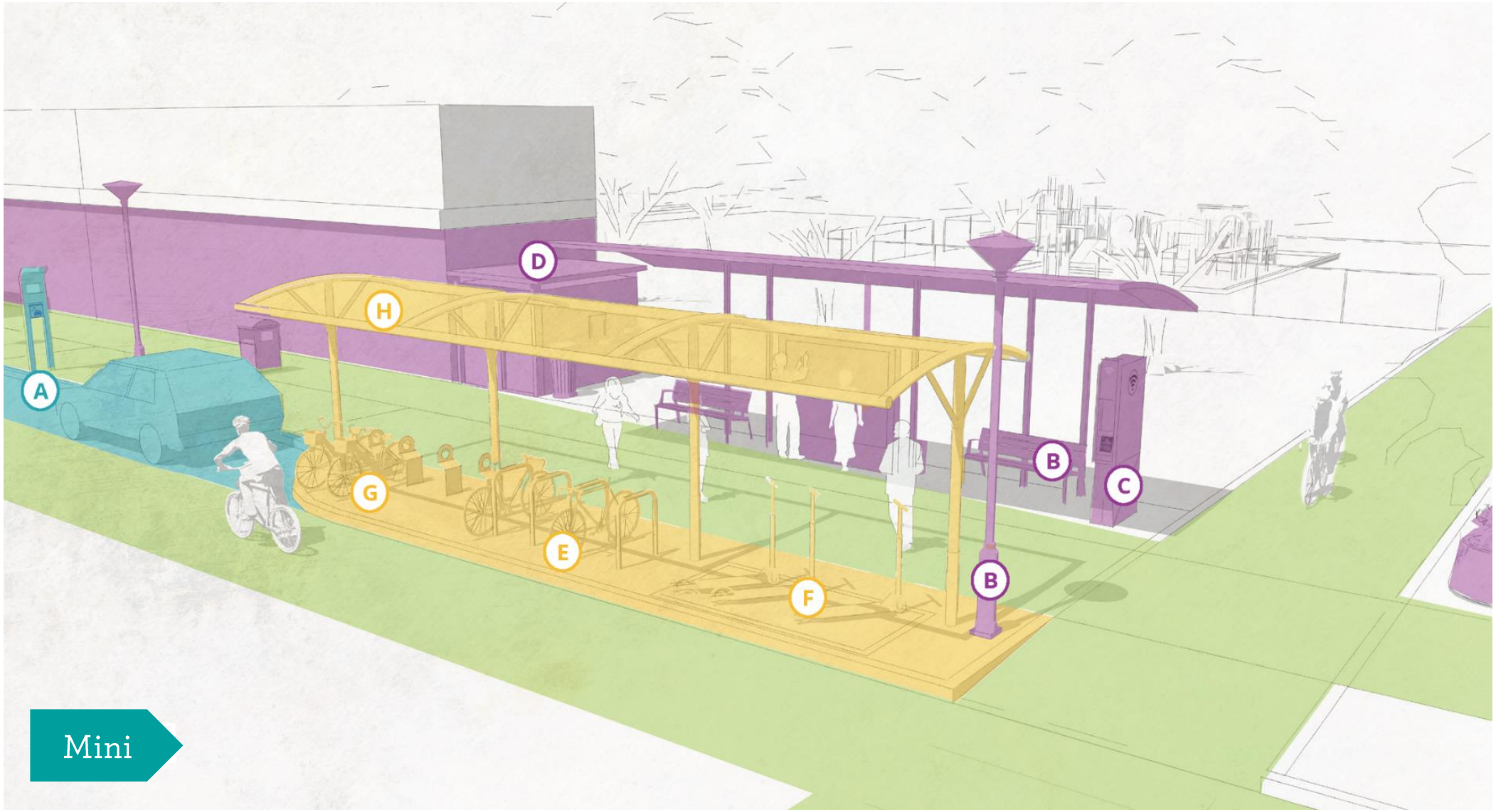
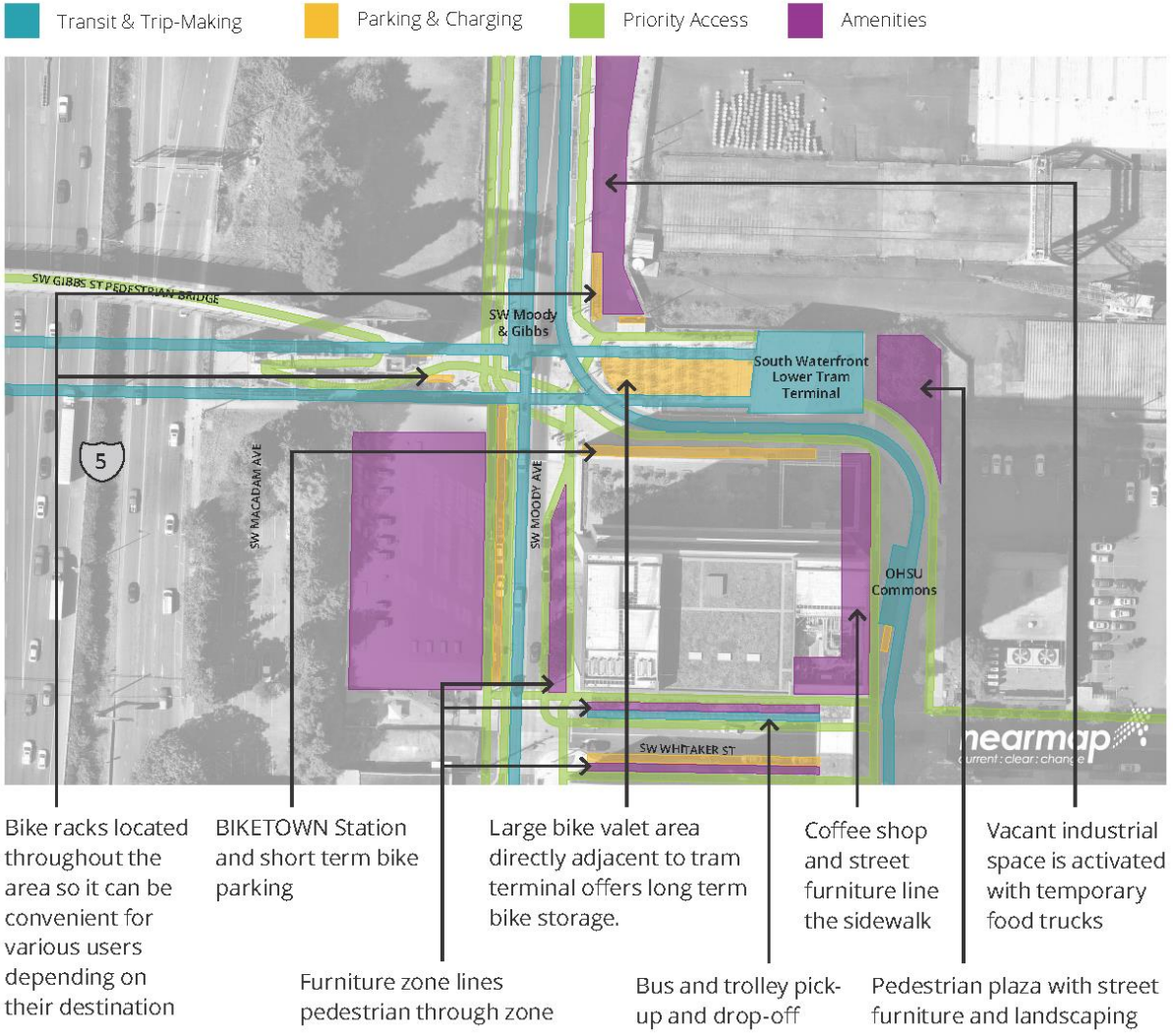


Example: Portland SoWa Mobility Hub

Portland's Mobility Hub: South Waterfront Lower Tram Terminal



Define and conceptualize the end product

1 MORE CHOICES

In addition to biking, walking, driving, and taking transit, many people have **access to on-demand services such as private-for-hire rides** (like taxis, Uber, and Lyft), scooter share, bike share, carsharing, and micro-transit shuttles.

2 NEW PLAYERS

New business models have increased the role of the **private sector in transportation and changed the nature of services operating in the public right-of-way**.

3 BEHAVIOR CHANGE

Trip-planning services are changing the way people make decisions about routes, mode, and cost to travel.

4 ELECTRIFICATION

Global trends toward electrification of vehicles, combined with locally-adopted goals for reduced greenhouse gas emissions, has **increased demand for electric charging options** as part of public infrastructure.

5 E-COMMERCE

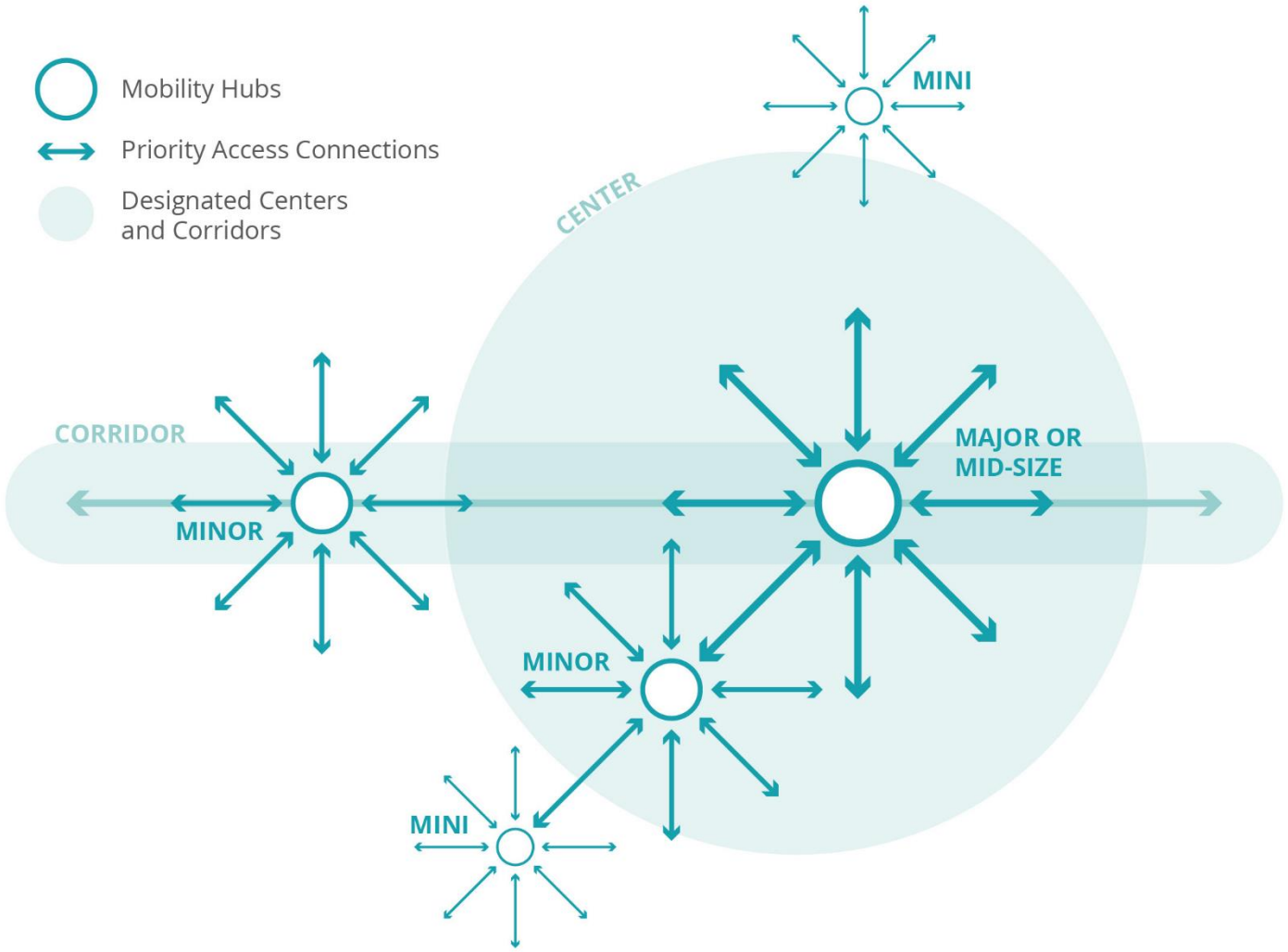
E-commerce is reducing personal trips to retail stores and restaurants and exponentially **increasing the volume of urban delivery and courier trips** occurring.

6 CURB SPACE DEMAND

There is **increasing demand for curb space** for elements like transit services, rideshare, pick-up and drop off, walkways, bikeways, and freight delivery.

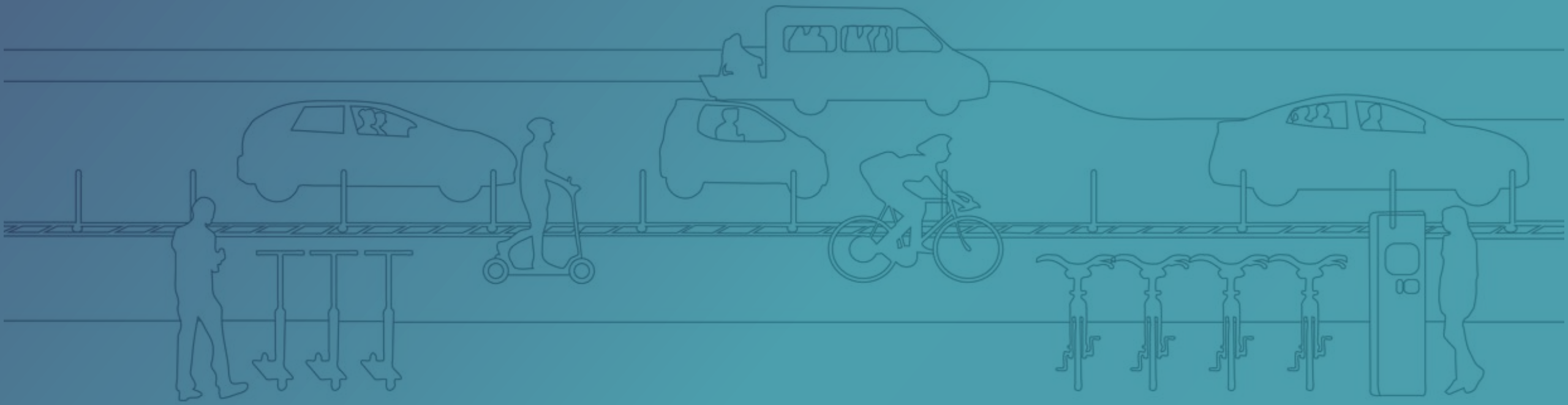
Hubs and Networks: Centers and Corridors

Conceptual Mobility Hub Network within the framework of Portland's Designated Centers and Corridors



Land use and siting considerations

Contexts and analyses



Land Use & Siting Considerations

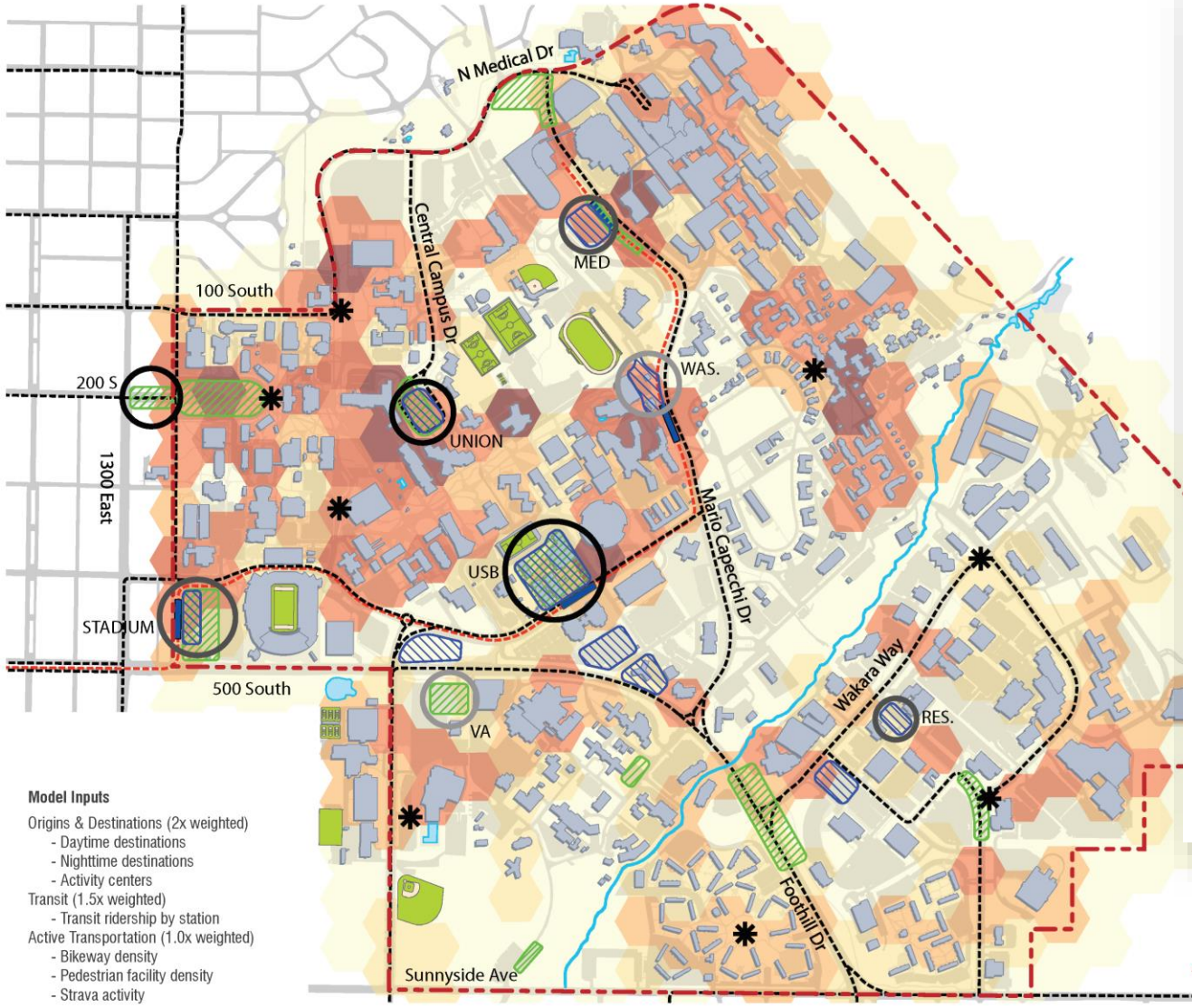
Composite Suitability Map for Mobility Hub Siting

Legend

- Higher Demand
- Lower Demand
- Stakeholder/Design Team Sites
- Existing Conditions Report Locations
- Micro Hub Locations
- Light Rail Line
- Light Rail Stations
- Bus Routes
- Tier 1 Hub
- Tier 2 Hub
- Tier 3 Hub

Potential Hub Summary

USB.	277,270 sf	6.4 ac
200 S	42,448 sf	0.9 ac
UNION	161,692 sf	3.7 ac
STADIUM	64,638 sf	1.5 ac
VA	72,458 sf	1.6 ac
WAS.	54,298 sf	1.3 ac
MED.	47,126 sf	1.1 ac
RES.	38,940 sf	0.9 ac



Model Inputs

Origins & Destinations (2x weighted)
- Daytime destinations
- Nighttime destinations
- Activity centers

Transit (1.5x weighted)
- Transit ridership by station

Active Transportation (1.0x weighted)
- Bikeway density
- Pedestrian facility density
- Strava activity

An outcomes-driven approach to siting mobility hubs

STEP 1 — QUANTITATIVE ANALYSIS

A Suitability Analysis maps for the factors identified as influencing transportation choice to determine areas most suited for clustering transportation choices. The step is focused on measuring need and demand.

STEP 2 — TYPOLOGY

A Mobility Hub Typology is a tool for determining the type and scale of the mobility hub that would serve suitable areas based on anticipated demand and context.

STEP 3 — QUALITATIVE ANALYSIS

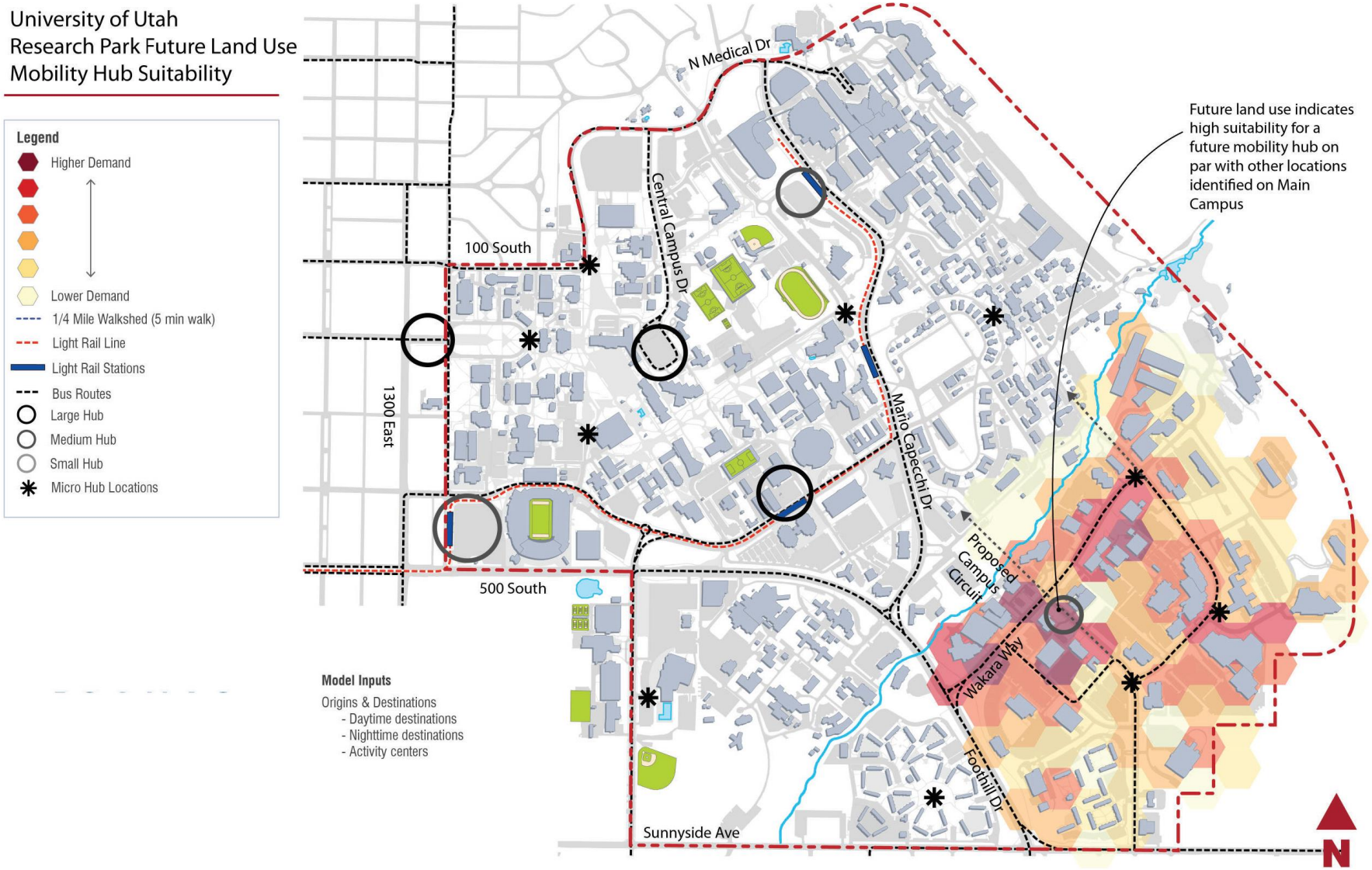
Building on the quantitative analysis, a Prioritization and Feasibility Analysis establishes criteria to further narrow areas of suitability based on alignment with goals and implementation considerations for candidate sites (such as available right-of-way, potential land acquisition or potential land-owner partnerships, and permitted uses).

STEP 4 — SITE DESIGN & PROGRAMMING

A conceptual design is crafted to fit within a selected site and reflect the appropriate mobility hub type. This step includes such details as access routes, ingress/egress, transit operational needs (e.g. number of bus bays, layover facilities, or similar), micromobility operational needs (e.g. parking capacity, payment kiosks, loading/unloading for rebalancing vehicles, or similar)

Land Use & Siting Considerations

University of Utah
Research Park Future Land Use
Mobility Hub Suitability



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Land Use & Siting Considerations

Mobility Hub Scenario C

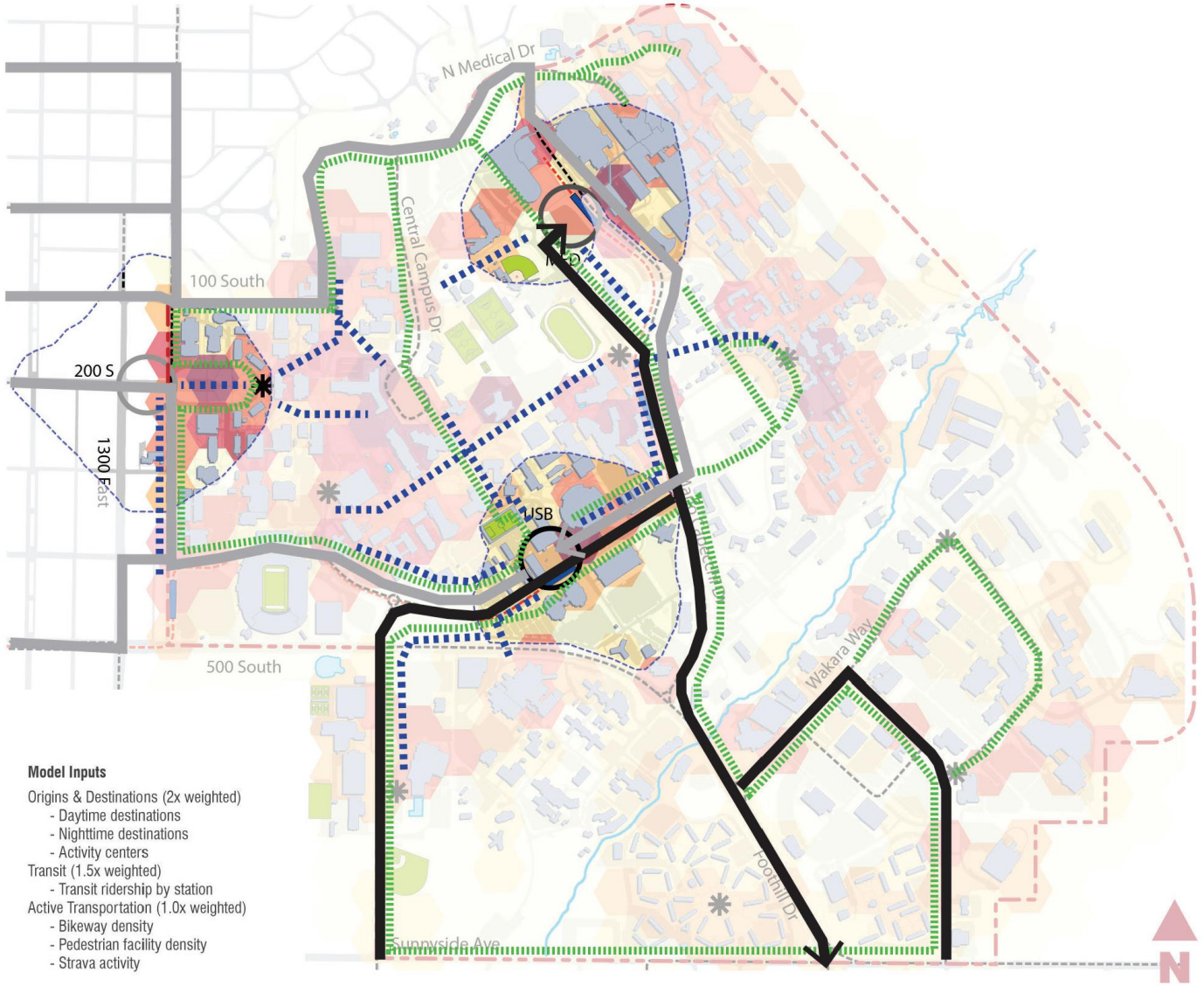
North / South Bus
East/ West Bus
Bike / Micromobility
Campus Shuttle

- Qual. Hub Score (Cumulative): 208.8 (2nd)
- O+D Score within Walkshed: 278

- North / South Bus Routes EOL at Medical
- East / West Routes EOL at USB

Potential Hub Summary

USB.	80,200 sf	1.8 ac
200 S	42,448 sf	0.9 ac
UNION	161,692 sf	3.7 ac
STADIUM	129,200 sf	3.0 ac
MED.	47,126 sf	1.1 ac



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Transit (1.5x weighted)
- Transit ridership by station

Active Transportation (1.0x weighted)
- Bikeway density
- Pedestrian facility density
- Strava activity

Unique siting challenges

- Location, location, location
- Constrained rights of way
- Existing policies
- Capacity limitations
- Meaningful engagement
- Known unknowns

TOD Site Integration

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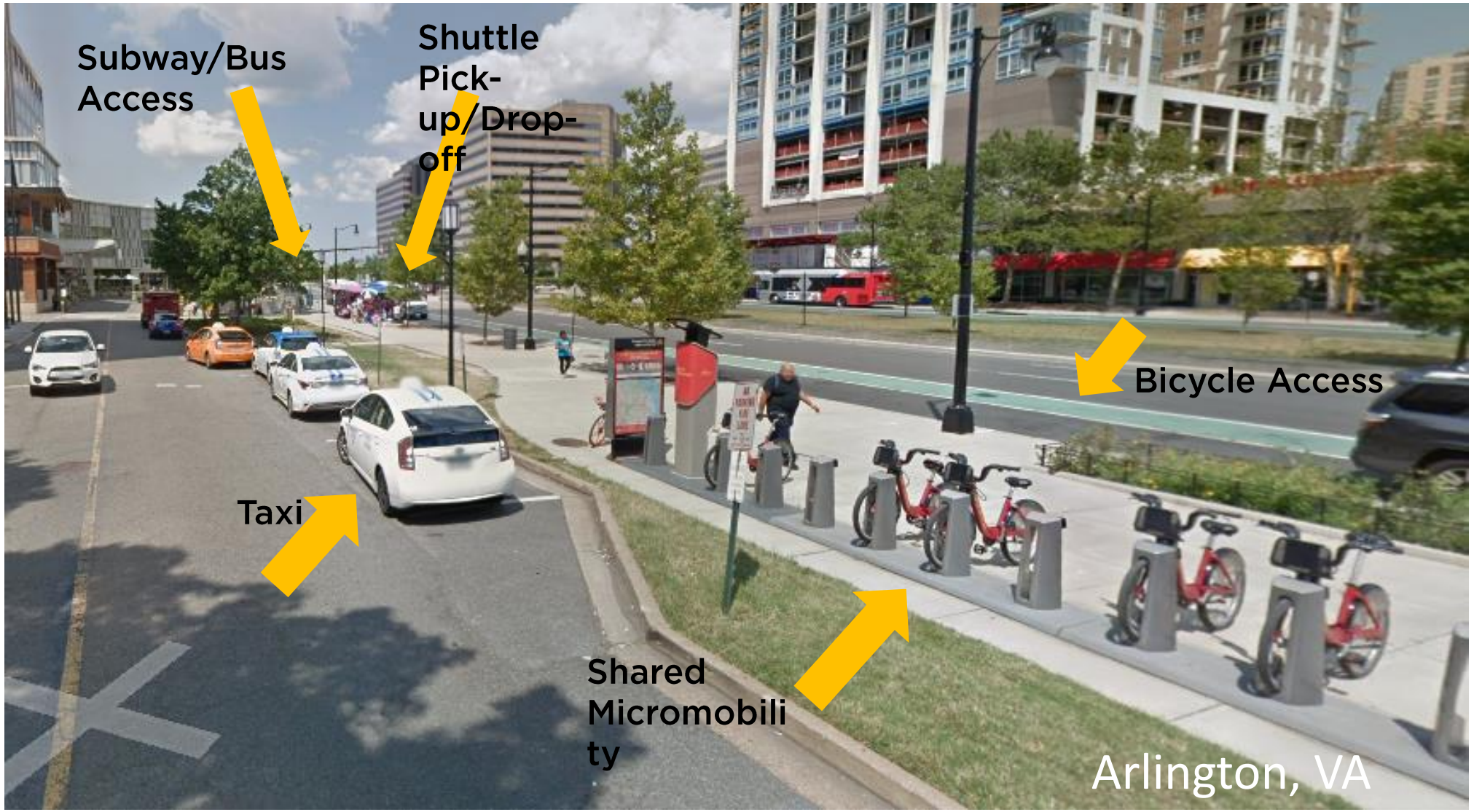
TOD Site Integration



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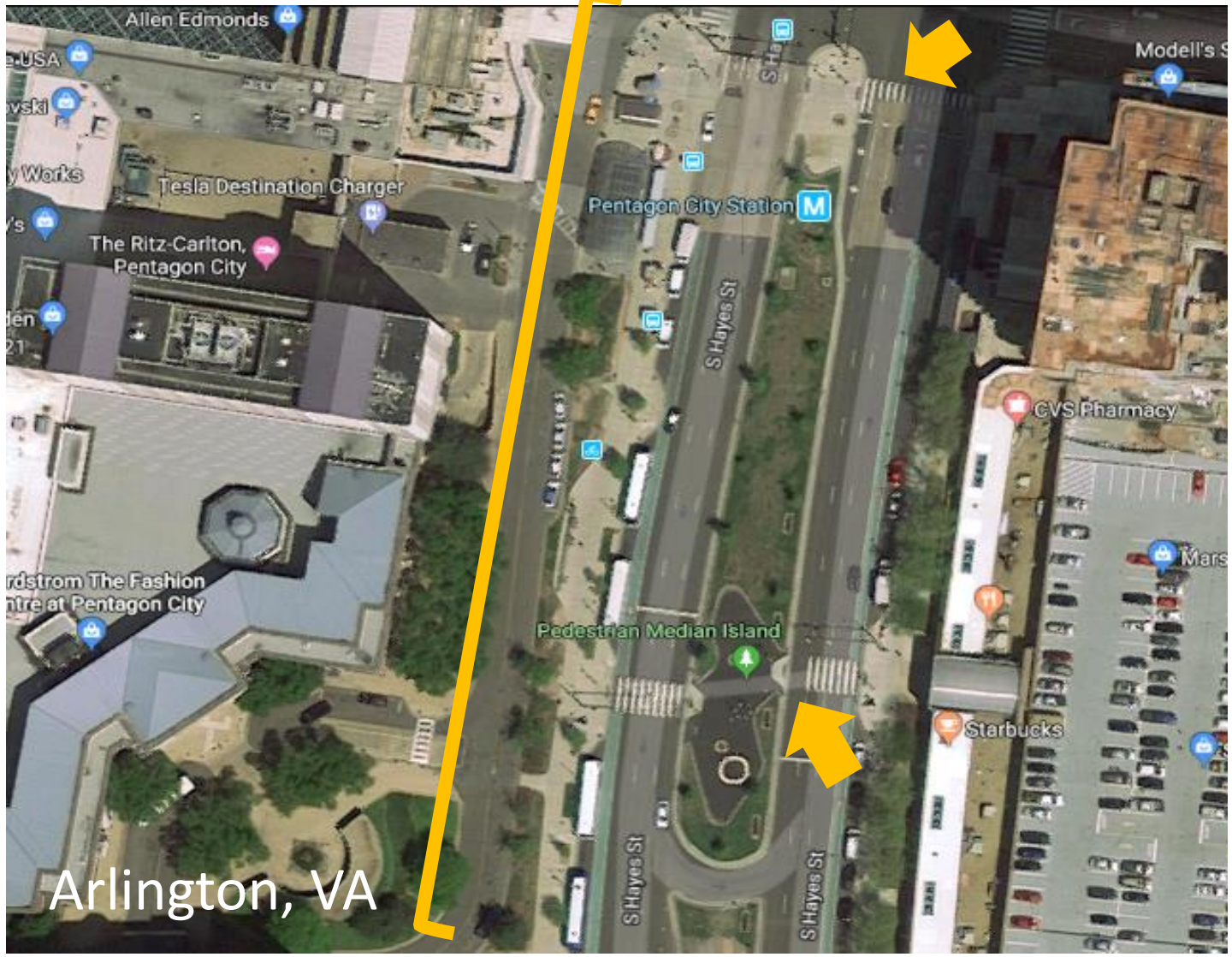
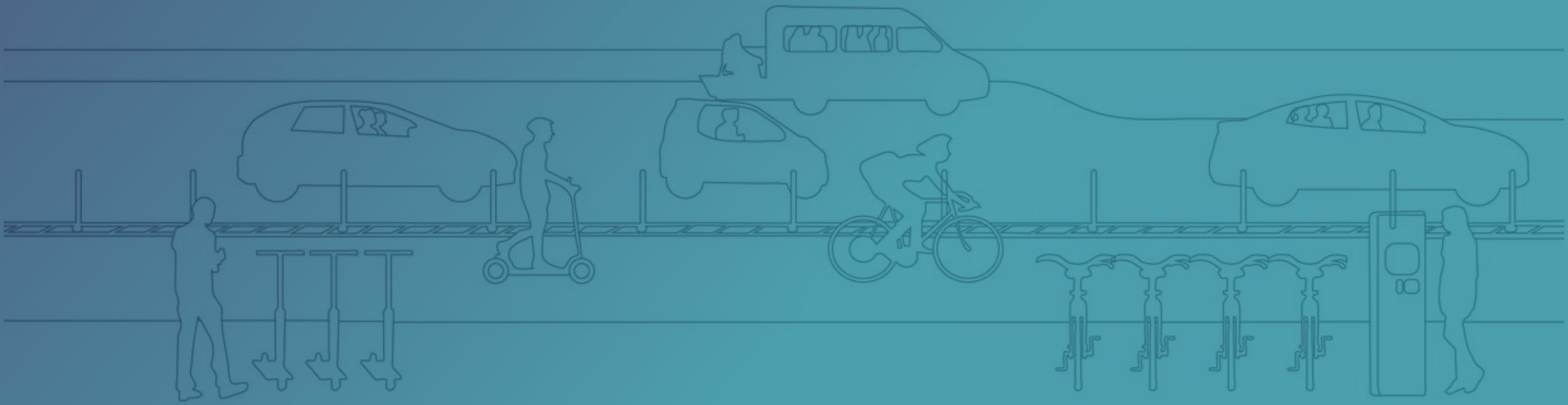
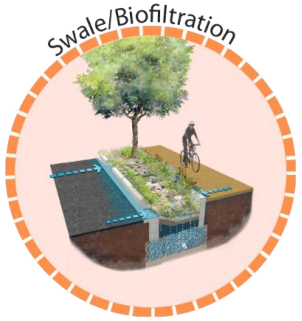


Building Back Better

The role of Mobility Hubs in Climate resilience and COVID recovery



Urban Cooling, Flood Mitigation, Ecological Function



Swales often parallel roads, trails, or sidewalks to capture, clean, and slow the movement of water as it is conveyed to a larger drainage system.

Tree trenches are continuous areas of soil beneath paving that allow trees to share water and nutrients, often used in constrained urban areas. This system allows trees to live longer, healthier lives and shortens their establishment period. Water captured in tree trenches flows through pipes to connect with the larger drainage system.

Stormwater planters may be connected linear systems, like tree trenches, or can act as small rain gardens. These treatments can either convey water, or can capture and store water from both the roadway and adjacent sidewalk.

Permeable paving allows water to pass through it more easily than traditional asphalt or concrete paving. Underground layers of sand, gravel, and piping can convey or store water. Permeable paving is often used in parking lots or parking lanes and on sidewalks in areas where planted stormwater treatments are not feasible.

Rain gardens are vegetated areas that allow water to infiltrate over long periods of time. They are often found in parking lots and adjacent to large developments used to handle on-site stormwater management needs, and can also be installed in curb extensions, chicanes, and traffic circles.

The primary purpose of flow-through planters is to slow the flow of water and to remove pollutants from runoff before it is carried through stormwater pipes and to the receiving body of water. These treatments may be installed in curb extensions and chicanes.

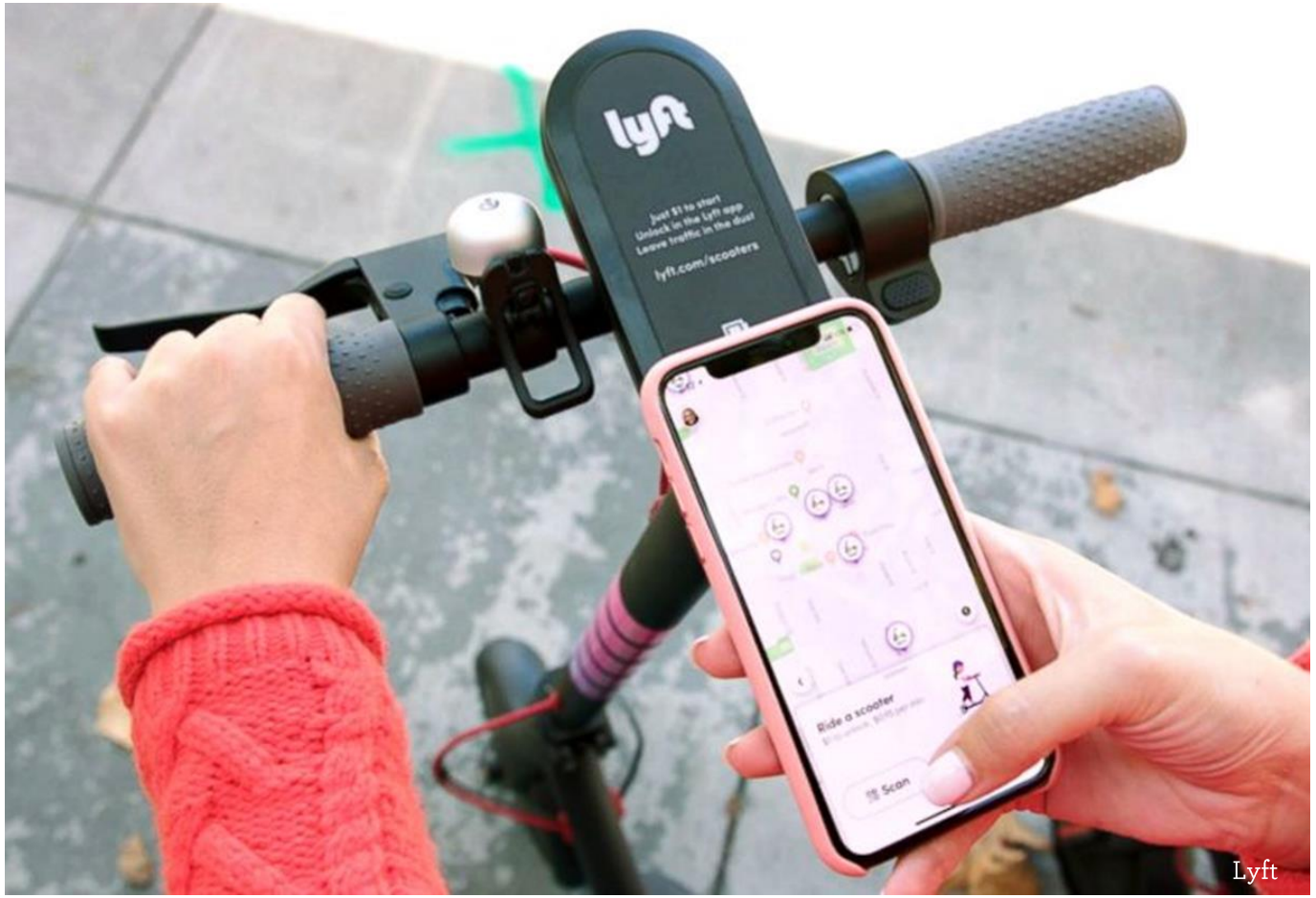
Infiltration trenches are large underground storage tanks that capture, store, and slowly infltrate runoff. They are often located benath roadways and are used most frequently in areas that are heavily developed where other planted solutions are not feasible due to space limitations.

Clean Energy Infrastructure

- Renewable energy production, storage, charging
- Water catchment and treatment
- Community resilience

Smart Cities and Electrification

- Mobility-as-a-Service
- Electrification and charging infrastructure
- Intelligent Transportation Systems
- Freight & e-commerce



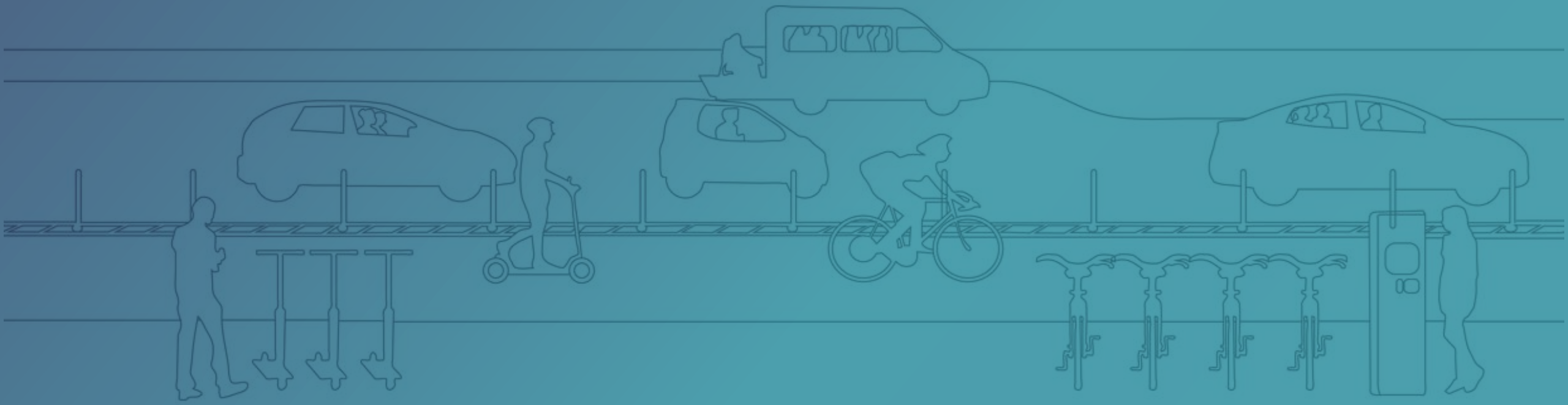
Lyft

Mobility Hubs and COVID Recovery/Resilience

- Quick-build active transportation networks
- Electrification
- Main Streets and local businesses
- Expanded access to shared micromobility
- Transportation Demand Management (TDM)
- Safe Routes to Schools
- Climate shelters

Implementation and policies

Strategies



Site Programming

User Profiles

A Typical Journey:
Tech professional commuting from Durham uses high frequency transit, grabs a coffee each morning when she gets to the Boxyard hub and has a 7 minute walk to her office. When she's running late, she grabs a scooter to get there in 3 minutes. She's thrilled to have time in the morning to read and get some fresh air while saving money by not driving.

User Needs:
- Consistent, convenient, and comfortable transit service
- Direct, well-maintained sidewalks with safe crossings and a pleasant streetscape
- Micromobility distribution reliability

A Typical Journey:
A restaurant employee catches the bus to the current regional transit center, and with RTP Connect, has an easy and affordable ride to the pick-up/drop-off zone in the heart of The Hub. Walking trips to and from the pick-up area often include a quick stop for a snack or some window shopping.

User Needs:
- Consistent, convenient, and comfortable transit service
- Direct, well-maintained sidewalks with safe crossings and a pleasant streetscape
- Human-scale development

A Typical Journey:
A resident that commutes to Raleigh doesn't have to battle rush hour traffic on her easy walk to the new transit center, although a scooter ride would make the trip a bit more exciting. At the end of the workday, she's found that she usually has a package waiting for her at the hub's Amazon lockers or needs to grab a few groceries at the market on her walk home.

User Needs:
- Consistent, convenient, and comfortable transit service
- Direct, well-maintained sidewalks with safe crossings and a pleasant streetscape
- Micromobility distribution reliability
- Distributed resident services coupled with transportation services and routes

A Typical Journey:
Office worker drives to the office but uses her lunch break to get some exercise with a bike ride around the RTP trails network before meeting colleagues for lunch at Boxyard. She loves that she can store her bike securely in the parking garage and use shower facilities in her building before getting back to the grind.

User Needs:
- Safe and comfortable bicycle facilities that are separated from traffic, where possible
- Employee provided amenities like secure bicycle parking and shower facilities

A Typical Journey:
When colleagues from around the Park want to collaborate, the hub's new meeting spaces are an easy bike, scoot, or shuttle from their office. The multitude of mobility options offer flexibility for different team members so everyone doesn't feel like they have to drive individually. While the whole team may take scooters or e-bikes to the lunch meeting together, some shuttle back to the office a little early for the next appointment.

User Needs:
- Micromobility distribution reliability
- Wayfinding and directional legibility for visitors

Active Transportation Networks

OFFICE

PARKING GARAGE

RESIDENTIAL

HOTEL

RETAIL

MIXED-USE

Existing Multi-Use Trail

Planned Multi-Use Trail

Planned Micromobility Lanes

Low-Stress Street

Policy Considerations

- Shared mobility permitting/policies
- Zoning code (allowable uses)
- Data sharing agreements/requirements
- Payment integration
- Ownership/operations models

Mahalo!