

City of Irvine Mobility Summit Innovation Spotlight: Whoosh Transportation System

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Presentation

- **Framework Plan**
- **Great Park Transportation Goals**
- **Alternatives Explored**
 - Modelling
 - Traditional Bussing
 - Shuttle/Tram
 - Autonomous Vehicles
- **What is Whoosh?**
- **Whoosh as a Solution**
- **Next Steps**
 - **Public Outreach/Meetings**
 - **First Operating Segment**
 - **Q&A**





Great Park Framework Plan

CITY OF IRVINE

- 1

Grand Promenade
Connection to Metrolink Station
- 2

Great Meadow
- 3

Amphitheater
- 4

North Lake
- 5

South Lake
- 6

Timeline Bridge
- 7

Full Circle Farm
- 8

Veterans Memorial
Park & Gardens
- 9

Botanic Garden
- 10

Historic El Toro Air
Traffic Control Tower
- 11

Perimeter Park
- 12

Arboretum
- 13

Future Library
- 14

Championship Bridge
- 15

Pretend City
- 16

Hangar 369
- 17

Orange County
Music & Dance
- 18

Flying Leatherneck
Aviation Museum
- 19

Asian American
History Museum
- 20

Wild Rivers
- 21

The Arc
- 22

Bosque Bridge
- 23

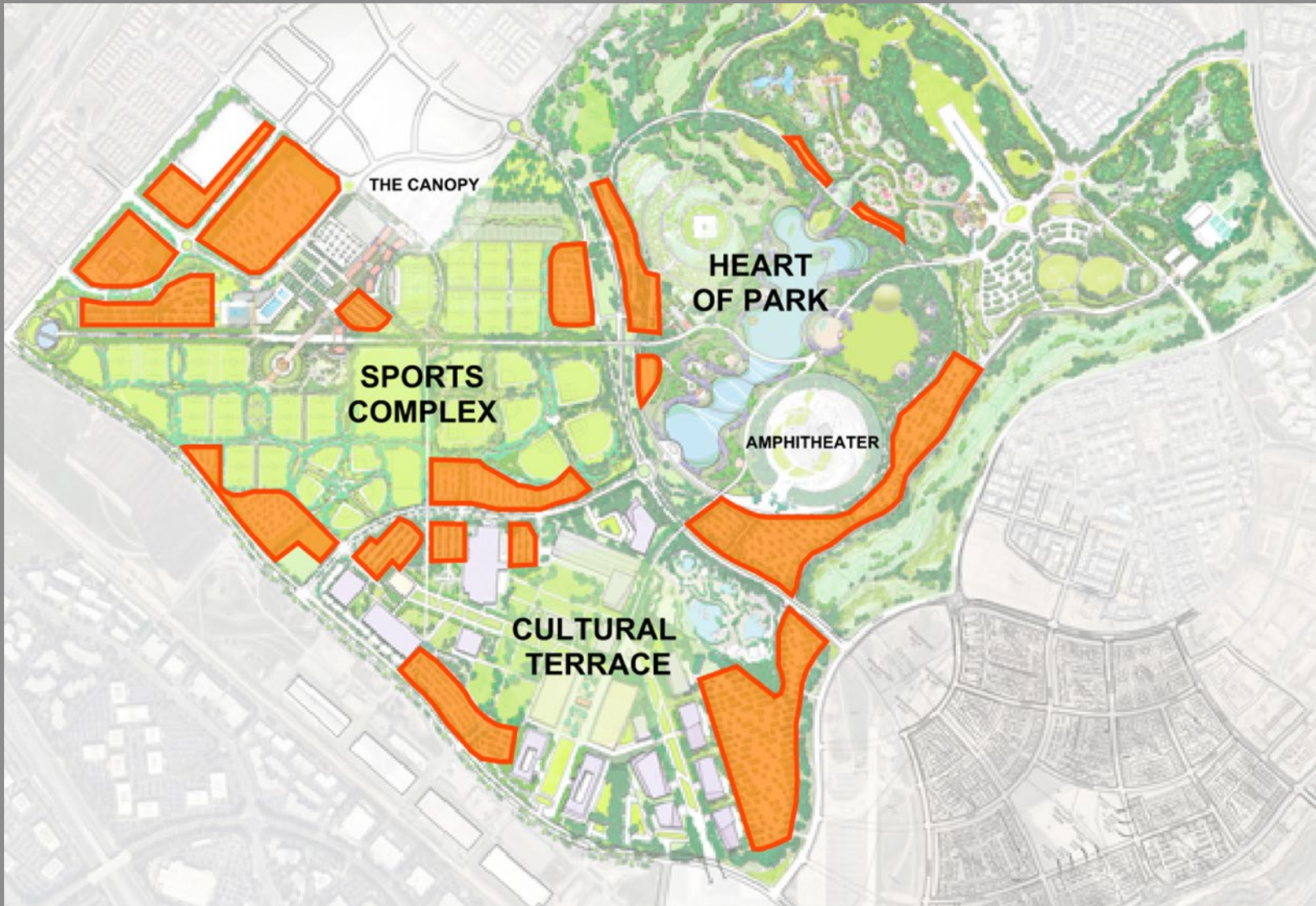
Retail, Food,
and Beverage
- 24

Great Park Live
Temporary Amphitheater
- 25

Great Park Ice



Parking Lot Accessibility



Great Park currently sees 5.5M – 6M visitors annually. Anticipated to grow to 10-15M

Currently if attractions are more than .33 miles away, people tend to move their cars to a closer location.

Sample Distances:

- Balloon - FLAM 0.6 miles
- Canopy – Wild Rivers .8 miles
- Great Meadow – Sports Park 1 mile
- Irvine Station – Amphitheater 1 mile

Ridership has high variance - high peak volumes



Great Park Transportation Goals

1. **Move people efficiently through the park**
2. **Encourage residents to PARK ONCE and visit multiple attractions**
3. **Connect with other modes of transportation**
 - Irvine Station, Irvine Connect, OCTA, Cyclists, and Pedestrians
4. **Be accessible - drop off close to attractions**
5. **Operate a system that is cost effective and environmentally responsible**
6. **Be innovative**
7. **Be fun**
8. **Above all else. Complement the Park setting**



Ridership Modeling

- Ridership demand driven by park amenities (destinations) independent of transportation choice. A model needs to be developed regardless of mode choice
- Sam Schwartz started the model in May 2023 with a preliminary park design.



Ridership Modeling

Purpose: Model estimates circulator ridership during three Great Park development phases—Interim Phase 1 (2027), Phase 1 (2032), and Full Build (2042).

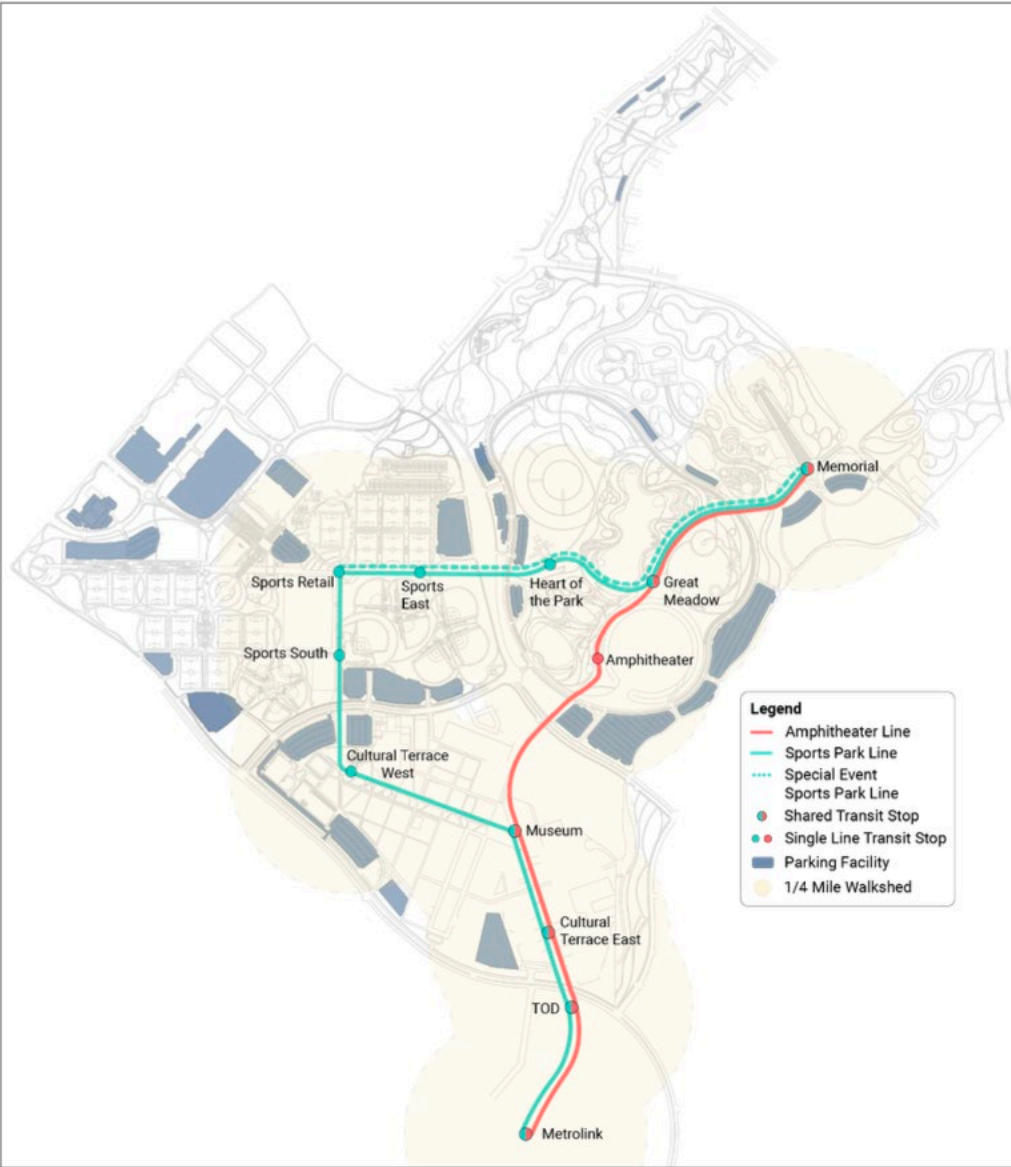
Methodology: The model is spreadsheet-based and built upon the June 2023 Great Park Land Use and Trip Generation Phase 1 Baseline developed by ITERIS.

Scenarios Modeled: Ridership demand across typical weekdays, weekends, and three special event scenarios to establish fleet size and service plan.

Small (Once a Month Event)	Medium (Once every 3-4 months)	Large (Once a Year Event)
› Typical Sporting Event (All day) › Farmer's Market (8am – 1pm) › Concert/Event (Evening) › Large Wedding/Private Event (Evening) <i>Total Attendance: 25,000</i>	› Large Sporting Event (All day) › Art Festival (10am – 5pm) › Seasonal event in gardens (e.g., Spring bloom) (All day) › Concert/Event (Evening) <i>Total Attendance: 50,000</i>	› Running Race: 5K, 10K, Marathon, etc. (7am – noon) › Numerous Large Sporting Events (All day) › Very Large Concert/Event (Evening) <i>Total Attendance: 75,000</i>



Ridership Modeling

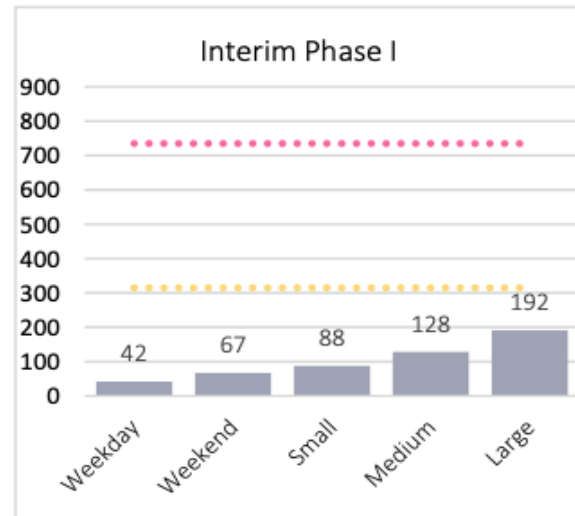


- OD Pair Assignments: The model assumes origin-destination (OD) pairs between land uses and districts to define travel patterns and circulator demand flows.
- District-Based Demand: Ridership demand is calculated by land use within the park's five thematic districts: Heart of the Park, Botanic Gardens, Cultural Terrace, Sports Park, and Bosque.
- Internal Capture Rates by Phase 2.5% - 7.5% & travel time comparisons between walking and circulator transit.

Ridership Modeling

Outputs: Total daily and peak hour ridership projections for service levels across timeframes and scenarios. Fleet projections for each phase and service costs in a low/medium/high scenarios.

Figure 9: Interim Phase 1 Peak Hour Ridership & Vehicle Capacity Values



..... Traditional Tram Capacity (35 passengers / vehicle)
..... AV Shuttle Capacity (15 passengers / vehicle)

Figure 10: Phase 1 Peak Hour Ridership & Vehicle Capacity Values

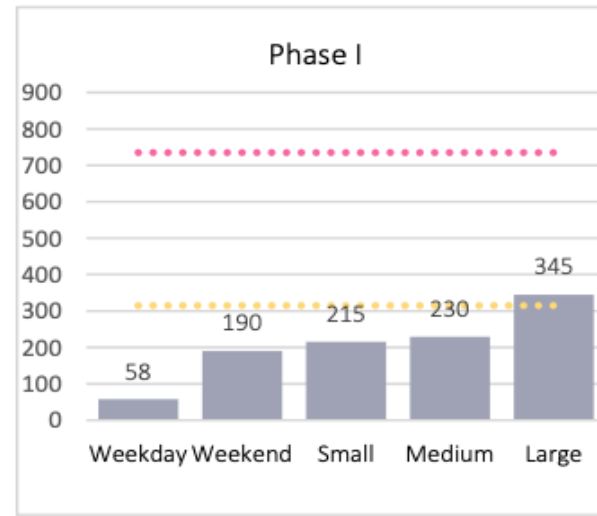
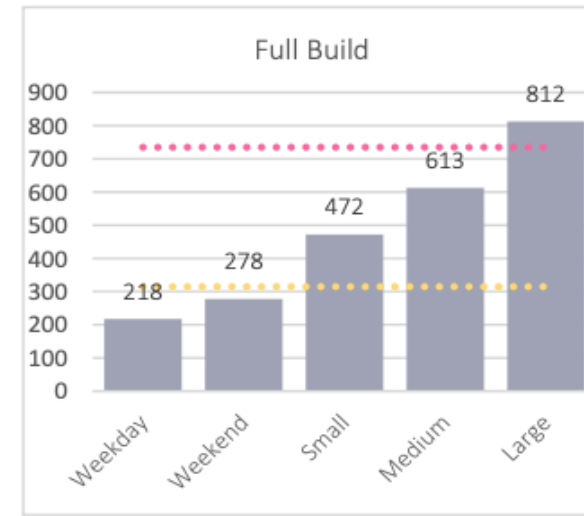


Figure 11: Full Build Peak Hour Ridership & Vehicle Capacity Values



Catalyst for Transit Growth

With last mile connections to the Irvine Station, IrvineCONNECT, OCTA bussing, cycling, and pedestrian modes.

This needs to expand transit ridership in Irvine



What is Whoosh?

An answer to key
transportation
goals

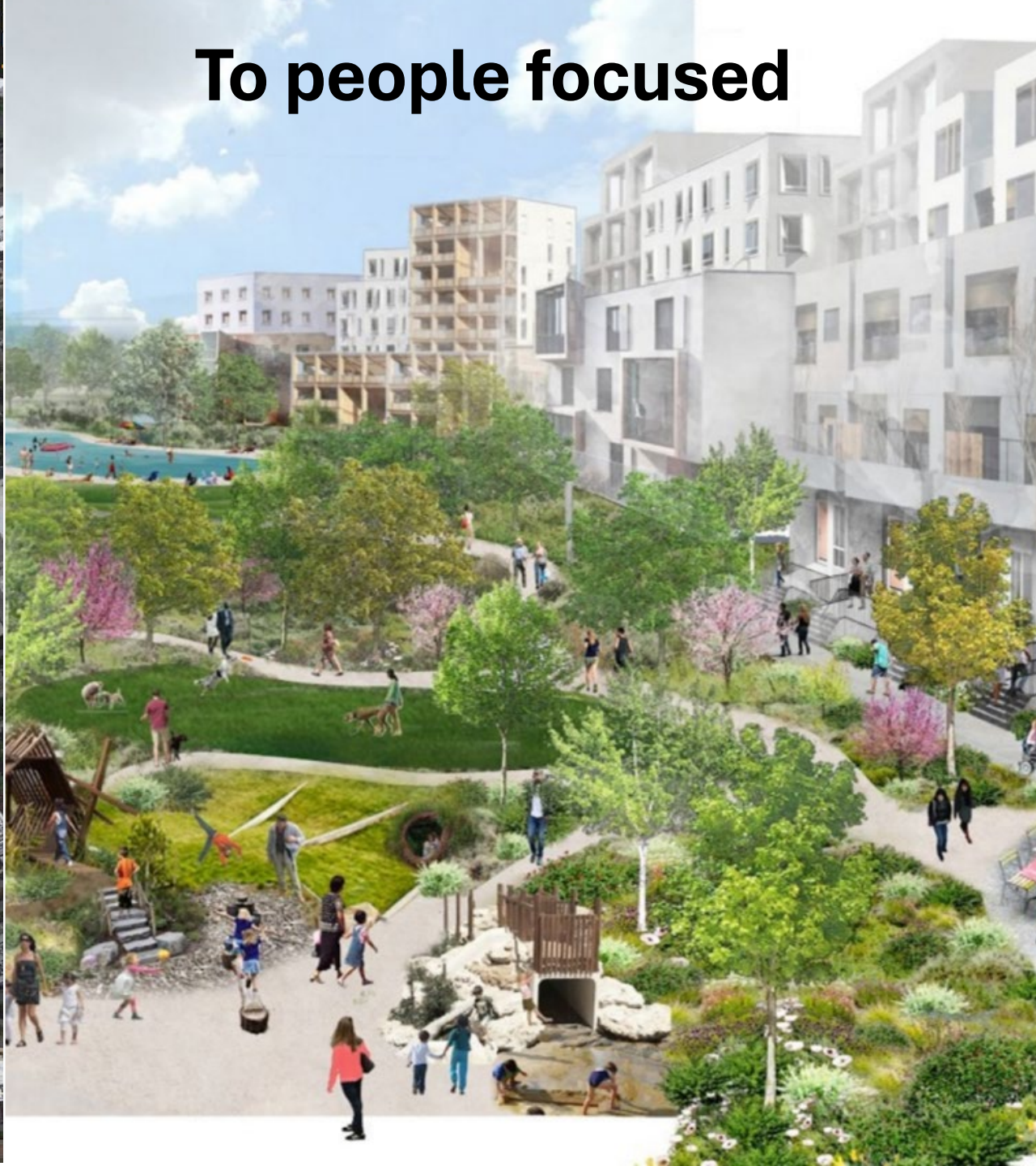


CONFIDENTIAL AND PROPRIETARY

**From parking
focused**

90% Auto Mode Share

To people focused





Attracts Riders

Faster, better service =
Transit people want to ride



Very Low Wait Times

Vehicles wait for YOU



Point to Point

No intermediate or unnecessary
stops and serves many destinations



Extends Transit

Builds ridership of transit and biking



Sustainable

Reduces embodied carbon and daily
energy use



Low Cost

Cableway reduces
infrastructure costs



Area coverage

Works across a development, not
just along a line



Phaseable

Increasing returns to scale as the
system grows



Accessible and Convenient



- 5 passengers
- Accommodates bikes, strollers, luggage, or a wheelchair
- On-demand, it waits for you
- All trips are nonstop from origin-to-destination with no intermediate stops, making for fast trips.



Compare / Contrast

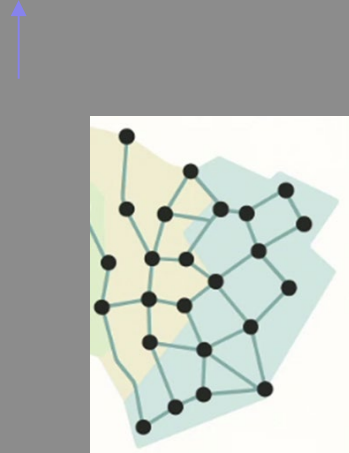
Bus & Rail

- Linear
- Frequent stops
- Long distances



WHOOSH®

- 2D network
- All trips nonstop — no intermediate stops



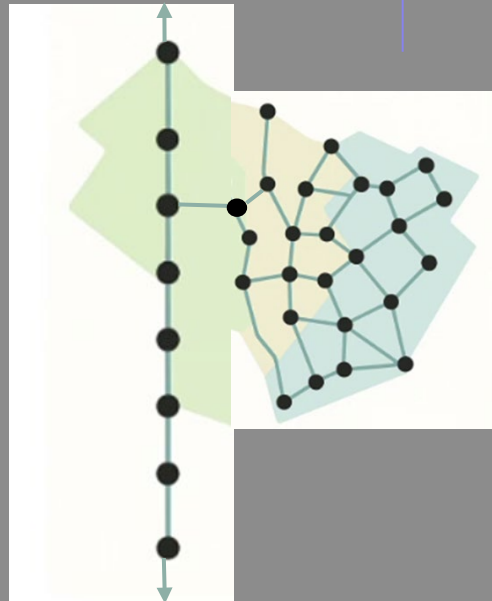
Combined

Bus & Rail

- Linear
- Frequent stops
- Long distances

WHOOSH[®]

- 2D network
- All trips nonstop — no intermediate stops
- **30-100X catchment area**



Partners

Holmes Group – Developer of Whoosh

- In business for 65 years
 - Over 500 employees
- Transportation and infrastructure focus



Christchurch Whoosh development team

Swyft Cities

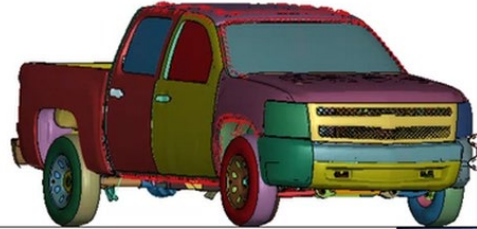
- Originally *Project Swyft* at Google
 - Eight employees. Spun out from Google in 2021
 - Team has completed hundreds of millions of \$\$ of transportation projects
 - TDM experts responsible for 30% mode shift away from driving



Experienced with safety-critical systems



CHEVROLET SILVERADO COARSE MODEL (CCSA V03)
Time = 0.0099989



Other Whoosh Projects

Queenstown, New Zealand

- Similar to Great Park
- Phase 1
 - 1.7 mi
 - Five stations
 - One maintenance facility
 - Free public access
- Permitting in progress



Full Great Park Alignment



- **Improved access**

- 12 stations
- Provides connectivity between all sectors of the Great park
- System will connect with other modes of transportation
- System will include drop off locations internal to the park where roads do not exist





City of Irvine Great Park Swyft Initial Forecasts

May 29, 2025



Great Park Model Assumptions

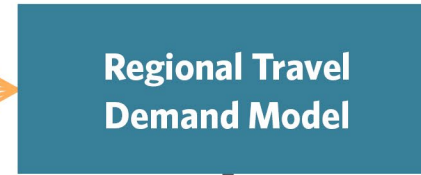
- Reflects March 2025 Swyft concept
- Uses ITAM Buildout Approved traffic forecasts
- Refined ITAM traffic analysis zones
- Reflects expected interaction between Great Park activity centers



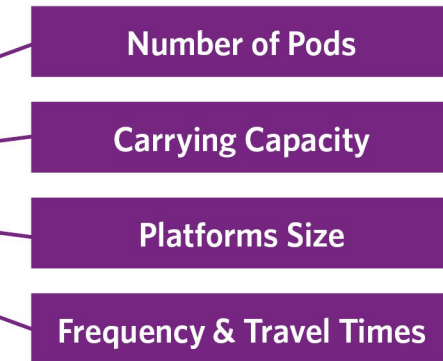
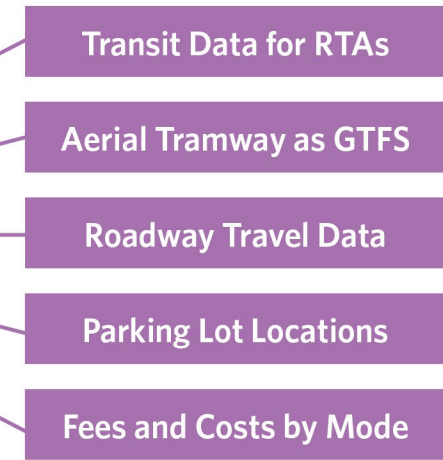
DEMAND SIDE



TOOL

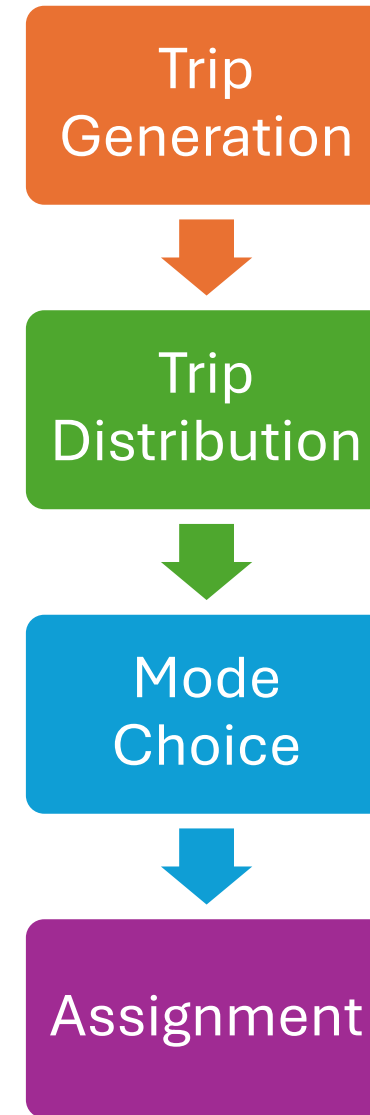


SUPPLY SIDE



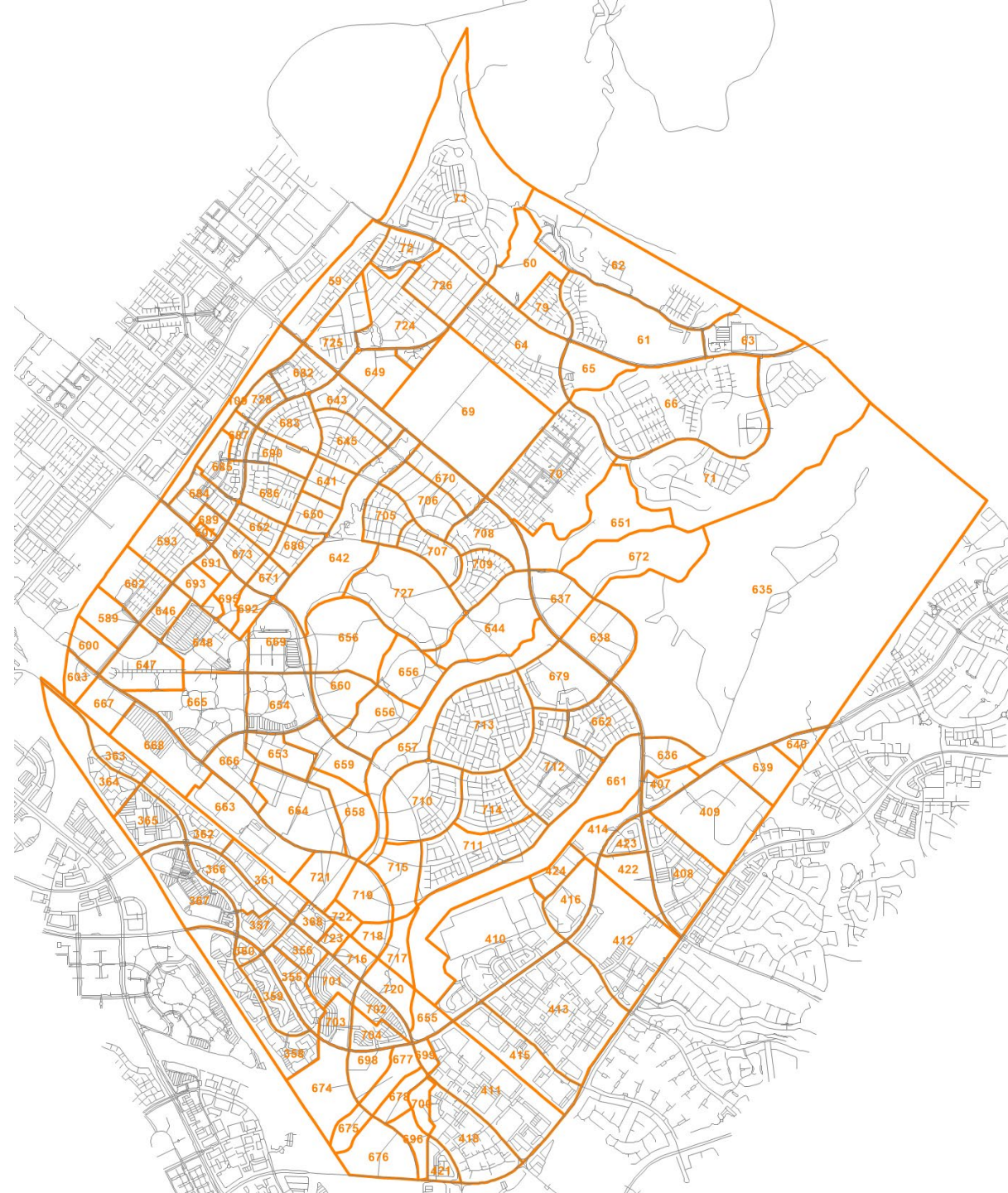
Great Park Ridership Model

- Four-step model
 - Trip generation
 - Trip distribution
 - Mode choice
 - Assignment
- TransCAD-based tool
 - Data sharing with ITAM
- Scenario testing



Subarea Model Traffic Analysis Zones

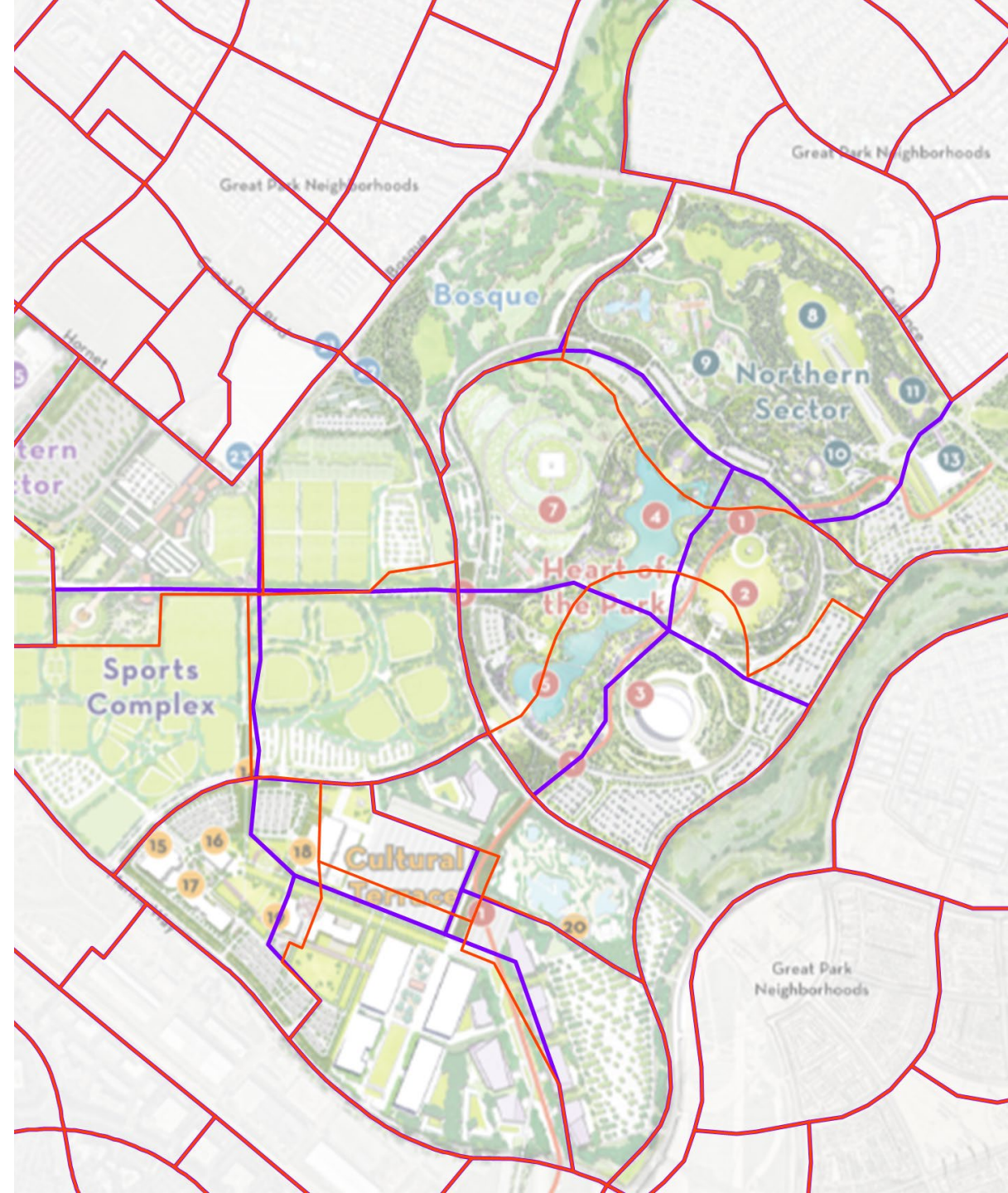
- Initial geography extracted from ITAM model



Traffic Analysis

Zone Refinement

- Customized the ITAM for the Great Park
 - Subdivided zones to distinguish park land uses
 - Refined zone geography reflects Swyft station locations
 - Added three new zones and updated ITAM trip generation



Walk Network

- Developed in TransCAD using OpenStreetMap web data
- Enhanced circulation using Great Park plan



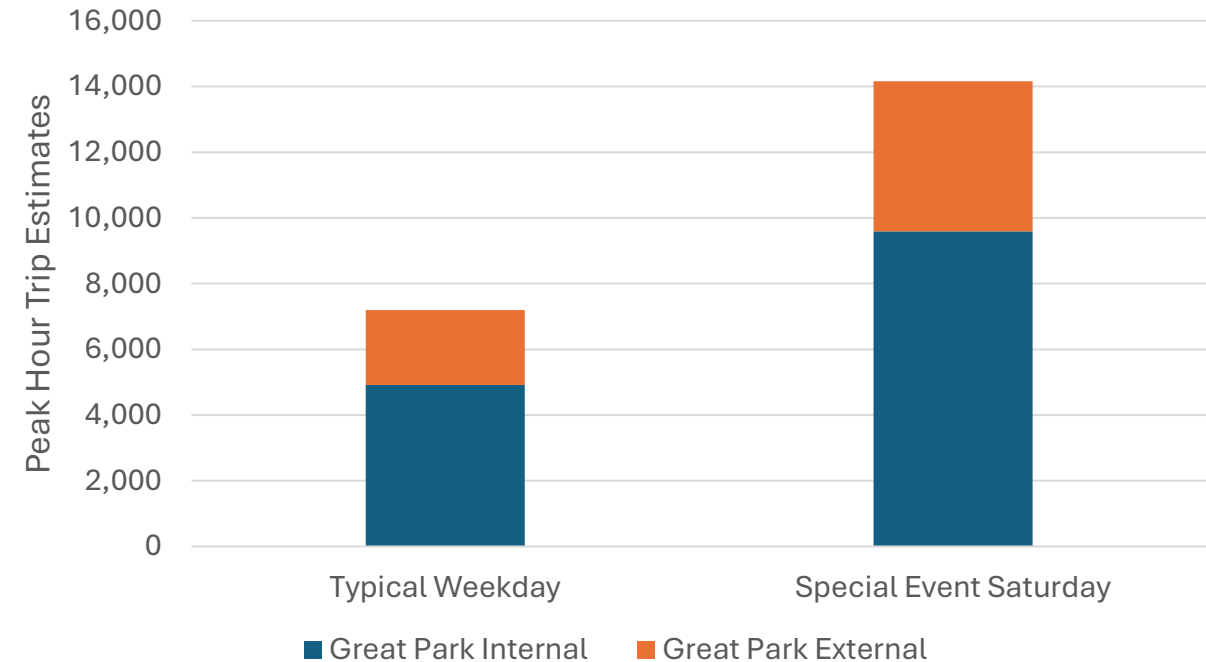
Balboa Park Comparison

	Weekday PM Peak Hour Person Trips
Balboa Park (Replica Model)	6,600
Great Park Buildout (HDR Model)	7,200
Difference (Pct)	600 (9%)

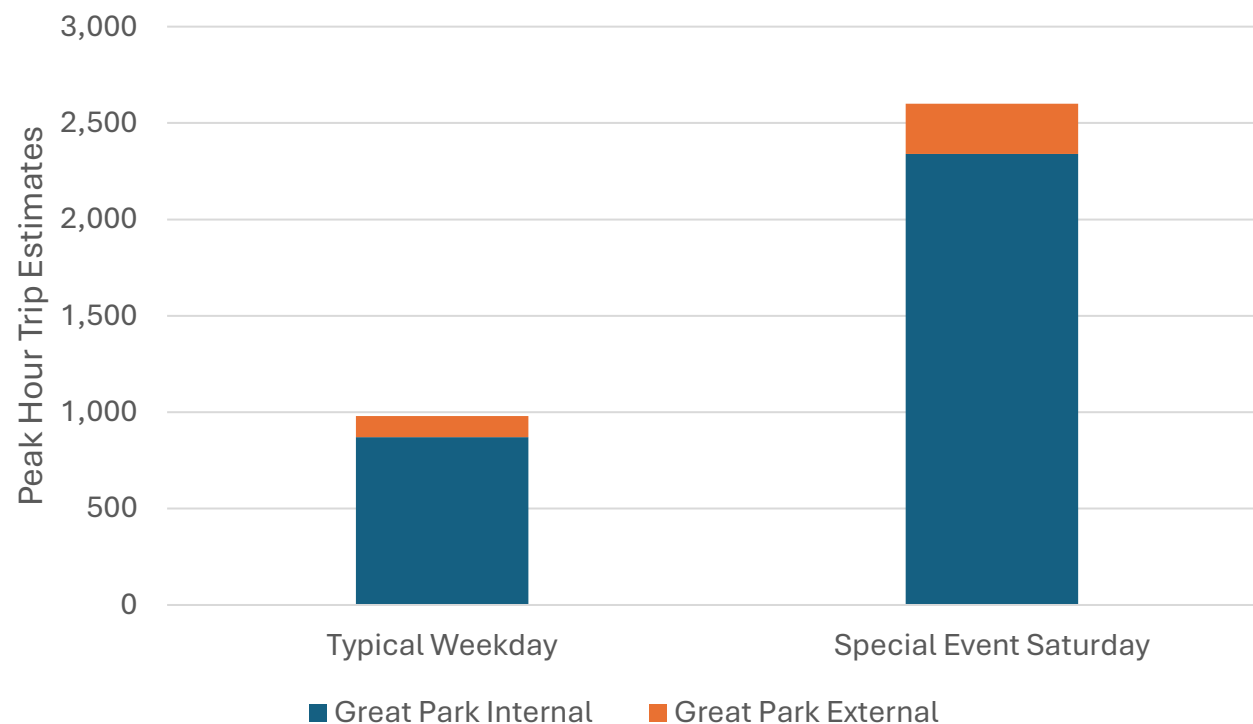
- Overall Great Park model estimates consistent with high level Balboa Park activity

Great Park Buildout Peak Hour Activity Scenarios

Typical Weekday Activity	Special Event Saturday Activity (3 to 4 times per year)
Great Park • Botanical Garden • Veterans Memorial Garden • Forest Arboretum • Wedding Pavilions • Bosque • Skate Park • Wild Rivers • Multi-Use Fields Baseball • Multi-Use Fields Soccer • Heart of the Park restaurants • Balloon Ride • Administrative offices • Aquatics Center • Flying Leathernecks • Cultural Terrace External • Metrolink Station • Great Park Neighborhoods • Southern California	Great Park • Botanical Garden • Veterans Memorial Garden • Forest Arboretum • Wedding Pavilions • Bosque • Skate Park • Wild Rivers • Multi-Use Fields Baseball • Multi-Use Fields Soccer • Heart of the Park restaurants • Balloon Ride • Administrative offices • Aquatics Center • Flying Leathernecks • Cultural Terrace • Large Amphitheater (event clearing) • Small Amphitheater (event clearing) External • Metrolink Station • Great Park Neighborhoods • Southern California
Estimated Daily Attendance: 68,000	Estimated Daily Attendance: 92,000



Great Park Buildout Swyft Cities Ridership Estimates



- Most Swyft Cities trips are internal
- External connection to Irvine Station, Great Park neighborhoods
- Approximately 3 times greater than Sam Schwartz projections (812 peak hour rides, see slide 10)

Potential Buildout Weekday Mobility Benefits



Compare Swyft to no-transit
scenario



Over 40% travel time savings
compared to walk only

Buildout Fleet Needs

- Planned 47-vehicle Whoosh fleet accommodates ITAM modeled peak-hour demand
 - Minimal to no wait times
- Special events (3-4/year) may increase wait times.



Upcoming Analysis

- Detailed wait time analysis
- Test alternate modes using updated Great Park Model
- Mode cost analysis
 - Operational costs
 - Capital costs



First Operating Segment



- 0.6 mi
- Eight vehicles
- Connects existing popular attractions in the park (Balloon, Visitor Center, Carousel) to highly desired incoming amenities (the Canopy, pickleball courts)



First Operating Segment

- The system will be held to performance metrics
- Allows staff to learn from the contribution-period operations



Costs and Operations

Costs

- First Operating Segment (~\$15.5M)
- Full System Alignment (~\$75M)

Operations

- Swyft Guarantee: Cost per passenger ride will be less than half of the average bussing cost between National, regional, and local data
 - Average = \$8.93/ passenger ride
 - Half = \$4.47/passenger ride



Outreach

- **Please visit our website!** *<https://cityofirvine.org/whoosh>*
 - Mobility Studies
 - Questions and Answers
 - Calendar of efforts going forward
- **Upcoming Presentations**
 - June 9: Public Town Hall meeting at Great Park Hangar 244
 - June 16: Finance Commission
 - June 17: Transportation Commission



Thank you

Thank you

