CONNECTIONS 2040

PLAN FOR GREATER PHILADELPHIA

fostering sustainability, equity and innovation

CHOICES & VOICES

APA-OH Webinar I May 29, 2015

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

Agenda

- DVRPC
- Choices & Voices Program Operation
- Creating Choices & Voices
- Advertising Choices & Voices
- Choices & Voices Results
- What's Next

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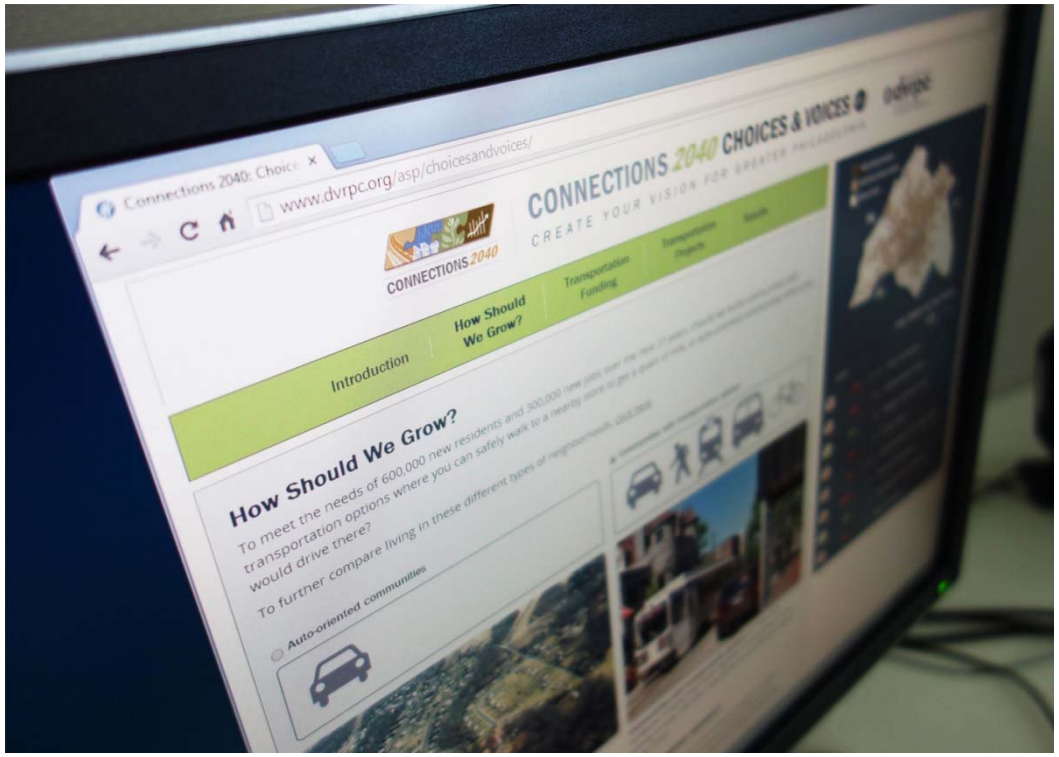
Delaware Valley Regional Planning Commission

- MPO for Greater Philadelphia
- 2 States, 9 Counties, 352 Municipalities
- 2040 Growth Forecast
  - Population: +11% to 6.26 million
  - Employment: +11% to 3.27 million

Choices & Voices



www.dvrpc.org/choicesandvoices

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CONNECTIONS 2040 CHOICES & VOICES V2.1

CREATE YOUR VISION FOR GREATER PHILADELPHIA

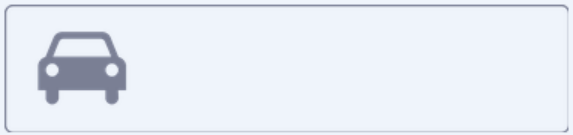
DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

How Should We Grow?

To meet the needs of 600,000 new residents and 300,000 new jobs over the next 27 years, should we build communities with transportation options where you can safely walk to a nearby store to get a quart of milk, or auto-oriented communities where you would drive there?

To further compare living in these different types of neighborhoods, click here.

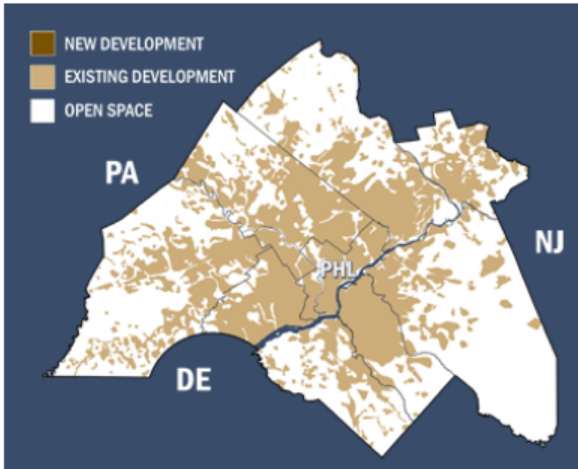
○ Auto-oriented communities



Auto-oriented communities *separate houses from other uses, generally requiring a vehicle to get to work, run errands, or make any other trip.*

○ Communities with transportation options

Communities with transportation options *mix shops and residences, bringing them closer together so that getting to work, running errands, and other trips can be done by walking, biking, or taking transit.*



The Region Today...

TODAY → 2040

1,085,600	Acres Developed
7,340	Vehicle Miles Driven
100	Biking & Walking Trips
64	Transit Trips
$13,680	Transportation & Energy Costs
21.8	Hours of Congestion
7.6	Greenhouse Gas Emissions
7.1	Road Fatalities

How To Use

Transportation Funding Options

Transportation Funding

The passage of Act 89 has provided a significant increase in funding for transportation investments in Pennsylvania. However, the region still faces a considerable shortfall between the cost to maintain and improve our roads, bridges, and transit system and the anticipated revenue the region will receive over the life of the *Connections 2040* Plan. The Plan is required to maintain a balanced budget, and cannot spend any more than can be reasonably anticipated.

Given our funding gap, and the fact that the Greater Philadelphia region pays a lower local share for transportation infrastructure than many of our competing regions, the *Connections 2040* Plan considers ways to increase funding to help improve our transportation system, in order to enhance quality of life and maintain economic competitiveness.

Do you think additional local funding is necessary to help pay for state-of-good repair needs and some new major transportation projects in the Greater Philadelphia region?

- (•) Yes
- ( ) No

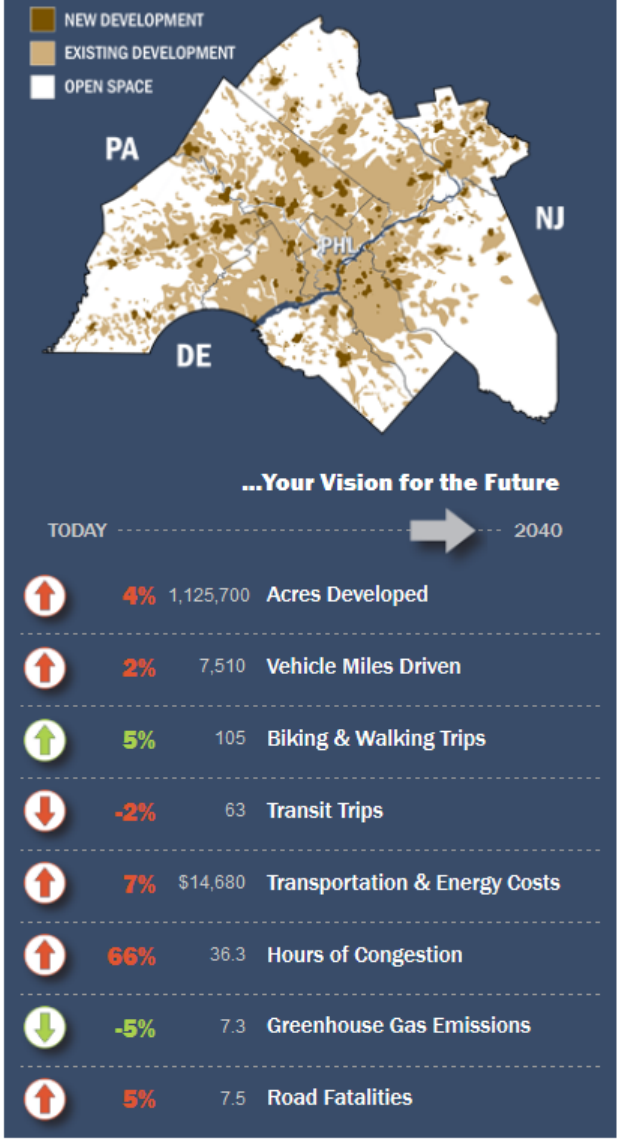
What type of local funding source(s) would you be willing to support? (Check all that apply)

- [x] Increase the gas tax ⓘ
- [ ] Increase transit fares ⓘ
- [ ] Increase vehicle registration fees ⓘ
- [ ] Increase the general sales tax ⓘ
- [ ] Mileage tax ⓘ
- [ ] Place tolls on the region's limited access highways ⓘ
- [ ] Congestion Pricing ⓘ
- [ ] Carbon Tax ⓘ
- [ ] Other ⓘ

How much should these new funding sources cost the average household per year in total? ⓘ

$200

NEXT



How To Use ⓘ

Transportation Investments

System Preservation

How well do you want to maintain roads and bridges?

Failure to properly maintain roads and bridges reduces safety, increases vehicle operating costs ⓘ, increases travel delay, and vehicle emissions.

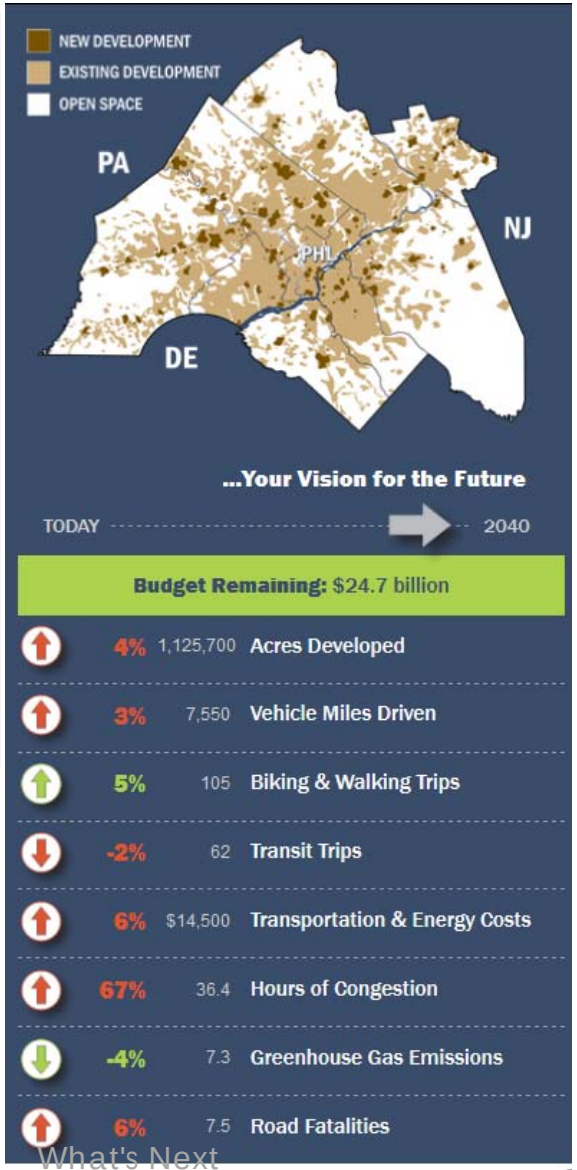
$35

$ 35 billion - Maintain current conditions

***Click here** to maintain current funding levels, current conditions worsen*

***Click here** to maintain current conditions*

***Click here** to acheive and maintain a state-of-good-repair*



Transportation Investments

At what level would you like to maintain transit infrastructure, including rail infrastructure, transit vehicles, and transit stations?

Failure to properly maintain transit infrastructure reduces the safety and reliability of the system as well as the comfort level of the user, all of which lead to lower ridership levels.

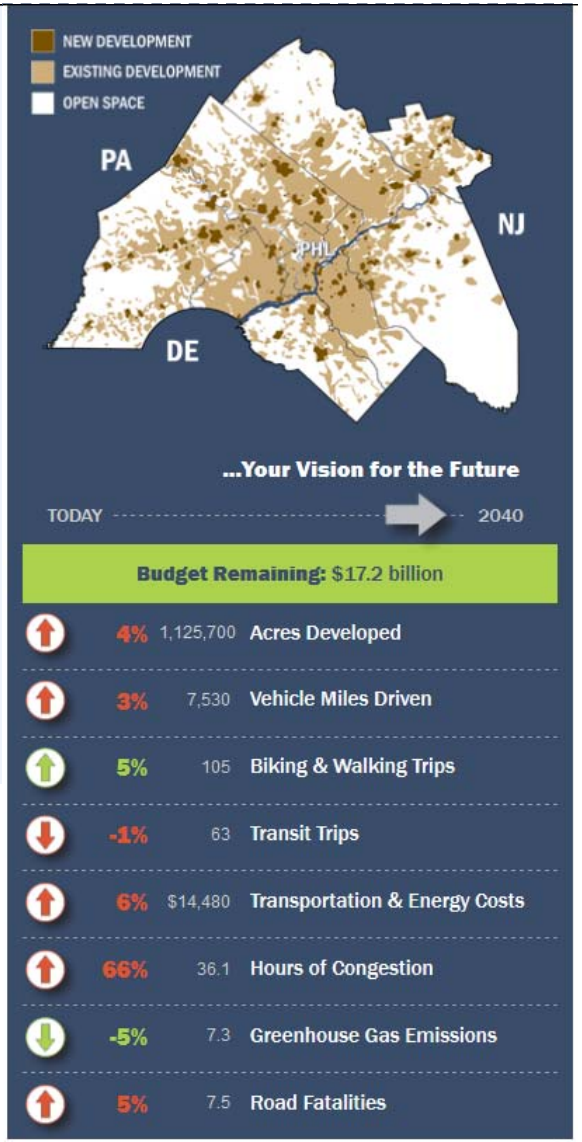
$25

$ 25 billion - Maintain current conditions

***Click here** to maintain current funding levels, current conditions worsen*

***Click here** to maintain current conditions*

***Click here** to achieve and maintain a state-of-good repair*



Crowdsourcing

Vehicle Miles Driven

Vehicle miles traveled have decreased in your scenario, helping to reduce congestion, improve road safety, and lower greenhouse gas emissions and the cost of transportation. Reducing VMT means the region will be less energy-dependent and may be more economically competitive than other more spread-out regions.

Your Scenario:	Everyone's Scenario:	Compare to Today:
-1% 7,260	-1% 7,250	7,340

Biking & Walking Trips

Your scenario encourages more biking and walking trips by developing approximately 875 miles of new bike and pedestrian facilities, including new segments of the Circuit regional trail network, bike lanes, and sidewalks. Biking and walking have become easier because most new development has occurred in areas where walking is pleasant and homes, stores, restaurants, schools, parks, and jobs are located in close proximity to one another. Incorporating more physical activity into our transportation system will improve health.

Your Scenario:	Everyone's Scenario:	Compare to Today:
5% 105	6% 106	100

Transit Trips

Investments in our regional public transit infrastructure have improved system condition making for smoother, safer, and more comfortable rides, and attracting new riders to the system.

The annual number of transit trips has increased because new development in established areas has made transit a viable alternative to driving for many people.

Your Scenario:	Everyone's Scenario:	Compare to Today:
16% 74	18% 76	64

Transportation & Energy Costs

Smaller, more energy-efficient homes have helped to lower energy bills. Compact development patterns and a strong transit system help the regional economy to deal with energy price fluctuations. Your scenario has focused considerable investment on road and bridge maintenance, and conditions generally have been maintained at today's level. This helps to keep vehicle operating costs from significantly rising.

These costs do not account for the effect of inflation. An item that costs $1 today will likely cost between $2.00 and $2.50 in 2040. Growing world population and economic development may also mean the cost of energy will increase at an even greater rate.

Your Scenario:	Everyone's Scenario:	Compare to Today:
4% $14,200	4% $14,230	$13,680

Creating Choices & Voices

Builds off DVRPC Scenario Planning Efforts

Making the Land Use Connection:
Regional What-if Scenario Analysis
(2008, Publication #08059)

Implementing Connections:
The Benefits For Greater Philadelphia
(2011, Publication #11045)

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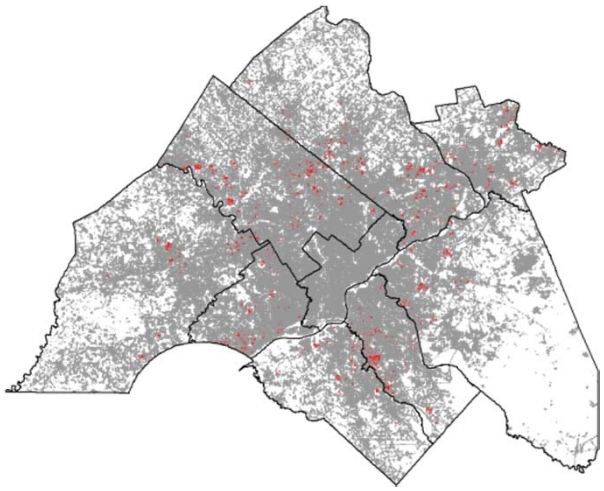
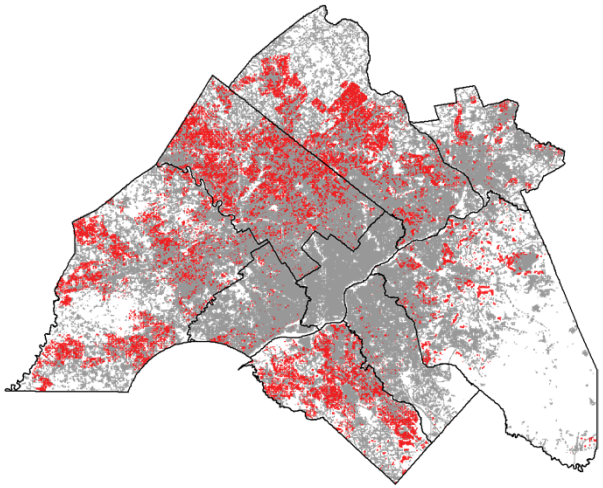
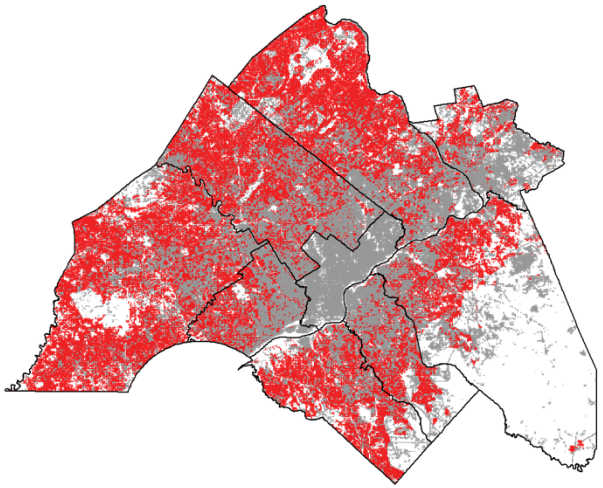
New Footprint Land Development

Recentralization	Trend	Sprawl
		
Acres Developed 5,800	169,000	478,000

2035 Future Development

2005 Existing Development

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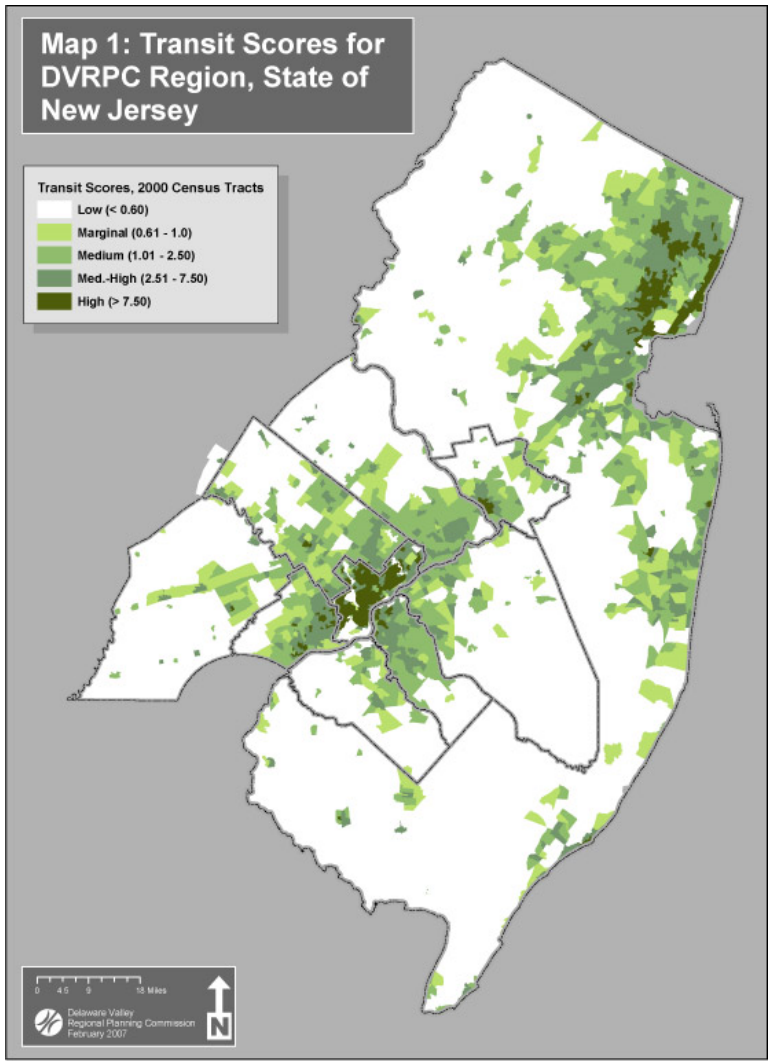
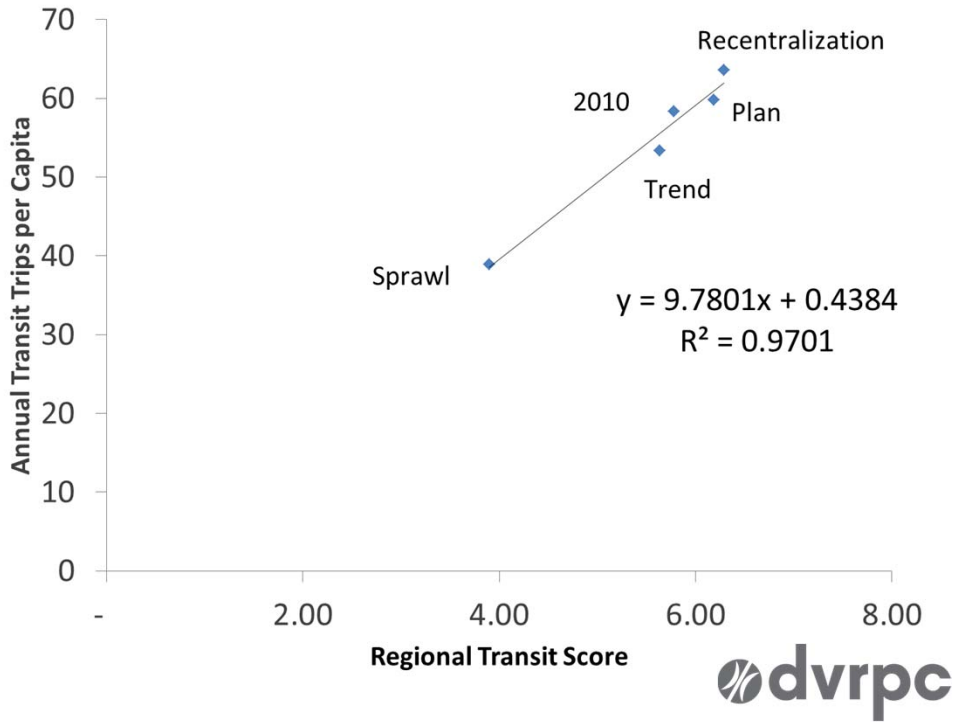
Creating Choices & Voices

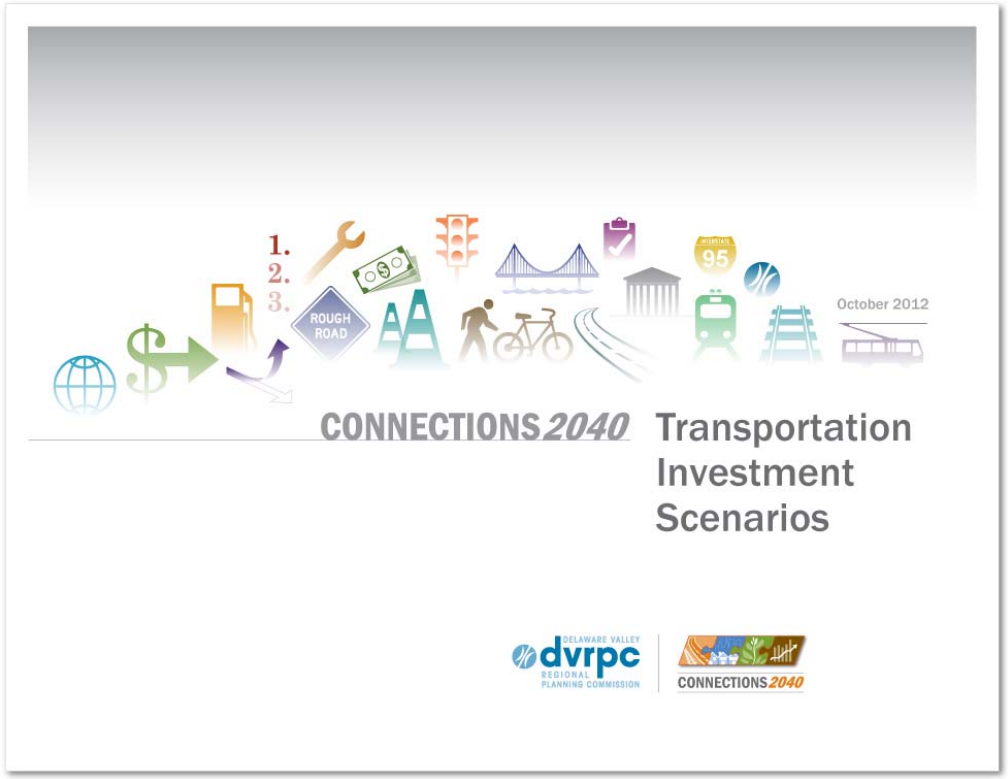


‘Regional’ Transit Score

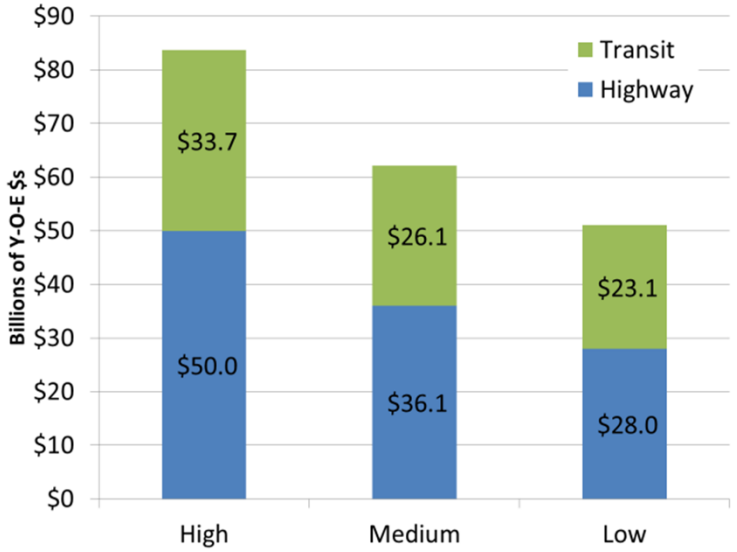
0.41 * (Population / Res. Acre) +
0.09 * (Jobs / Comm. Acre) +
0.74 * (Zero-car households / Res. Acre)



Transportation Investment Scenarios



2012, Publication #13004



High - $84 B

- Obama proposal

Medium - $62 B

- MAP-21 level continues

Low - $51 B

- Actual gas tax revenue

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Transportation Elasticity

Tax or Fee	Trip Frequency	Trip Length
Carbon Tax	-0.09	-0.26
Congestion Pricing*	-0.41	-0.15
Tolling	0.00	-0.28
VMT Fee	-0.16	-0.45
Gas Tax	-0.08	-0.23
Transit Fares**	-0.90	0.00
Vehicle Registration Fees	-0.04	0.00
Sales Tax / Other	-0.01	-0.03

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Web Programming

Bootstrap

- Provides default layouts, styles, and components
- Uses 12-column responsive grid to fit to small screens
- Includes easy-to-use JQuery plugins
- Fast development, supported by all browsers back to IE7

Knockout.

- Dynamic controls the user interface
- Provides missing link between static HTML and dynamic data
- Uses Model-View-View Model (MVVM) pattern for event-driven programming

Google Analytics

- Comprehensive traffic analysis and reporting
- Monitor traffic sources to evaluate campaign effectiveness
- Compare visits to app submissions: completion ratio
- Track sharing via social media
- Find out what users do next on the website dvrpc

Getting the Word Out

- Social Media
- Link on DVRPC website
- Users can Like on Facebook and Retweet
- News articles (Inquirer, Newsworks.org, PlanPhilly)
- Posted on regional blogs
- DVRPC Newsletter (~10,000 subscribers)
- Tailored e-mails to ~200 regional organizations
- Business cards
- Presentations and meetings
- Partner organizations (county planning departments, TMAs)

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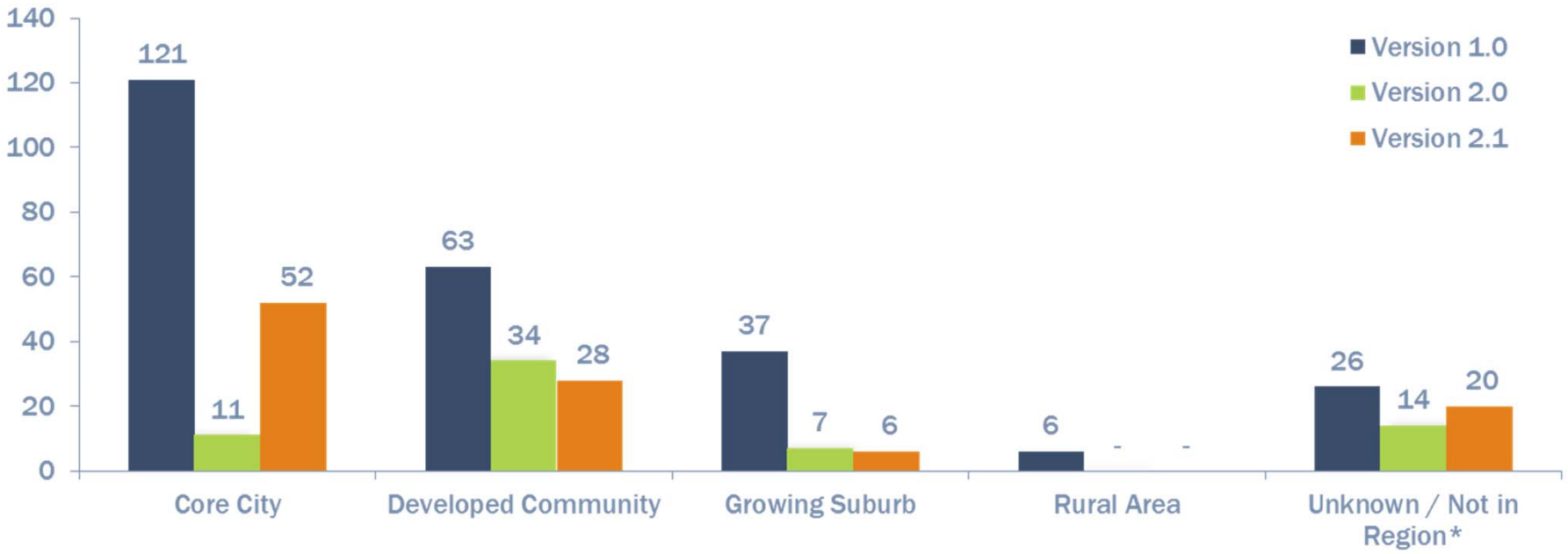
Choices & Voices Responses



*No further evaluation

Version 2.1 results through May 21, 2015

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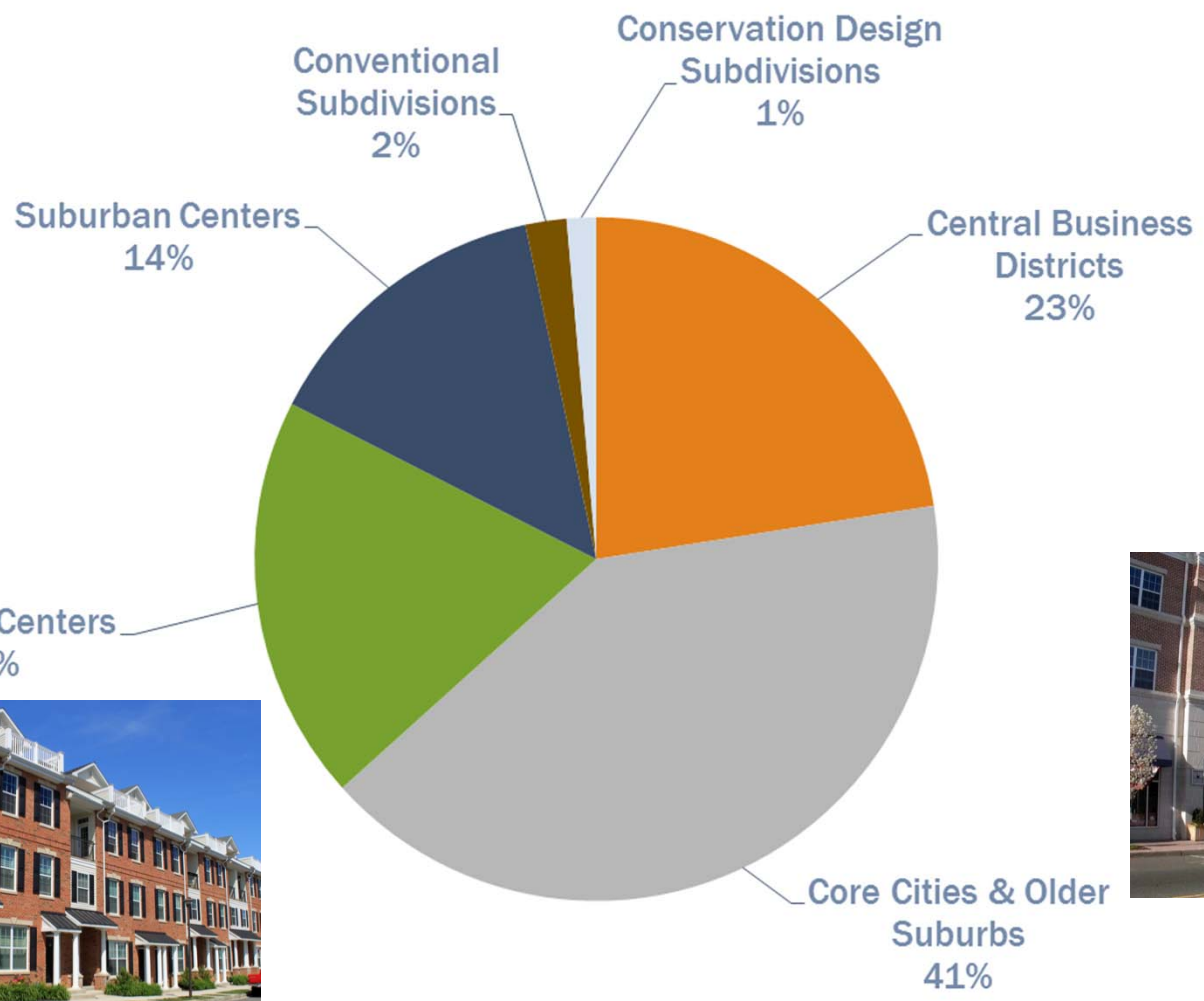
Development Patterns



Average: 39,000 acres developed

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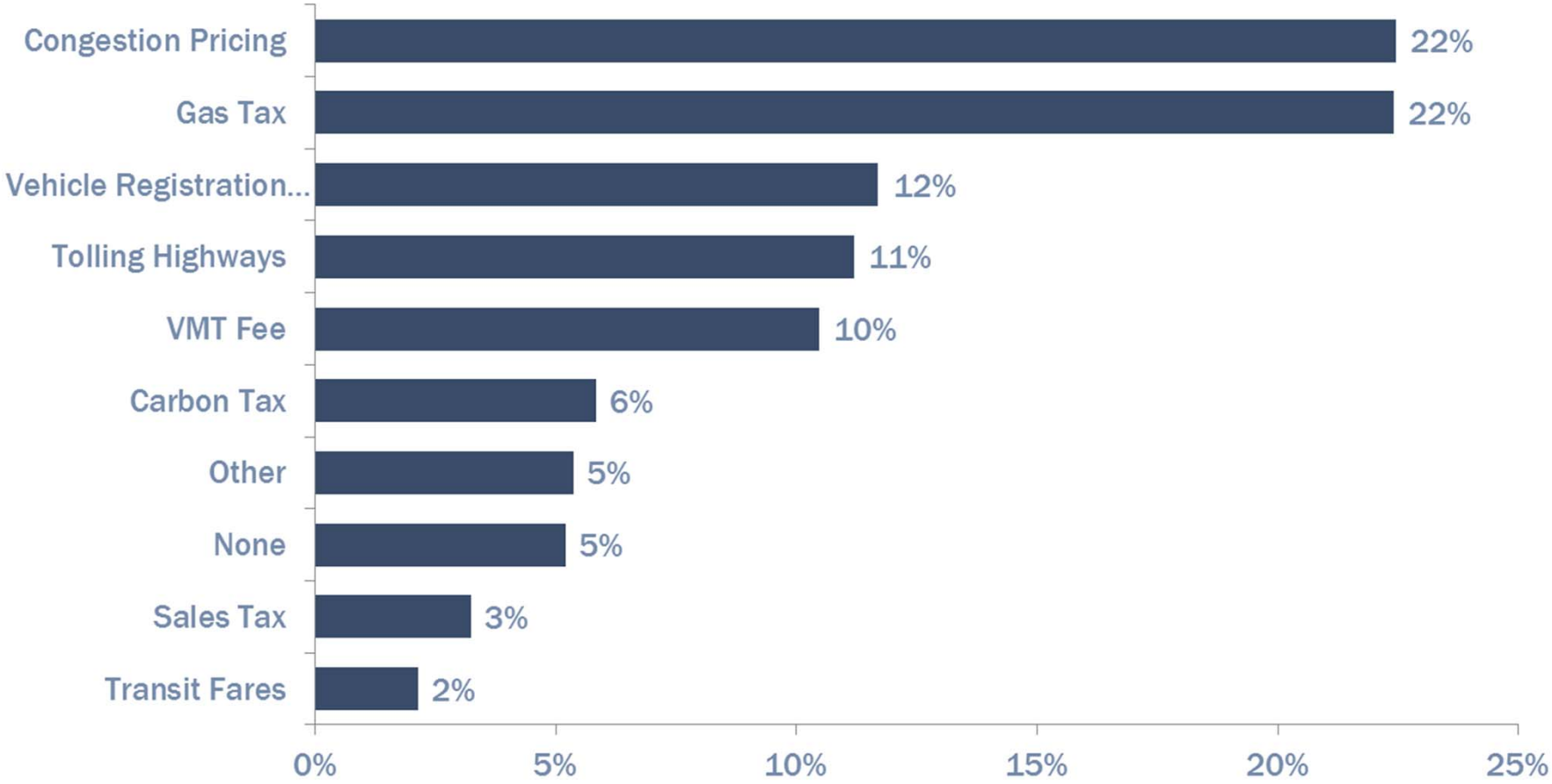
Local Revenue Options



* Carbon Tax not available in Version 1.0

Version 1.0 and 2.0: Average ~$150 Per Household Per Year
Version 2.1: Average ~$210 Per Household Per Year

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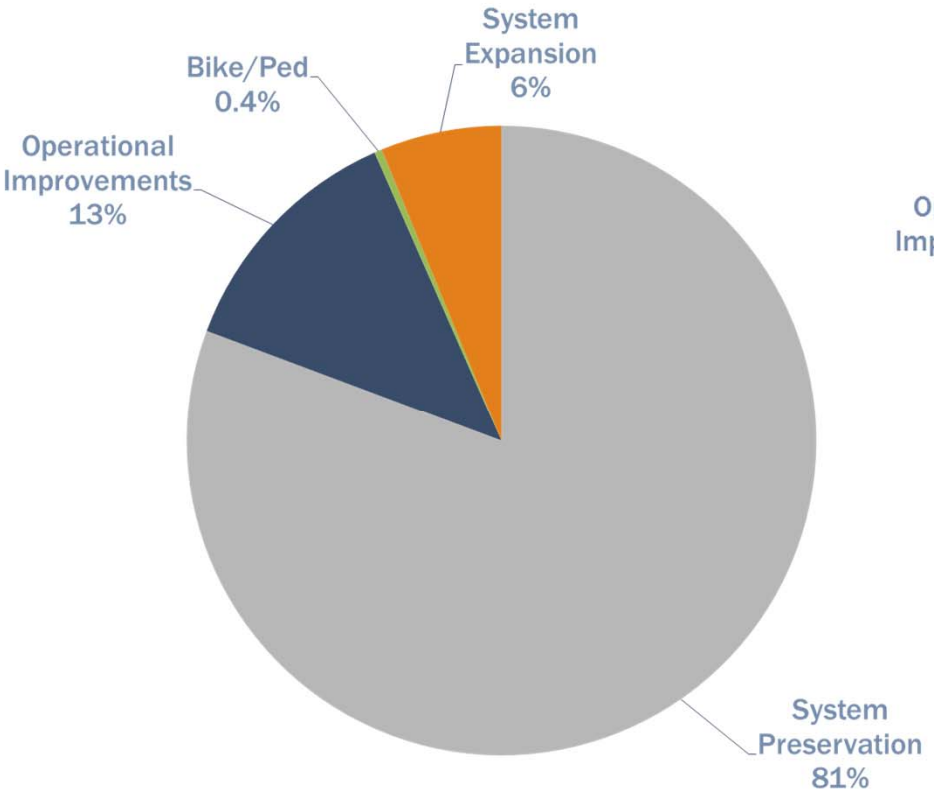
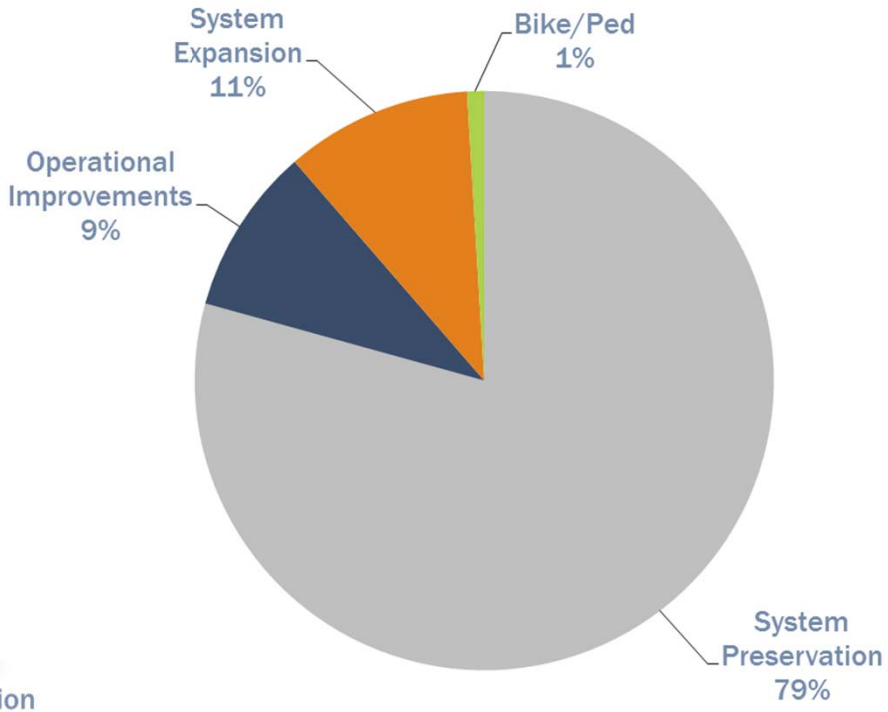
Expenditures

Choices & Voices Participants



Available Revenue: $74.3 Billion (Y-O-E)

Connections 2040 Plan



$63.5 Billion (Y-O-E)

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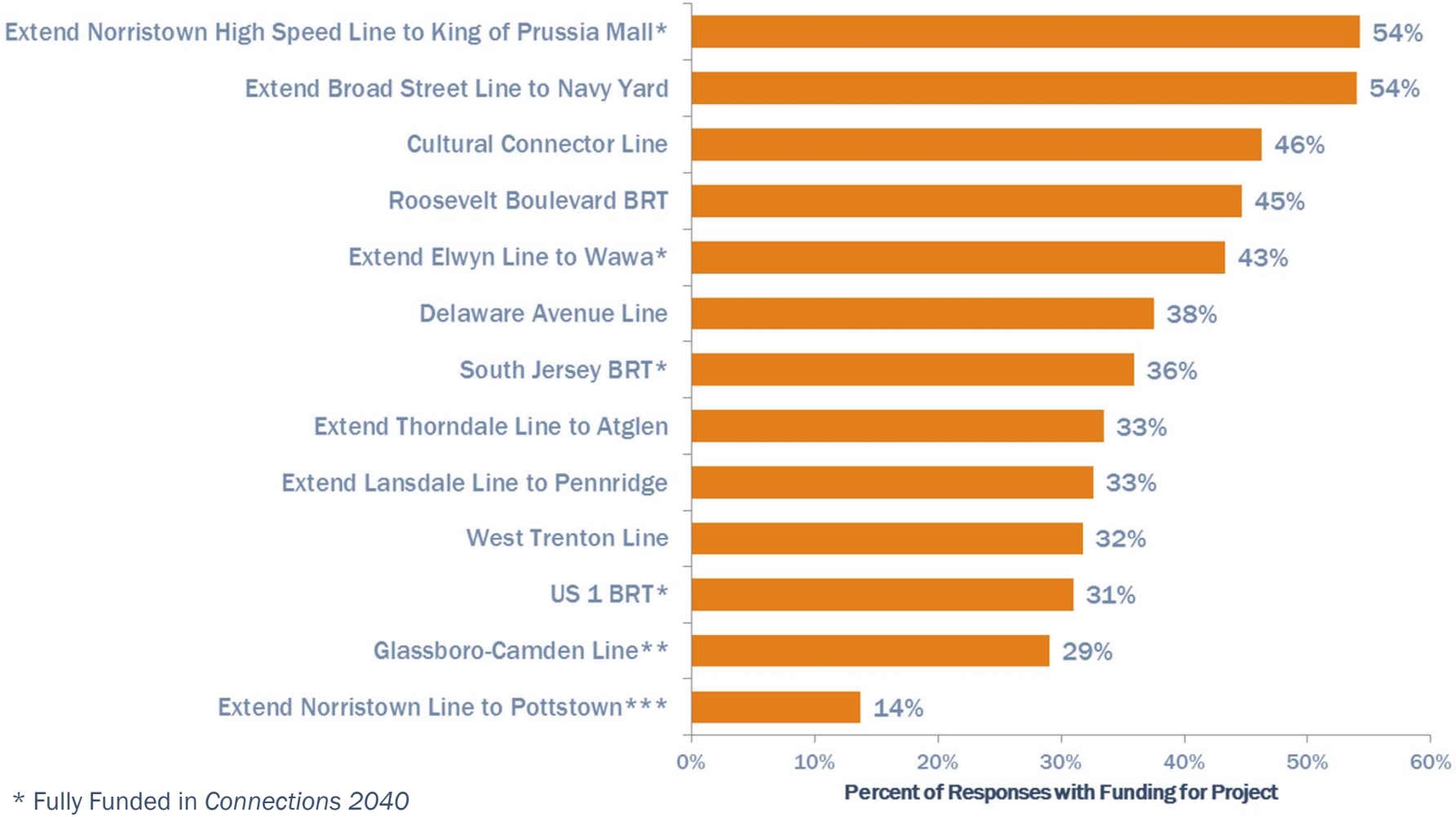
Transit System Expansion



* Fully Funded in *Connections 2040*
** Partially Funded in *Connections 2040*
***Not an option in Version 1.0

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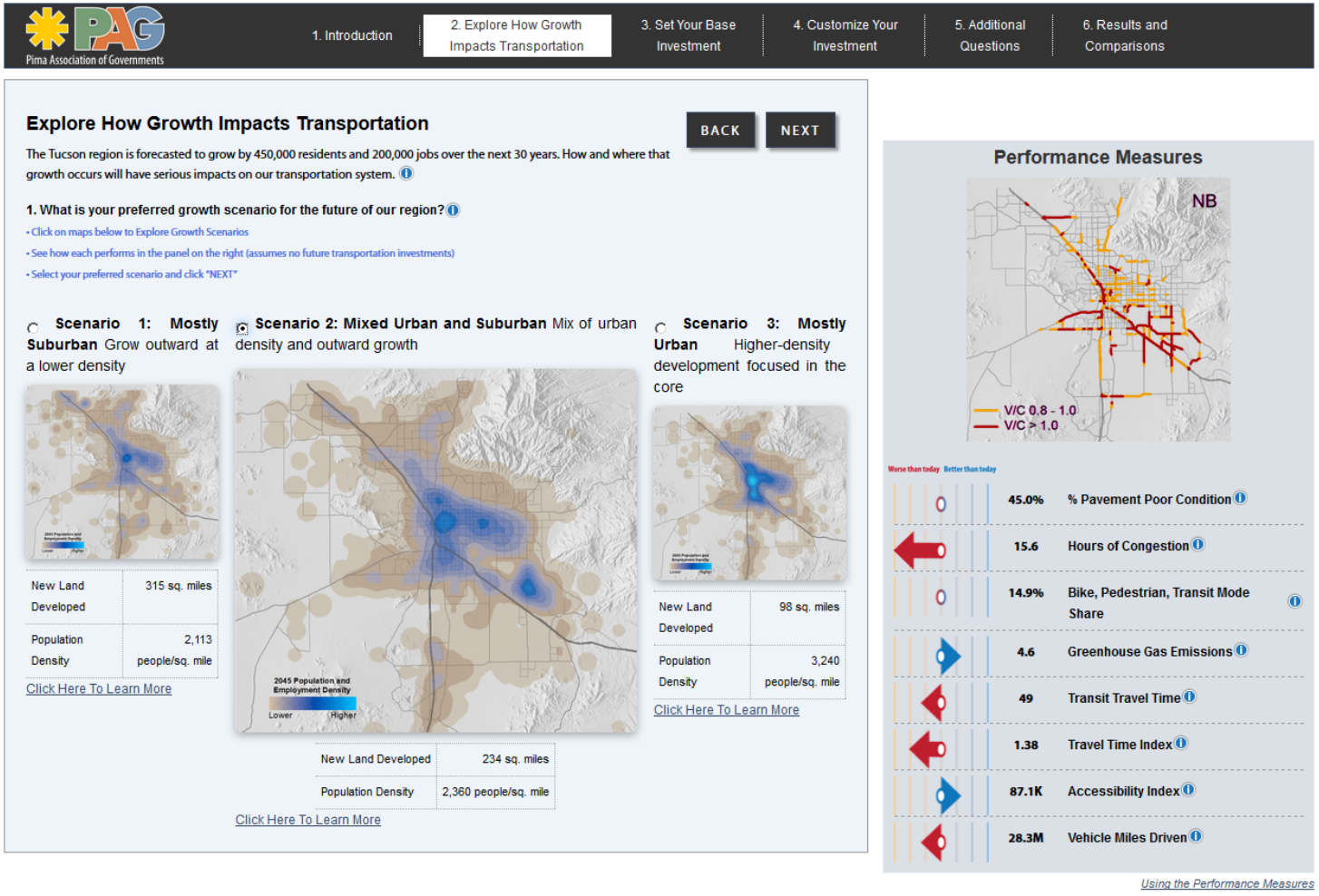
Pima Association of Governments

PAG Engage 2045 Survey Tool

http://gismaps.pagnet.org/RTPengage/



What's Next

github SOCIAL CODING

Choices & Voices Source Code
https://github.com/dvrpc/ChoicesAndVoices

Future of Scenario Planning
http://www.dvrpc.org/asp/pubs/publicationabstract.asp?pub_id=WP14038

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Accessible Wayfinding for the Disabled Traveler: DC Metro Wayfinding Project

W. Brandon Cox, MA, COMS

Senior Director of Rehabilitation & Education
Certified Orientation & Mobility Specialist
Columbia Lighthouse for the Blind

Columbia Lighthouse for the Blind ClickAndGO DC Metro Project

- Professional background & DC Metro Project background
- Phase 1 Demonstration (Completed December 2014)
- Phase 2 Demonstration (Estimated December 2015)

Phase 1 Demonstration: Completed December 2014

- Funded by New Freedom (FTA)
  - $100,000
- 10 Metro Stations completed with Virtual Tours and descriptions of each entrance.
- Gallery Place Chinatown completed with Virtual Tours and over 110 Point to Point Routes into and out of the station. Includes routes to bus stops and major landmarks.
- www.clb.org/clickango or iPhone App

Phase 2 Demonstration: Estimated December 2015

- Funded by Enhanced Mobility Program (FTA)
  - $250,000
- 5-7 stations will add:
  - More advanced virtual tours
  - Routes into and out of station
    - High Resolution Low Vision Maps for Each Route
  - iBeacon Navigation Support

"How Do I Get There From Here?"

1. Self-orientation

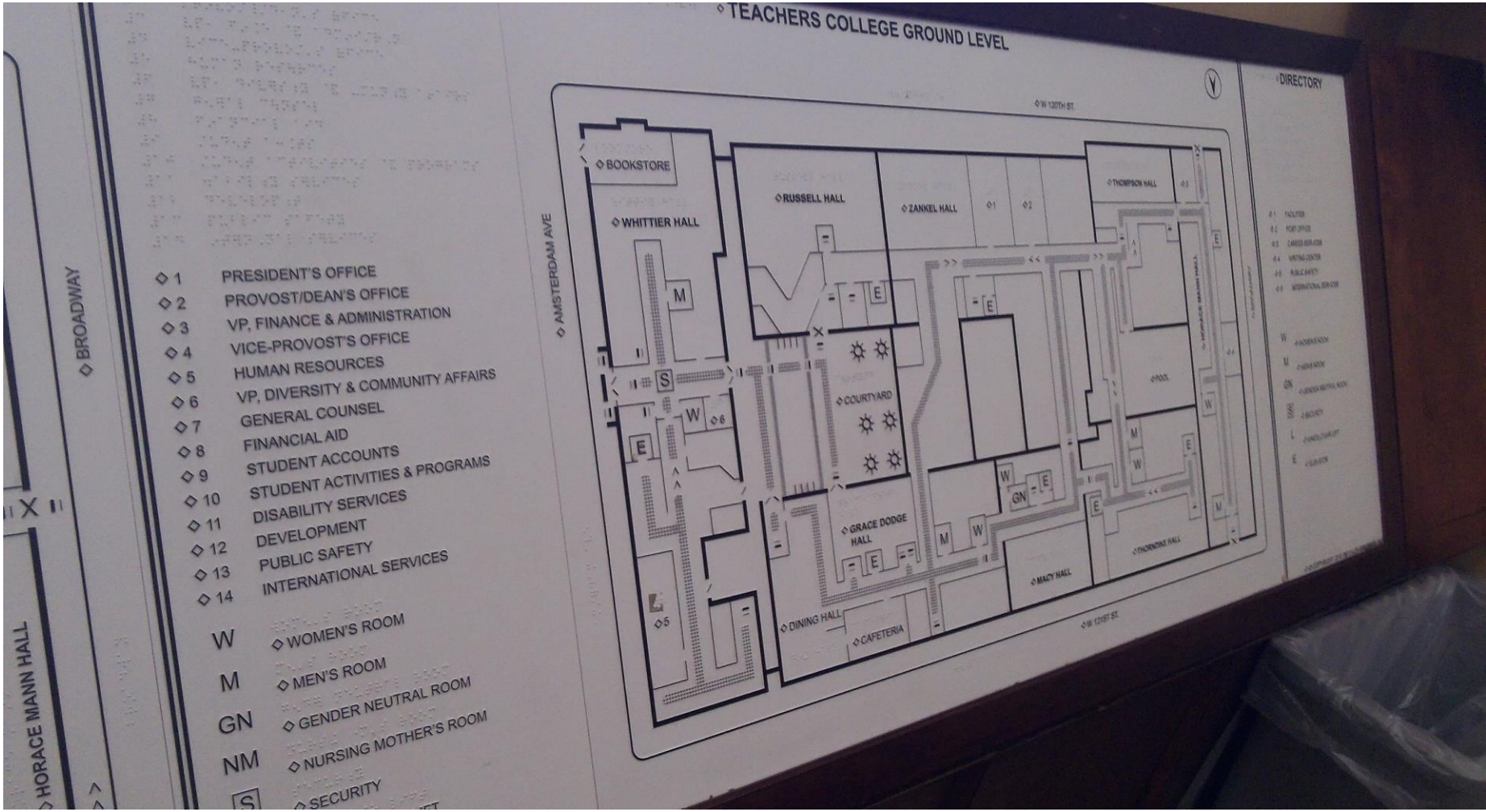
2. Get directions or guide support

3. Orientation & Mobility

4. GPS, RIAS, Bluetooth & other new technologies*

5. Tactile maps

Tactile Maps



What is ClickAndGo?

- Searchable, customized data “manually pre-compiled”
- serves *multiple user groups*
- Narratives include slope, sound, tactile and distance cues
- Free for users, no equipment to purchase, install, or maintain

What is ClickAndGo?

- Data delivered thru multiple formats (smartphone is one of "many" delivery options)
- Seamless outdoor to indoor transitioning
- Supported by iBeacon technology
- **Pre-journey learning and exploration**: Users can explore and "virtually" explore routes in advance of their travel to the site

What is ClickAndGo?

- Deliverable in multiple languages
- Also available via free IVR service for users with no access to higher tech devices
- Low vision “high contrast” maps of all routes and tours are provided
- Separate customized databases provided for wheelchair travelers

Multiple Databases for Different User Groups

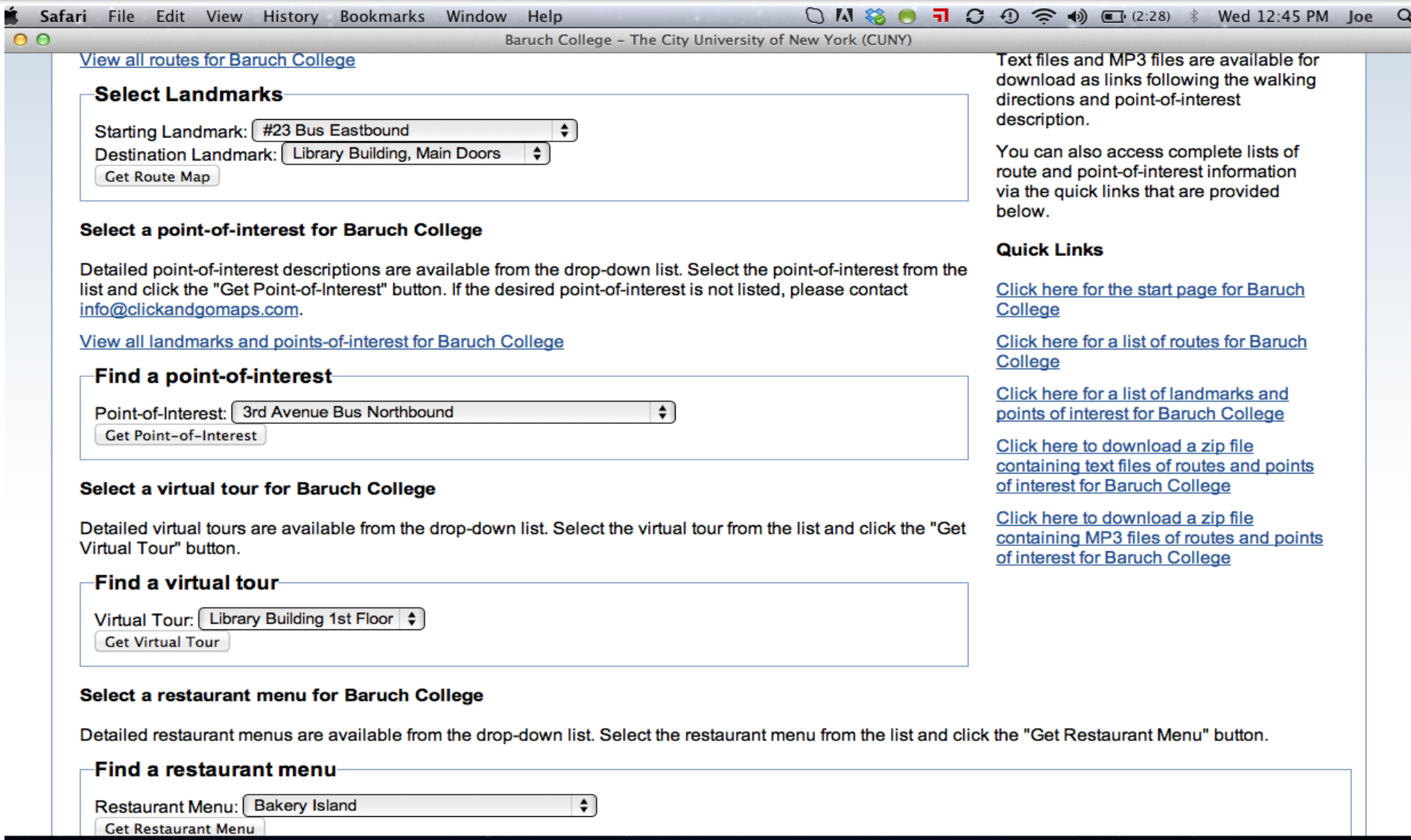
What is ClickAndGo?

- How is data compiled?
- What is the business model?
- Testimonials, Blind community responses

How is ClickAndGo Data Delivered to Users?

- Screenreader
- IVR via telephone or cellphone
- Text or MP3 file download
- Large print or Braille
- Refreshable Braille for DB
- iPhone App w/ iBeacon support

Website Access

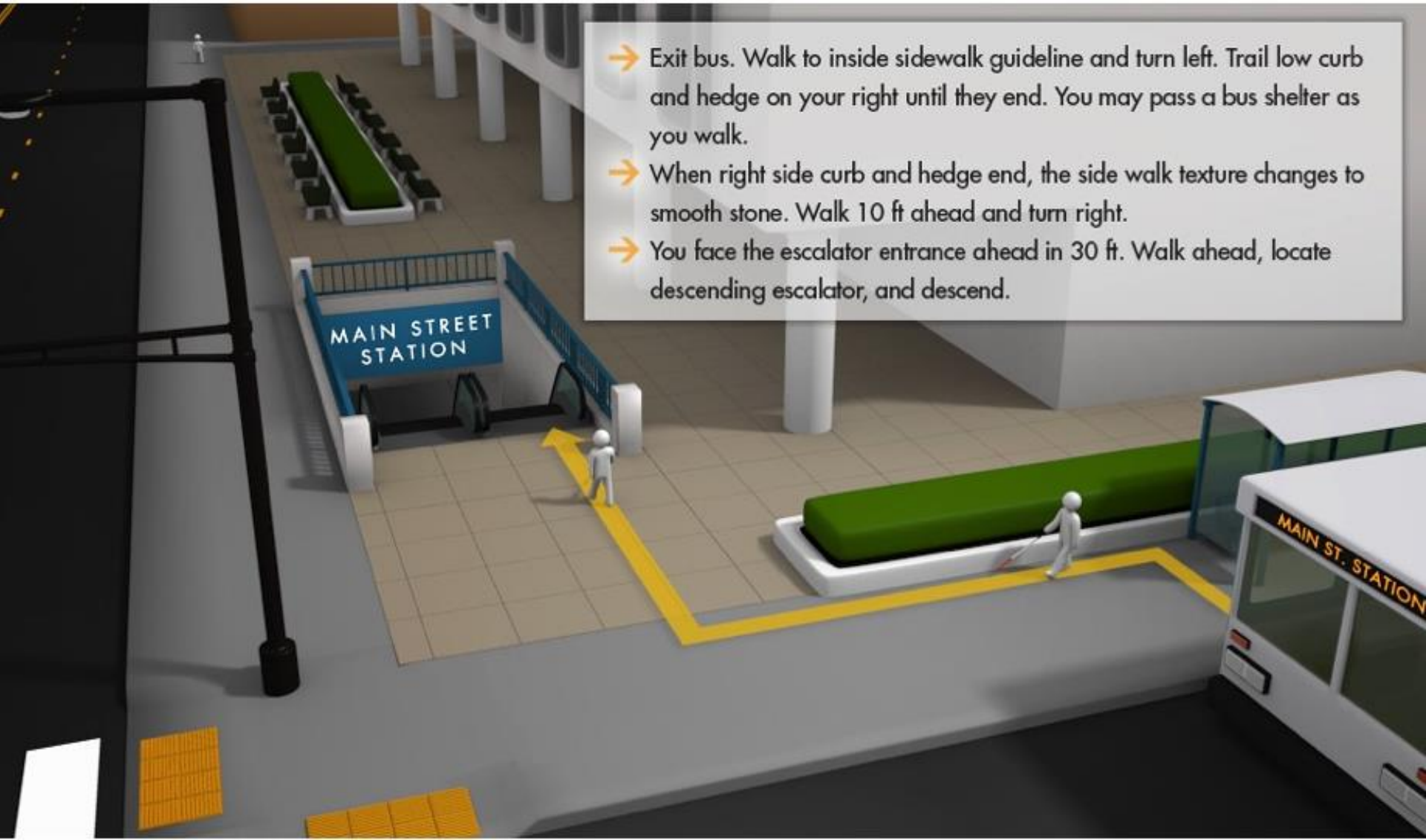


ClickAndGo Features

1. ACCESSIBLE WALKING DIRECTIONS

- Searchable “Point A to Point B” customized indoor *and* outdoor walking directions
- Select from list of starting and end points

ClickAndGo Features

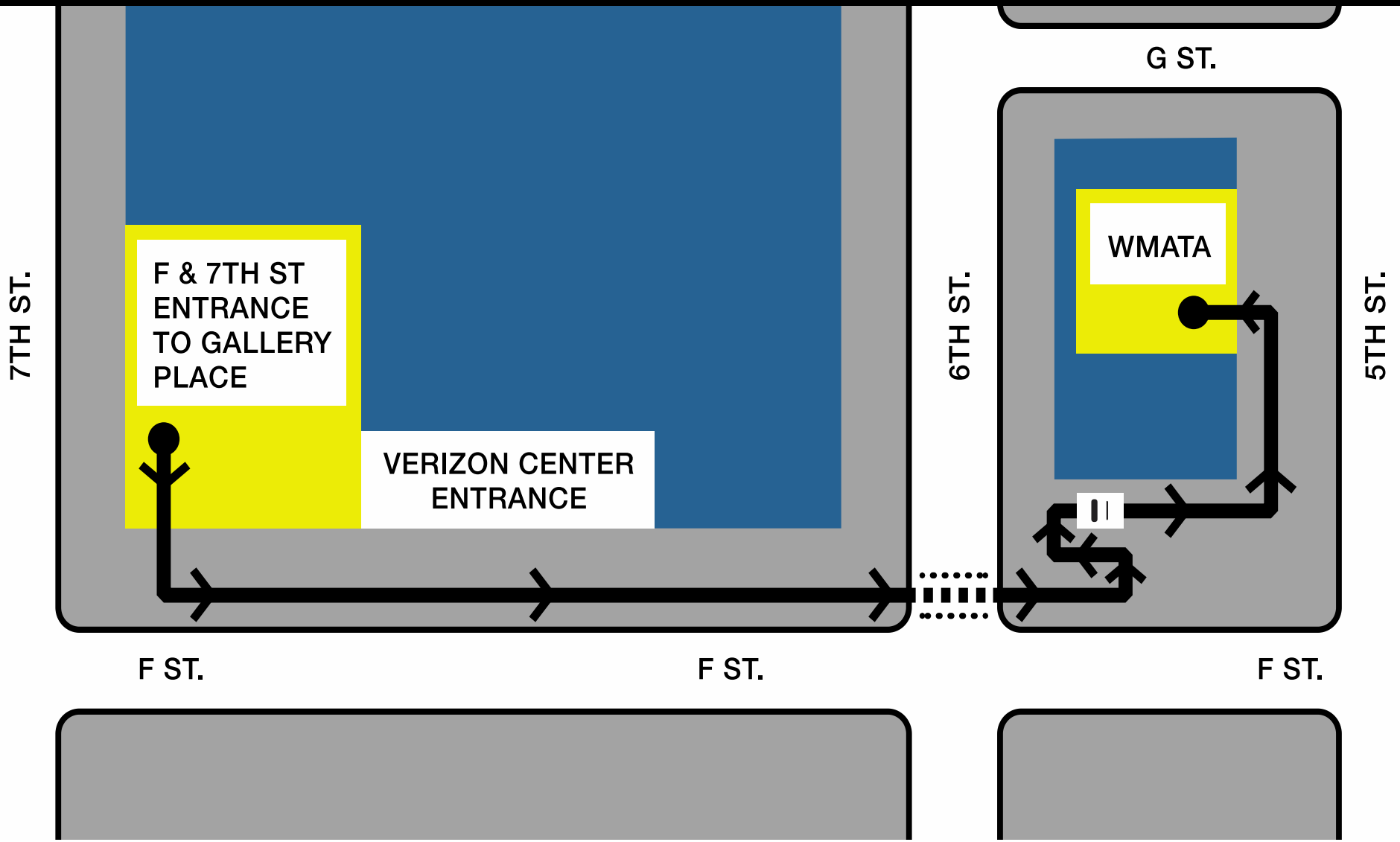


Additional ClickAndGo Features

2. LOW VISION MAPS

- High contrast visual maps can be delivered for each walking route.
- User can zoom, download, print out, and carry for reference
- Delivered via website and iPhone App

Low Vision Maps



ClickAndGo Features

3. VIRTUAL TOURS

- An “overview” or “walk-through” of a venue.
- Can serve as familiarization tool
- Facilitates the development of a cognitive map

ClickAndGo Features

4. POINT OF INTEREST INFORMATION (POI)

- Provides description/location of landmark.
- Identifies which routes have been compiled reach that POI.

ClickAndGo Features

5. INTERSECTION DESCRIPTIONS

- Detailed descriptions provided for intersections.

  Includes:

- Geometry & type of traffic controls
- Presence & location of pedestrian plazas and bicycle paths
- Other relevant info

Additional ClickAndGo Features

6. RESTAURANT / MENU ACCESS

- Can direct traveler to restaurants, and then provide audio/text menu option

7. EMERGENCY EVACUATION / EGRESS.

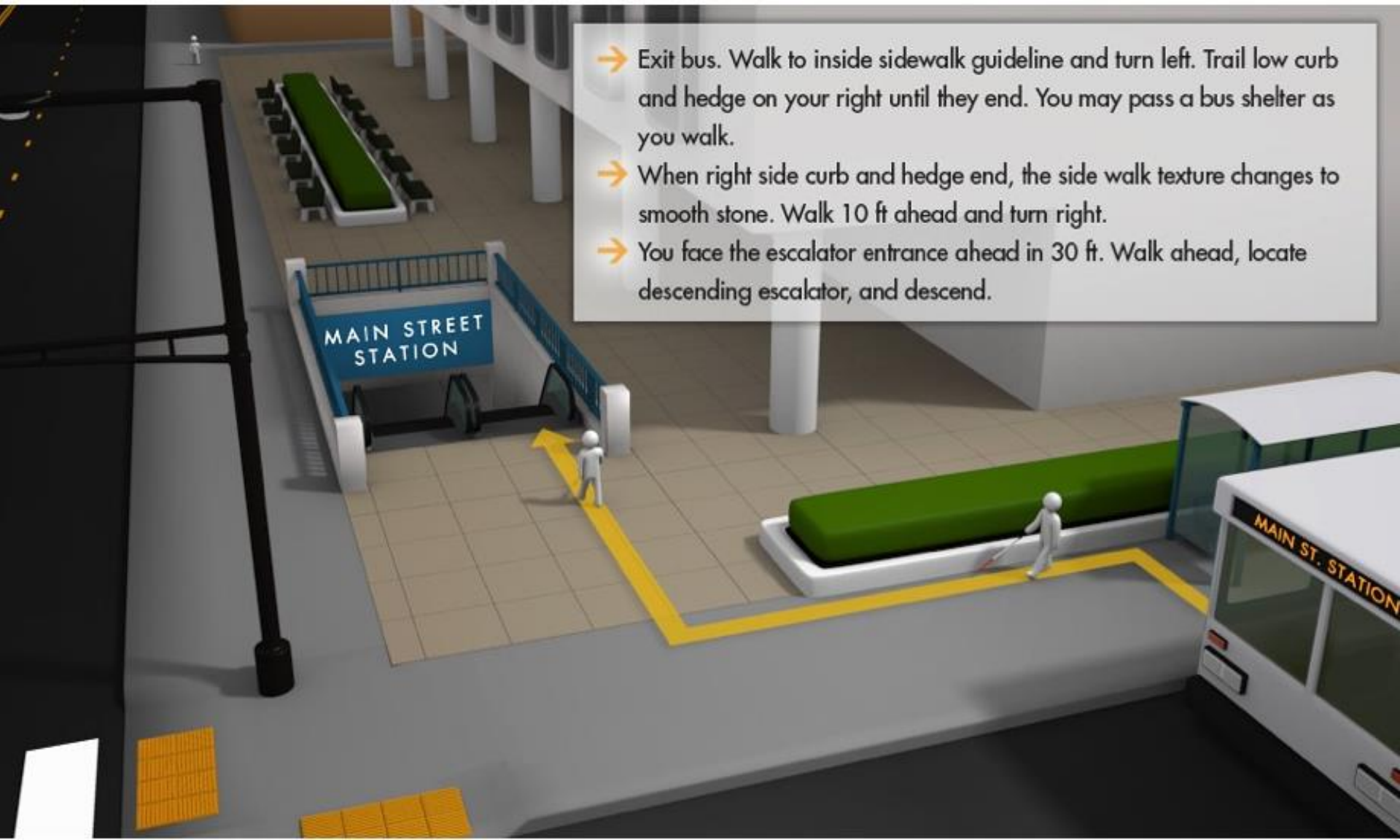
- Supports emergency egress planning and procedures (*specific ibeacons dedicated to emergency messaging)
- Familiarization to emergency fire / exit routes

iBeacon support

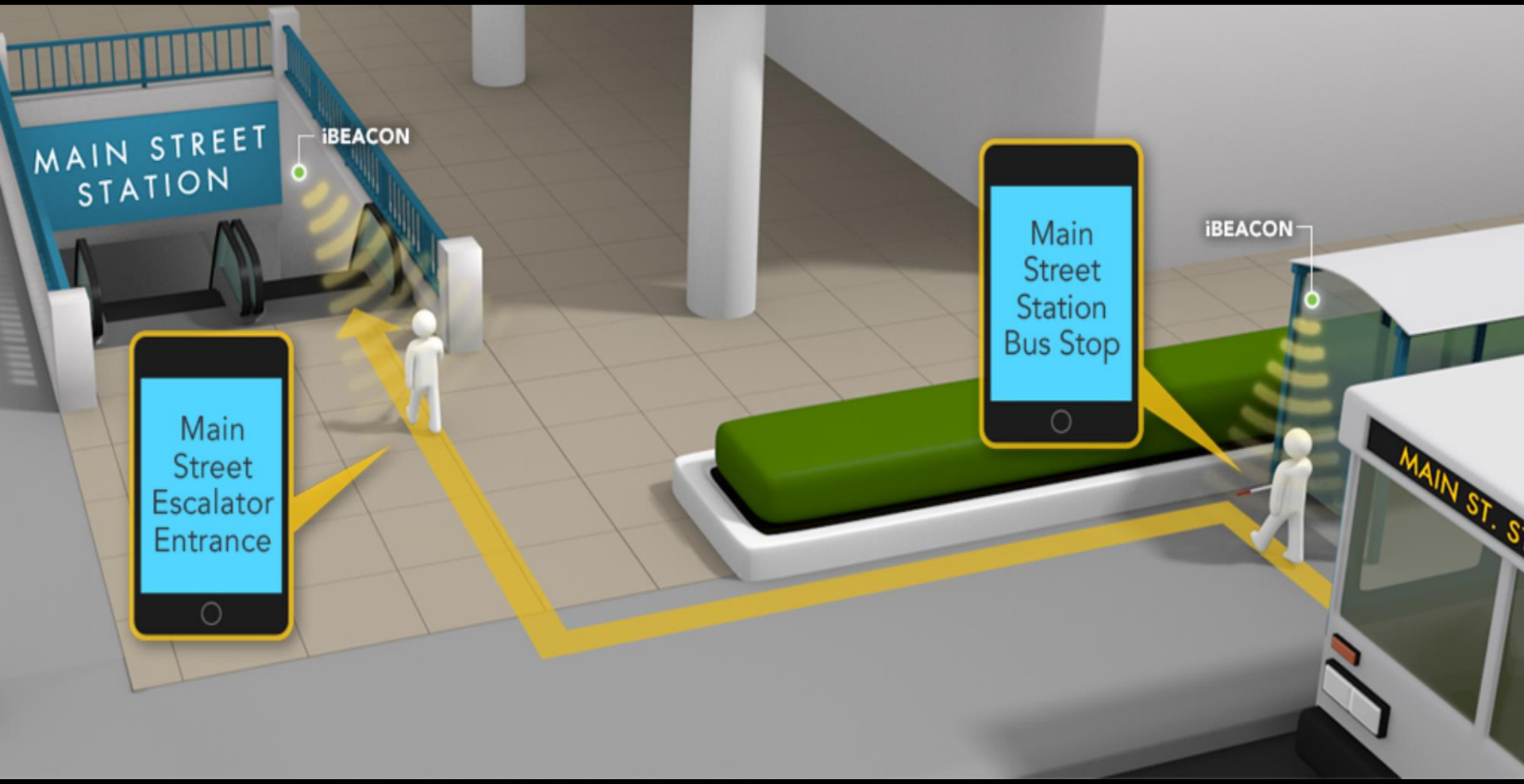
Indoor Real-Time Location Support

- iBeacon support offered as complement to customized narratives.
- Provides real time location-specific support
- Used for landmark ID, orientation support
- some iBeacons designated for emergency announcements, hazard alerts, etc

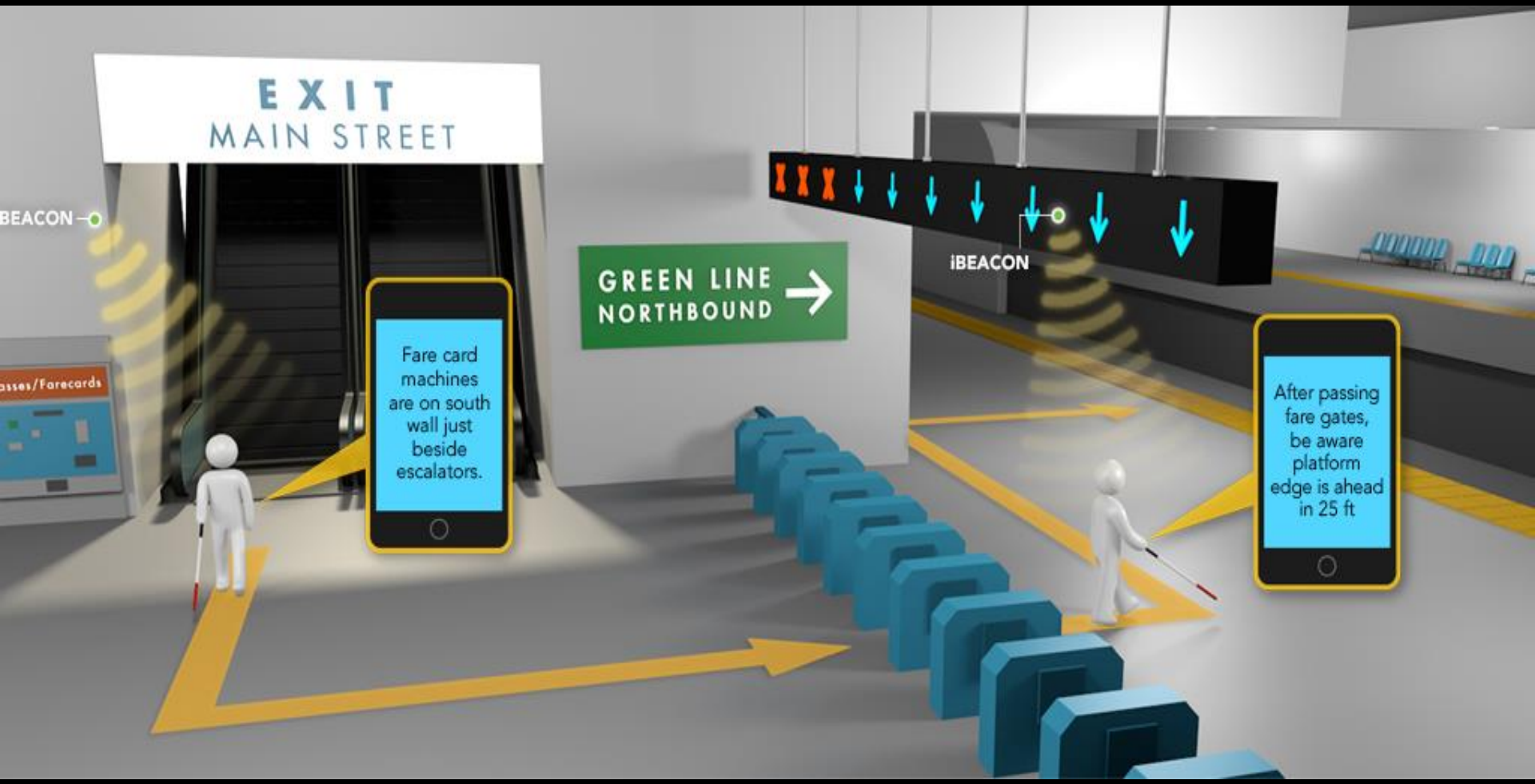
Narrative without iBeacon



Narrative with iBeacon support



iBeacon support



Community applications of ClickAndGo service

- Transit environments (bus, train, light rail)
- University campuses
- Hotel / Corporate / Conference centers
- Airports, hospitals, malls, parks, museums
- Downtown areas of cities
- Skyway and tunnel systems

Summary

- ClickAndGo technology offers “pre-journey learning” and a low vision map component.
- Free access to data in every possible format
- Data easily edited and updated.

Summary

- All blind-specific data compiled by O & M instructors
- Can provide seamless outdoor to indoor route guidance and familiarization support
- No installation, purchase, or maintenance of “equipment”

Questions and Resources

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- Email: **bcox@clb.org**

- www.clickandgomaps.com
- www.clb.org/clickandgo

Real-time ridesharing – Can toll discounts encourage carpooling?

APA Transportation Planning Division webinar:
Technology Applications for Transportation Planning
May 29, 2015

Greg Griffin, AICP
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image: TTI

Overview

1. Background
2. Project description
3. Results
4. Summary

Disclaimer

The contents of this presentation reflect the views of the author, who is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Federal Highway Administration (FHWA), the Texas Department of Transportation (TxDOT), or the Central Texas Regional Mobility Authority (CTRMA). This report does not constitute a standard, specification, or regulation.

Texas A&M Transportation Institute

1. Background

Real-time, aka 'Dynamic' Ridesharing

- RTR (or dynamic ridesharing) apps match carpool partners at the time the trip is needed or scheduled for a specific time and place.
- Traditional carpool coordination is non-dynamic, requiring pre-trip coordination between driver and passengers.

Texas A&M Transportation Institute

Enabling Technologies

Cell-based Internet

+ GPS

+ Personal verification

+ electronic $

+ cloud-based servers

Smartphone revolution?

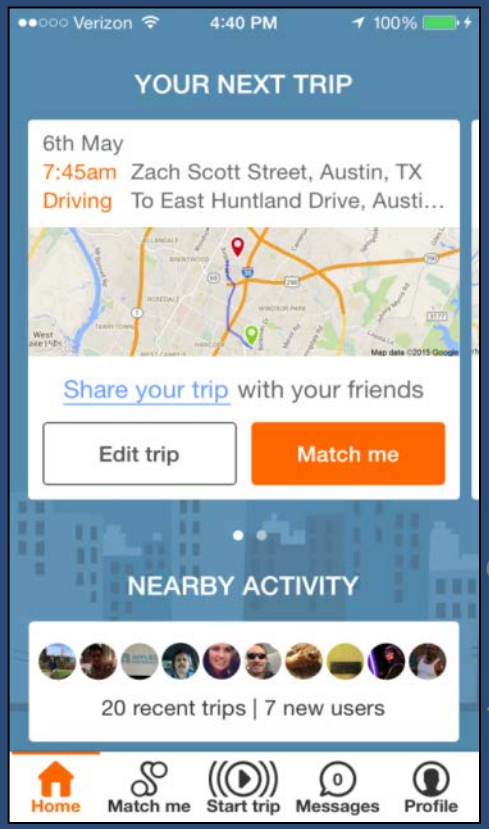

Image Carma

Texas A&M Transportation Institute

Is smartphone ownership a barrier?

- Yes, for older & low-income demographics.
- Smartphone adoption continues to increase.

Smartphone Ownership Highest Among Young Adults, Those With High Income/Education Levels

% of U.S. adults in each group who own a smartphone

All adults	**64%**
Male	66
Female	63
18-29	85
30-49	79
50-64	54
65+	27
White, non-Hispanic	61
Black, non-Hispanic	70
Hispanic	71
HS grad or less	52
Some college	69
College+	78
Less than $30,000/yr	50
$30,000-$49,999	71
$50,000-$74,999	72
$75,000 or more	84
Urban	68
Suburban	66
Rural	52

Combined analysis of Pew Research Center surveys conducted December 4-7 and 18-21, 2014.

PEW RESEARCH CENTER

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Prospect

- **Increase managed lane person-throughput** via tech.-based enforcement
- **Decrease congestion** on entire system by encouraging carpooling
- Potential **infrastructure cost savings** through deferred expansions and reduced maintenance

❖Each prospect is contingent on widespread adoption

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Advantages

- Dynamic ridesharing merges attributes of mass transit and personal automobility:

	Mass Transit	Dynamic Ridesharing	Personal Autos
$ (personal)	Low *	Low	High
Time Accessibility	Scheduled	Flexible	Instant
Roadway efficiency	High *	High	Low

*depending on utilization

Challenges

- Resistance to ridesharing remains:
  - **Coordination** with others still required
  - Concerns about **stranger danger** (may be mitigated with social media or employer networks)
  - **Marginal economy** of car and associated cost investments encourage continued use (households already own multiple cars)

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Existing Research

- Pricing for road and parking impact prospects for dynamic ridesharing (Deakin et al 2010)
- 3+ occupants could increase trust and utilization (Spielberg & Shapiro 2000)
- Preferences to schedule ride at least night before, rather than immediate (Deakin et al 2010)
- Targeting large employers may reap fast benefits (Amey et al 2011)

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2. Project description

Tolling Integration Concept

Single-occupant drivers + RtR software = Saving$

1. 80-90% of work trips are SOV
2. Encourage carpooling with toll road discounts (2: ½ off *or* 3+: free)
3. Provide mobility with *software*: not *hardware*:

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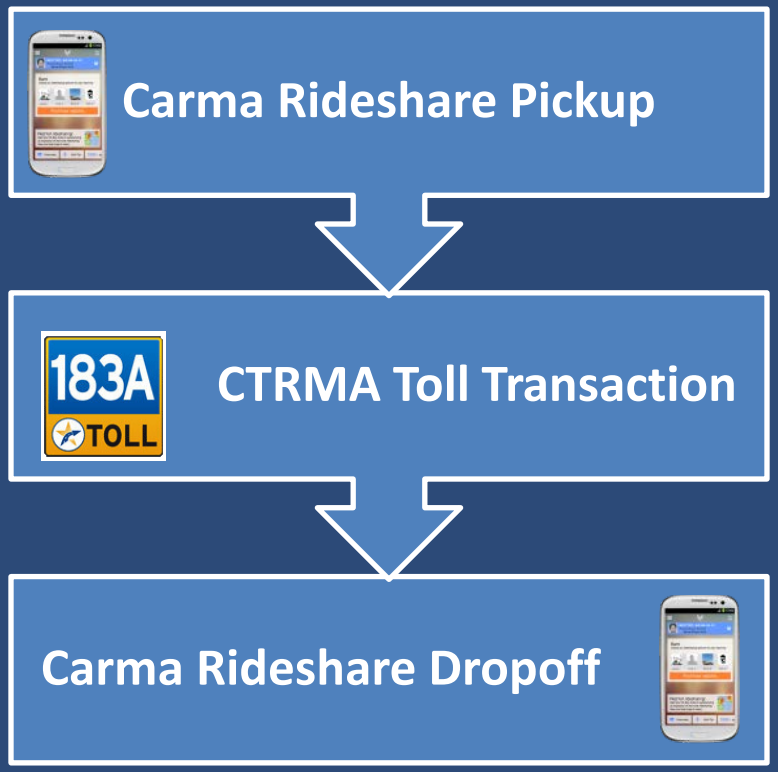
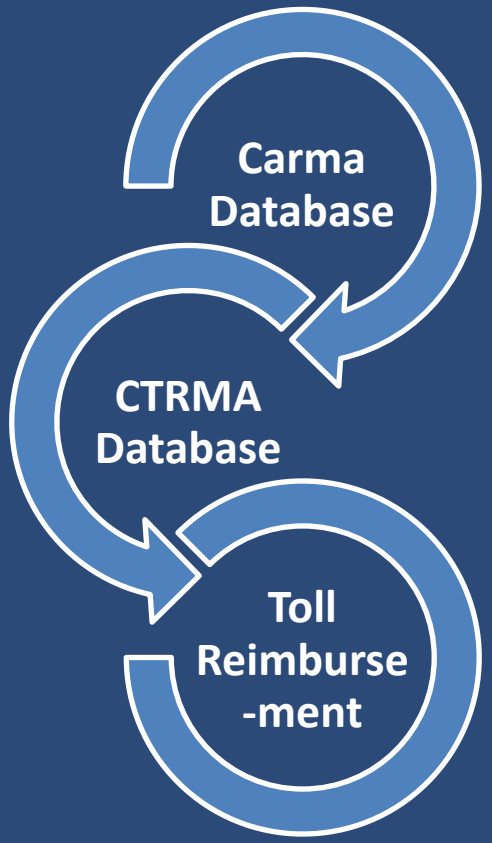
Tolling Integration Concept

Rideshare & Toll Transactions



Backoffice Coordination



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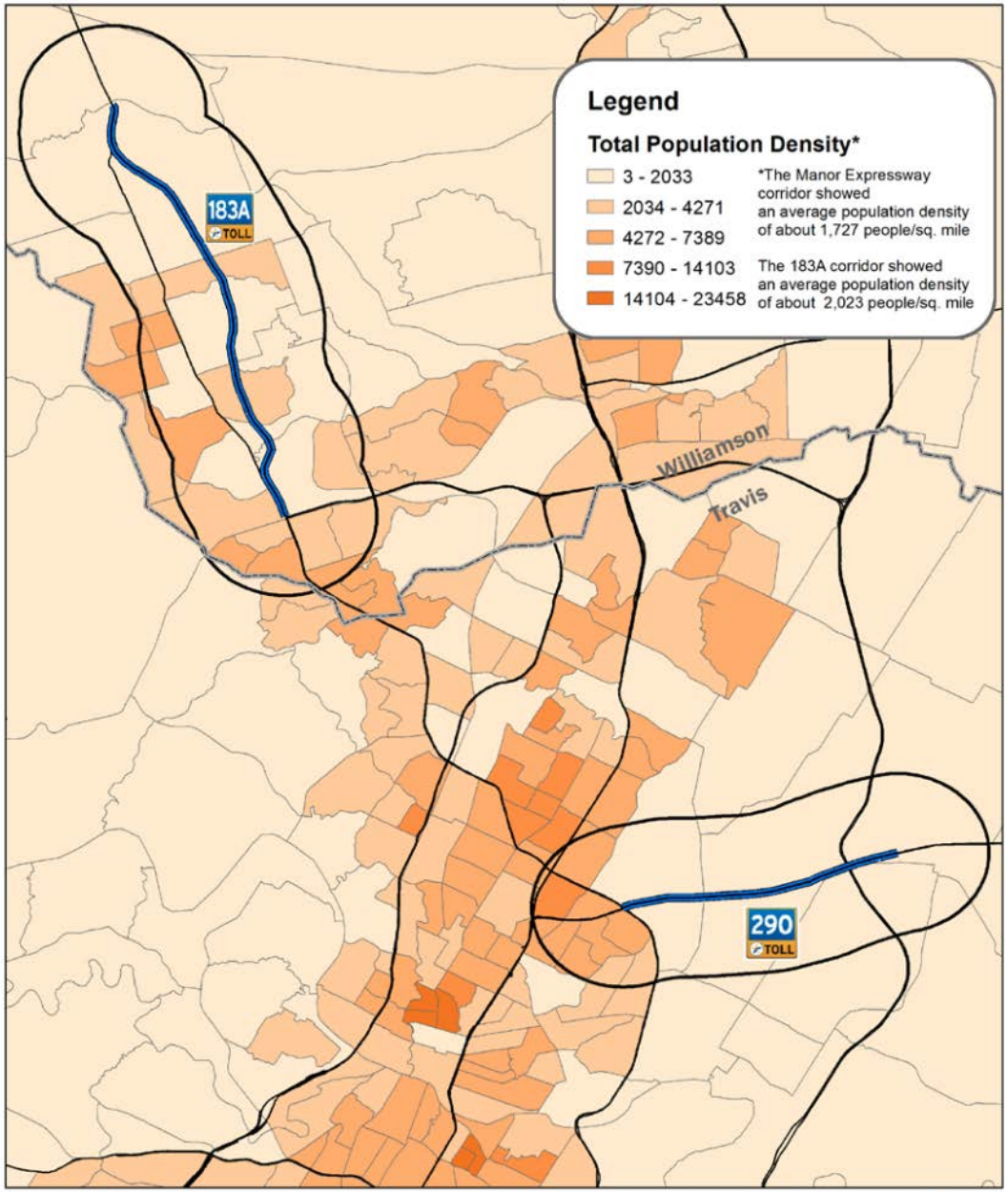


Total Population Density (ACS)

Real-Time Ridesharing for Occupancy-based Tolling

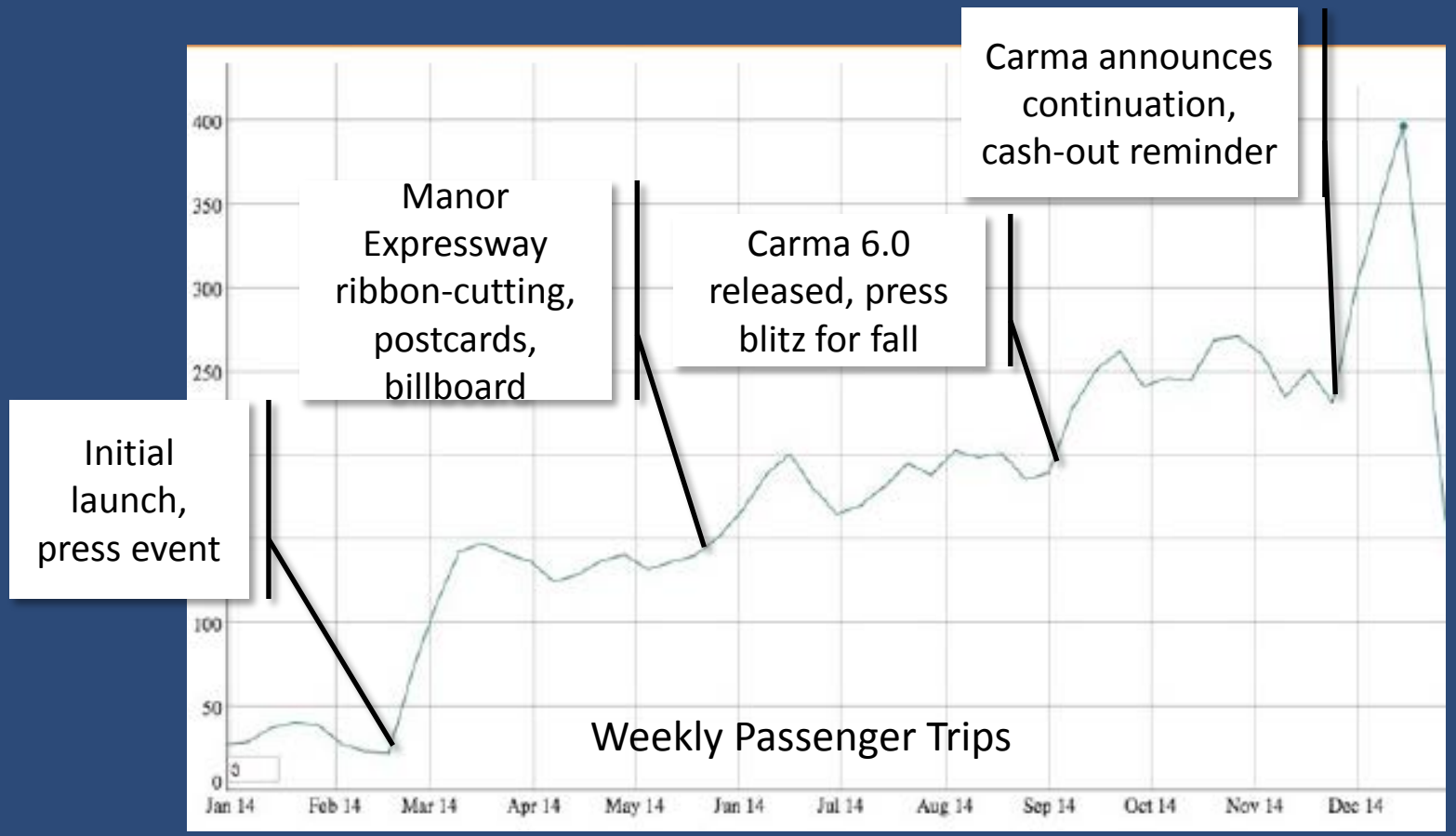
0 10 Kilometers

0 5 Miles

N

3. Results

Recruitment & Carpooling Trips



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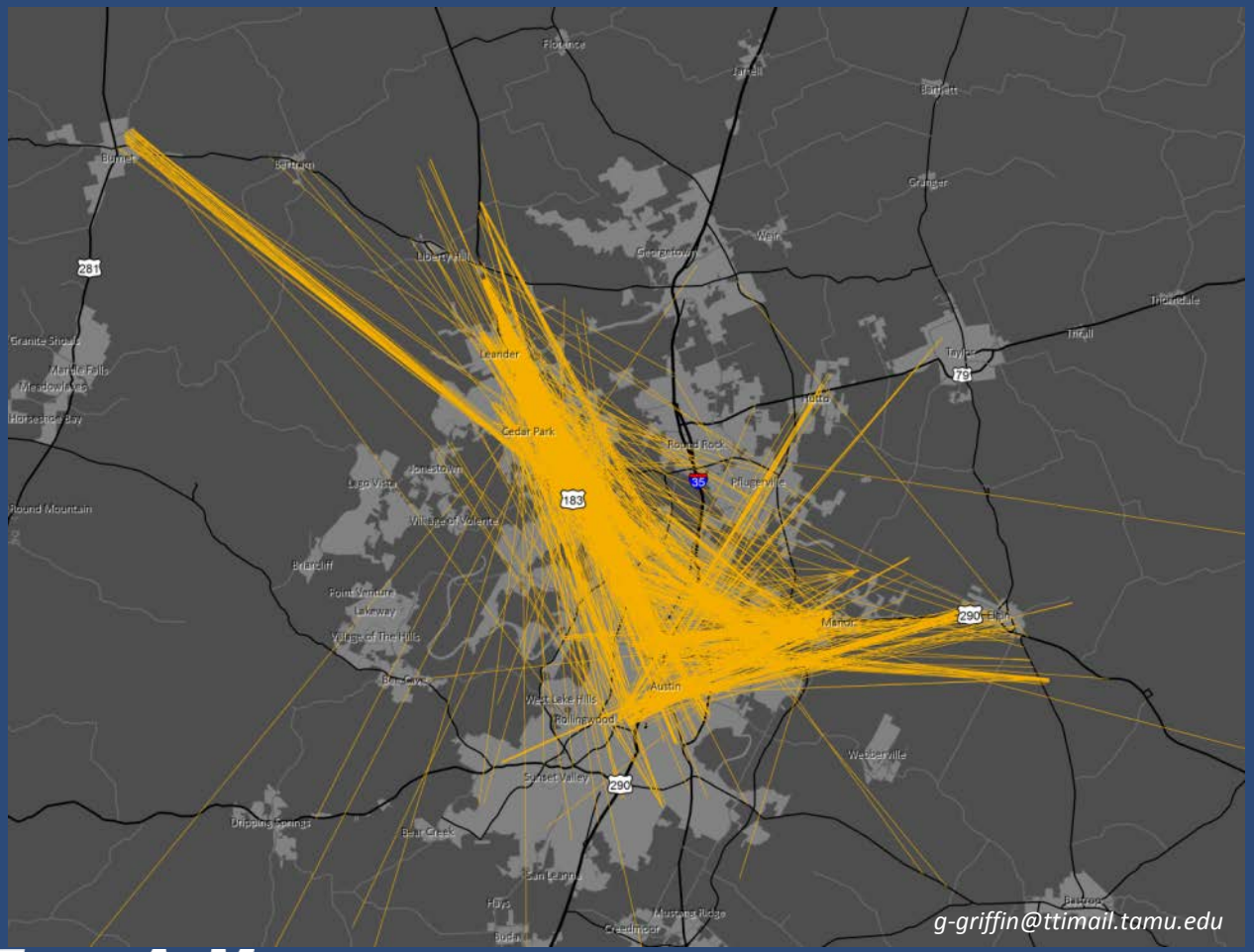
Carma Trip Origins and Destinations, 2014



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Carma Pilot Weekday Users and CTRMA System Transactions

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4. Summary

Key Findings for System Users

- Pilot Study Drivers Saved an Average of $1.08 per Trip in Tolls Alone
- Real-time Ridesharing Can Connect Drivers and Riders through Neighborhoods and Employers
- Users Appreciate Benefits of Toll Discounts by Occupancy

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Key Findings for Agencies

- Real-time Ridesharing Can Be Used to Verify Vehicle Occupancy
- Vehicle Occupancy Can Be Increased Through Real-Time Ridesharing
- Real-Time Ridesharing Has Potential as a Social Equity Benefit, but This Has Not Been Realized in This Pilot to Date

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Potential Research Directions

- Equity impacts for low-income communities
- Access to transit
- Employer/agency carpooling promotion & monitoring
- Effects of parking charges
- Barriers to non-participants

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Spielberg, F. & P. Shapiro. 2000. Mating Habits of Slugs: Dynamic Carpool Formation in the I-95/I-395 Corridor of Northern Virginia. In *Transportation Research Record No. 1711*, pp 31-38.

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Questions?

Technology Applications for Transportation Planning

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