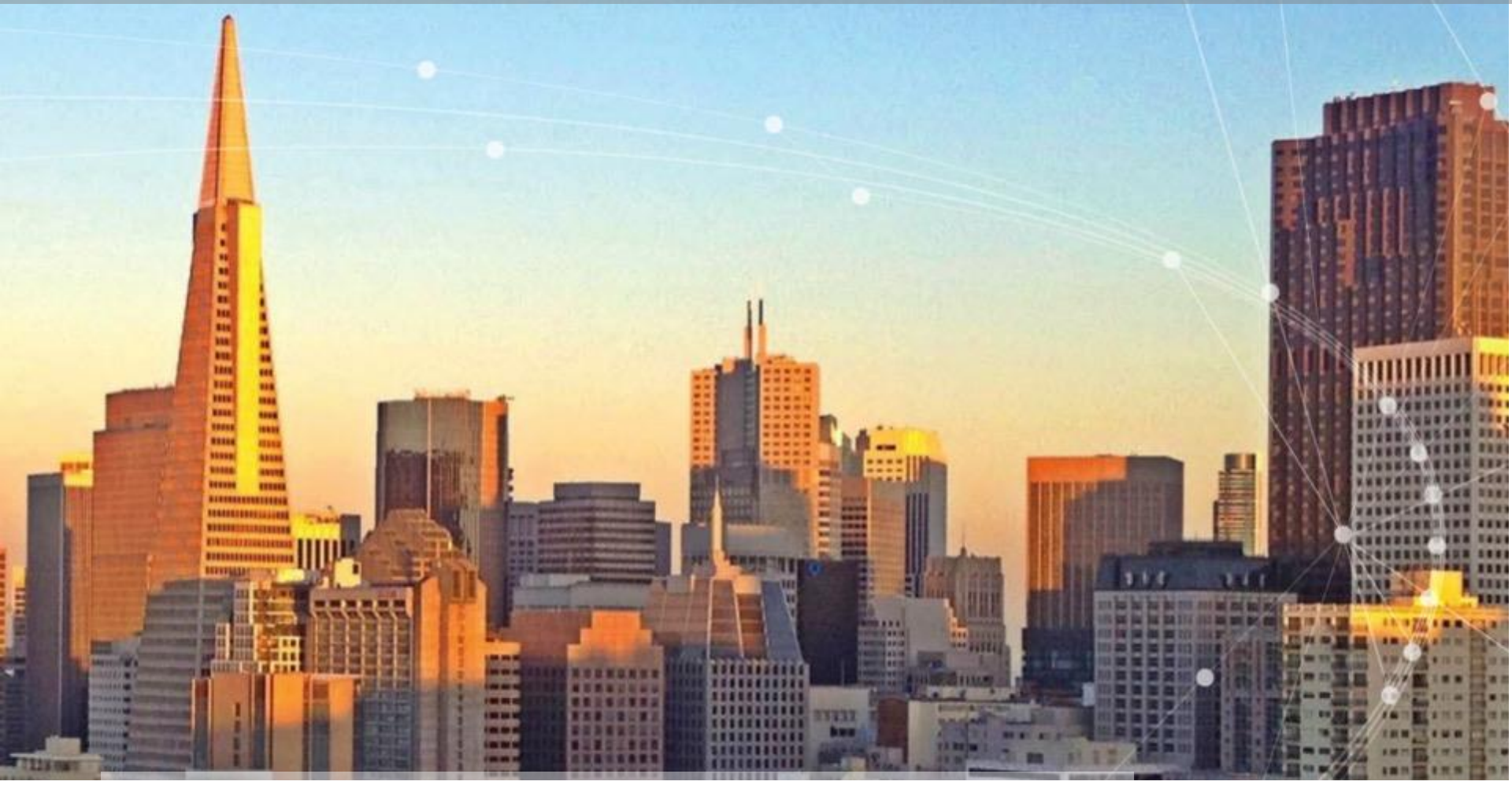
USDOT Smart Cities Grant Proposal
Internet of Moving People & Parcels



Timothy Papandreou
Chief Innovation Officer, Office of Innovation
San Francisco Municipal Transportation Agency

$50M USDOT Smart City Challenge Grant

Specific Qualifiers:

- 200,000 to 850,000 people within city limit (2010 Census)
- More than 15% of its urbanized area's population (2010)
- An existing public transportation system

Qualitative Attributes:

- Conducive to demonstrating proposed strategies
- Continuity of committed leadership and capacity
- Commitment to integrating with the sharing economy
- Clear commitment to open data.

- **The Smart City is expected to improve safety, enhance mobility, and address climate change.**

USDOT Smart City Vision Elements

Vision Element	Priority
Technology Elements	
Vision Element #1: Urban Automation	Highest Priority
Vision Element #2: Connected Vehicles	Highest Priority
Vision Element #3: Intelligent, Sensor-Based Infrastructure	Highest Priority
Innovative Approaches to Urban Transportation Elements	
Vision Element #4: Urban Analytics	High Priority
Vision Element #5: User-Focused Mobility Services and Choices	High Priority
Vision Element #6: Urban Delivery and Logistics	High Priority
Vision Element #7: Strategic Business Models and Partnering	High Priority
Vision Element #8: Smart Grid, Roadway Electrification, and EVs	High Priority
Vision Element #9: Connected, Involved Citizens	High Priority
Smart City Elements	
Vision Element #10: Architecture and Standards	Priority
Vision Element #11: Low-Cost, Efficient, Secure, and Resilient Information and Communications Technology	Priority
Vision Element #12: Smart Land Use	Priority

Smart City Challenge Grant Process

Two step process:

- **Step 1:** Submit Vision proposal: Submitted Feb, 4 2016
- 77 cities applied. San Francisco among the 7 city finalists
- Each will receive $100,000 to develop detailed proposal

Step 2: Submit Detailed proposal: Due TBD Late May 2016

- Develop technical demonstration plans
- Budget plan documents and performance measures
- Participate in opportunities with USDOT and others
- Create 3 minute video explaining proposal

Final city selected to receive $40 M award over 3 years with $10 M match from Vulcan partners.

- Cities will be encouraged to further plans even if they don’t receive the award.

Binary policy system incompatible with city growth

80% Empty

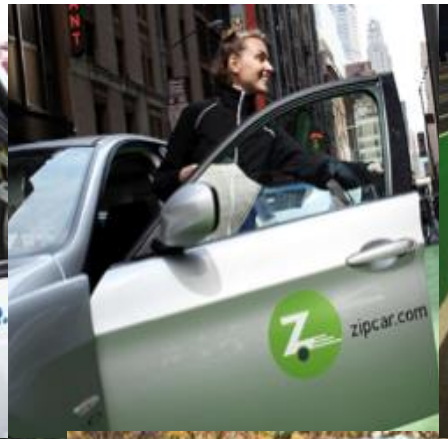
95% Stationary

100% Owned

120% Peak Demand

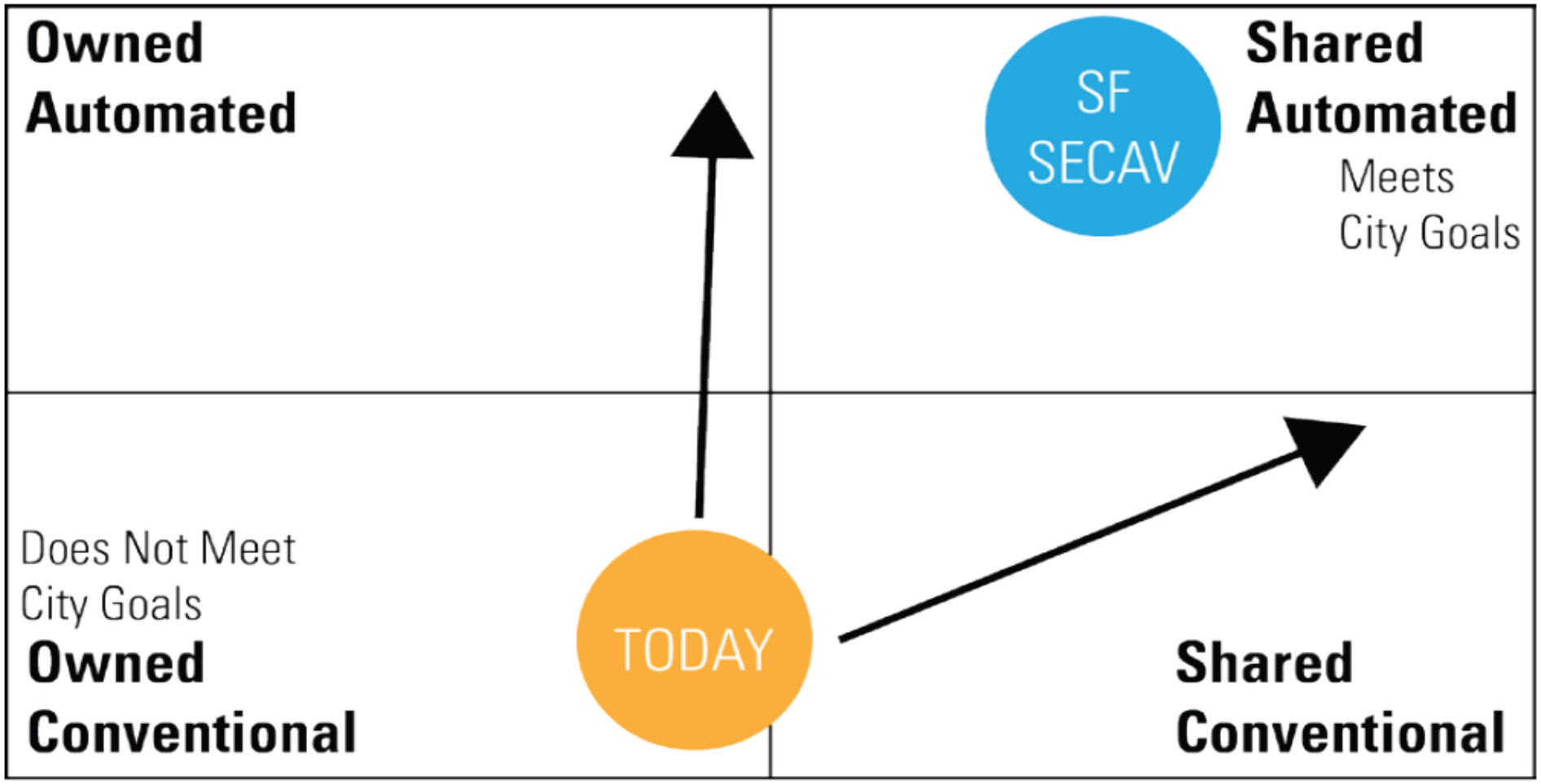
80% Empty Off-Peak

Timothy Papandreou @tpap_



Timothy Papandreou @tpap_

Mobility options growing rapidly tailored to the trip type



Ownership Model

1.0 Internal Combustion Engine/Pedal Power

2.0 Electric Vehicles

3.0 Electric Driverless Vehicles

Shared Model

1.0 Shared Vehicles

2.0 Electric Shared Vehicles

3.0 Shared, Electric, Connected, Automated Vehicles (SECAV)

San Francisco Smart City Proposal

Community supported and data-driven approach to:

- Expand and integrate shared mobility (car/bike/scootershare, pooling, taxis, private transit) with public transit, and incorporate shared Connected & Automated Vehicles (CAVs).

Transit and shared mobility can work better together:

- Access to mobility without the hassles of car ownership
- Save money and time with scaled and shared services

CAV technology can meet multiple city goals:

- Reduce traffic fatalities, emissions, congestion & noise
- Reduce personal, business and city operating costs

Combined can reduce demand for street space and parking:

- Repurpose public rights-of-way over time in phases
- Shift more priority for transit, walking, cycling,
- Create more open space and affordable housing

San Francisco Smart City Grant Focus Areas

Three key focus areas:

Transport as a Platform: City policy framework & partnership

- Criteria certification path for shared mobility & CAV providers
- *Safety, Affordability, Accessibility, Availability, Interoperability & Sustainability*

Transport as a Service: Customer focused mobility marketplace

- Enable integration of routing, booking and payment of all modes
- Focus apps/screens to prioritize green, affordable, shared trips
- Create data governance and city dashboard on key metrics

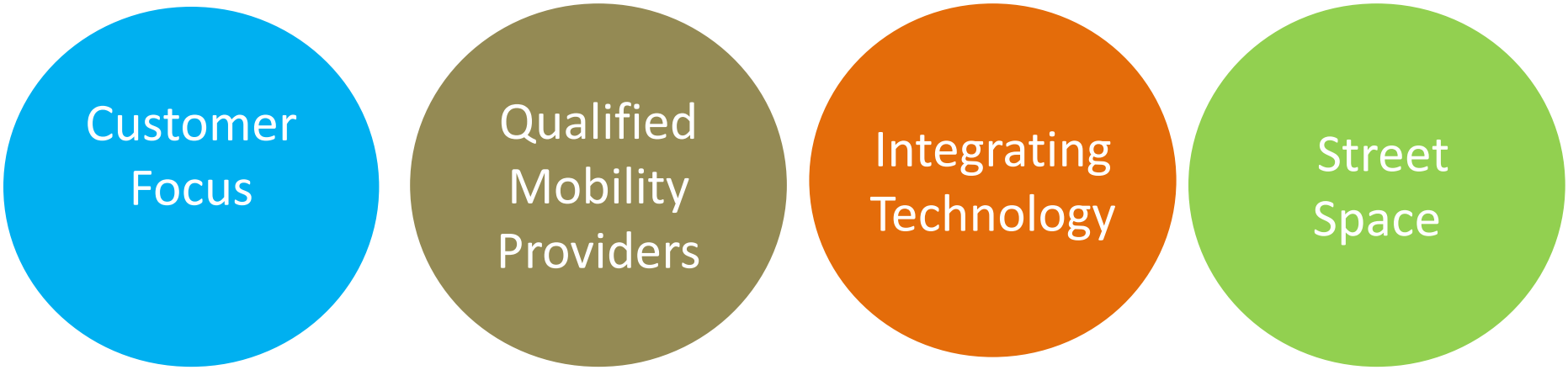
Smart Shared & Connected Streets: Community design framework

- Pilot and prioritize curbs, travel lanes & parking for shared modes
- Pilot & prioritize connected infrastructure and shared CAV fleets,
- Integrate CAV technology into municipal fleets & land use policy
- Develop transition metrics and process to repurpose streets space

City Transportation Platform

Excellent Transportation Choices

Safety Accessibility Interoperability Availability Affordability Sustainability



Residents
Workers
Visitors
Commercial

Public
Private
Employer

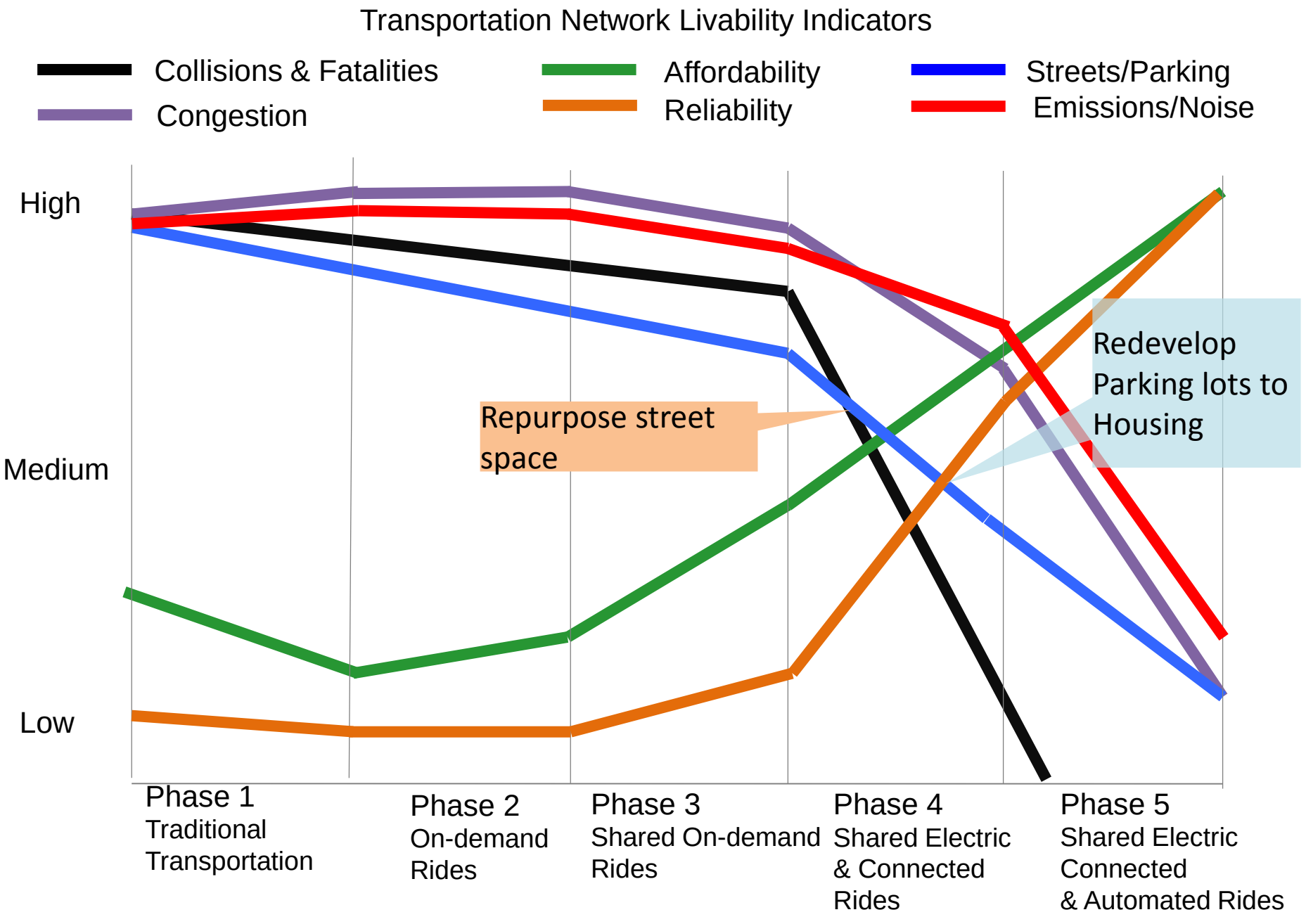
Routing
Booking
Payment
Un/lock
Gamification
Connected & Automated

Lights
Lanes
Stations
Spots
Stops
Docks

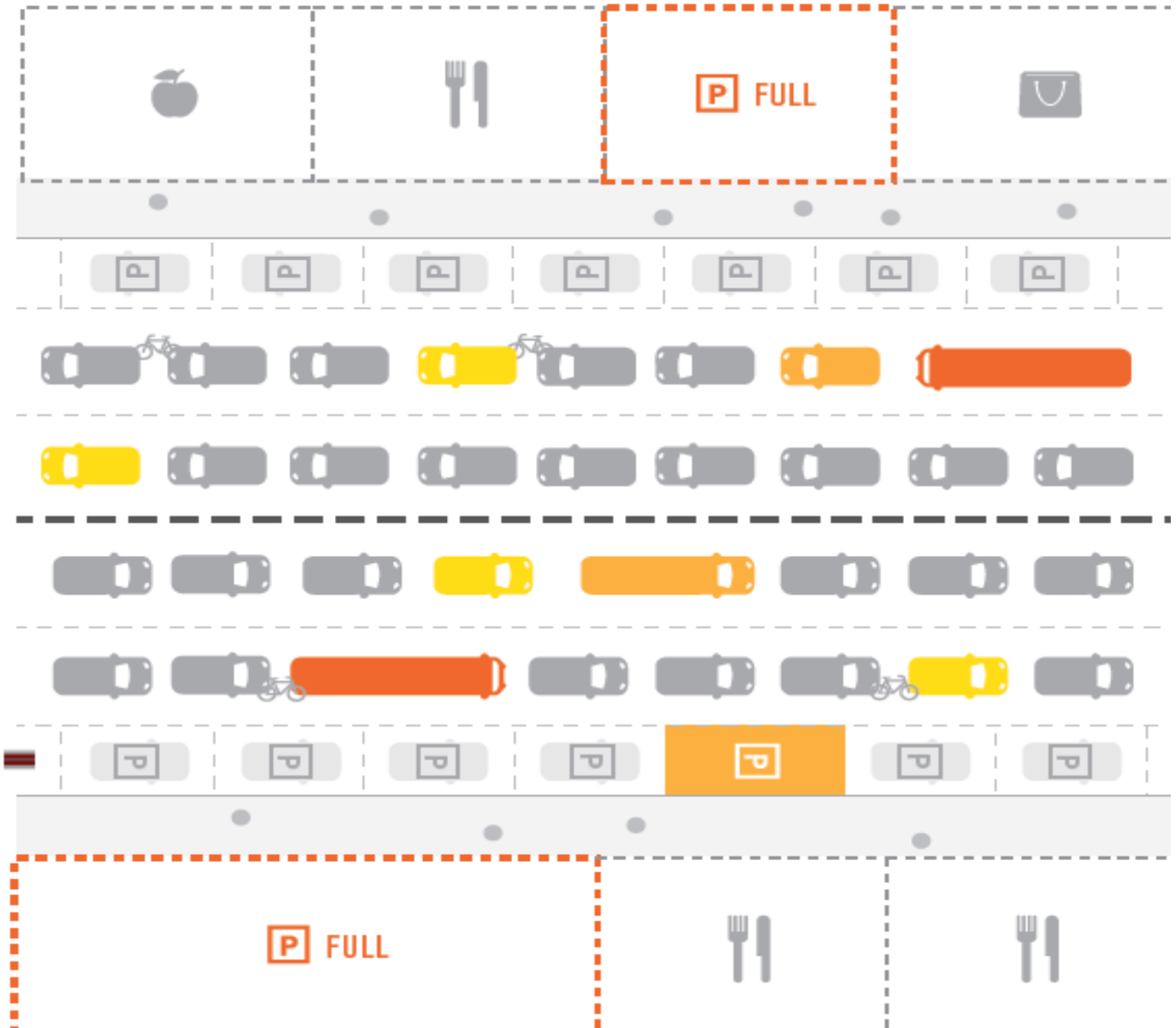
Timothy Papandreou @tpap_

Collaboration Platform Partnerships to reduce single occupant trips, fatalities, emissions & optimize sustainable trips in the city

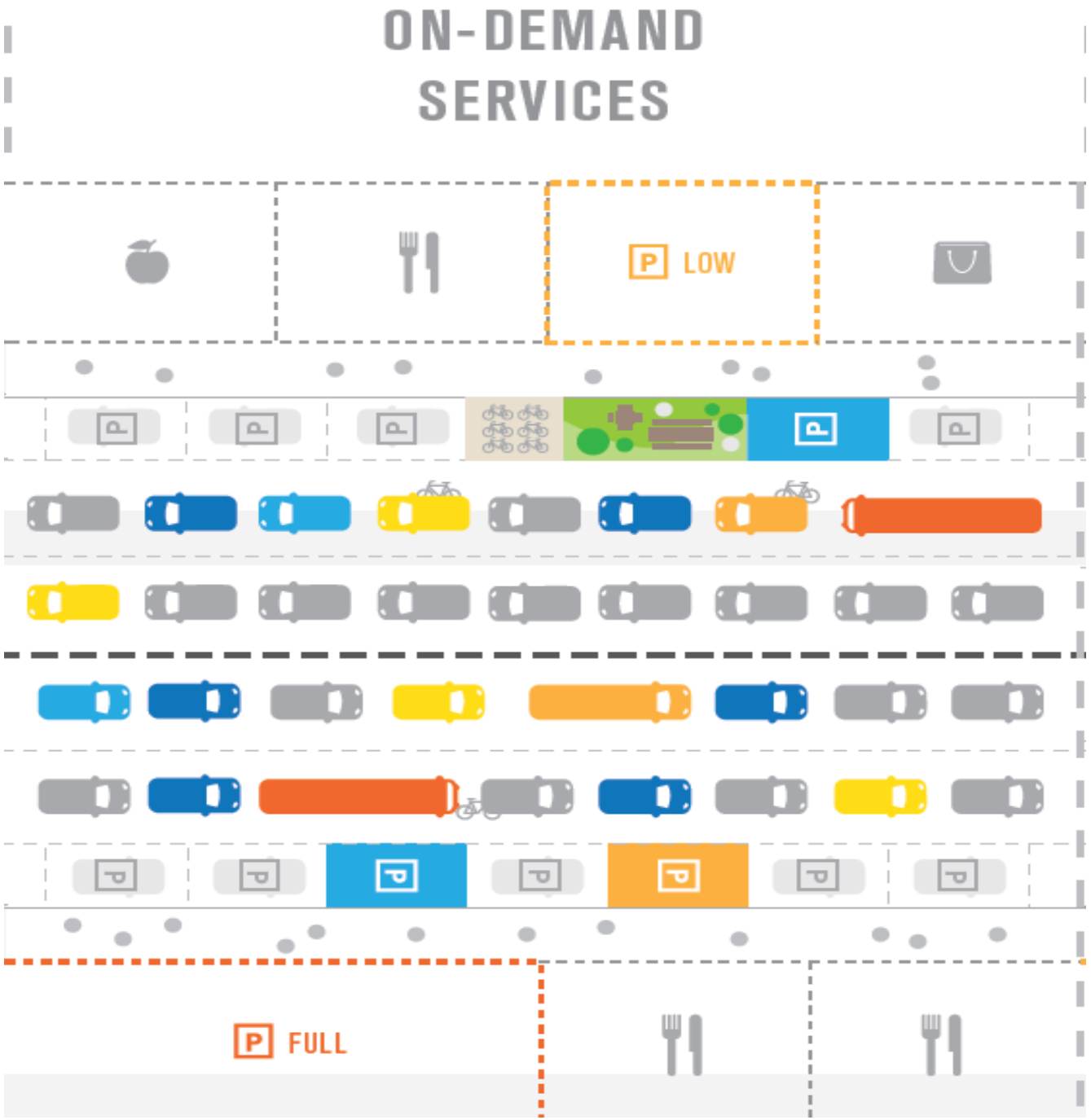
Path potential of SECAV contribution to SF Quality of Life

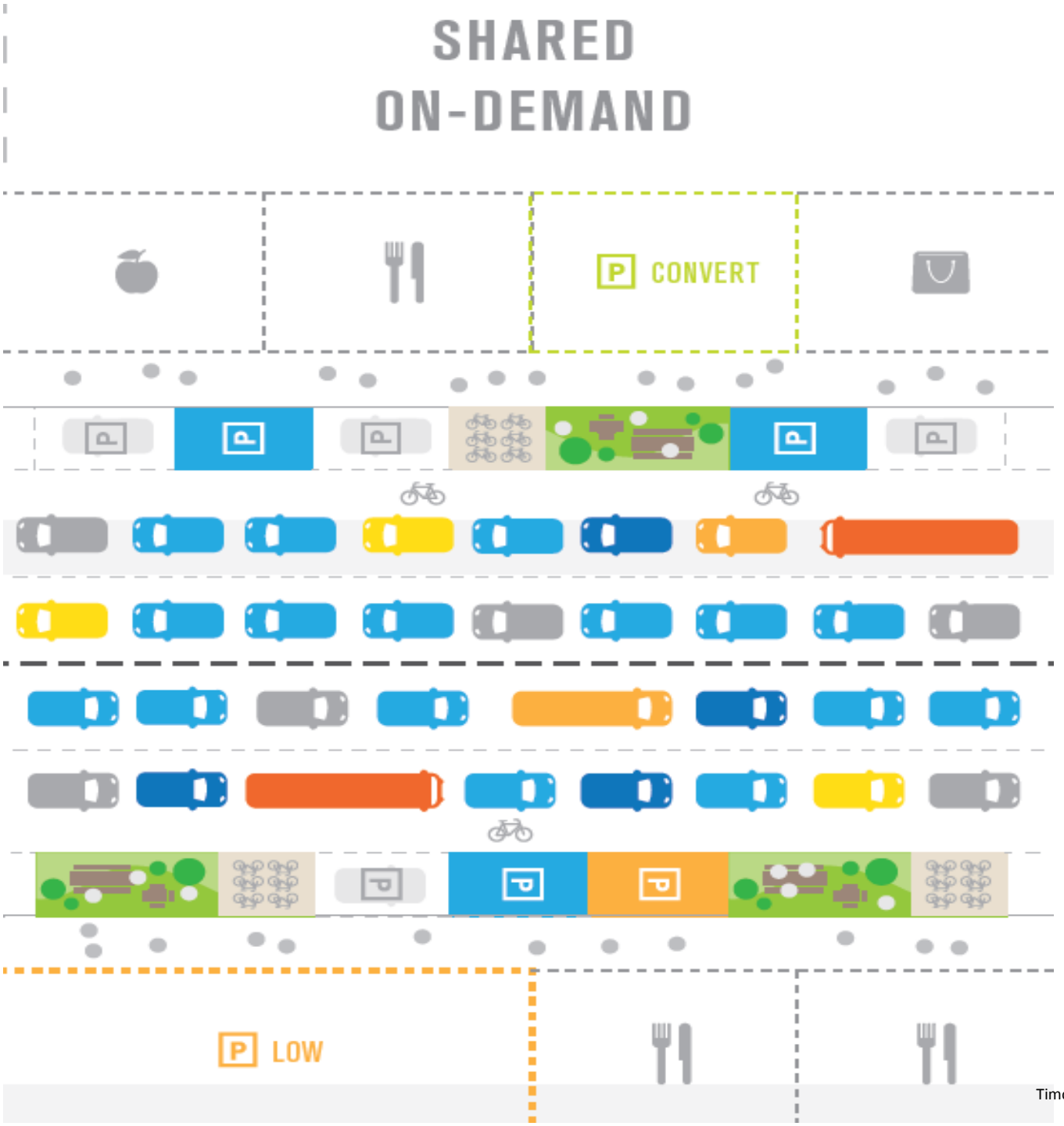


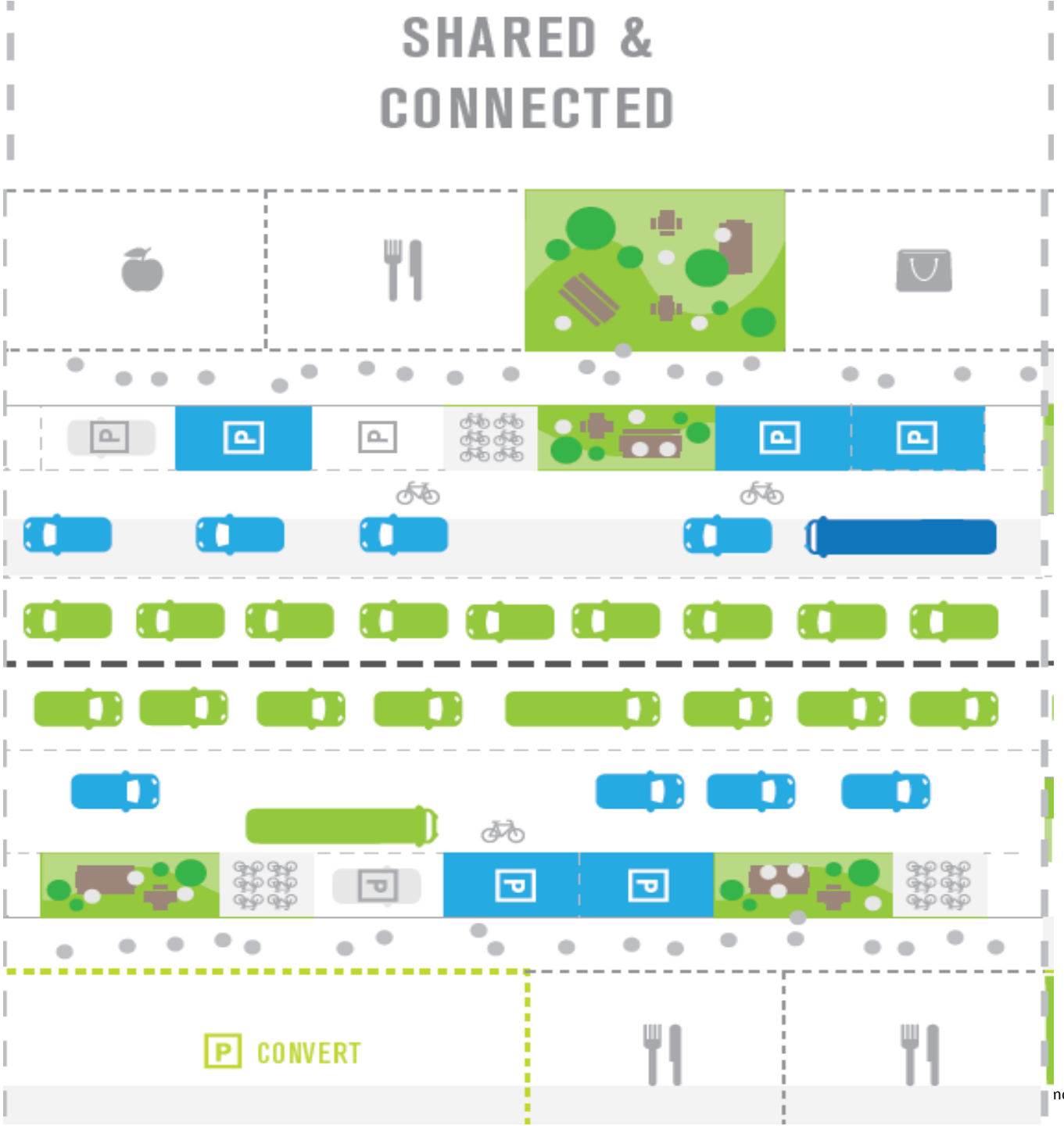
OWNERSHIP/
CURRENT MODEL



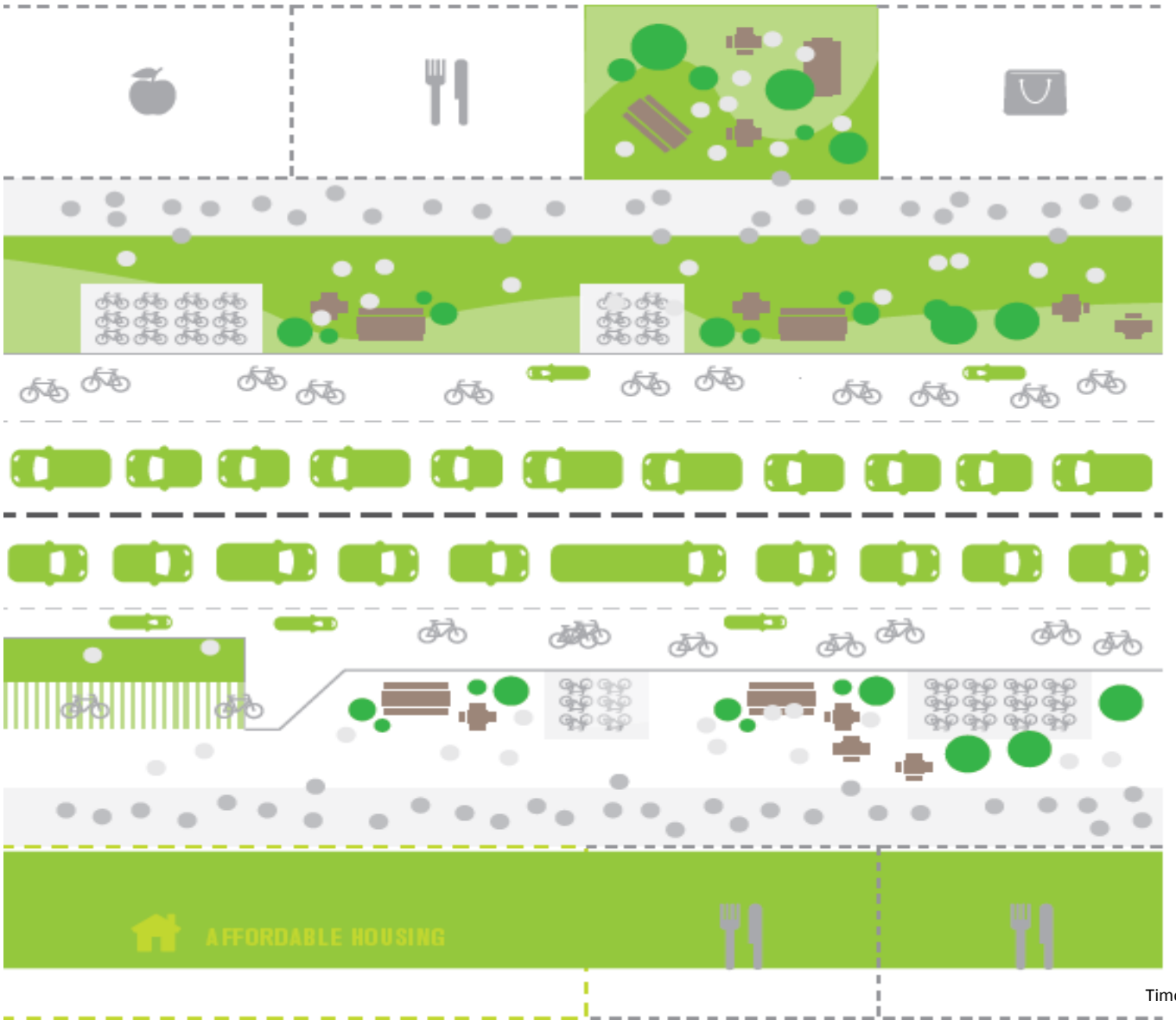
Timothy Papandreou @tpap_







SHARED ELECTRIC CONNECTED AUTOMATED MODEL



Smart City Community Challenge Process

Challenge results in at least one neighborhood that is selected as the city's first pilot area for these new services and technologies:

- Fiscal sponsors provide technical services to applicants
- Increase shared mobility services integrated with transit in neighborhood to take advantage of new policy framework
- Invite the CAV, technology companies and researchers to participate in pilots in the area

SF Smart City Team

Core Policy Team	Office of Innovation, Mayor's Office, UC Berkeley, Consultant
Technical Support Team	Grants Business Manager Communications Manager SFMTA: Planning, Technology, Parking, Engineering, Contracts, Government Relations, Accessible Services, Performance City Partners: SFDT, SFCTA, MTC, SFPUC, CalSGC
External Support Team	Technology Relationships Management Community Challenge Management

San Francisco Smart City Key Steps

Initiate project team lead by SFMTA Office of Innovation with:

- City and Regional Agency and Academic partners
- Technology and Business partners
- Mobility and Delivery providers

Develop Community Challenge with community partners:

- Engagement, website portal, selection criteria, review panel

Develop qualified technology partners process:

- Website portal, ideas and support screening criteria

Develop and submit application including video with project team

Smart City Grant award will accelerate implementation of focus areas already underway