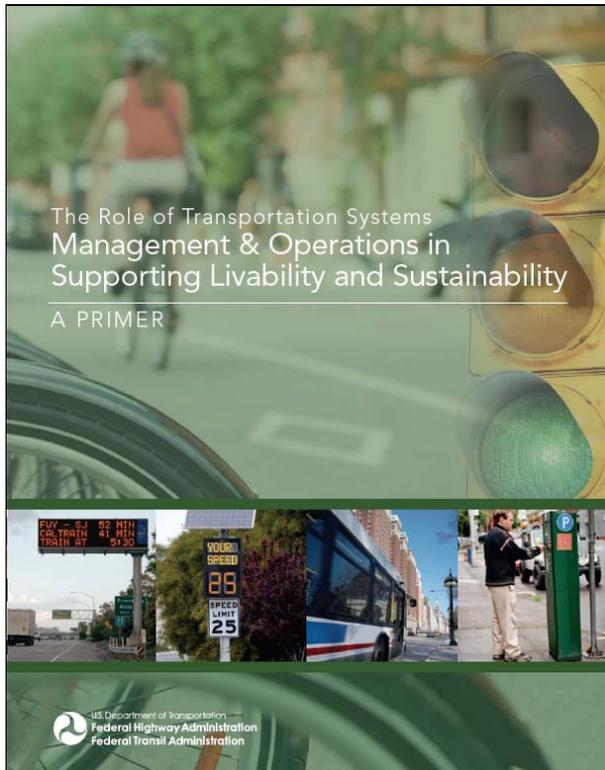


# The Role of Transportation Systems Management & Operations in Supporting Livability and Sustainability

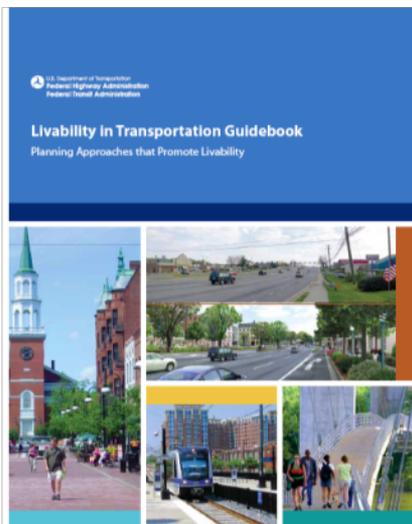
Michael Grant, ICF International  
February 7, 2012  
NTOC Webinar

# Highlights of FHWA/FTA Primer



- **Background:** Definitions and linkages
- **9 “Fundamentals”:** Key elements for managing and operating to support livability and sustainability
- **Putting it all together**
- **Getting started**

# Livability



- **Livability in transportation** is about using transportation facilities and services to help achieve broader community goals, such as increasing travel choices, improving economic competitiveness, and enhancing unique community characteristics.

1. Provide more transportation choices
2. Promote equitable, affordable housing
3. Enhance economic competitiveness
4. Support existing communities
5. Coordinate and leverage federal policies and investment
6. Value communities and neighborhoods

## HUD-DOT-EPA Partnership Livability Principles



# Sustainability

- Meeting the needs of the present without compromising the ability of future generations to meet their own needs. (Bruntland definition)
- Triple bottom line: maximize the positive effect of decisions on
  - Equity (also known as social or people)
  - Ecology (also known as environment)
  - Economy
- *Similar but different from livability:*
  - Long-term, multigenerational focus
  - Addresses larger environmental goals such as reducing climate impacts, increasing energy efficiency, and reducing natural resource use.



# Transportation Systems Management & Operations

- M&O strategies are multimodal transportation strategies to operate the system more efficiently, such as:
  - Traffic incident management
  - Traffic signal coordination
  - Transit signal priority
  - Bus rapid transit
  - Freight management
  - Work zone management
  - Special event management
  - Road weather management
  - Congestion pricing
  - Managed lanes
  - Ridesharing programs / demand management programs
  - Parking management
  - Electronic toll collection
  - Transit smartcards
  - Traveler information





# How M&O Supports Livability and Sustainability

# Why Is M&O Important to Help Achieve Livability and Sustainability Goals?

*M&O strategies can help improve how existing transportation systems interface with the communities they serve.*

- **Mobility and Accessibility**

- Park-and-ride lots, intermodal centers, TSP, managed lanes

- **Safety**

- Traffic signal timing, adding and improving crosswalks and bicycle lanes

- **Reliability**

- Information systems, incident response programs, work zone and special event management

- **Community Life**

- Traffic calming, parking management, pedestrian countdown signals

- **Economic Vitality**

- Freight management, ridesharing programs, managed lanes

- **Environmental Quality**

- Traveler delay reduction programs, encouragement of non-motorized modes, support for increased transit ridership and ridesharing



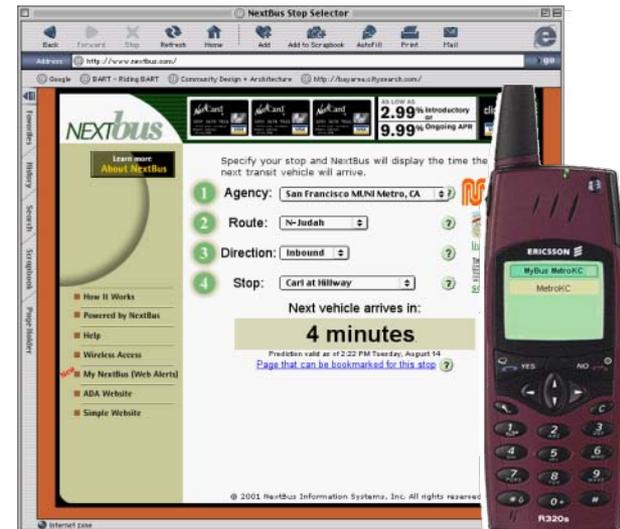
# How M&O Can Support Livability and Sustainability: Economic Issues

- Save travelers time and money wasted by congestion
- Cost-effectively improve transportation system performance
- Enhance economic competitiveness and economic development
- Improve safety
- Implementation of pricing (an M&O strategy) can provide a sustainable funding source for transportation



# How M&O Can Support Livability and Sustainability: Environmental Issues

- Improve air quality and public health by reducing air pollutant emissions
- Help mitigate climate change by reducing fuel consumption and greenhouse gas (GHG) emissions
- Support land preservation and reduce sprawl by limiting new infrastructure development



# How M&O Can Support Livability and Sustainability: Travel Choice and Social/Equity Issues

- Support travel choices by increasing the attractiveness of travel options
- Increase public awareness of suitable travel options
- Provide greater social equity by increasing travel options for disadvantaged populations and communities
- Preserve existing communities by maximizing the efficient use of existing infrastructure



# A Balanced Approach to M&O

- The way that M&O strategies are implemented is critical in their support for livability and sustainability, for example:
  - Implementing operations strategies to speed traffic flow could adversely affect community livability if they limit pedestrian and bicycle access.
  - Operations strategies that support efficient transit operations and provide for safe bicycling and walking can improve livability.
- Approaches that consider multimodal system performance and transportation choices are vital in ensuring that M&O strategies support livability/sustainability.





# Fundamentals: How to Manage & Operate Transportation Systems to Support Livability and Sustainability

# The 9 M&O Fundamentals to Support Livability and Sustainability

## **9 “fundamentals” for managing and operating transportation systems in ways that support livability and sustainability:**

- Operate to serve community priorities.
- Increase opportunities for safe, comfortable walking and bicycling.
- Improve the transit experience.
- Support reliable, efficient movement of people and goods.
- Manage travel demand.
- Provide information to support choices.
- Support placemaking.
- Use balanced performance measures.
- Collaborate and coordinate broadly.

# *Fundamentals:*

## **Operate to serve community priorities**

- Community's goals and objectives for the transportation system and its larger context determine how the system should be managed and operated, and how to decide if its successful.
- By focusing on community priorities, transportation system operations can help a community achieve its broader goals.

### *Strategies*

- Incorporate operations considerations into the planning process.
- Use context-sensitive solutions, for both operations and design.
- Conduct public outreach.



# ***Fundamentals:* Increase opportunities for safe, comfortable walking and bicycling**

- Walking and bicycling are central to sustainability and livability; they are low-cost, non-polluting, and provide community benefits.
- The attractiveness and function of these modes is heavily affected by the management and operation of the transportation system

## *Strategies*

- Traffic calming
- Countdown pedestrian signals
- Complete Streets
- Safe Routes to School
- Bicycle Sharing



## **Creating New Pedestrian Spaces**

Before

After



# Fundamentals: Improve the transit experience

- Transit can reduce congestion, reduce stress, boost social equity.
- M&O strategies can improve the transit-riding experience and help make transit more competitive with private automobiles.
- For M&O, bus transit is often a key focus because it operates in mixed traffic or shared rights of way.

## Strategies

- Roadway operations
  - Transit signal priority
  - Queue jumps
  - Buses on shoulders
- Transit system operations
  - Improved payment methods
  - Improved transit schedule coordination
  - Access to and from transit stations
  - Real-time information
  - Circulator services



# *Fundamentals:* Support reliable, efficient movement of people and goods

- Reliability and efficiency are fundamental goals for M&O.
- Support livability and sustainability by
  - emphasizing efficient movement of people and goods rather than just vehicles
  - giving greater emphasis to modes or techniques that accommodate safe movement for the least cost (socially, economically, environmentally, trip values)

## *Strategies*

- Management strategies for incidents and emergencies, weather, work zones, planned special events
- Freight efficiency improvements
- Automated toll collection
- Adaptive signal control
- Active traffic management (reversible lanes, shoulder lanes, ramp metering)

# Fundamentals:

## Manage travel demand

- To improve livability and sustainability, manage travel demand in ways that support more transportation choices and more efficient use of the transportation system.
- TDM reduces congestion, helps avoid need for capacity expansion, improves air quality, provides choices and reduces costs for individual travelers.

### Strategies

- Ridesharing programs
  - Price signals
  - Other incentives
  - Parking policies
  - Car sharing
- Telecommuting and flexible work schedules
  - Freight demand management
  - Active transportation and demand management



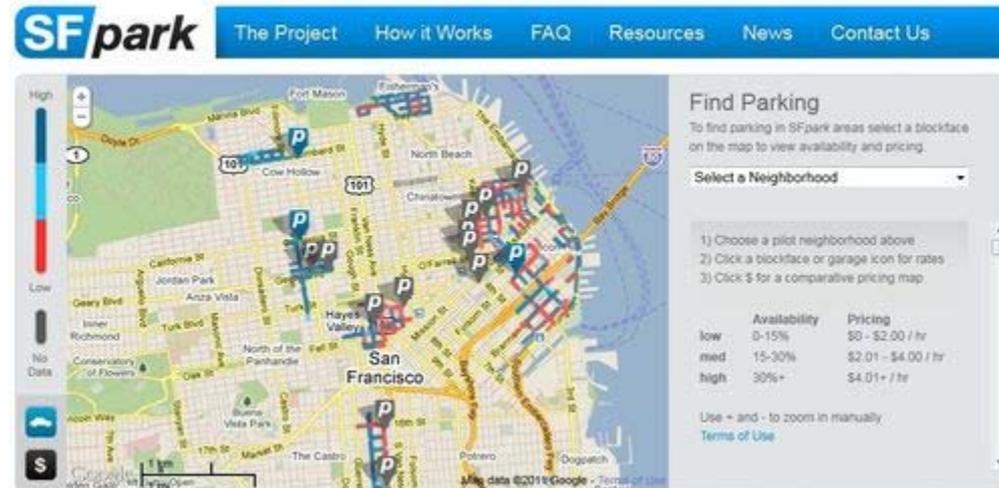
# Fundamentals:

## Provide information to support choices

- With a greater level of awareness, travelers and freight carriers can make better decisions about when or if to travel, which route to take, and which mode to choose.
- Results: greater predictability of services, more options for avoiding delay, facilitates using different modes.

### Examples:

- 511 multimodal traveler information systems
- Parking management with real-time information



# Fundamentals: Support placemaking

- Placemaking emphasizes the connections between land use and transportation, as well as urban design and operations.
- M&O strategies can work hand-in-hand with community development by improving roadway network connectivity, access management, reliability, safety, and land use and transportation coordination.

## Strategies

- Road diets
- Network connectivity
- Roundabouts
- Truck delivery parking



Figure 1: Rockville Pike Boulevard and Promenade Cross Section



Figure 2: Alternative Rockville Pike BRT Cross Section

# Fundamentals:

## Use balanced performance measures

- Evaluating the impact of M&O strategies on livability and sustainability requires new performance measures.
  - Focus on efficient movement of people and goods rather than vehicles.
  - Consider the effects of the transportation network on the full range of livability and sustainability outcomes (e.g., social equity, economic impacts, environmental quality).

Livability Principle	M&O Performance Measure	
<b>Provide more transportation choices</b>	•Multimodal Level of Service •Mode Share	•Transit Accessibility and Coverage •Person Delay (rather than vehicle delay)
<b>Promote equitable, affordable housing</b>	•Jobs/Housing Balance •Housing and Transportation Index	•Location Efficiency
<b>Enhance economic competitiveness</b>	•Travel Time Reliability •Job Accessibility	•Workforce Accessibility •Travel Time Index
<b>Support existing communities</b>	•Accessibility to Essential Destinations (e.g. stores, healthcare, schools) •Safety (crashes by mode)	•Vehicle Speed Suitability
<b>Coordinate policies and leverage investment</b>	•Consistency with Local Land Use and Transportation Plans •Return on Investment	•Cost-Benefit Ratio
<b>Value communities and neighborhoods</b>	•Community Character (e.g., resident satisfaction) •Connectivity Index	



## ***Fundamentals:***

# **Collaborate and coordinate broadly**

- Creating livable and sustainable communities requires carefully balancing the needs of multiple segments of a population in the current generation as well as future generations.
- The management and operation of a regional or statewide transportation system also requires coordination and collaboration among multiple agencies and jurisdictions.
- Coordination and collaboration can also occur at the project level.

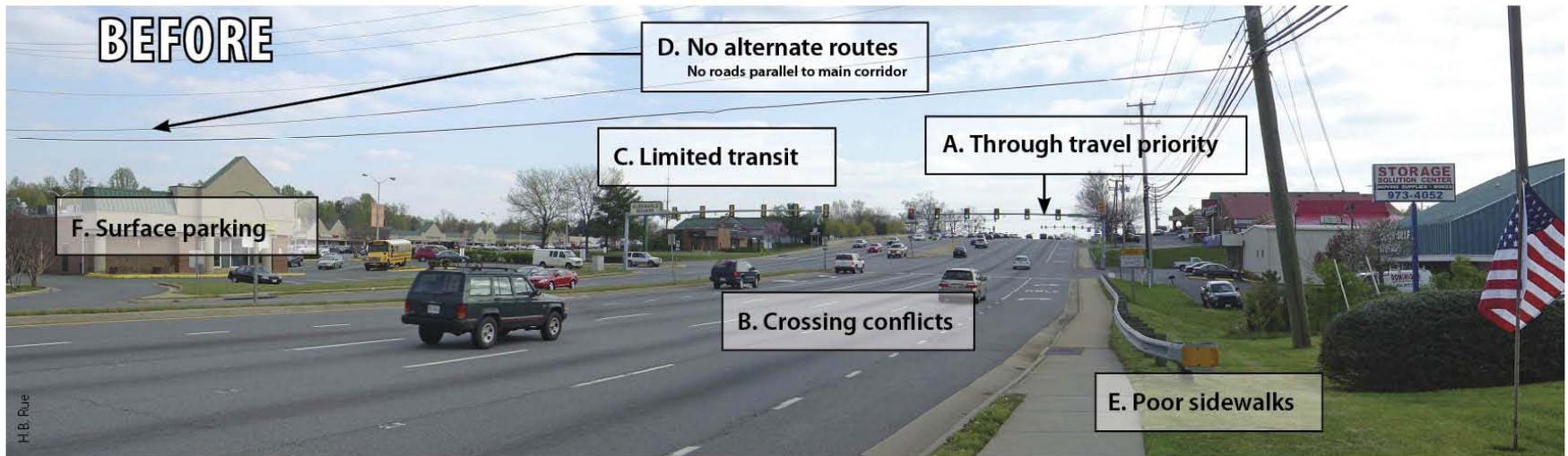




# Putting it All Together & Getting Started

# Putting it All Together: Multimodal Corridor

- The future system looks quite different than past practice.

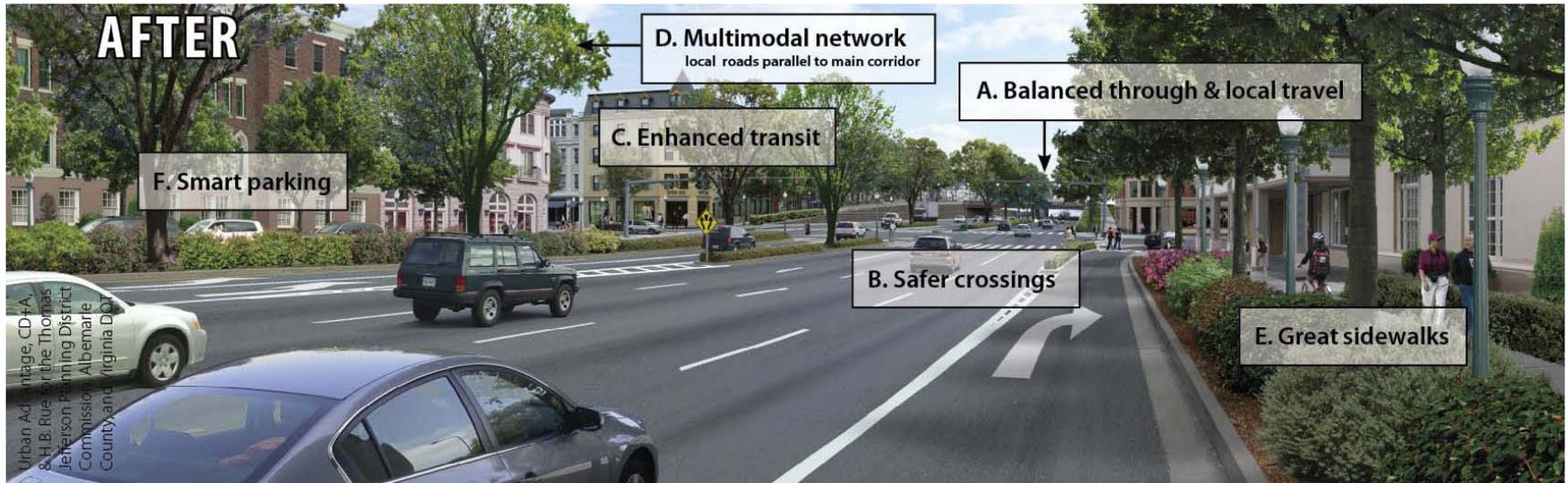


- A. Through travel priority
- B. Crossing conflicts
- C. Limited transit

- D. No alternate routes
- E. Poor sidewalks
- F. Surface parking

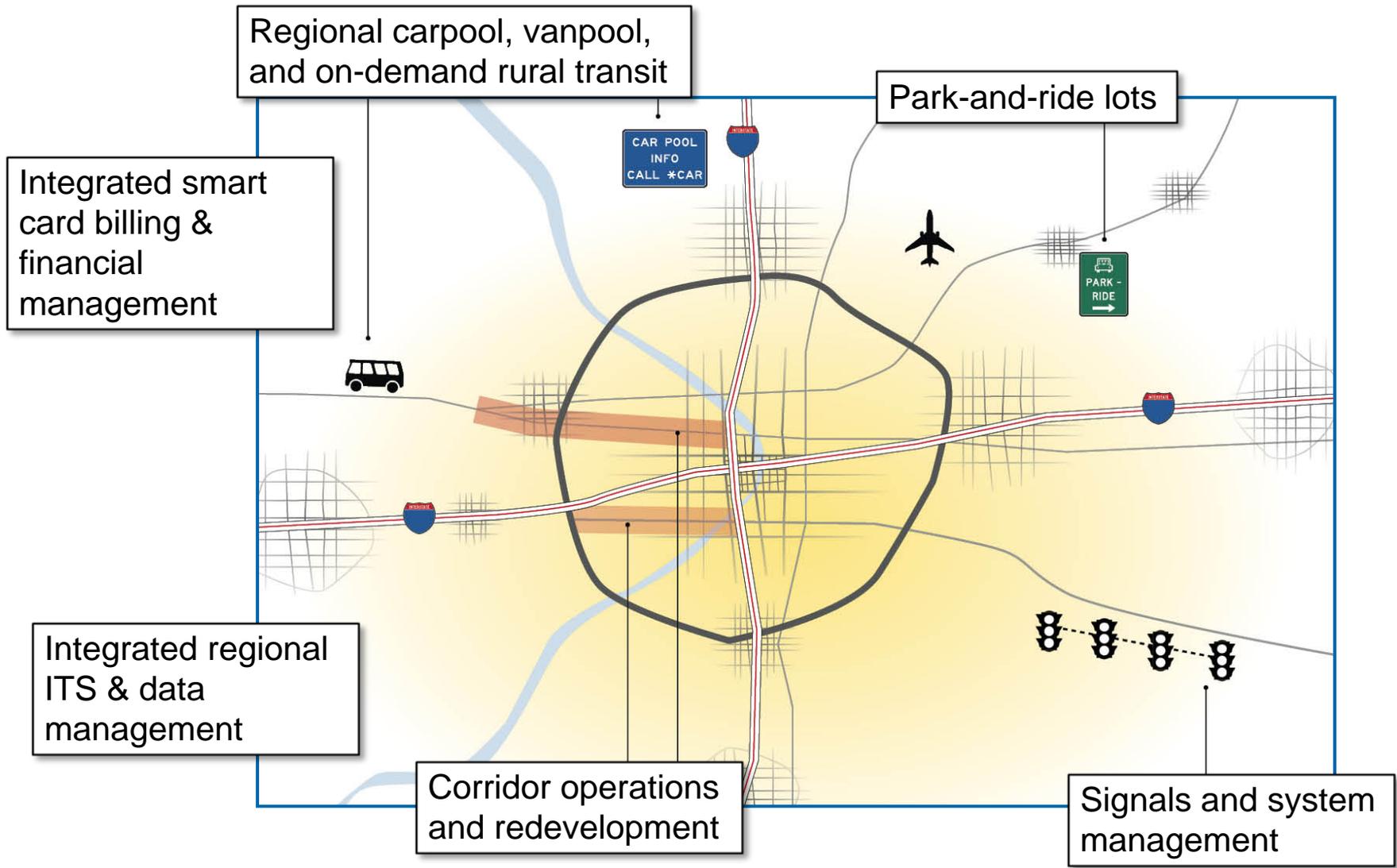
# Putting it All Together: Multimodal Corridor

- The future system looks quite different than current practice.



- A. Balanced through & local traffic
- B. Safer crossings
- C. Enhanced transit
- D. Multimodal network
- E. Great sidewalks
- F. Smart parking

# Putting It All Together: Regional Strategy



# Getting Started

There are many smaller steps that practitioners, policymakers, and others can take to start the process of incorporating livability and sustainability into system M&O.

Some of the key themes that can help practitioners and policymakers move forward include:

- Create partnerships.
- Engage with the community and stakeholders.
- Take a multimodal perspective.
- Balance priorities.
- Recognize and emphasize the broader benefits of M&O.
- Pick a project; pick a place.



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