



# Shoulder Conversion to HOT Lane Workshop

National Road Pricing Conference  
June 4, 2010

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# Workshop Purpose

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Provide hands-on practice in applying lessons learned and best practices from implemented projects across the country

- Understand the challenges in implementing pricing projects
  - Move pricing forward in your area
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# Workshop Agenda

- Review of Project
- Break into groups for exercises
- Five subject areas covered
  - 5-10 minute overview of subject area
  - 35-40 minutes to complete exercise
  - Break for lunch after second round of exercises
- Group reports

# Subject Areas

- Planning
  - Operations
  - Design
  - Funding and Finance
  - Outreach
- ❖ No specific order, all have overlapping elements



# Our Project

Length: 15 miles

6 lanes with 10' shoulders on both sides

165,000 AADT and growing

Peak period speeds consistently reach 30mph

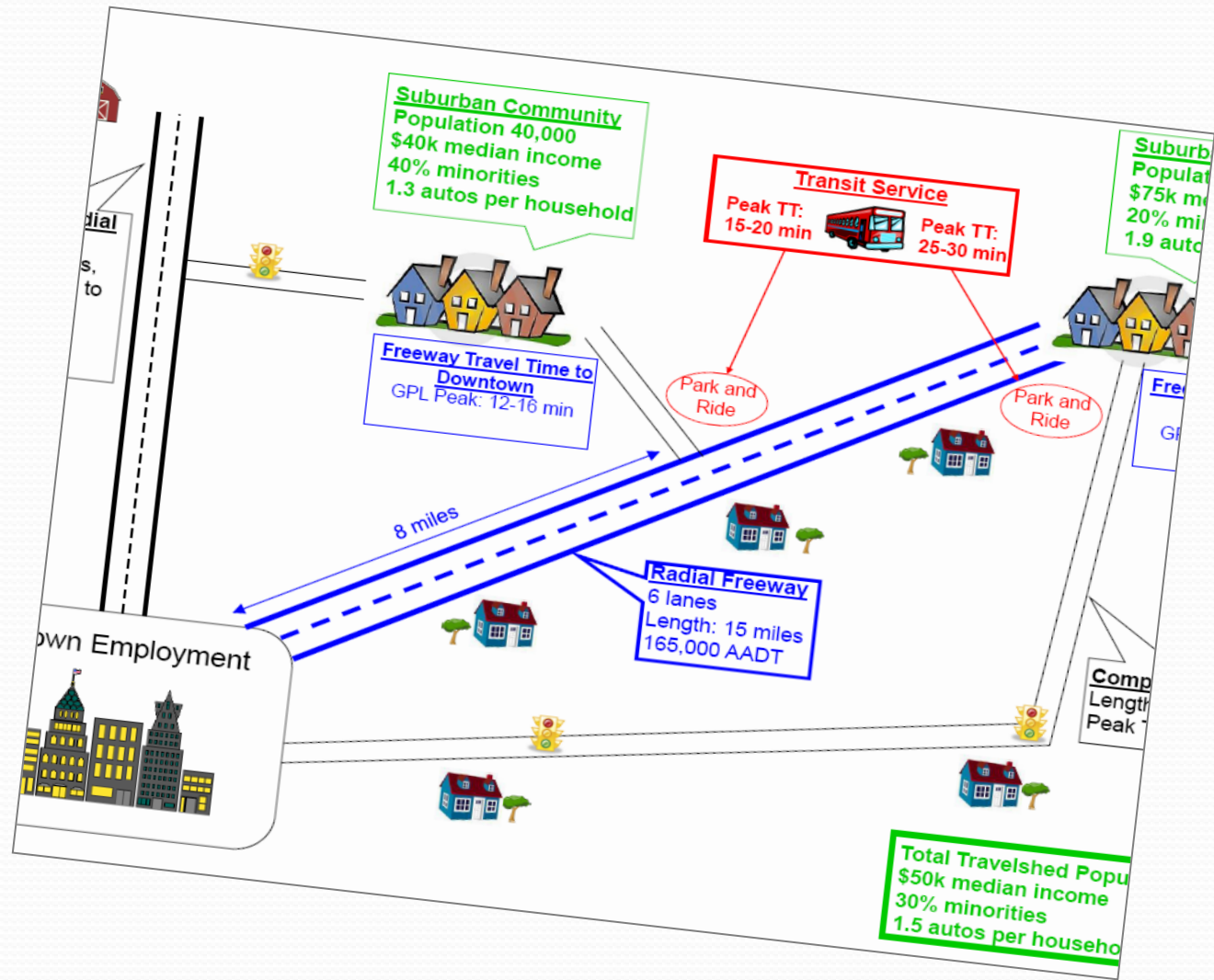
Drainage inlets every 0.5 mile with 4" depression in left shoulder

Additional 20' of ROW periodically available beyond right shoulder

Rumble strips on outside edgelines

Four bridge abutments exist along the facility

Existing ITS components include cameras, loop detection in all lanes at half mile spacing and on freeway ramps, DMS, & ramp meters.





**Competing Radial Freeway**

Currently 4 lanes, very congested, to be expanded to 6 lanes in the future

**Suburban Community**  
Population 40,000  
\$40k median income  
40% minorities  
1.3 autos per household



**Freeway Travel Time to Downtown**  
GPL Peak: 12-16 min

**Transit Service**  
Peak TT: 15-20 min  Peak TT: 25-30 min

**Suburban Community**  
Population 20,000  
\$75k median income  
20% minorities  
1.9 autos per household



**Freeway Travel Time to Downtown**  
GPL Peak: 20-30 min

Park and Ride

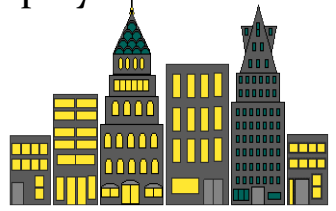
Park and Ride

8 miles

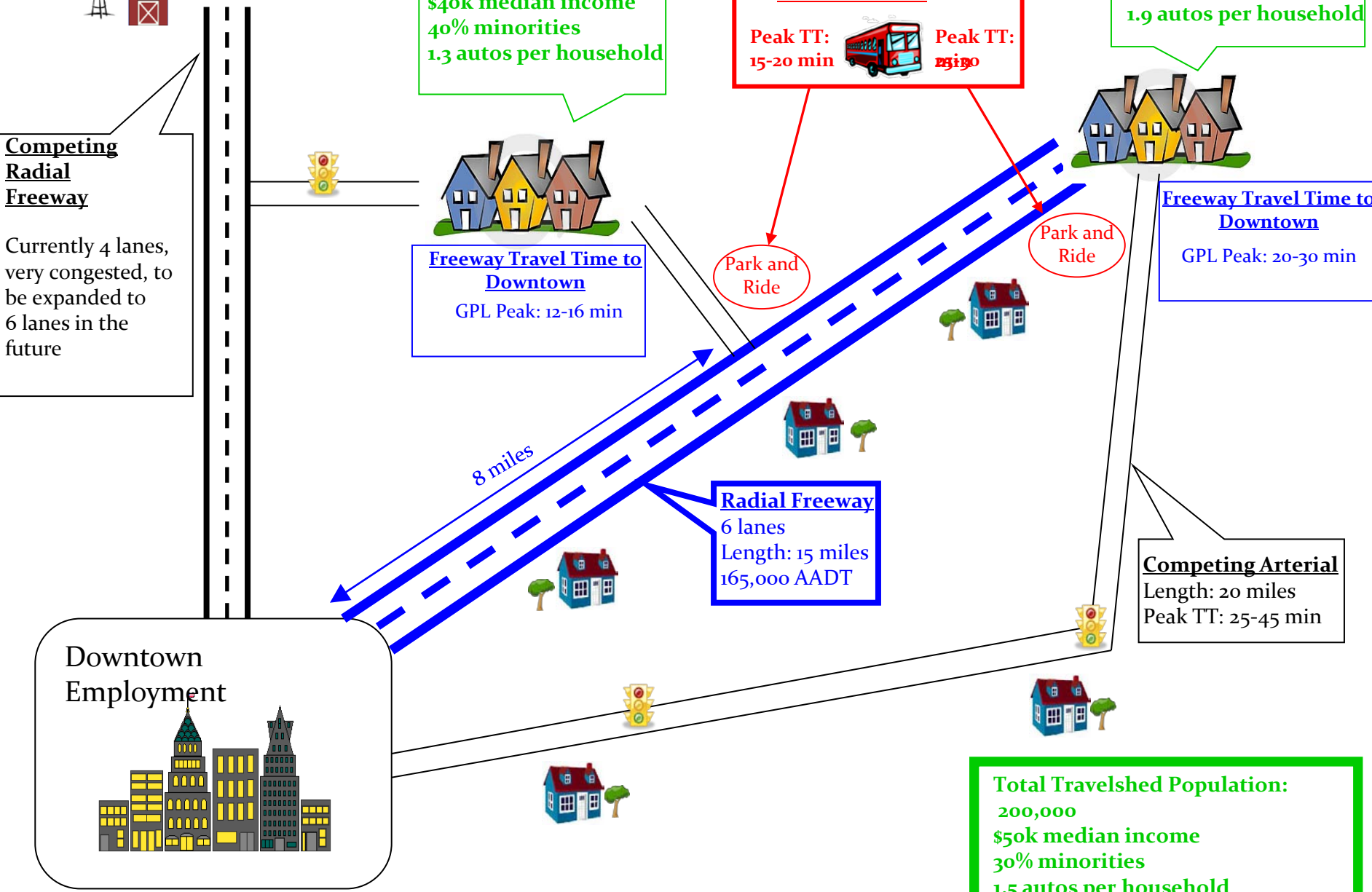
**Radial Freeway**  
6 lanes  
Length: 15 miles  
165,000 AADT

**Competing Arterial**  
Length: 20 miles  
Peak TT: 25-45 min

**Downtown Employment**



**Total Traveled Population:**  
200,000  
\$50k median income  
30% minorities  
1.5 autos per household



# Project Characteristics

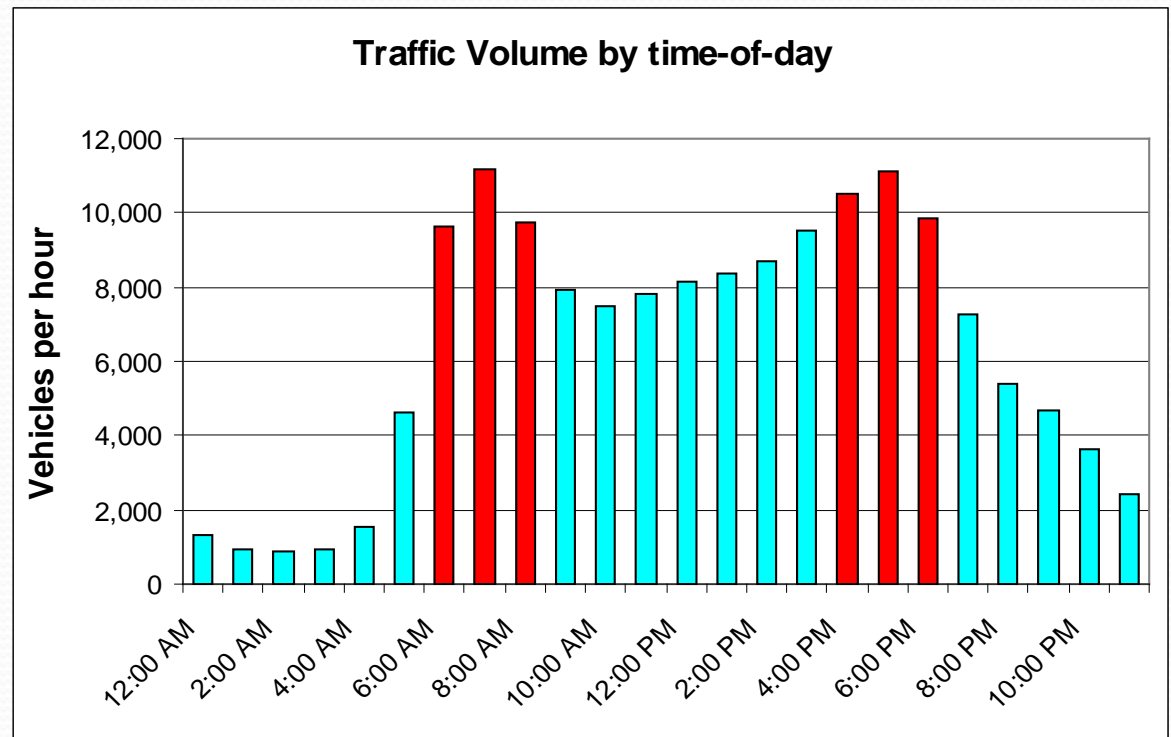
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- Corridor History
    - Congestion worsening
    - Downtown businesses seeking alternatives to bring more commuters downtown
    - Opposition to capacity improvements on adjacent radial corridor from environmental interests
  - Corridor demographics
    - Varies by sub-area
    - Total travelshed population = 200,000
    - \$50,000 median income
    - 30% minorities
    - 1.5 autos per household
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# Project Characteristics

## General Purpose Lanes

- 6 lanes with 10' shoulders
- 165,000 AADT and growing





# Project Characteristics

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## Project Partners

- State DOT
  - Owner of lanes and ROW
  - Operator of freeway
- Transit authority
  - Operator of express bus service and park-and-ride facilities
- Regional toll authority
  - Operates one toll road in region
    - Cash and transponder-based electronic tolling
- Metropolitan Planning Organization
- State Police
  - Enforces traffic laws on state highways

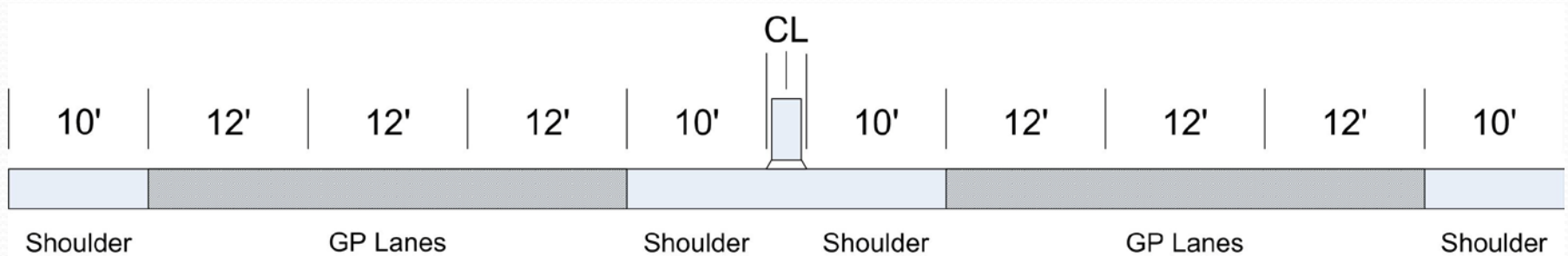
# Project Characteristics

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- Legal authority – HOT and shoulder running allowed by state statute
  - Regional policies – none for shoulder conversion
  - Project partners – state DOT (owner of ROW), transit authority, regional toll authority, state police
  - Toll authority currently operating one toll road in region with ETC (transponder)
  - Environmental clearance – FONSI expected
  - Design exceptions – submit request to FHWA prior to implementation
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# Project Characteristics

- Cross section



- Access

- Location and method of access undetermined

- Enforcement

- Subject to design and location

# Project Characteristics

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- Estimated project costs
    - Capital costs: \$ 10,000,000
    - Annual operating costs: \$ 1,000,000
  - Bus volumes
  - Available funding
    - State is committed to contributing \$ 8,000,000
  - Traffic and revenue studies - none
  - Revenue sharing potential – Regional toll authority
  - Possible funding partners - Regional toll authority and transit agency
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# Planning

- Establish goals and objectives and clearly communicate a vision
- Take advantage of opportunities
- Maintain flexibility
- Engage project partners and encourage agency cooperation



## Planning Exercise

### **Planning Group Exercise**

**Develop an Action Plan that identifies the steps necessary in the planning process to support the project.**

What are the sequential steps to plan the project?

What are the project goals?

Who are the players and what are their roles?

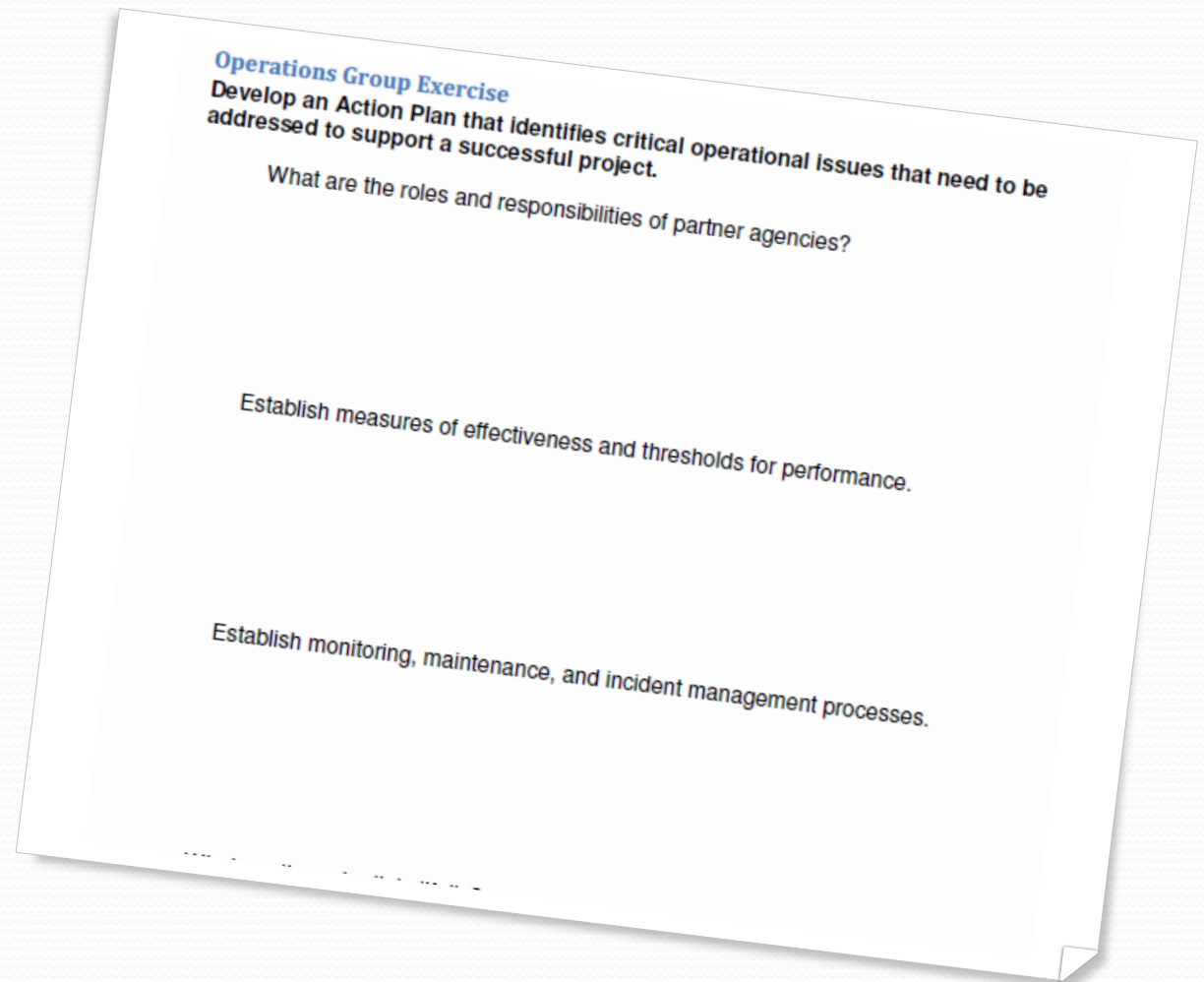
# Operations

- Develop a Concept of Operations to guide the process
- Establish a minimum operating speed threshold of 45 mph for HOT operation
- Select the appropriate user group to best optimize the added capacity and achieve stated objectives
- Ensure that temporary use of the shoulder as a HOT lane is only deployed when needed

# Operations

- Establish operational procedures that ensure the safety of users and help maximize the potential benefits of using the shoulder during congested periods
- Ensure operations integrate with existing systems
- Determine if existing incident management protocol will be applicable to shoulder operations
- European applications of shoulder use have typically been accompanied by one or more ATM strategies

## Operations Exercise



# Design

- Ensure the safest design possible that provides adequate space for identified users and necessary maneuvers
- Provide adequate space for emergency refuge and/or enforcement whenever possible
- Provide clear information to users to ensure their comprehension of the facility and the specifics of operation



## Design Exercise

### **Design Group Exercise**

Develop an action plan that identifies critical design issues that are addressed to support a successful project.

Who are the appropriate user groups?

Identify and establish fundamental design parameters of the facility.

Identify and establish related design parameters of the facility.

# Funding and Finance



- Consider any and all funding and/or financing mechanisms
- Available assistance through federal programs
- Stakeholders
- Revenue sharing

## Finance Exercise

### **Finance Group Exercise**

Develop a financial plan that will allow for the successful design, construction, operations, and maintenance of the facility.

Who owns the lane(s) and right-of-way (ROW)?

Were FTA funds used for the HOV project?

Is the project eligible for an urban partnership agreement grant or a value pricing pilot program grant?

# Outreach

The background of the slide is a photograph of a heavy traffic jam on a multi-lane highway. The cars are packed closely together, and the scene is somewhat hazy, suggesting a busy, congested environment. The image is faded and serves as a backdrop for the text.

- Identify project champions
- Conduct market research and identify issues
- Develop clear and concise messages
- Communicate project goals
- Continue from project development through operations
- Create brand awareness

## Outreach Exercise

### **Outreach Group Exercise**

**Develop a communication/marketing plan that will support project implementation and operation.**

Outline sequential steps in outreach plan.

Who are the stakeholders?

What are the most appropriate communication methods? Will they vary throughout the corridor? If yes, how so?



# Breakout Group Reports

