



# Welcome

## I-40

# High Occupancy Vehicle - Congestion Management Study

**This study is sponsored by the**

**North Carolina  
Department of Transportation**

**in cooperation with**



**Durham-Chapel Hill-  
Carrboro Metropolitan  
Planning Organization**





# Study History

- ◆ **I-40 HOV/Congestion Management Study undertaken in phases - Phase One and Phase Two.**
- ◆ **Phase One - 2000/2001**
  - **Identify strategies which have the potential to improve the vehicle carrying capacity of I-40 in the Triangle Region.**
  - **Evaluate options including high occupancy vehicle (HOV) lanes; toll lanes and express/truck lanes.**





# Study Findings

## Phase One

- ◆ **Not possible to eliminate traffic congestion because rate of population and employment growth exceeds ability to provide sufficient road capacity.**
- ◆ **Some congestion management strategies show potential to better manage congestion and provide travelers with choices to ensure a faster, more reliable trip.**
- ◆ **Survey of public indicates some support for high occupancy vehicle system on I-40.**

### Key Recommendations

- ◆ **Move forward with congestion management strategies that can be implemented to provide alternatives to single occupancy vehicle travel within the region**
- ◆ **Strongly support recent ITS and TDM initiatives which, along with transit initiatives, provide a solid foundation for strategies such as HOV lanes**
- ◆ **Proceed with transportation improvements currently planned and programmed in NCDOT and local agency plans and programs**
- ◆ **Study short-term improvements to enhance I-40 operational efficiency**
- ◆ **Establish a review process to better coordinate ongoing transportation studies and projects in the region**
- ◆ **Establish an appropriate institutional framework for implementing an ongoing congestion management process.**
- ◆ **Study, promote and implement smart growth policies that support desired growth patterns, which can be effectively served by future transportation investments**
- ◆ **Review current funding policies and mechanisms for transportation programs as well as identifying new funding sources**
- ◆ **Engage the public, in the broadest sense of the word, in developing future transportation strategies**

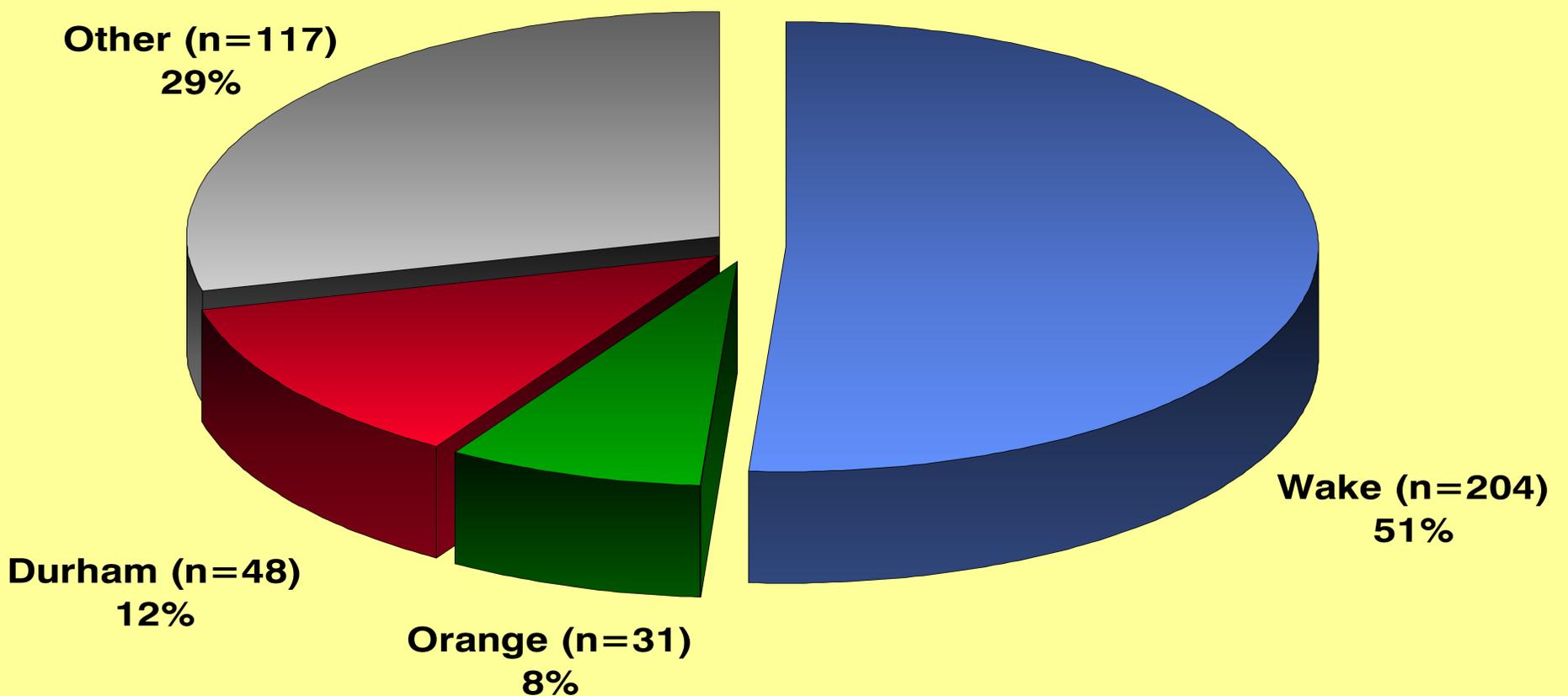


# Study Findings Phase One

To get a better understanding of the transportation issues, a telephone survey was conducted. A total of 400 random telephone calls were made to people living within a 50-mile radius of the Research Triangle Park.

## SAMPLE DESCRIPTION

### County of Residence



Base = 400 random sample interviews

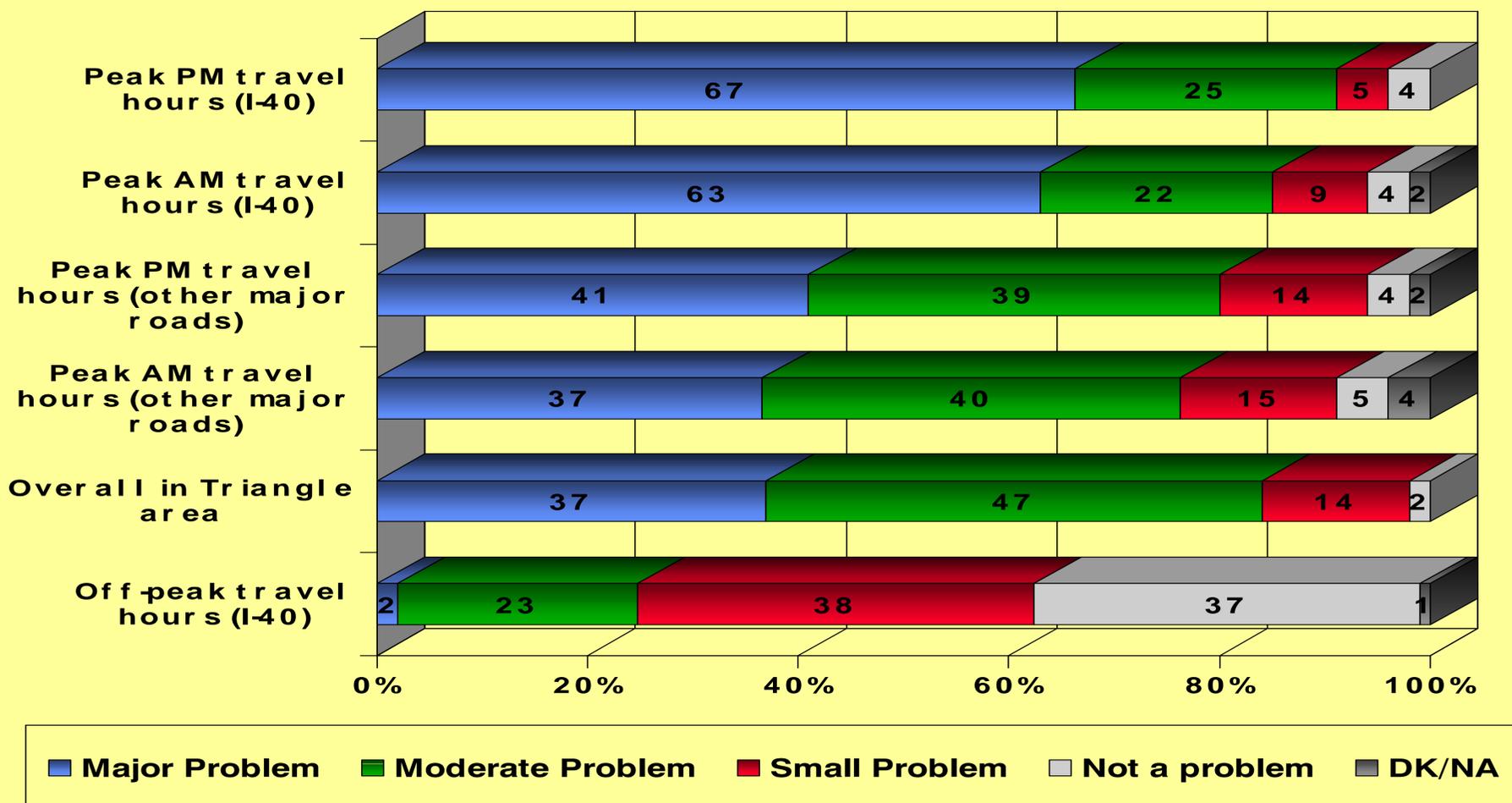
Johnston, Zabor, McManus, Inc. (Study #6632)



# Study Findings Phase One

Most I-40 commuters perceived traffic to be a moderate to major problem on I-40, especially during peak commute hours.

## Current Traffic Perceptions - Total Perception of Traffic Congestion Problems



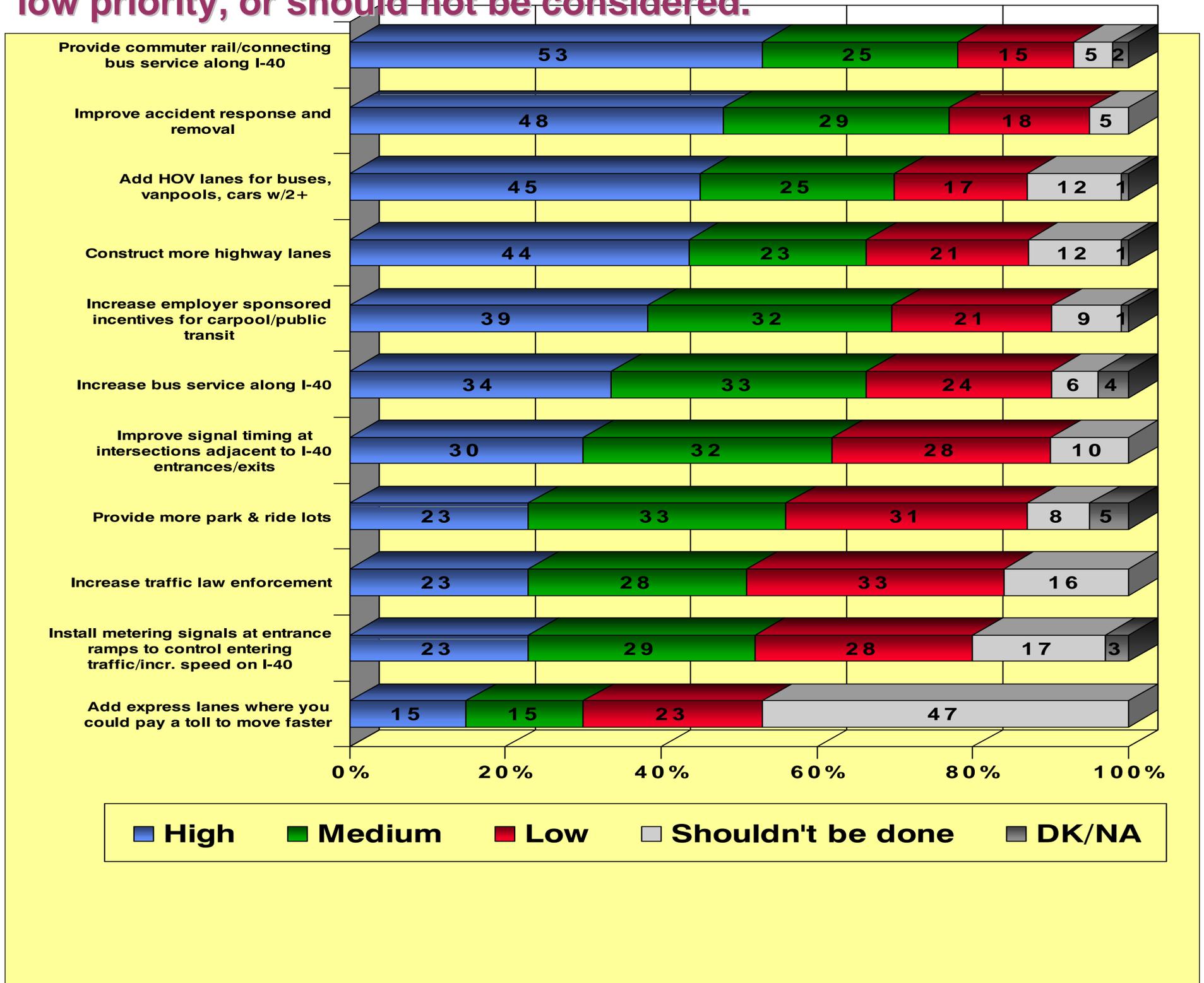
Base = 400 random sample interviews

Johnston, Zabor, McManus, Inc. (Study #6632)



# Phase One Telephone Survey

Survey participants were presented with 11 potential solutions for improving congestion on I-40 and were asked their opinions on whether each should be given a high priority, medium priority, low priority, or should not be considered.



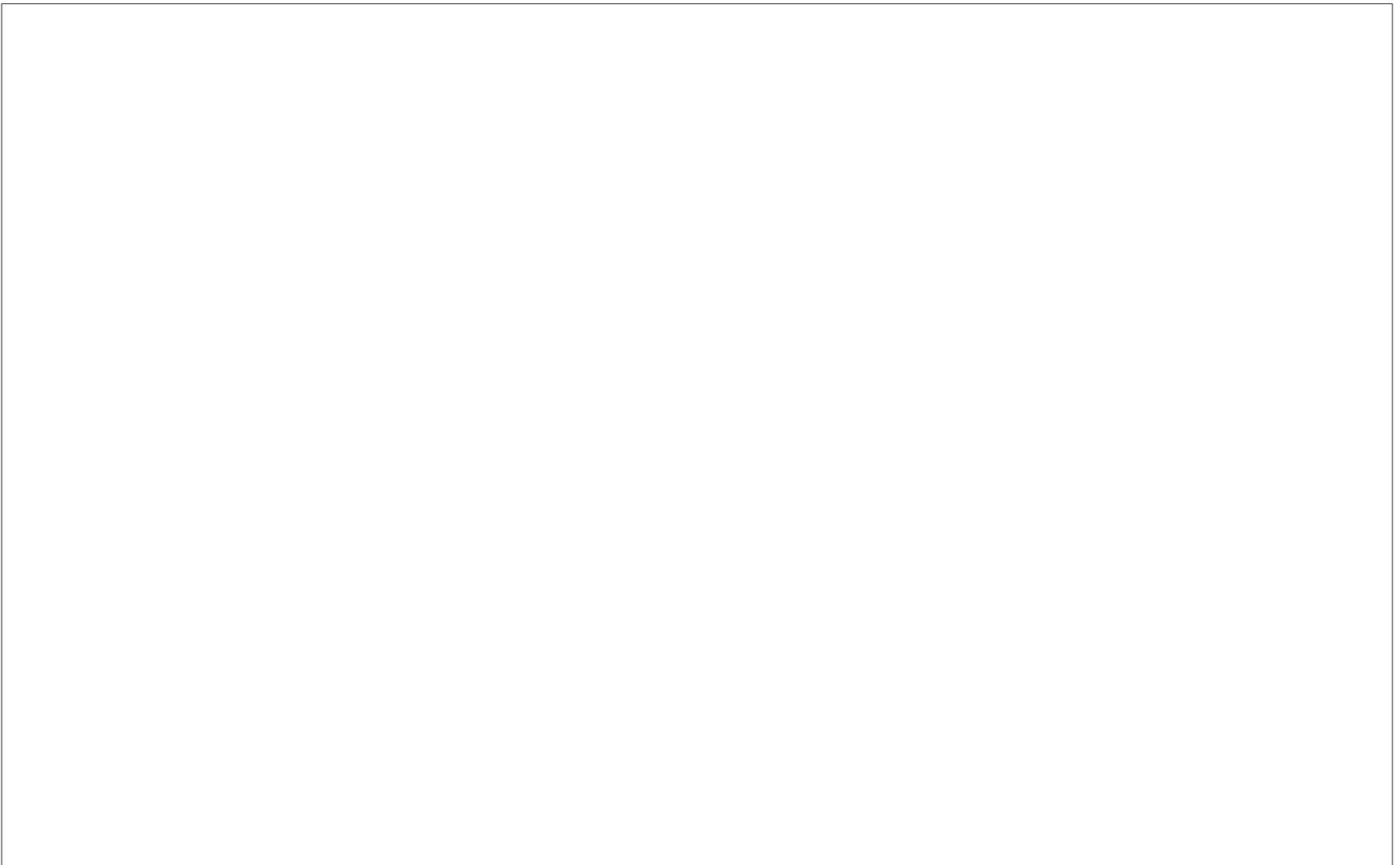
Base = 400 random sample interviews

Johnston, Zabor, McManus, Inc. (Study #6632)



# Study Findings Phase One

- ◆ **Technical analysis indicates a total of 100 miles of area freeway warrant consideration for high occupancy vehicle facilities.**





# Phase Two – 2001/2002

**Develop a Congestion Management Plan with specific projects and actions for adoption by:**

- **NCDOT,**
- **DCHC,**
- **CAMPO,**
- **Triangle Transit Authority.**

◆ **In-depth Evaluation of HOV**

- **Fiscally constrained demand forecasts,**
- **Demand-driven implementation phasing,**
- **Traffic analysis,**
- **Functional design.**



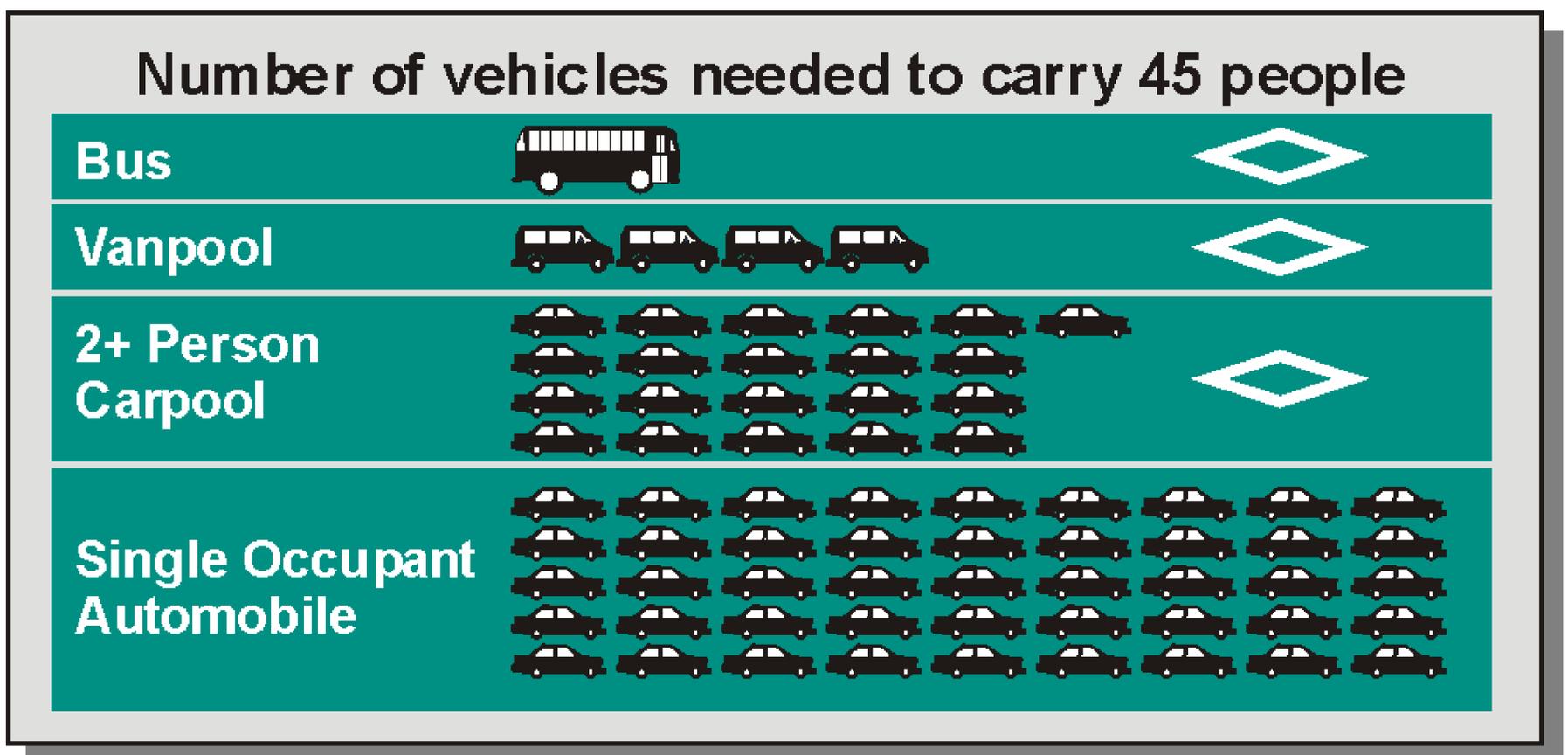
**HOV – providing options**





# What is HOV?

HOV lanes, sometimes called carpool lanes or diamond lanes, are reserved during designated times for vehicles with two or more riders.



These less congested lanes encourage people to carpool, vanpool or ride the bus to take advantage of shorter travel times. By moving more people in fewer vehicles, HOV lanes manage traffic congestion, provide travel choices, and permit a faster, more reliable commute.

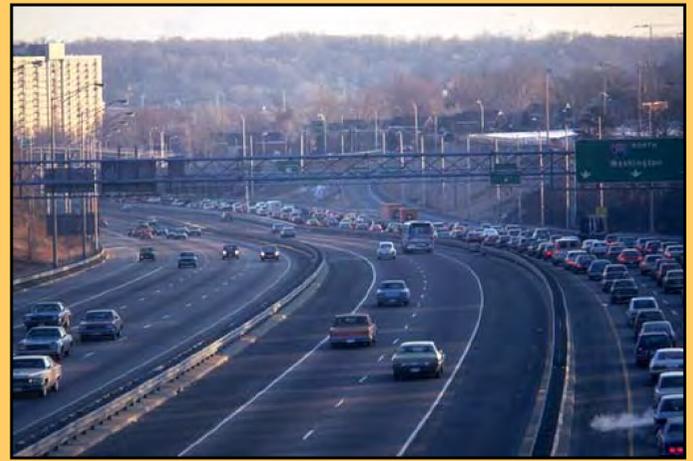


# What does an HOV lane look like?

## Buffer Separated



## Barrier Separated



## Other HOV Applications



Value Pricing  
SR-91, CA



Value Pricing  
SR-91, CA



Separate R/W – Busway  
Pittsburgh, PA



Contra Flow  
Brooklyn, NY



Queue Bypass  
Los Angeles, CA

## Another Local HOV Application

Future side widening to provide for HOV lanes



# How can you get on and off an HOV lane?

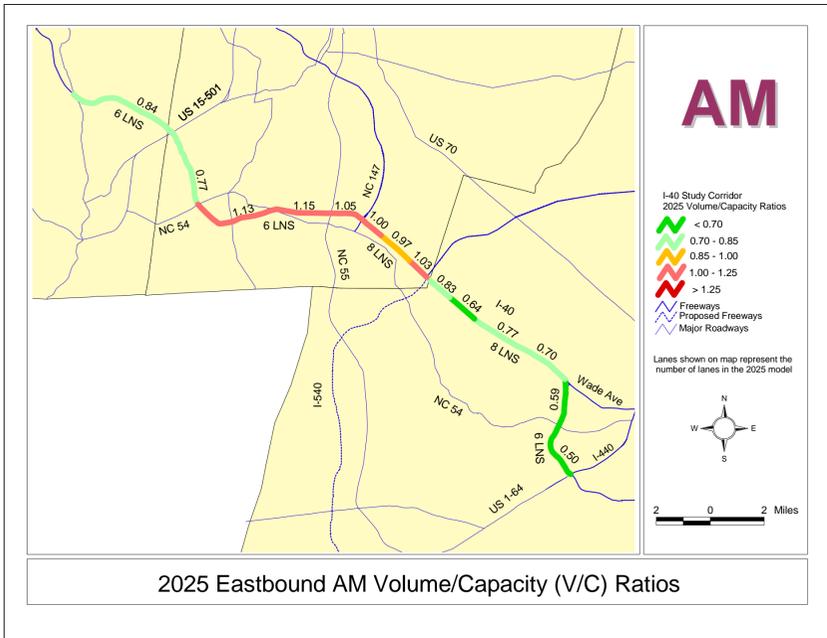
**HOV access is provided in four general formats:**

- ◆ **freeway-to-freeway connections**
- ◆ **direct connections to cross roads or supporting facilities such as park-and-ride lots**
- ◆ **in-line connections**
- ◆ **continuous access**

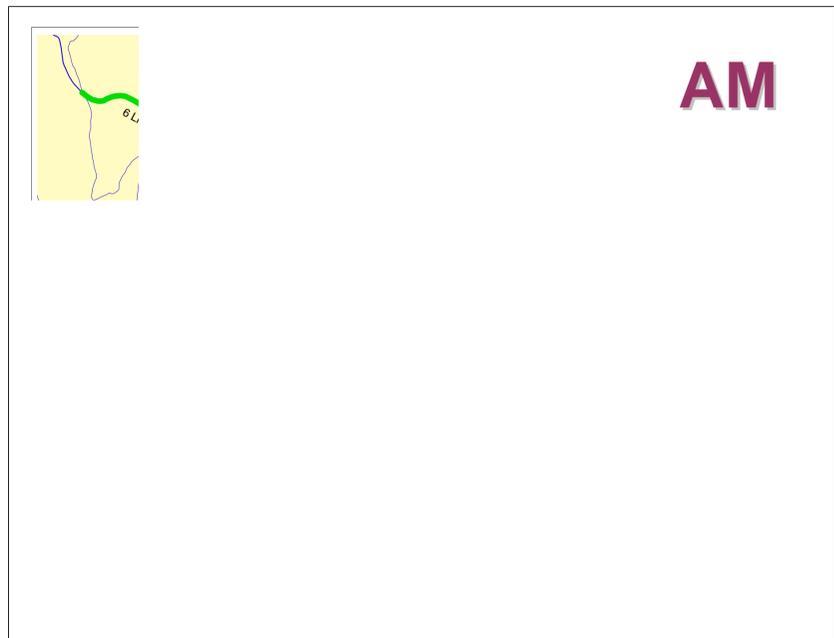




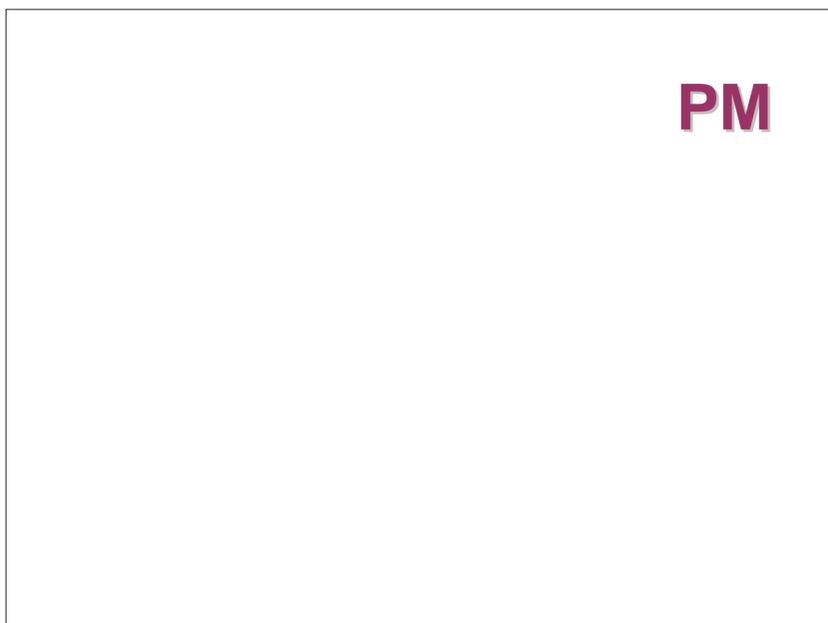
# Baseline Traffic Analysis Under Phase Two



- ◆ Heavy congestion from NC 54 Thru RTP in the AM



- ◆ Heavy congestion approaching RTP from Raleigh in AM.
- ◆ Extreme congestion between I-540 and Davis Drive in AM.



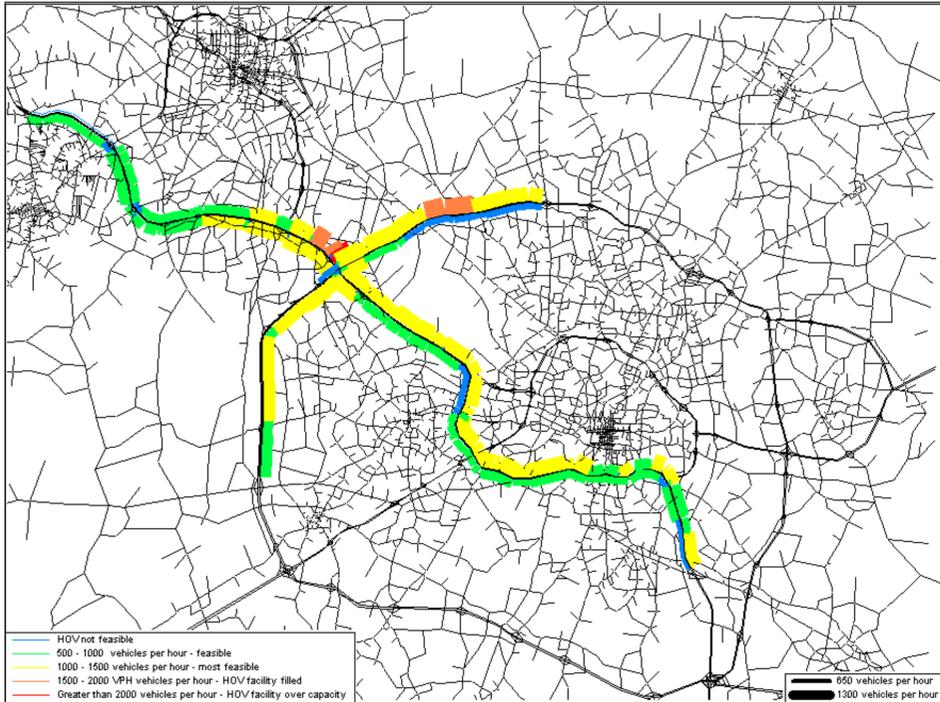
- ◆ Heaviest congestion thru RTP and approaching Wade Avenue split in PM.



- ◆ Heavy congestion from RTP thru NC 54 in PM.

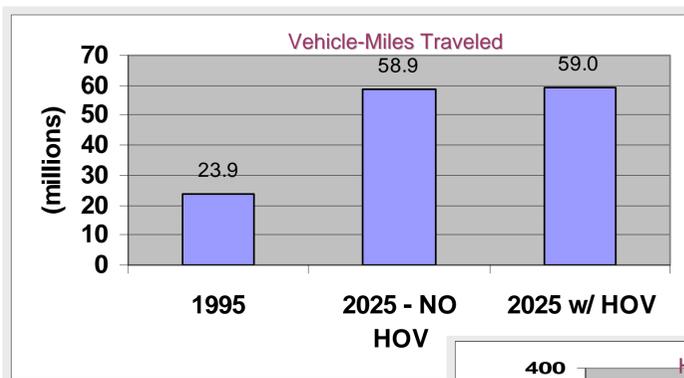


# Feasibility of HOV Under Fiscally Constrained Network

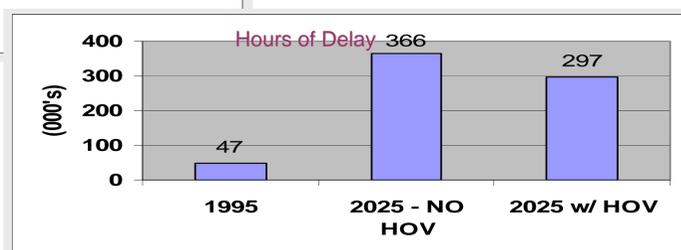


◆ **Fiscally constrained HOV network shows feasibility along entire length of the study area. (\*)**

## ◆ 2025 System performance with and without HOV.



Total vehicle-miles increases slightly, indicating a shift of vehicles on adjacent roadways onto I-40 general purpose and HOV lanes as more capacity becomes available.



Total hours of delay are reduced.

(\*)Based on AM peak hour volumes.

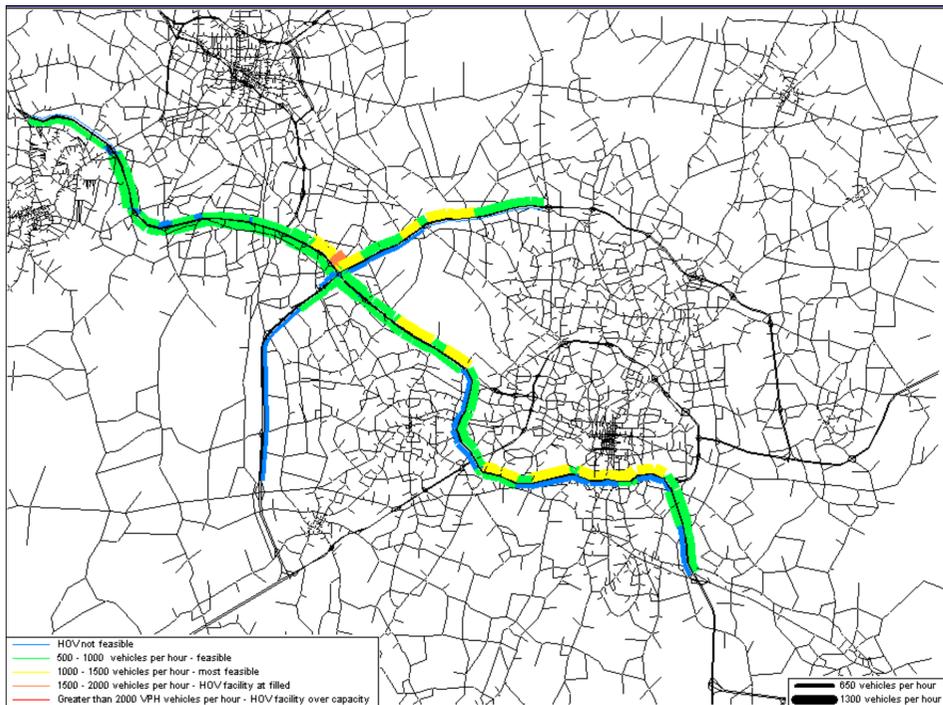
Average Speeds

Average speed increases.



# Demand-driven HOV Implementation Phasing for Fiscally Constrained Network

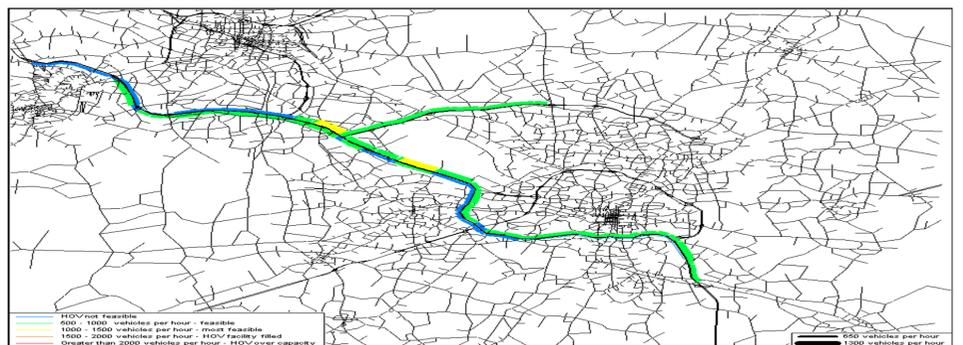
- ◆ HOV is feasible in 2025, what about in interim years?
- ◆ As the region continues to develop, HOV becomes more and more essential.



- ◆ 2015 – HOV feasible everywhere except on Western Wake Expressway. (\*)

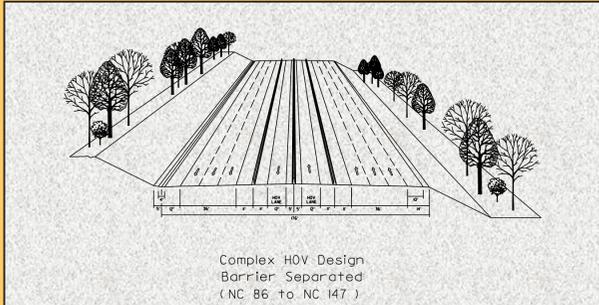
- ◆ 2005 – HOV feasible everywhere on the fiscally constrained network. (\*)

(\*)Based on AM peak hour volumes.

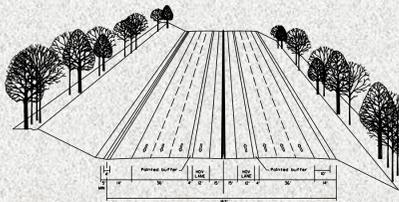




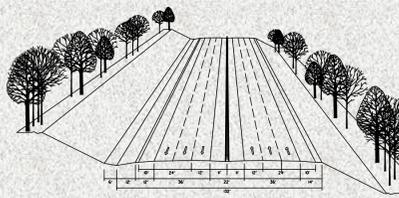
# Functional Design Considerations – Typical Sections



Complex HOV Design  
Barrier Separated  
( NC 86 to NC 147 )

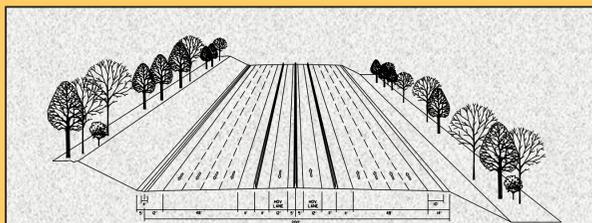


Simple HOV Design  
Painted Buffer  
( NC 86 to NC 147 )

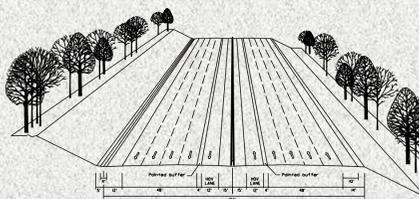


EXISTING I-40 TYPICAL SECTION  
( With TIP Widening Shown )  
( NC 86 to NC 147 )

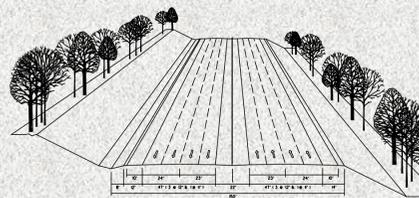
NC 86 to  
NC 147



Complex HOV Design  
Barrier Separated  
( NC 147 to Wade Ave )



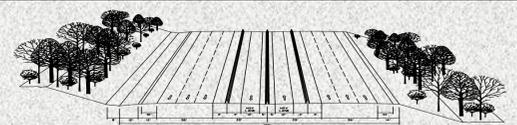
Simple HOV Design  
Painted Buffer  
( NC 147 to Wade Ave )



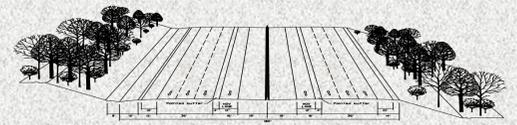
EXISTING I-40 TYPICAL SECTION  
( NC 147 to Wade Ave )

Wade  
Avenue  
to US  
1/64

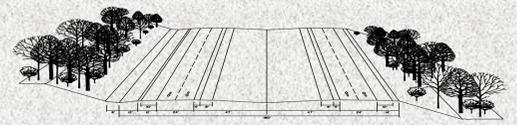
NC 147  
to Wade  
Avenue



Complex HOV Design  
Barrier Separated  
( Wade Ave to US 1 )



Simple HOV Design  
Painted Buffer  
( Wade Ave to US 1 )



EXISTING I-40 TYPICAL SECTION  
( Wade Ave to US 1 )



# How can I stay involved?

- ◆ **Final Study recommendations will be presented in spring 2002 at another set of Open Houses.**
- ◆ **Please complete the Open House Comment Form to receive future project information.**
- ◆ **Call 1-866-527-7715 or log onto [www.I40HOV.com](http://www.I40HOV.com) for ongoing project information.**
- ◆ **Other ways to get and stay informed**
  - **Newsletter**
  - **Brochure**
  - **“Snail Mail”**

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and brochure before  
you leave!**