



### US 74 CASE STUDY

FHWA Congestion Pricing Workshop April 20, 2011





- Corridor Context
- Evolving Vision
- Fast Lanes Studies
- Implementation Strategies
- Design Challenges
- Next Steps





# **CORRIDOR CONTEXT**





# CITY OF CHARLOTTE Long History of Plans/Studies





Year	Study	Outcome
1977	DEIS	Freeway/Expressway
1986	Supplemental EIS	Expressway w/median HOV
1988	Supplemental FEIS	Expressway w/median HOV
2002	SE Corridor MIS	BRT median
2006	SE Corridor Rapid Transit & Hwy Project	BRT w/LRT option
2007	Land Use / Infrastructure Assessment (Ph.I)	Market factors add to access barriers
2009	Fast Lanes Study	Priority corridor for managed lanes
2009	Area Plan (Ph.II)	Reverse-frontage land use vision



#### **Urbanization**



- Rural to Suburban transition
  beginning
- Independence Boulevard serving mobility function
- Sparse network of surrounding roads



- Suburban character
- Independence Boulevard serving both access and mobility functions
- + 1,000,000 SF Commercial
- + >2,000 Residential Units
- 60,000 120,000 ADT



#### **Varied Highway Facility**





#### Hybrid Arterial-Expressway





#### Mismatch of Mobility / Access





#### **Declining Retail**





# **1991 Appraised Value** \$33,465,140 2003 Appraised Value INDEPENDEN



## **EVOLVING VISION**



#### Policy Framework for Integrating Land Use/Transportation

#### Centers, Corridors and Wedges Growth Framework

- Framework provides
   "starting point" for
   developing plan
   recommendations
- Most of the plan area is within a growth corridor
- Plan will include six (6)
   Transit Station Area Plans



# CITY OF CHARLOTTE

#### **Independence Concept Plan**





## **FAST LANES STUDIES**



#### US 74 - Managed Lanes Corridor

- Highest HOV demand in 2013 & 2030
- High-ranking corridor in travel time savings/mile for HOV facility users
- Revenues exceed O&M cost estimates for HOT lanes







#### **Basic Design Options**

#### "Full Feature" Fast Lanes



#### **Design Exceptions for Fast Lanes**









#### **Early Assessment**

- Highest HOV demand in 2013 & 2030
- High-ranking corridor in travel time savings/mile for HOV facility users
- Revenues exceed O&M cost estimates when HOT lanes are considered



CORRIDOR	Longth	Year 2013			Year 2030	
	(Miles)	Capital Cost	Revenue	O&M Cost	Revenue	O&M Cost
US-74 East	12	\$225-700	\$2-11	\$6	\$6-20	\$8



# **IMPLEMENTATION STRATEGIES**



- 21-mile "Monroe Parkway" from I-485 to Marshville
- Expected to be complete by 2015
- Estimated cost of \$756 million









#### **NCDOT Project Prioritization**

	Goal Mobility					Tier Statewide		Submode Highway		
RANK	SCORE	SPOT ID	TIP #	DIV	COUNTY(S)	ROUTE	FROM / CROSS STREET	то	DESCRIPTION	
1	120	45797	1-2304	09	DAVIDSON	I- 85	NC 150	I- BUS 85, US 29, US 52, US 70	NORTH OF NC 150 TO I-85 BUS./US 29-52-70. ADD ADDITIONAL LANES	
2	106.19	43468	U-2509	10	MECKLENBURG	US 74 (INDEPENDEN CE BOULEVARD)	I- 485	IDLEWILD ROAD	US 74 (INDEPENDENCE BOULEVARD), CHARLOTTE OUTER LOOP TO IDLEWILD ROAD. UPGRADE CORRIDOR TO PROVIDE ADDITIONAL CAPACITYAND SAFETY. FEASIBILITY STUDY UNDERWAY.	
3	100.16	42717	I-3311C	10	MECKLENBURG	1- 77	5TH STREET IN CHARLOTTE	I- 85	5TH STREET IN CHARLOTTE TO NC 73 (SAM FURR ROAD). ADDITIONAL LANES - 5TH STREET TO I-85. HIGH OCCUPANCY VEHICLE (HOV) LANES.	
4	100.14	42716	I-3311B	10	MECKLENBURG	I- 77	I- 485 (CHARLOTTE OUTER LOOP)	NC 73 (SAM FURR ROAD)	5TH STREET IN CHARLOTTE TO NC 73 (SAM FURR ROAD). ADDITIONAL LANES - 1-485 (CHARLOTTE OUTER LOOP) TO NC 73 (SAM FURR ROAD).	
5	95.26	42726	1-3802	10, 09	CABARRUS, ROWAN	I- 85	NC 73 (IN CABARRUS COUNTY)	US 29-601 CONNECTOR IN ROWAN COUNTY	NC 73 IN CABARRUS COUNTY TO US 29-601 CONNECTOR IN ROWAN COUNTY. ADD ADDITIONAL LANES.	
6	93.18	45806	I-4750A	12, 10	IREDELL, MECKLENBURG	1- 77	NC 73 (IN MECKLENBU RG COUNTY)	US 21 (EXIT 33 IN IREDELL COUNTY)	NC 73 IN MECKLENBURG COUNTY TO US 21 IN IREDELL COUNTY (EXIT 33). WIDEN AND RECONSTRUCT ROADWAY.	
7	87.7	44024		05	WAKE	I- 40	US 1 (US 1/64)	LAKE WHEELER RD	REHABILITATE EXISTING LANES (REMOVE AND REPLACE ASR CONCRETE) AND WIDEN 6-LANE FREEWAY TO 8 LANES.	
8	87.19	42735	1-4700	13	BUNCOMBE	I- 26	NC 280	I- 40 (AT ASHEVILLE)	NC 280 TO I-40 AT ASHEVILLE. ADD ADDITIONAL LANES.	
9	83.28	44050		10	CABARRUS	I- 85	CONCORD MILLS BLVD	NC 73	I-3803B - WIDEN I-85 FROM 4 LANES TO 8 LANES FROM CONCORD MILLS BLVD TO NC 73.	

NCDOT's Strategic Planning Office of Transportation (SPOT) recently ranked completing US-74 to I-485 behind only the I-85 Yadkin River Bridge in terms of statewide mobility goals.



#### **Priority Project**

#### Project U-2509



- 6 miles remain to be improved (Conference Dr to I-485)
- Pre-construction activities to be conducted by NCDOT (PDEA)
- NCDOT's Strategic Planning Office of Transportation (SPOT) ranked U-2509 second only to the Yadkin River Bridge





#### **Rapid Transit Corridor**

- 13.5 miles, 16 stations
- MTC completion estimate of 2022-2026 (3 Phases)
- \$582 million escalated cost estimate
- Only rapid transit corridor within same space as radial freeway







#### **Selection of BRT**

#### **Cost effective**

"High" CE rating; LRT is "med-low" Eligible for federal New Starts

#### Less expensive

Est. \$331 M; LRT is \$585 M Lower O&M costs

#### **Construction flexibility**

Phased highway construction schedule (only Albemarle to Conference funded) BRT can be implemented on both ends initially, with middle completed in later phases of highway projects

#### **Compatible with alternate scenarios**

Express bus compatible

LRT would require transfer at highway's end

Future BRT stops can be implemented early







#### Addressing the "Same Space" Challenge

**US 74 with Exclusive Busway** 



#### **US 74 with Combined BRT and HOT**





# **DESIGN CHALLENGES**



#### **Corridor Segments**





#### **Design Issues**

- Number of Managed Lanes
- Direction of Managed Lanes
- Access points for Managed Lanes
- In-Line or Off-Line Stations
- Bus By-Pass Lanes or Slip Lanes
- Control of Access
- Interchange Modifications
- Design Exceptions



• Re-purposing Access Lanes as General Purpose Lanes



# **NEXT STEPS**





- Phase III Fast Lanes Study
- Physical & Operational Analyses by NCDOT & Others
- Decision by MTC on Transit Mode & Stations
- Definition of Roadway & Transit Project for LRTP & TIP

