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NORTH CAROLINA

AECOM



*Indirect and Cumulative Effects in  
Long Range Planning*

NCAMPO Conference  
May 12, 2016



# *Indirect and Cumulative Effects in Long Range Planning*

## Today's Topics

- Overview of Integration  
*Alena Cook, NCDOT-TPB*
- Overview of ICE  
*Bob Deaton, NCDOT-PDEA*
- ICE in Long Range Planning Best Practices  
*Cindy Camacho, AECOM*
- ICE Pilot New Bern Area MPO  
*Taruna Tayal, VHB*



# Overview of Integration



# *What “Integration” Is...*

...a planning process that provides a seamless connection between long-range transportation planning and project development that ultimately leads to supporting the timely delivery of projects.

Land Use Planning  
and  
Community Vision

Long Range  
Transportation  
Planning

Project  
Planning  
(NEPA)



# *Integration...*

- Enables a seamless transfer of information about:
  - transportation needs
  - environmental & community considerations
  - long range planning decision making process
- Encourages better coordination, decisions, and documentation
- Meets legal requirements for use of long range planning information in project development (is NOT doing NEPA in long range planning)



# *Integration Linkages*

## **Long Range Transportation Planning**

## **Project Development**

**Problem Statement** → **Purpose & Need**

**Planning Level  
Alternatives Analysis** → **Detailed Alternatives Analysis**

**Community Impact  
Assessment** → **Community Impact Analysis**

**Indirect & Cumulative  
Effects Screening** → **Indirect & Cumulative Effects  
Analysis**

**Public Involvement** → **Public Involvement**

# *Where we are now...*

## Implemented & Monitoring

- Problem Statement (2010)
- Community Impact Assessment (2015)
- Interagency Coordination Protocol (2016)



## Parts Implemented, Remainder Underway

- Alternatives Analysis
- Public Involvement

## Best Practices & Pilot Study

- Indirect & Cumulative Effects



# For More Information...

## Integration Website

<https://connect.ncdot.gov/projects/planning/Pages/Integration-Project.aspx>

The screenshot displays the 'Connect NCDOT BUSINESS PARTNER RESOURCES' website. The navigation menu includes 'Doing Business', 'Bidding & Letting', 'Projects' (highlighted), 'Resources', and 'Local Governments'. A search bar is located on the right. Below the navigation, a secondary menu lists 'Planning' (highlighted), 'Construction', 'Roadway Design', 'Work Zone', 'Contracts', 'Toolkit', 'High Profile Projects', and 'Bicycle & Pedestrian'. The main content area is titled 'Integration Project' with the subtitle 'Linking Long Range Transportation Planning and Project Development'. A breadcrumb trail shows the path: 'Connect NCDOT > Projects > Planning > Integration Project'. The page is divided into two columns. The left column contains the main text of the project, and the right column features a sidebar with 'Integration General Information' and 'Integration Linkages' sections, each containing links to various documents and protocols.

**Integration Project**  
Linking Long Range Transportation Planning and Project Development

Connect NCDOT > Projects > Planning > Integration Project

**Integration Project**  
**Linking Long Range Transportation Planning and Project Development**

The North Carolina Department of Transportation has undertaken a major process improvement with the goal of integrating the long range transportation planning process with the project development process. In North Carolina the long range transportation planning process is called the Comprehensive Transportation Planning process and leads to the development of Comprehensive Transportation Plans (CTP). In MPO areas, there are additional federal requirements for long range transportation plans, including for plans to be fiscally constrained (often called Metropolitan Transportation Plans or MTPs). The project development process in North Carolina is handled through the Section 404/ NEPA Merger 01 process (called the Merger process) or other means to follow the National Environmental Policy Act (NEPA) and its state counterpart, State Environmental Policy Act (SEPA). The Integration Project was designed to improve the linkage between any type of long range transportation plan (CTPs or MTPs) and project development, whether handled through the Merger process or other means.

The Integration Project was designed through the work of a multi-agency 'Integration Team' from 2005 to 2007. This work resulted in the identification of 8 linkages between long range planning and project development, where products from the CTP process could inform or serve as the starting point for NEPA/ SEPA. In 2008, an 'Integration Implementation Team' (IIT) was formed to direct the implementation of the Integration Project. Under the leadership of the IIT, small working groups designed best standards and practices for accomplishing the goals of integration. The IIT is currently overseeing outreach on the proposed best practices and development of training. Refer to the documents below for more information on the Integration Project.

**Integration General Information**

- [Integration Project Overview](#) PDF
- [Management Structure and Roles](#) PDF

**Integration Linkages**

- [CTP Guidelines](#) PDF
- [CTP Process Map](#) PDF
- [Interagency Coordination Protocol](#) PDF
- [Protocol Companion Tables](#) XLS
- [Public Engagement Toolkit Video \(unzip and play in Internet Explorer\)](#) CTR
- [The 8 Integration Linkages](#) PDF

**Problem Statement**  
Problem Statements(PS) communicate the need, context, and concept for project proposals in transportation planning which can be used as the starting point for Purpose and Need in NEPA/SEPA.





# Overview of Indirect and Cumulative Effects



# *Definitions*

## ICE: Indirect & Cumulative Effects

- **Indirect Effects:** Reasonably foreseeable, further in time and distance from the footprint of the proposed project than direct effects.

Propensity for project to initiate changes in land use via new access, reducing travel times, etc.

- **Cumulative Effects:** All past, present and reasonably foreseeable future actions, regardless of what agency(s) or person undertakes such actions. These effects are additive, hence, cumulative.



# *History of ICE at NCDOT*

- Early 2000's, NC-DENR sued over lack of detail/info on Clean Water Act permitting for NCDOT projects ICE issues.
- NC-DENR and NCDOT staff collaborated to design a process to address ICE issues for NEPA and project permitting.
- ICE analysis is based on NCDOT's "Guidance for Assessing Indirect & Cumulative Impacts of Transportation Projects in North Carolina".



# *ICE in Project Development/ NEPA*

## Consists of a multi-phase process

- **Step 1: ICE Screening-** determines if second step is necessary.

\*Most projects only need the Screening step.

- **Step 2: Land Use Scenario Assessment (LUSA)-** if needed.

\*LUSA projects are typically larger more complex projects.

~Steps 1 and 2 are predominantly qualitative.

- **Step 3: Water Quality Analysis-** rarely used.

\*reserved for projects that Steps 1 & 2 indicate will likely spur impacts to area resources via storm water runoff, sediment and nutrient loading.



# *ICE Screening Process*

## Base Screening Information:

- Focuses on project study area population, employment trends, and notable environmental features (both Natural & Human environment).

## Analytical Screening Info:

- Looks at project study area with the proposed project overlaid, to assess how it would affect qualities such as travel patterns, travel time savings, changes in access and others.

~All of this information will feed into two matrices, for Indirect Effects and for Cumulative Effects.



# *Indirect Effects Matrix*

- Scope of the proposed project
- Travel Time Savings
- Forecasted Population Growth
- Forecasted Employment Growth
- Available Land in the study area
- Water & Sewer Availability
- Market for Development
- Public Policy
- Notable Environmental Features

~Each category is rated for “More Concern” or “Less Concern”, based on local protection, presence of the resource or potential for impacts.



# *Cumulative Effects Matrix*

- Notable Cultural Features
    - Past Actions
    - Current Activities
    - Future Development
  - Notable Community Features
  - Notable Water Resource Features
  - Notable Natural Habitat Features
- ~Each category is rated for “More Concern” or “Less Concern”, based on local protection, presence of the resource or potential for impacts.



# *ICE Screening Products in Project Development*

## *Summary Statements of Resulting Analysis:*

- Indirect Summary Statement
- Water Quality Effects Summary Statement
- Cumulative Effects Summary Statement

## *Overall Conclusion and Next Steps:*

- Base information and analysis come together.
- Enables the analyst to render a determination whether the project has a low potential to spur land use change and development in the area, OR, that additional study is necessary in the form of a Land Use Scenario Assessment (LUSA), which will compare potential land use changes between the build and no-build scenarios.





# *ICE in Long Range Planning Compared to Project Development*

- ICE in Long Range Planning results in 4 Products:
  - Product 1: Existing Conditions Assessment
  - Product 2: Future Growth Potential Assessment
  - Product 3: Indirect & Cumulative Effects Screening
  - Product 4: Best Management Practices Recommendations
- ICE in Planning & Project Development utilize similar matrices for evaluation of similar factors
- Indirect Effects in Planning can be screened at both the area-wide “Plan” level and the individual “Project Proposal” level



# *Benefits of ICE in Long Range Planning (Part 1)*

## *Benefits to Project Development*

- Provides input and documentation for various alternatives on the potential effects from proposed projects
- Aids in decision making for the project development process throughout NEPA
- Gives NCDOT a head start on permitting requirements relating to the Clean Water Act, as well as other state and federal regulations



# *Benefits of ICE in Long Range Planning (Part 2)*

## *Benefits to Long Range Planning*

- Better products and documentation
- Encourages coordination
- Enhances decision-making
- Provides communities with best management practices








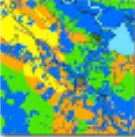













# ICE in Long Range Planning Best Practices

# ICE Procedures

- AECOM assisted PDEA and TPB in creating the process to integrate ICE analysis into the transportation planning process.
- This informs the early development of transportation project alternatives, and decision makers in identifying, adopting and documenting ICE avoidance and minimization strategies during the transportation planning process.
- The Integration ICE process results for project development (NEPA/SEPA) were subsequently documented.



	Product 1. Existing Conditions Assessment	Product 2. Future Growth Potential Assessment	Product 3. Indirect and Cumulative Effects Screening	Product 4. Best Management Practices Recommendations
When	At the Beginning of the Transportation Planning Process	During Development of Future Projections	During Development and Analysis of Project Proposals	During Development of the Draft Transportation Plan
INPUTS	 <p><b>Community Understanding Report</b></p>	 <p><b>Land Use or Land Development Plans</b></p>	 <p><b>Draft CTP Project Proposals</b></p>	<p><b>Products 1, 2 and 3</b></p>
	 <p><b>Environmental Features Map (includes human &amp; natural features)</b></p>	 <p><b>Study Area's future land use classifications, densities and intensities</b></p>	<p><b>Product 1 Maps and Data</b></p> 	
OUTPUTS	 <p><b>Environmental Sensitivity/ Other Mapping</b></p>	 <p><b>Future Land Use Map</b></p>	<p><b>Product 2 Maps and Data</b></p> 	 <p><b>Best Management Technical Memorandum</b></p>
	 <p><b>Plan-Level ICE Existing Conditions Matrix</b></p>	 <p><b>Future Growth Potential Map</b></p>	<p><b>Economic Development Plans/Projections</b></p> 	
	 <p><b>Technical Memorandum</b></p>	 <p><b>Technical Memorandum</b></p>	 <p><b>Screening Matrix for Indirect Effects— Plan &amp; Project Level</b></p>	
			 <p><b>Technical Memorandum Part 1 – Indirect Effects</b></p>	
			 <p><b>Screening Matrix for Cumulative Effects</b></p>	
			 <p><b>Technical Memorandum Part 2 — Cumulative Effects</b></p>	

# *Procedures Tools and Documents*



# Product 1 | Existing Conditions Assessment

## Product 1 | Existing Conditions Assessment

### Setting the Scene

- Provides a baseline of the human and natural environmental features contained within the CTP study area.
- The MPO/RPO/TPB staff and consultants will utilize existing land use and socio-economic information and fill out the Plan ICE Screening Tool of Existing Conditions.
- Existing land use and socio-economic information will be summarized in Technical Documentation.

INPUTS



**Community Understanding Report**



**Human Environmental Features Map**



**Natural Environmental Features Map**



**Environmental Sensitivity Map**

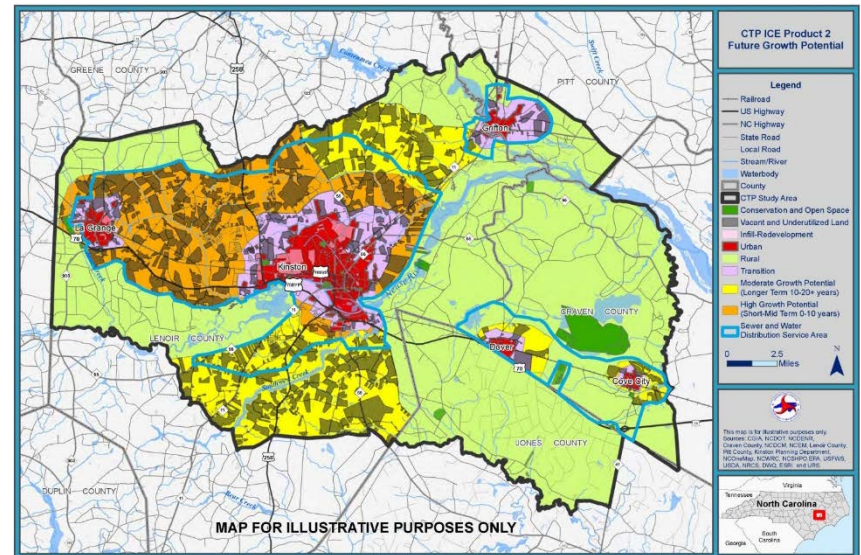


# Product 2 / Future Growth Potential Assessment

## Product 2 | Future Growth Potential

### Assessment

- Addresses the study area's current and future land use classifications, densities and intensity of land uses.
- Provides a Future Growth Potential map illustrating areas targeted for development in the near and mid term, areas available for development and current and future utility service areas.
- The Map and Technical Documentation summarize the potential future land use changes without proposed transportation alternatives.
- This product may be customized based on the data available from the MPO



# *Product 3 / Indirect and Cumulative Effects Screening*

## **Product 3 | ICE Screening**

**Indirect Effects Screening- Plan Level and Project Level**

**Cumulative Effects Screening- Plan Level**

- MPO/RPO/TPB staff screens CTP alternatives both for potential indirect effects and potential cumulative effects
- Data for ICE Screening includes Products 1 and 2 and other related local plans (e.g., economic development plans/projections) for determining the CTP future growth areas.
- Staff will document the screening results in a Technical Memorandum, and matrix screening tool. Findings will also be documented for the NEPA/SEPA project development process

# Product 3 / Indirect Effects Matrix Cumulative Effects Matrix

Product 3: ICE Screening Matrix for Indirect Effects, Project-Level										
Rating	Scope of Trans. Plan Investments	Macro Change in Accessibility	Forecasted Population Growth	Forecasted Employment Growth	Available Land	Water/Sewer Availability	Market for Development	Public Policy	Notable Environmental Features	Result
<b>More Concern</b>	High	High	> 3% annual population growth	> 3% increase New Jobs Expected	40% or greater of available land*	Services available [muni 100%; county 20% of area]	Development activity abundant	Less stringent; no growth management	Notable Feature(s): Abundant / More Sensitive	
<b>High</b>	X	X			X					Indirect Effects Expected
<b>Medium-High</b>						X	X		X	
<b>Medium</b>								X		
<b>Medium-Low</b>			X	X						
<b>Low</b>										
<b>Less Concern</b>	Low	None	No population growth or decline	No new Jobs or Job Losses	0 - 9% of available land*	Limited or no service available now or in future	Development activity lacking	More stringent; growth management	Notable Feature(s): Minimal / Less Sensitive	

Product 3: ICE Screening Matrix for Cumulative Effects													
Rating	Notable Cultural Features			Notable Community Features			Notable Water Quality Features			Notable Natural Habitat Features			Result
<b>More Concern</b>	Unique Resources - Not Protected / Recognized			Unique Resources - Not Protected / Recognized			Unique Resources - Not Protected / Recognized			Unique Resources - Not Protected / Recognized			
	Past Actions	Current Activities	Future Development	Past Actions	Current Activities	Future Development	Past Actions	Current Activities	Future Development	Past Actions	Current Activities	Future Development	
<b>High</b>				X			X			X			Cumulative Effects Expected
<b>Medium-High</b>											X	X	
<b>Medium</b>					X			X	X				
<b>Medium-Low</b>						X							
<b>Low</b>	X	X	X										
<b>Less Concern</b>	Features Incorporated in Local Planning and Protection			Features Incorporated in Local Planning and Protection			Features Incorporated in Local Planning and Protection			Features Incorporated in Local Planning and Protection			

**Product 3: ICE Screening Matrix for Indirect Effects, Project-Level**

Rating	Scope of Trans. Plan Investments	Macro Change in Accessibility	Forecasted Population Growth	Forecasted Employment Growth	Available Land
<b>More Concern</b>	High	High	> 3% annual population growth	> 3% increase New Jobs Expected	40% or greater of available land*
<b>High</b>	X	X			X
<b>Medium-High</b>					
<b>Medium</b>					
<b>Medium-Low</b>			X	X	
<b>Low</b>					
<b>Less Concern</b>	Low	None	No population growth or decline	No new Jobs or Job Losses	0 - 9% of available land*



**Product 3: ICE Screening Matrix for Indirect Effects, Project-Level**

Rating	Water/Sewer Availability	Market for Development	Public Policy	Notable Environmental Features	Result
<b>More Concern</b>	Services available [muni 100%; county 20% of area]	Development activity abundant	Less stringent; no growth management	Notable Feature(s): Abundant / More Sensitive	
<b>High</b>					<b>Indirect Effects Expected</b>
<b>Medium-High</b>	X	X		X	
<b>Medium</b>			X		
<b>Medium-Low</b>					
<b>Low</b>					
<b>Less Concern</b>	Limited or no service available now or in future	Development activity lacking	More stringent; growth management	Notable Feature(s): Minimal / Less Sensitive	

**Product 3: ICE Screening Matrix for Cumulative Effects**

Rating	Notable Cultural Features			Notable Community Features		
More Concern	Unique Resources Not Protected / Recognized			Unique Resources Not Protected / Recognized		
	Past Actions	Current Activities	Future Development	Past Actions	Current Activities	Future Development
High				X		
Medium - High						
Medium					X	
Medium - Low						X
Low	X	X	X			
Less Concern	Features Incorporated in Local Planning and Protection			Features Incorporated in Local Planning and Protection		



**Product 3: ICE Screening Matrix for Cumulative Effects**

Rating	Notable Water Quality Features			Notable Natural Habitat Features			Result
More Concern	Unique Resources Not Protected / Recognized			Unique Resources Not Protected / Recognized			
	Past Actions	Current Activities	Future Development	Past Actions	Current Activities	Future Development	
High	X			X			Cumulative Effects Expected
Medium - High					X	X	
Medium		X	X				
Medium - Low							
Low							
Less Concern	Features Incorporated in Local Planning and Protection			Features Incorporated in Local Planning and Protection			

# Product 4 | Best Management Practices Recommendations

## Product 4 | ICE Best Management Practices

- Identifies common techniques for minimizing the potential for indirect and cumulative effects of a proposed transportation project.
- Promotes coordination and collaboration between NCDOT and local governments and promotes more effective project implementation.
- Technical Documentation provides a range of Best Management Practices useful in planning for project implementation at the local level.

**Steps to Prepare CTP-ICE Best Management Practices Recommendations**

Step	Action
1	The TPB/MPO/RPO will review the results of the CTP-ICE Assessment (see list of procedure inputs above). From the CTP Indirect and Cumulative Effects (ICE) Screening (Product 3), the resource features on the indirect effects and cumulative effects matrix(ces) that have been rated as areas of more concern will be the focus for the next steps, further research and review.
2	<p>Using the Resources/Tools provided in this procedure and/or supplemental tools not contained in the procedure, the TPB/MPO/RPO will identify how impacts on elements of the project proposals (e.g., notable water quality features) rated as areas of more concern might be avoided or reduced.</p> <p>The Resources/Tools provided in this report represent several examples of the many resources and tools available for addressing water quality, land use and growth, and natural resource concerns. They are listed below and additional resources can be found in the Appendix categorized by these three broad areas. The TPB/MPO/RPO are encouraged to research and apply other resources/tools not listed in this procedure as new and updated tools are frequently being released. NCDOT PDEA Human Environment Section-Community Studies may be consulted to provide guidance and recommendation for identifying the most appropriate tools to address potential issues for ensuring consistency between long-range planning and the NEPA/Project Development process.</p> <p><b>Smart Growth</b> Aims to enable growth in a low-sprawl or no-sprawl fashion that locates/encourages growth closer to existing developed areas or to areas targeted for growth, while avoiding important resources.</p> <p>EPA – Smart Growth Publications: <a href="http://www.epa.gov/smartgrowth/publications.htm">http://www.epa.gov/smartgrowth/publications.htm</a></p> <p>American Planning Association – Growing Smart: <a href="http://www.planning.org/growingsmart/">http://www.planning.org/growingsmart/</a></p> <p>American Planning Association – Policy Guide on Smart Growth: <a href="https://www.planning.org/policy/guides/adopted/smartgrowth.htm">https://www.planning.org/policy/guides/adopted/smartgrowth.htm</a></p>

# Smart Growth

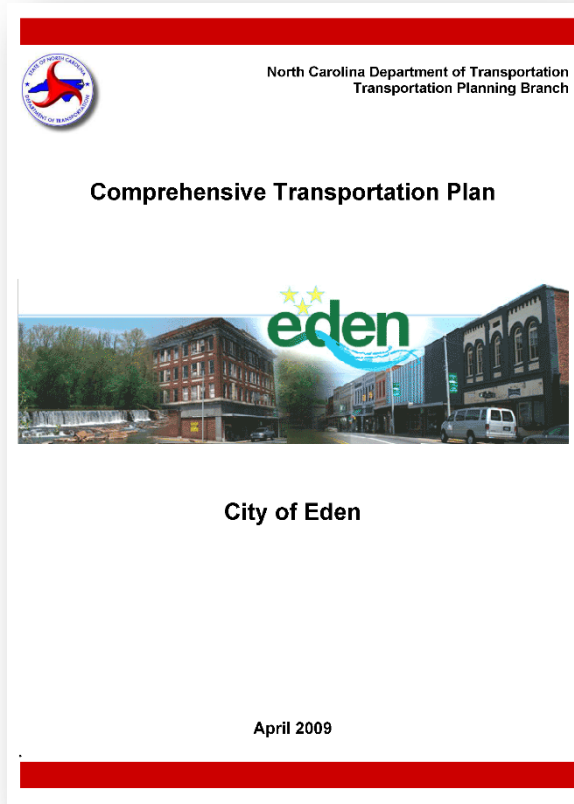
## 10 principles to guide smart growth strategies:

- Mix land uses.
- Take advantage of compact building design.
- Create a range of housing opportunities and choices.
- Create walkable neighborhoods.
- Foster distinctive, attractive communities with a strong sense of place.
- Preserve open space, farmland, natural beauty, and critical environmental areas.
- Strengthen and direct development towards existing communities.
- Provide a variety of transportation choices.
- Make development decisions predictable, fair, and cost effective.
- Encourage community and stakeholder collaboration in development decisions



<http://www.sehinc.com/>

# Closing



- Eden Case Study
  - CTP-ICE Procedures applied to 2009 Comprehensive Transportation Plan
  - Procedures refined: project and plan-level ICE screenings differentiated
- Recommended New Bern Pilot



# ICE Pilot New Bern Area MPO



# *Pilot Study for New Bern Area MPO Metropolitan Transportation Plan (MTP)*



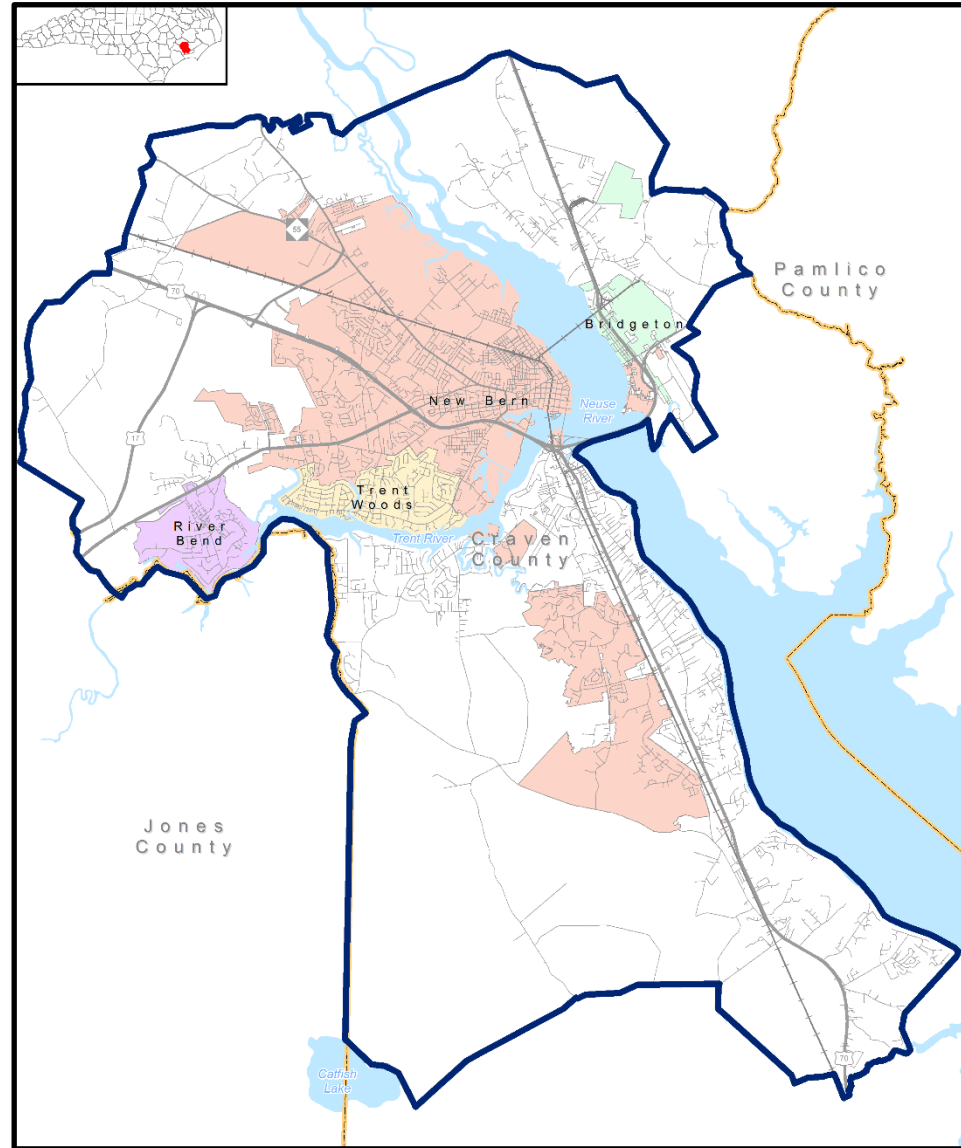
Taruna Tayal and Candice Andre, AICP



*Transportation*

# *New Bern Area MPO*

- Craven County
- Newest MPO in NC
- Important Consideration for NBAMPO Transportation Plan
  - Improving Mobility
  - Conservation of Natural Environment
  - Cost-Benefit Ratio



# Developable Parcels



# Craven County - Historical and Forecasted Population

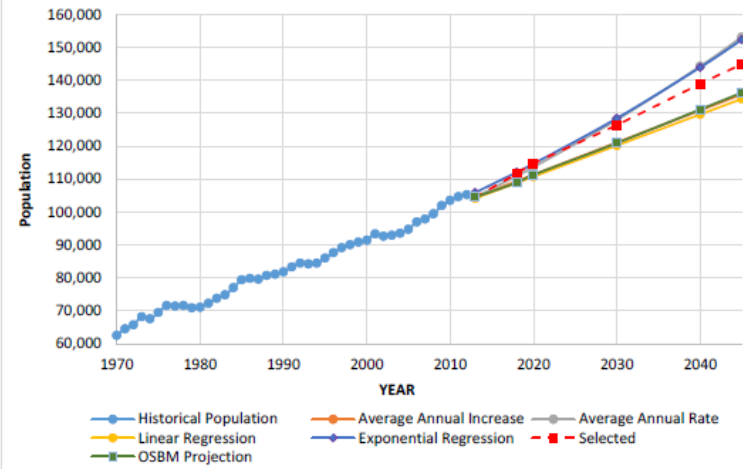
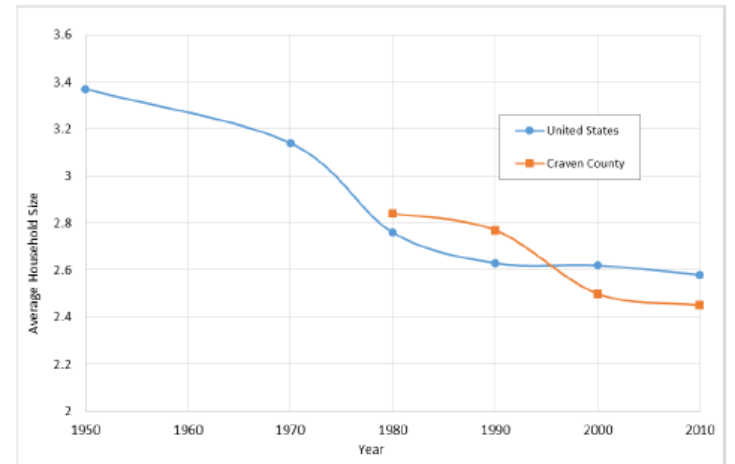


Figure 3. Historical Average Household Size

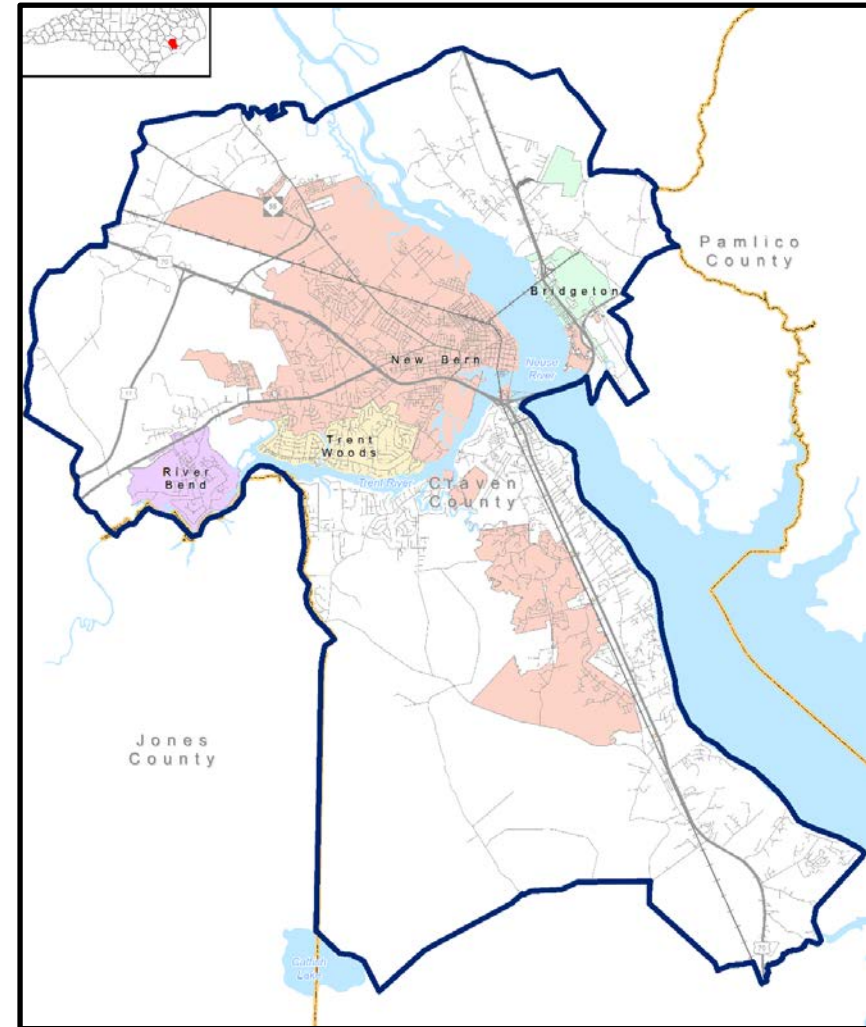


Historical Data Source: United States Census Bureau

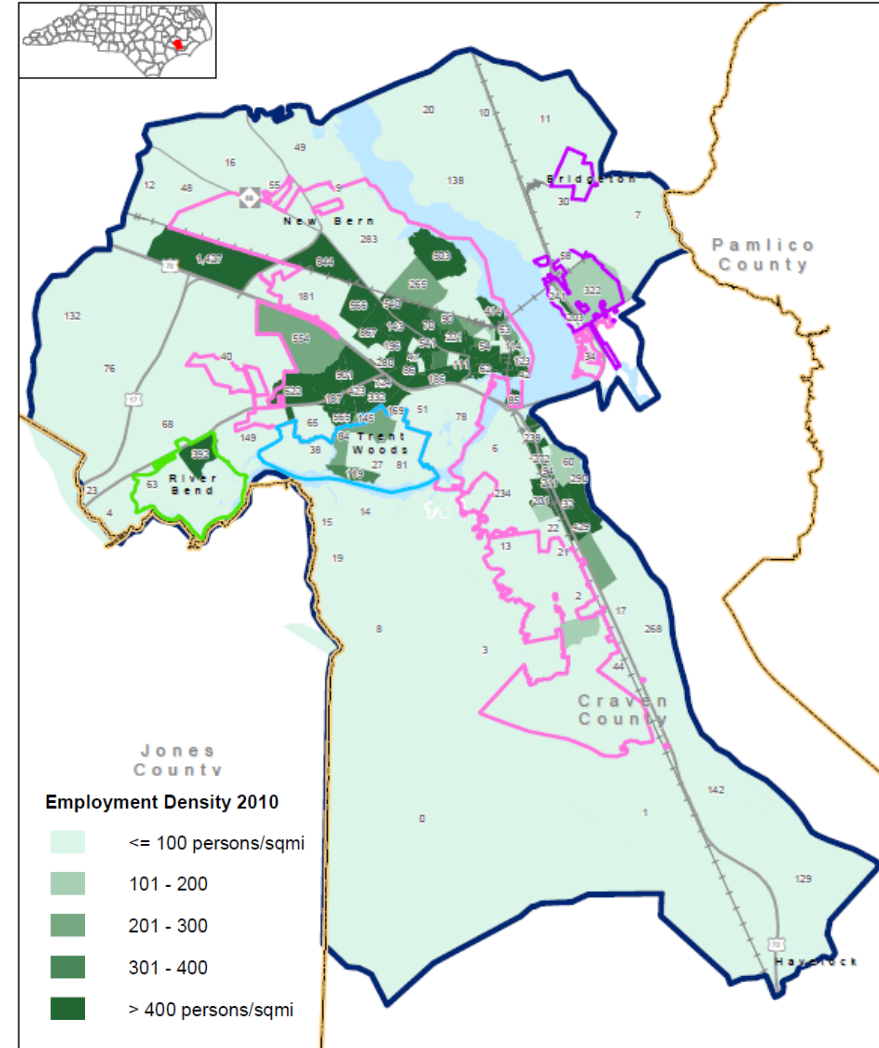
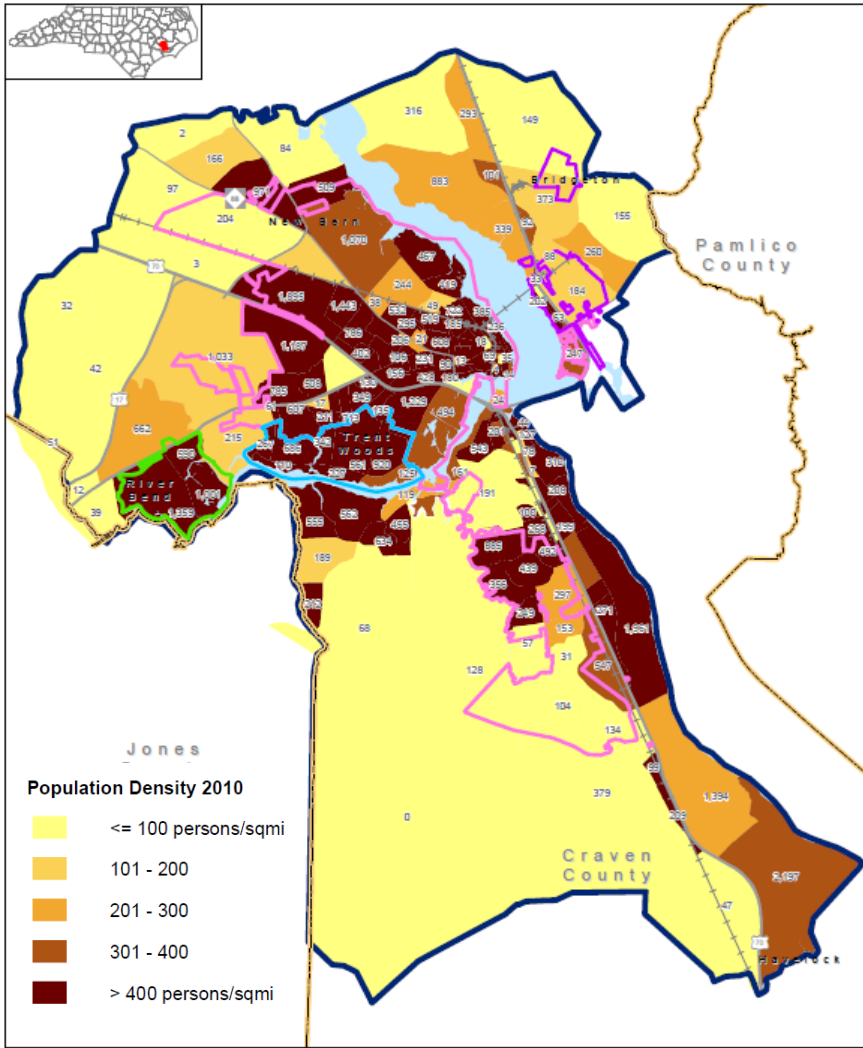


# *Indirect & Cumulative Effects Assessment*

- Pilot Study
- 4 Products
  1. Existing Conditions Assessment
  2. Future Growth Potential Assessment
  3. ICE Screening
    - Plan level
    - Proposed projects
  4. Best Management Practices Recommendations
- Include compilation of products as appendix of MTP

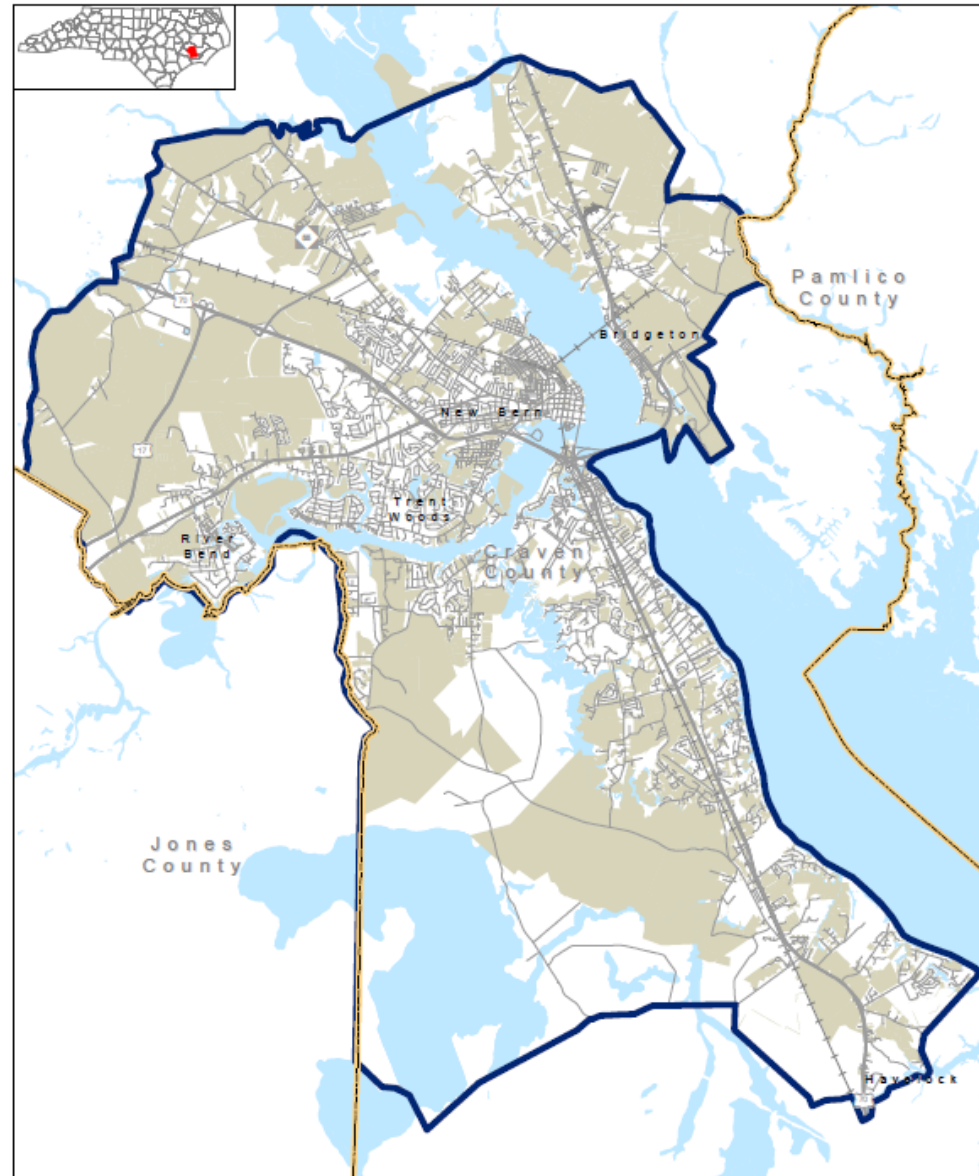


# Product 1: Existing Conditions Assessment



# *Product 1: Existing Conditions Assessment*

- Developable Land
- Water & Sewer Availability
- Market for Development
- Public Policy
- Notable Environmental Features



# Product 1: Existing Conditions Assessment

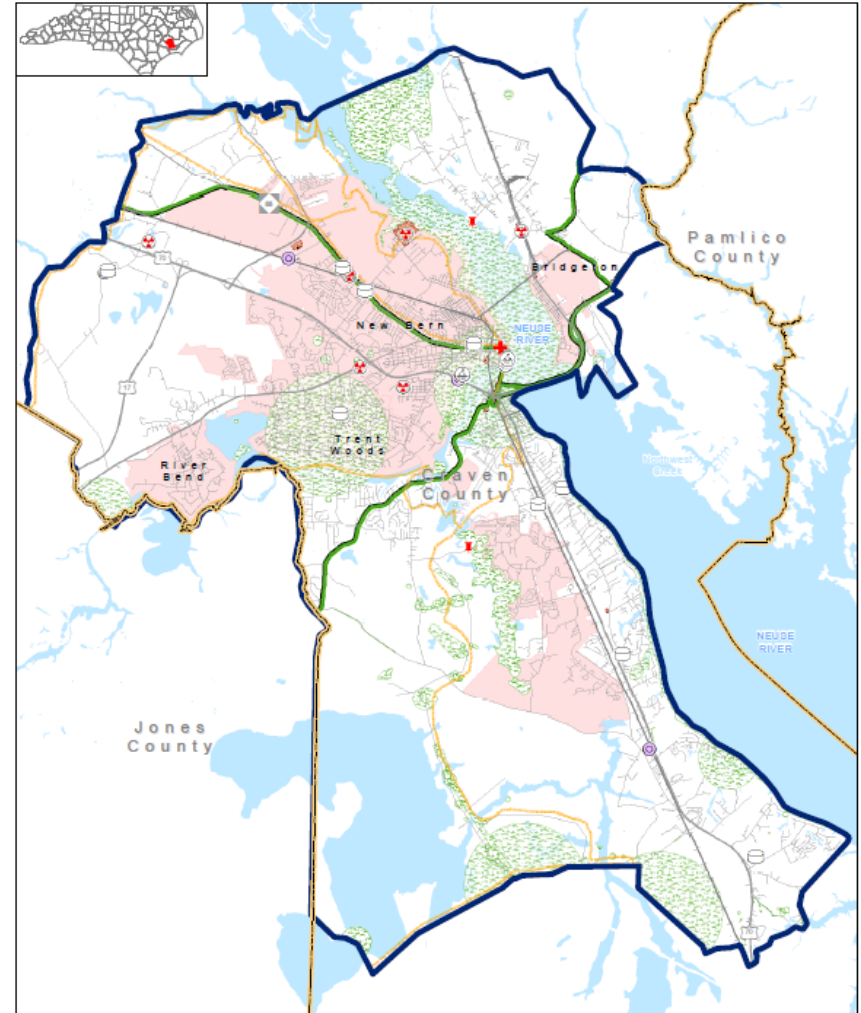
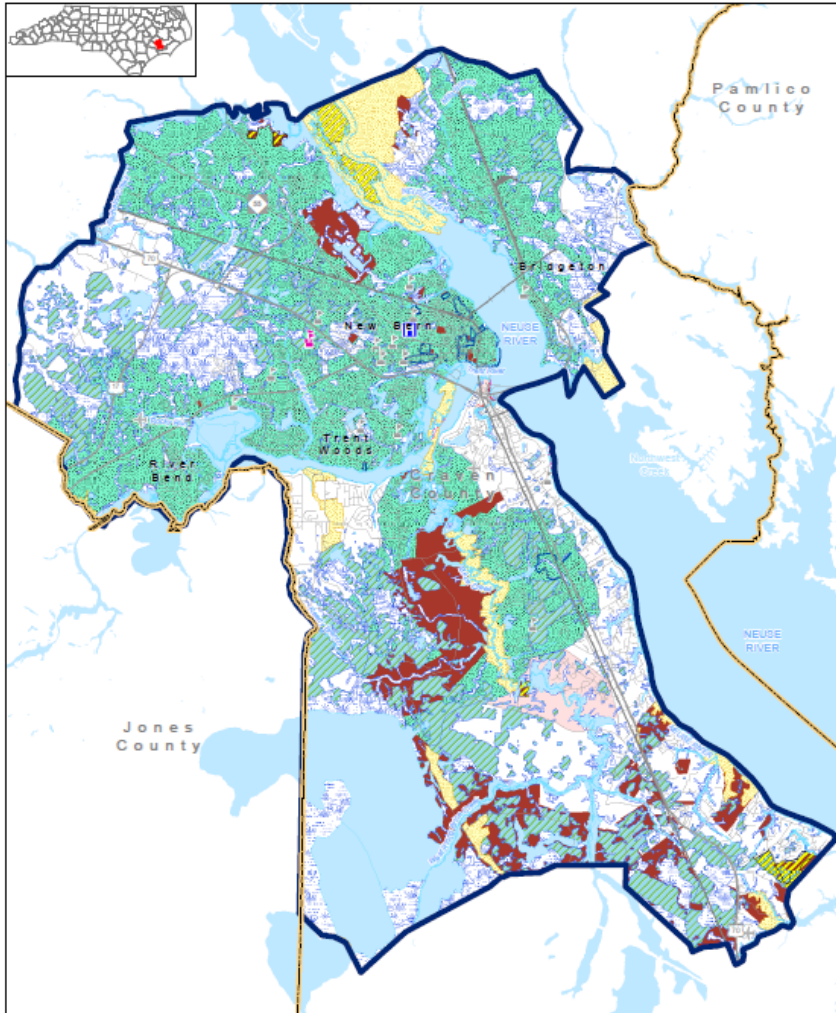
Product 1: MTP - ICE Plan-Level Existing Conditions Matrix: New Bern MTP Study Area								
Rating	Forecasted Population Growth	Forecasted Employment Growth	Available Land	Water/Sewer Availability	Market for Development	Public Policy	Notable Environmental Features	Result
<b>Greater Likelihood</b>	> 3% annual population growth	> 3% increase New Jobs Expected	60% or greater of available land*	Services available [muni 100%; county 20% of area]	Development activity abundant	Less stringent; no growth management	Notable Feature(s): Abundant / More Sensitive	
<b>Expected</b>							X	
<b>Likely</b>			X	X				
<b>Possible</b>		X			X			<b>Possible Indirect Effects</b>
<b>Not Likely</b>	X							
<b>Not Expected</b>						X		
<b>Lesser Likelihood</b>	No population growth or decline	No new Jobs or Job Losses	0 - 9% of available land*	Limited or no service available now or in future	Development activity lacking	More stringent; growth management	Notable Feature(s): Minimal / Less Sensitive	

## Possible Indirect Effects



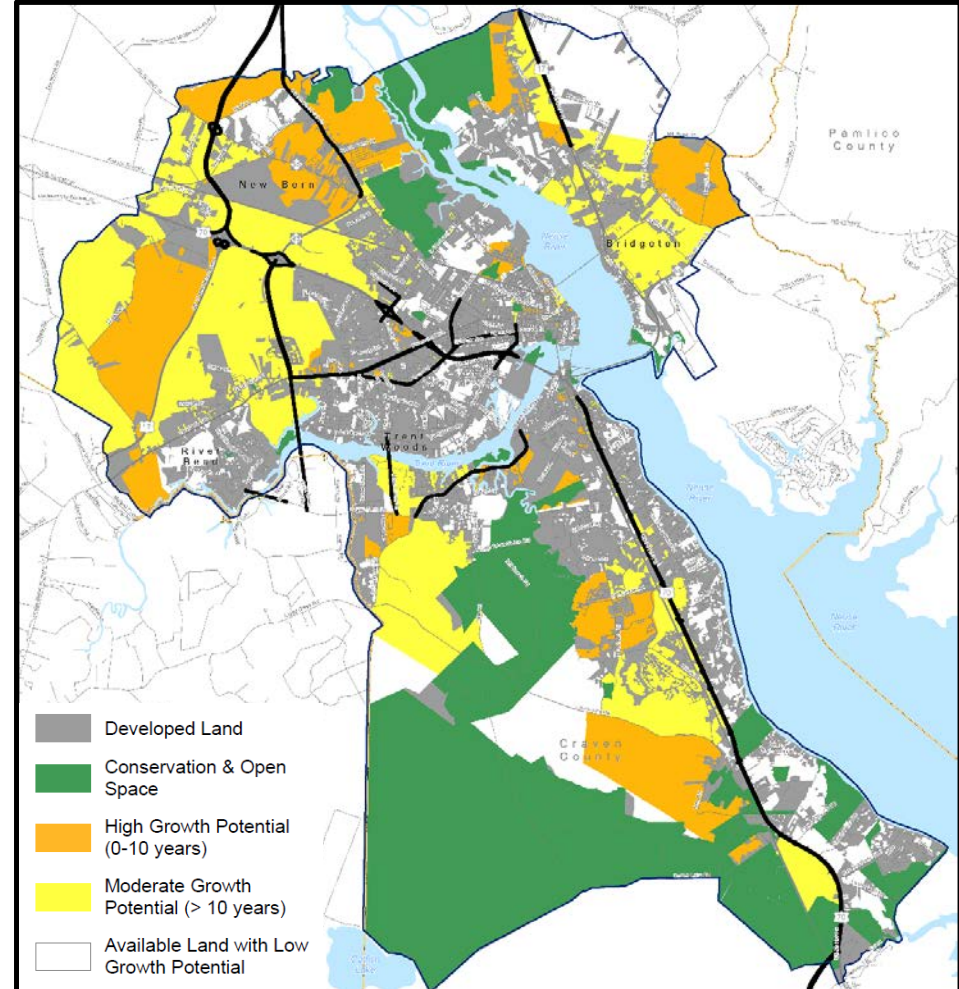


# Product 1: Environmental Features

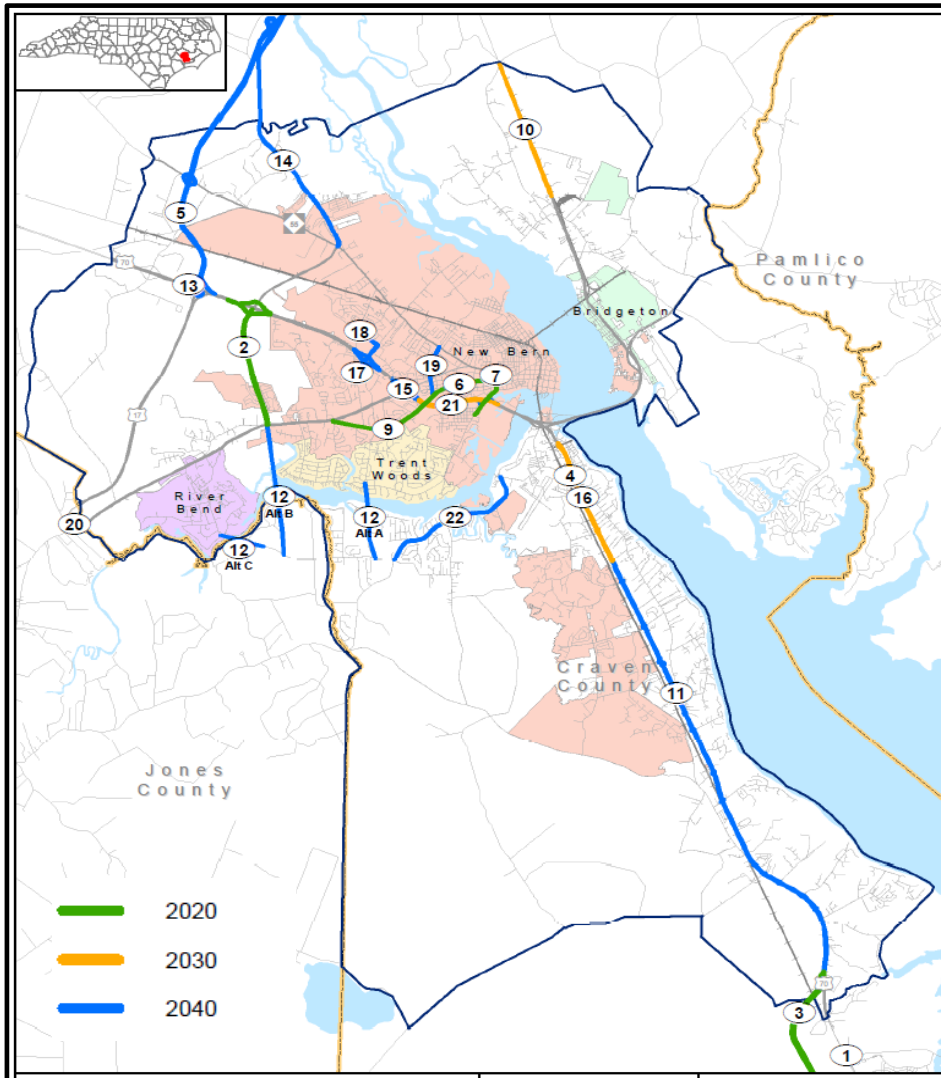


## Product 2: Future Growth Potential Assessment

- Based on socioeconomic data for each of the Traffic Analysis Zones (TAZ) on forecasted population and employment growth.
  - High growth potential = within next 10 years
  - Moderate growth potential = >10 years



# MTP Project - ICE Screening



Draft MTP Projects:

- Highway
- Public Transit
- Rail
- Bicycle



# Product 3: MTP Roadway Projects

Map ID	REPORT YEAR	ID	LOCATION	ROADWAY	FROM	TO	TYPE
2	2020	R-4463	New Bern	NC 43 CONNECTOR	US 70	US 17 Bus	NEW LOCATION
4	2021	U-5713	James City	US 70 (James City)	Neuse River Bridge	Gratham Road	UPGRADE TO FREEWAY
5	2040	R-2301	New Bern / Craven County	US 17 NEW BERN BYPASS	MPO Boundary	US 70	NEW LOCATION
6	2020	-	New Bern	Trent Boulevard	Simmons St	First St	ROAD DIET
7	2018	-	New Bern	First Street / Country Club Drive	Broad St	Pembroke Ave	ROAD DIET
9	2020	U-3448	New Bern	Trent Road	US 17 / MLK Blvd	Simmons St	WIDENING
10	2030	R-3403B	Craven County / Bridgeton	US 17	MPO Boundary	Mill St (Bridgeton)	UPGRADE TO HIGHWAY
11	2040	H090795	Craven County	US 70	Grantham Rd	Havelock Bypass	UPGRADE TO FREEWAY
12	2040	-	<multiple>	Brices Creek Road Connector (multiple alternatives)	Bridge over Trent River	--	NEW LOCATION, WIDENING
13	2040	R-2301 ramps	Craven County	US 17	@ US 70	--	INTERCHANGE
14	2040	-	New Bern	NC 43 Washington Post Road	NC 55	MPO Boundary	UPGRADE TO BOULEVARD
15	2040	-	New Bern	US 17 Ramps	multiple locations	multiple locations	INTERCHANGE
16	2040	-	James City	US 70	Neuse River Bridge	Grantham Rd	WIDENING
17	2040	-	New Bern	S Glenburnie Road	McCarthy Blvd	Elizabeth Ave	WIDENING
18	2040	-	New Bern	Elizabeth Avenue	Racetrack Rd	S Glenburnie Rd	WIDENING
19	2040	-	New Bern	Simmons Street	Trend Rd	Neuse Blvd	ROAD DIET
21	2025 / 2030	-	New Bern	US 17 / US 70 / MLK Boulevard	US 70 Interchange	Trent Creek Rd	UPGRADE



# Indirect Effects Screening

Product 3 - Part 1: MTP - ICE Screening Matrix for Indirect Effects, Plan-Level: New Bern Area MPO MTP Study Area (2040)										
Rating	Scope of Trans. Plan Investments	Macro Change in Accessibility	Forecasted Population Growth	Forecasted Employment Growth	Available Land	Water/Sewer Availability	Market for Development	Public Policy	Notable Environmental Features	Result
<b>Greater Likelihood</b>	High	High	> 3% annual population growth	> 3% increase New Jobs Expected	40% or greater of available land*	Services available [muni 100%; county 20% of area]	Development activity abundant	Less stringent; no growth management	Notable Feature(s): Abundant / More Sensitive	
<b>Expected</b>									X	
<b>Likely</b>		X			X	X				<b>Likely Indirect Effects</b>
<b>Possible</b>	X			X			X			
<b>Not Likely</b>			X							
<b>Not Expected</b>								X		
<b>Lesser Likelihood</b>	Low	None	No population growth or decline	No new Jobs or Job Losses	0 - 9% of available land*	Limited or no service available now or in future	Development activity lacking	More stringent; growth management	Notable Feature(s): Minimal / Less Sensitive	

## Likely Indirect Effects

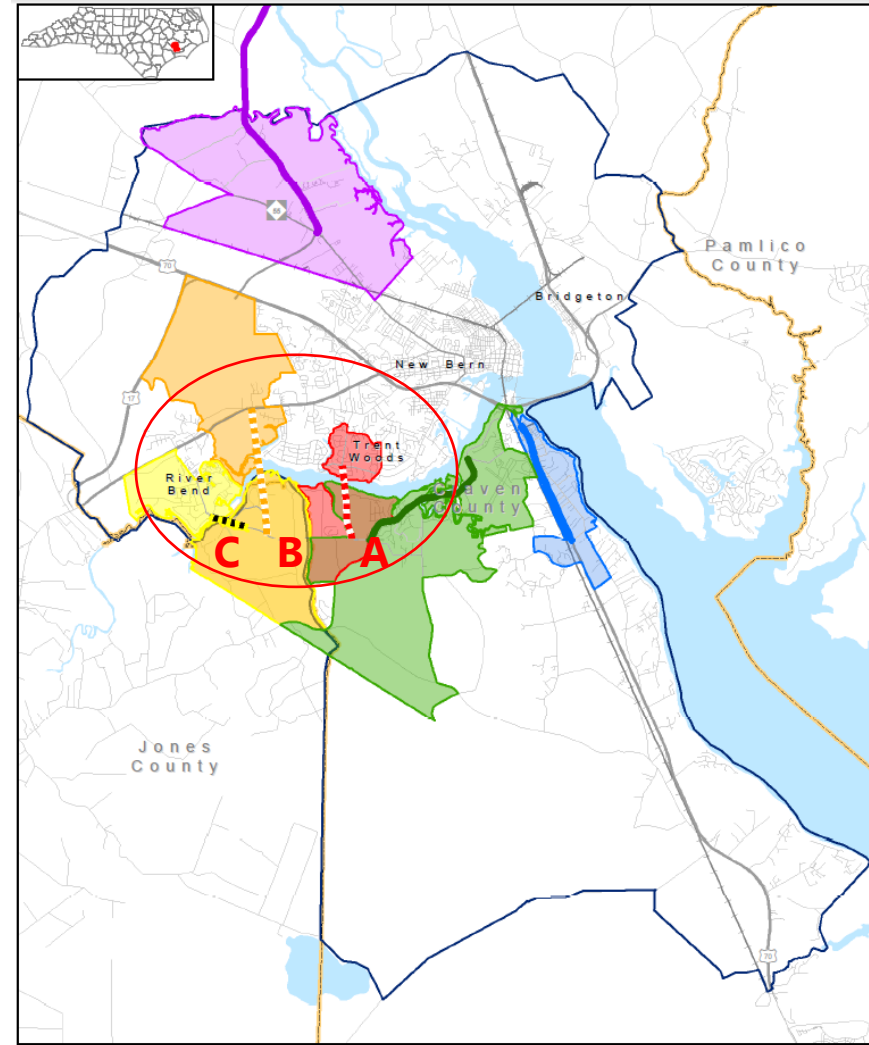


# Project D: Brices Creek Road Connector over Trent River

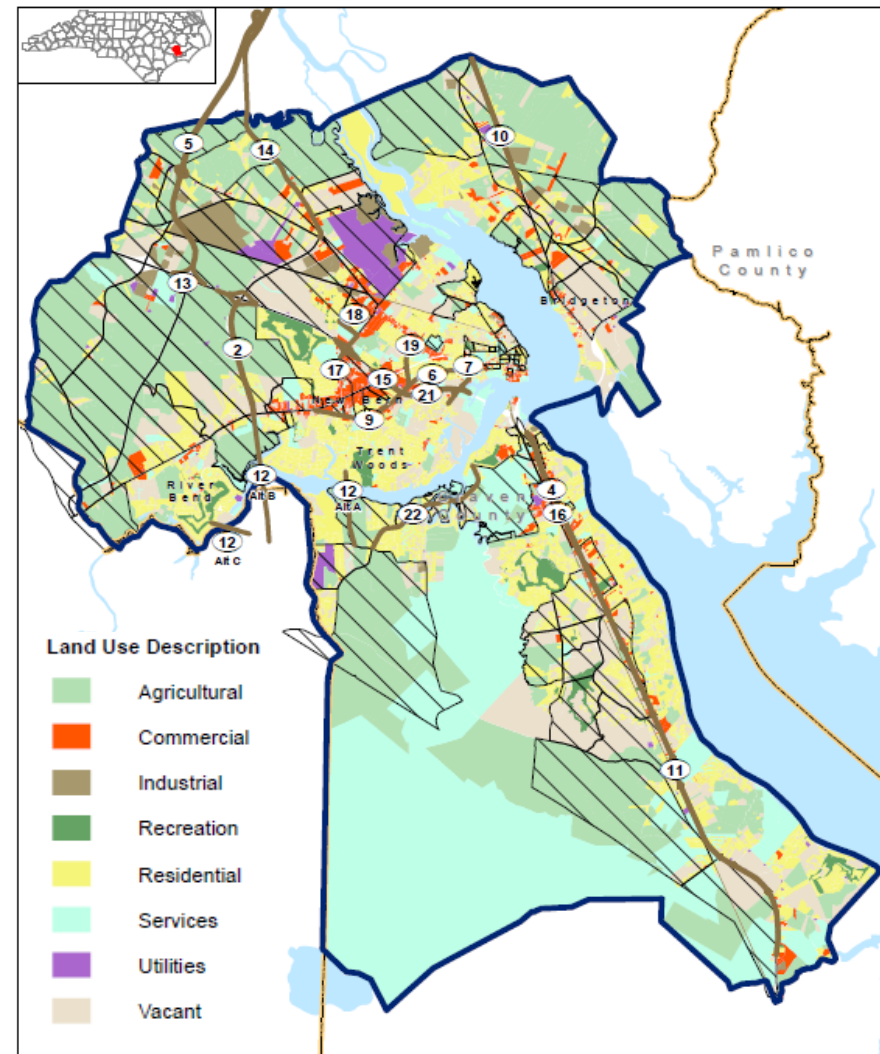
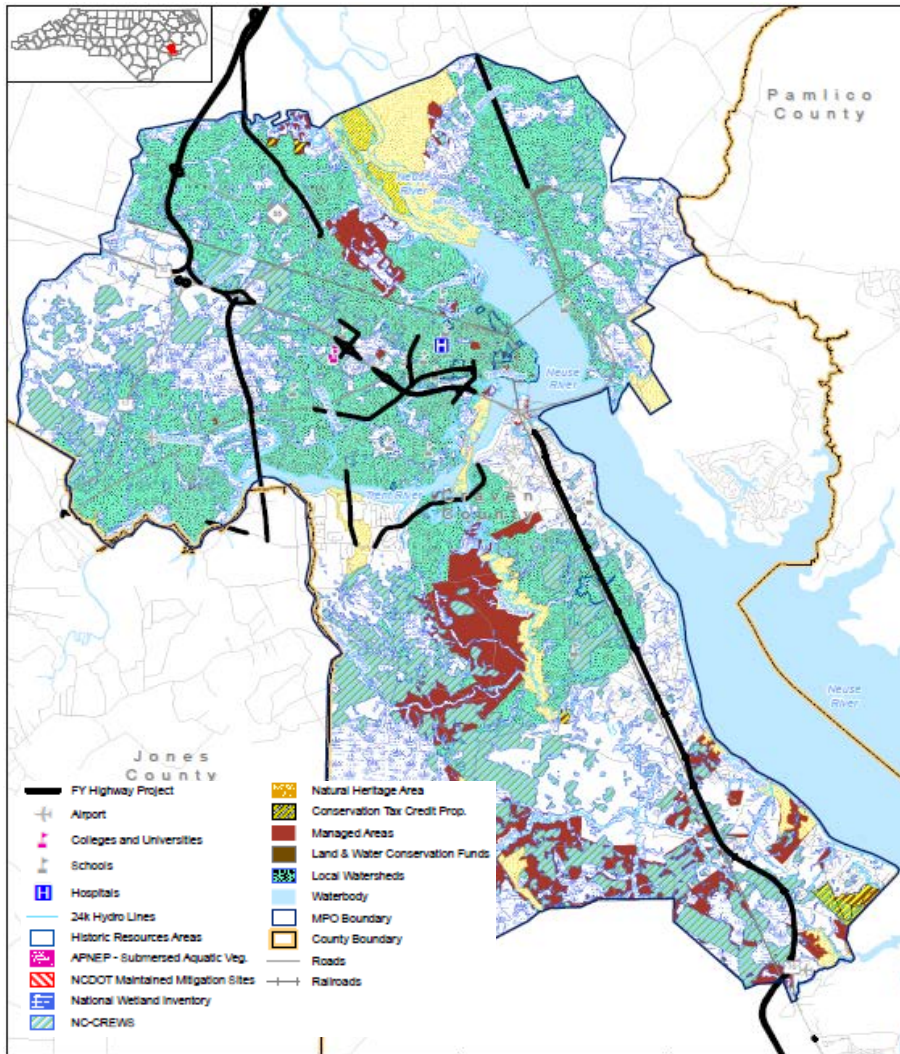
- 3 alternatives
- Horizon Year 2040
- Indirect Effects Screening =

Alt A	Likely Indirect Effects
Alt B	Likely Indirect Effects
Alt C	Possible Indirect Effects

- Accessibility
- Environmental Features



# Product 3: Indirect & Cumulative Effects



# Product 3: Cumulative Effects Screening

Product 3: MTP-ICE Screening Matrix for Cumulative Effects: Plan-Level													
Rating	Notable Cultural Features			Notable Community Features			Notable Water Quality Features			Notable Natural & Habitat Features			Result
Greater Likelihood	Unique Resources Not Protected / Recognized			Unique Resources Not Protected / Recognized			Unique Resources Not Protected / Recognized			Unique Resources Not Protected / Recognized			
	Past Actions	Current Activities	Future Development	Past Actions	Current Activities	Future Development	Past Actions	Current Activities	Future Development	Past Actions	Current Activities	Future Development	
Expected													
Likely				X						X			
Possible					X	X	X				X	X	Possible Cumulative Effects
Not Likely								X	X				
Not Expected	X	X	X										
Lesser Likelihood	Features Incorporated in Local Planning and Protection			Features Incorporated in Local Planning and Protection			Features Incorporated in Local Planning and Protection			Features Incorporated in Local Planning and Protection			

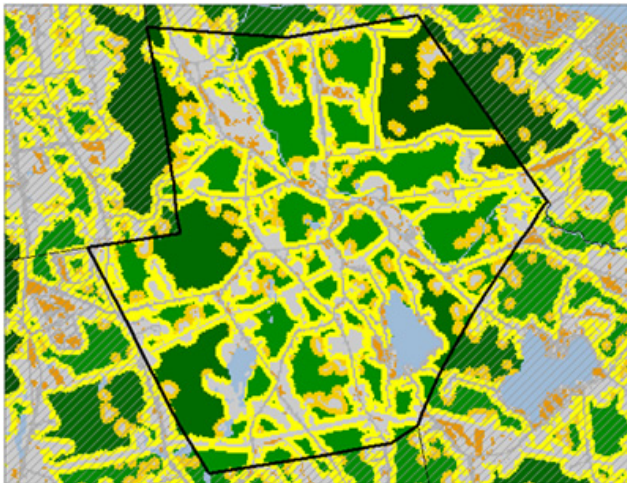
## Possible Cumulative Effects





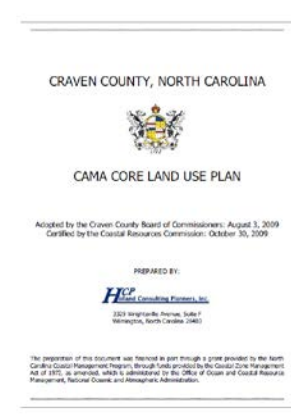
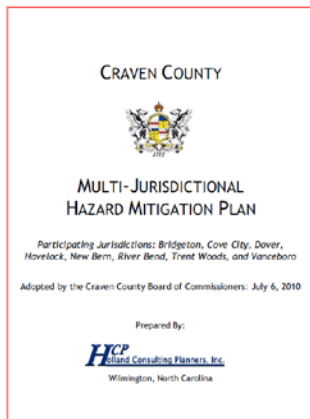
# Product 4: Recommended Best Management Practices

- Green Infrastructure Planning / Green Growth Toolbox
- Revising Zoning Ordinances
- Smart Growth Ordinance
- Habitat Cohesion and Protection
- Farmland Protection (Purchase of Development Rights (PDR) and Transfer of Development Rights (TDR) programs)



# Product 4: Recommended Best Management Practices

- Start with an accurate baseline
- Prioritize important resources in local plans!
- Use the resources available
  - Planning guidance
  - Funding opportunities
  - Grant-writing assistance
  - Available for preserving existing character and growth opportunities



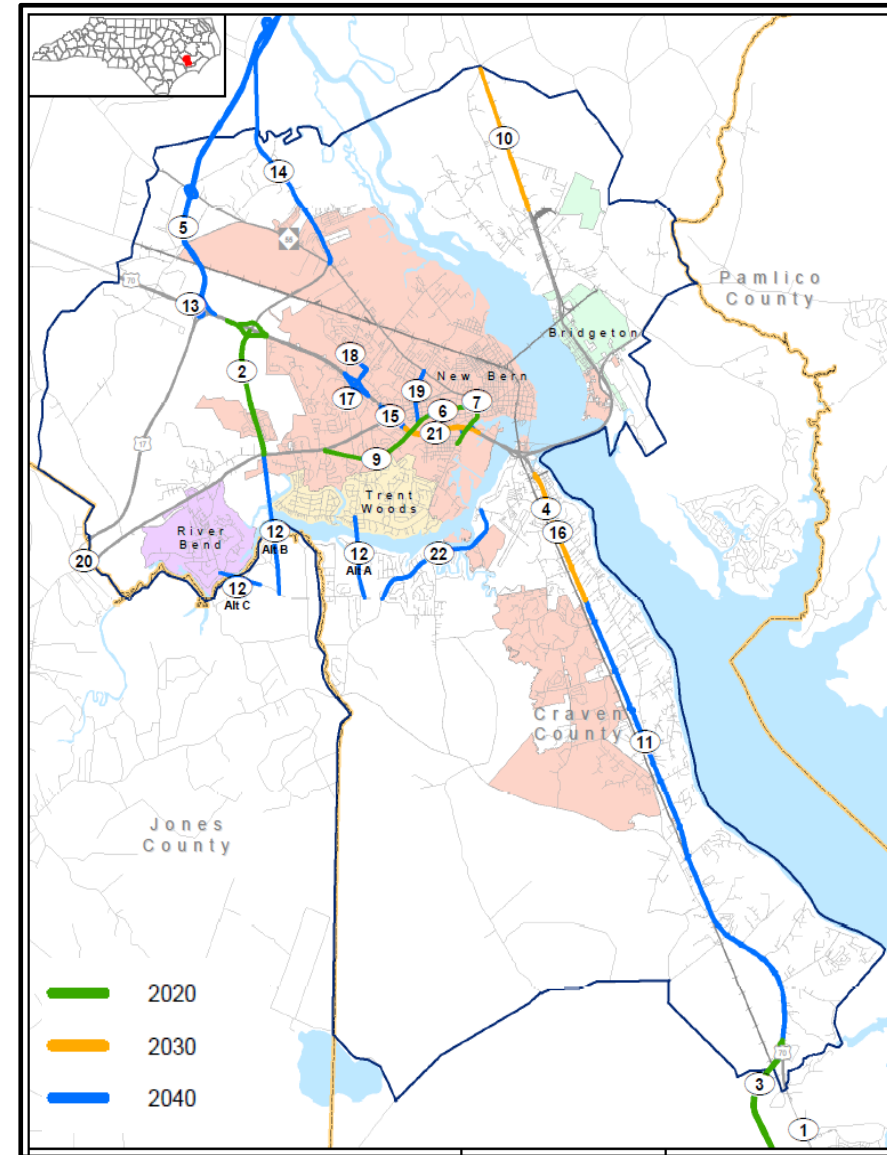
## *Ultimate Benefits of ICE*

- Inter Agency Coordination
- Identify challenges/obstacles early in planning process
- Enhance project credibility; reduce risk/uncertainty
- Provide project planning and development baseline
- Broader assessment of impacts and outcomes
- Help tell the story of project need, purpose, and benefit
- Yield specific BMPs for local communities
- Horizon Year Analysis may be beneficial
- Applicable to other MPO and Non-MPO areas
- Implementation of BMPs will be the key



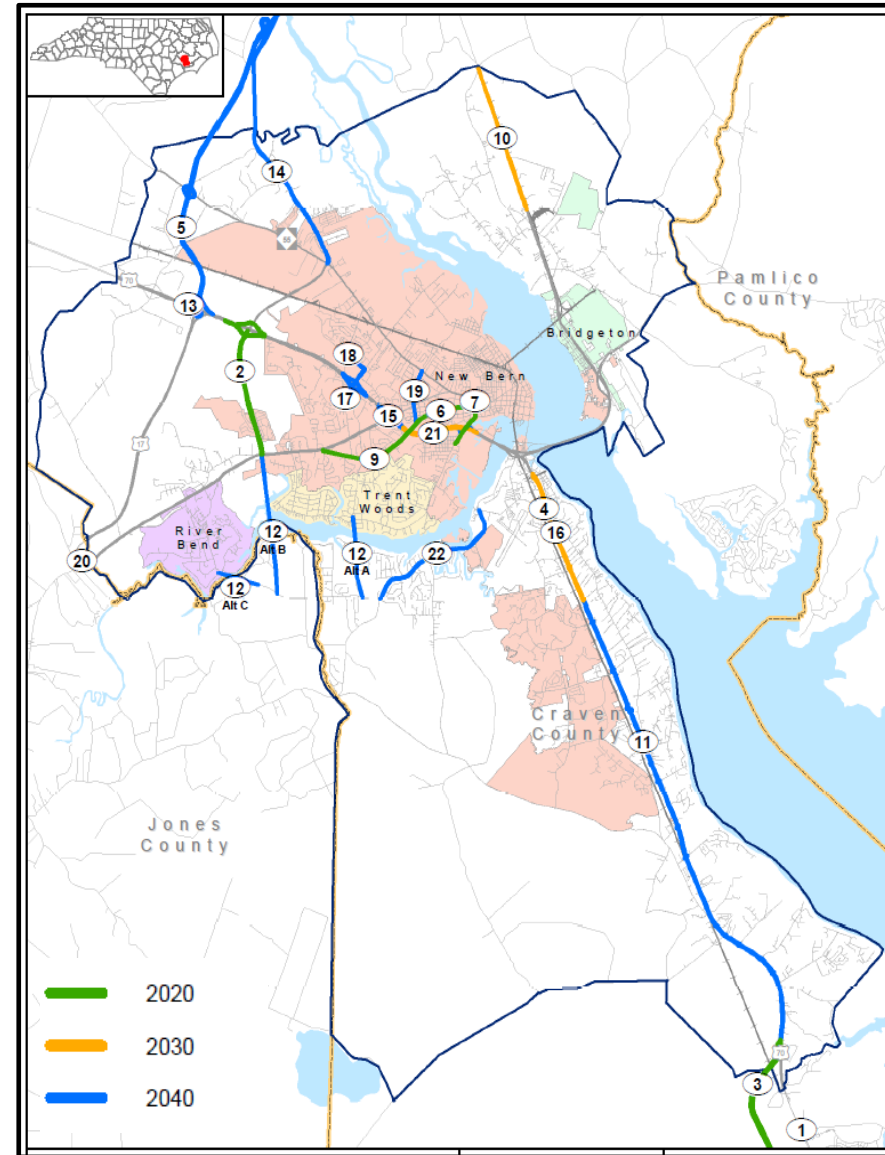
# Lessons Learned

- Work sessions with MPO committees.
- Tweak assessment depending on MPO characteristics.
- MTP update may include changes due to ICE and recommendations or other BMPs have been implemented.
- Schedule training after completion of ICE assessment on recommended BMP
- Hold closing workshop with MPO committees.



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- NBAMPO – Maurizia Chapman and Kim Maxey
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- NCDOT, PDEA – Bob Deaton
- FHWA – Bill Marley, George Hoops



## *Questions and Comments*

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