

## **2035 LRTP and CTP Land Use Scenarios**

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### **Land Use Scenarios Proposed**

#### **Background**

The Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) prepared Socioeconomic Data (SE Data) based on the current land use plans and policies of local jurisdictions for the year 2005 and 2035. The SE Data shows the location of population and employment throughout the planning area. The Transportation Advisory Committee (TAC – the DCHC MPO policy board) approved this SE Data for use with the Triangle Regional Model (TRM) at their meeting on September 12, 2007. The TRM uses the SE Data to generate trips and show how those trips will be accommodated on highways, transit and other transportation modes, and then produces transportation system performance data, such as the level of congestion and vehicle miles traveled, for the Long Range Transportation Plan (LRTP) and Comprehensive Transportation Plan (CTP).

The question is often asked during the development process – How might changes in land use plans or policies affect the design and performance of future transportation system? And, how might local jurisdictions change their land use plans and policies to realize a desired outcome in the future transportation system?

The DCHC MPO has created land use scenarios as part of the 2035 LRTP and CTP development process to evaluate the impacts that land use changes might have on the transportation system performance data of the TRM (travel demand model). That is, the MPO has developed alternative land use assumptions that change the SE Data that was approved in September 2007. The SE Data approved in September 2007 is often referred to as the Baseline SE data.

#### **Contents of this Document**

This presentation of the land use scenarios is detailed and lengthy. Therefore, therefore it will help the reader to know the principal contents of this document:

- Summary of Land Use Scenarios -- The concept of the proposed land use scenarios are summarized in the table on page 2. Begins on page 2.
- Scenario Review – Tables and maps show how the future population and employment would change to achieve each Scenario. Tables begin on page 3 and maps begin on page 7.

## 2035 LRTP and CTP Land Use Scenarios

No.	Name	Description	Purpose	SE Data Changes	Land Use Plan Changes	Control Total Changes
1	<b>Baseline</b>	Uses current land use plans, policies and official actions. Most likely future reality.	Produces adopted LRTP and Air Quality Conformity Determination	None	None	No change -- Use baseline control totals
2	<b>Build-out</b>	Assumes all available land is developed as proposed in existing long range land use plans, policies and official actions.	Identify needs in CTP, which does not have time horizon, and show long range trajectory of current plans	Realize buildout for each TAZ	None	No control totals used because there is no time horizon
3	<b>Constrained Growth</b>	Assume overall slower growth than current forecasts (could include only "existing plus committed" transportation network)	Impact of slower growth because of congestion (reduced mobility)	Decrease development in specified TAZs	Recommend policy changes to reduce overall development	Reduce population and employment control totals
4	<b>Travel Corridors</b>	Increase population and employment development in key <u>corridors</u> (perhaps those identified by Special Transit Advisory Commission)	Impact of new policies that direct development to existing transportation infrastructure	Increase development in identified TAZs, and reduce in other TAZs	Recommended specific policy changes that encourage and permit more development in corridors	No change -- Use baseline control totals
5	<b>Transit Nodes</b>	Increase population and employment development in transit oriented areas ( <u>distinct nodes</u> )	Impact of new policies that direct development to existing and appropriate transportation infrastructure	Increase development in identified TAZs, and reduce in other TAZs	Recommended specific policy changes that encourage and permit more development in corridors	No change -- Use baseline control totals

- Recommended Policies – There is a discussion of the objectives of each scenario and a list of sample policy directions to realize the scenarios. Begins on page 21.

## **Additional Information**

There are a few additional points that are important to understanding the use of these scenarios:

CAMPO Participation – The Capital Area Metropolitan Planning Organization (CAMPO) has developed SE Data for a set of land use scenarios that complement the four DCHC MPO land use scenarios. The SE Data for these scenarios has been combined and checked by the Triangle Regional Model Service Bureau.

Scenario Implementation -- The TAC might be able to adopt the SE Data produced by a favorable land use scenario. The 2035 LRTP and Air Quality Conformity Determination would also be based on this newly adopted SE Data.

## **Scenario Review**

This section presents several methods for reviewing the Scenarios.

### **Total Comparison**

The two tables on page 4 compare the total employment and population for each Scenario with the Baseline SE Data (the data approved by the TAC for use in the 2035 LRTP development and that is based on the current land use plans and policies of the jurisdictions). The tables demonstrate that the overall totals for the Travel Corridor and Transit Nodes Scenarios remain equal to the Baseline SE Data, and that the Buildout and Constrained Scenarios show expected increases and decreases, respectively, compared to the Baseline SE Data.

### Population

Jurisdiction	Baseline		Buildout		Constrained		Travel Corridors		Transit Nodes	
	2005	2035	Pop.	% Change	Pop.	% Change	Pop.	% Change	Pop.	% Change
Durham (1)	244,022	354,164	545,514	54%	325,325	-8%	354,163	0%	354,164	0%
Orange (2)	44,904	57,649	217,359	277%	50,346	-13%	57,649	0%	57,649	0%
Chatham (3)	34,067	117,130	140,583	20%	75,986	-35%	117,130	0%	117,150	0%
Chapel Hill (4)	58,339	80,483	86,957	8%	72,373	-10%	80,466	0%	80,483	0%
Carrboro	20,858	28,269	28,269	0%	24,626	-13%	28,255	0%	28,269	0%
Hillsborough	12,438	22,380	22,380	0%	21,262	-5%	22,380	0%	22,382	0%
<b>Total</b>	<b>414,628</b>	<b>660,075</b>	<b>1,041,062</b>	<b>58%</b>	<b>569,918</b>	<b>-14%</b>	<b>660,043</b>	<b>0%</b>	<b>660,097</b>	<b>0%</b>

### Employment

Jurisdiction	Baseline		Buildout		Constrained		Travel Corridors		Transit Nodes	
	2005	2035	Emp.	% Change	Emp.	% Change	Emp.	% Change	Emp.	% Change
Durham (1)	175,487	282,571	440,830	56%	258,653	-8%	282,583	0%	282,601	0%
Orange (2)	4,290	10,087	34,347	241%	9,204	-9%	10,087	0%	10,087	0%
Chatham (3)	8,199	23,863	47,035	97%	17,606	-26%	23,863	0%	23,853	0%
Chapel Hill (4)	36,702	74,875	82,313	10%	67,735	-10%	74,875	0%	74,923	0%
Carrboro	4,390	6,857	6,945	1%	5,734	-16%	6,856	0%	6,856	0%
Hillsborough	5,679	14,453	14,625	1%	13,916	-4%	14,452	0%	14,426	0%
<b>Total</b>	<b>234,747</b>	<b>412,706</b>	<b>626,095</b>	<b>52%</b>	<b>372,848</b>	<b>-10%</b>	<b>412,716</b>	<b>0%</b>	<b>412,746</b>	<b>0%</b>

(1) Durham County does not include Chapel Hill jurisdiction

(2) Includes parts of Orange County that are not in Carrboro, Chapel Hill and Hillsborough

(3) Includes eastern half of Chatham County

(4) Includes parts of Chapel Hill in Orange County and Durham County

### **Movement Comparison**

The total population and employment in the Travel Corridor and Transit Node Scenarios remains the same as that of the Baseline SE Data. However, the individual TAZ totals increase and decrease to depict a shift, or movement, of the population and employment from one TAZ to another. The two tables on page 6 show the amount of population and employment movement that occurs in these two Scenarios for the various jurisdictions, and indicates what percentage of the total this movement represents.

### **TAZ Maps**

The remaining pages in this section present ten maps:

- A population and employment map showing the forecasted growth in each TAZ from the year 2005 through 2035 for the Baseline Scenario. There is one map for each county.
- A population and employment map for each of the four Scenarios.

The map coloring depicts the level of increase or decrease of population and employment in each TAZ (Traffic Analysis Zone) for that Scenario. The reader can distinguish the expected patterns such as the increases around transit stations and along corridors for the Transit Node and Travel Corridor Scenarios, and decreases in areas of low transportation access for the Constrained Scenario.

### **TAZ Tables**

The tables showing the detailed SE Data for each of the four scenarios are voluminous and therefore are not included in this document. The tables are available on the MPO's Web site – [www.dchhcmpo.org](http://www.dchhcmpo.org), or by contacting Andy Henry, (919) 560-4366, [andrew.henry@durhamnc.gov](mailto:andrew.henry@durhamnc.gov).

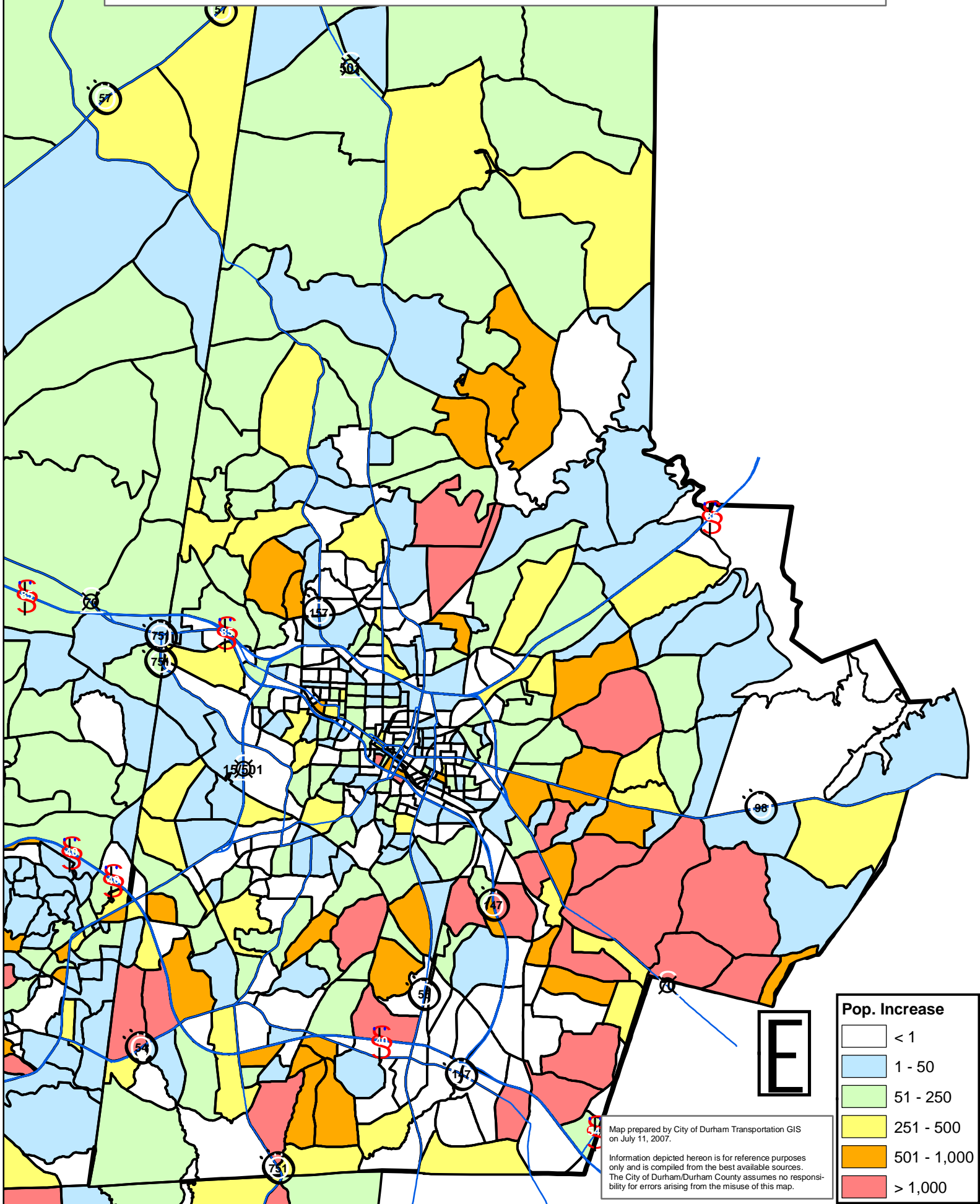
## Travel Corridor Movement

Jurisdiction	Population			Employment		
	Total	Movement	Percent Move	Total	Movement	Percent Move
Durham (1)	354,163	20,002	6%	282,583	13,138	5%
Orange (2)	57,649	4,780	8%	10,087	297	3%
Chatham (3)	117,130	0	0%	23,863	0	0%
Chapel Hill (4)	80,466	2,140	3%	74,875	1,371	2%
Carrboro	28,255	928	3%	6,856	230	3%
Hillsborough	22,380	849	4%	14,452	421	3%
<b>Total</b>	<b>660,043</b>	<b>28,699</b>	<b>4%</b>	<b>412,716</b>	<b>15,457</b>	<b>4%</b>

## Transit Node Movement

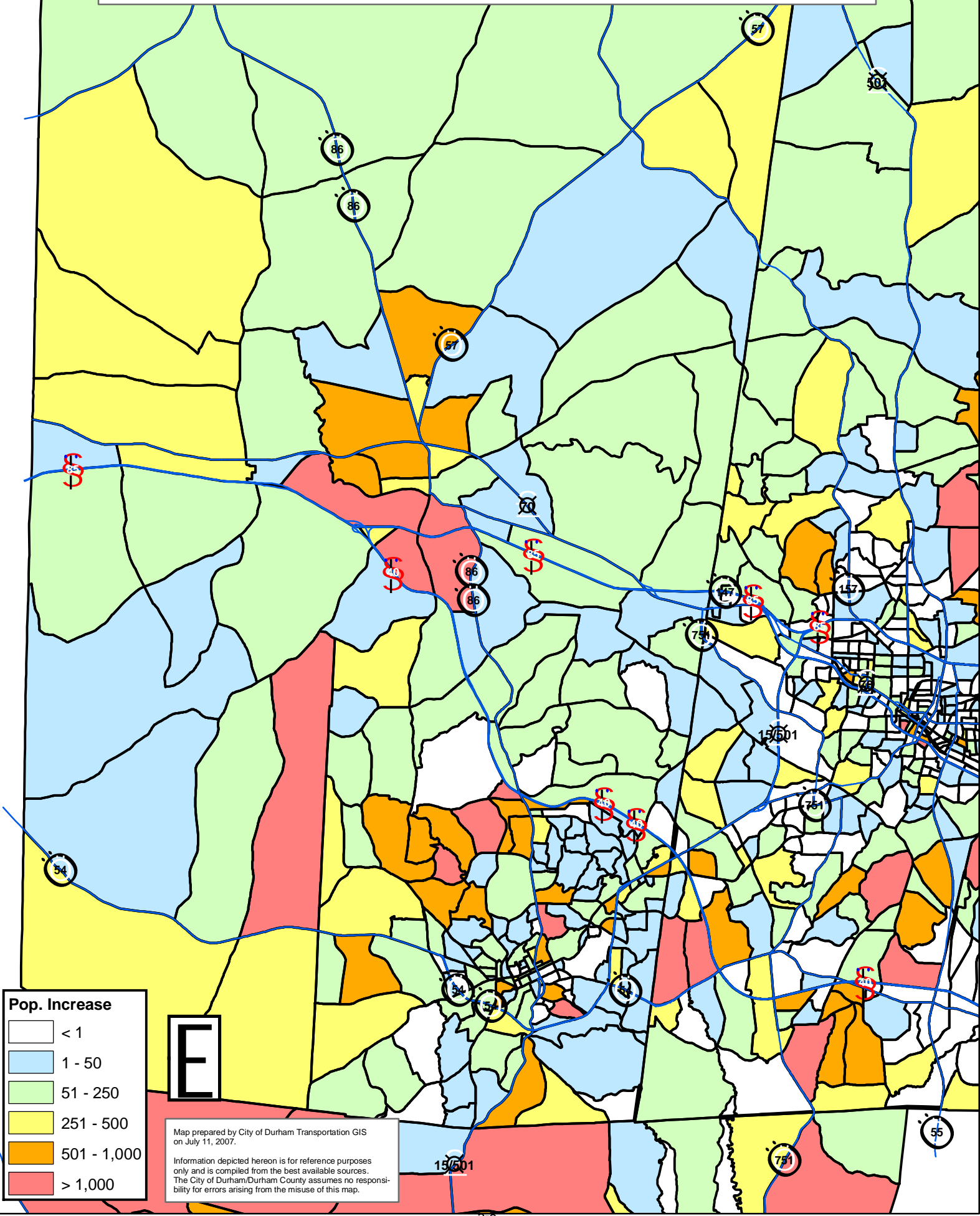
Jurisdiction	Population			Employment		
	Total	Movement	Percent Move	Total	Movement	Percent Move
Durham (1)	354,164	15,842	4%	282,601	20,535	7%
Orange (2)	57,649	5,370	9%	10,087	848	8%
Chatham (3)	117,150	24,671	21%	23,853	14,556	61%
Chapel Hill (4)	80,483	5,643	7%	74,923	1,532	2%
Carrboro	28,269	26	0%	6,856	830	12%
Hillsborough	22,382	842	4%	14,426	803	6%
<b>Total</b>	<b>660,097</b>	<b>52,394</b>	<b>8%</b>	<b>412,746</b>	<b>39,104</b>	<b>9%</b>

# Durham County Population Change 2005 to 2035



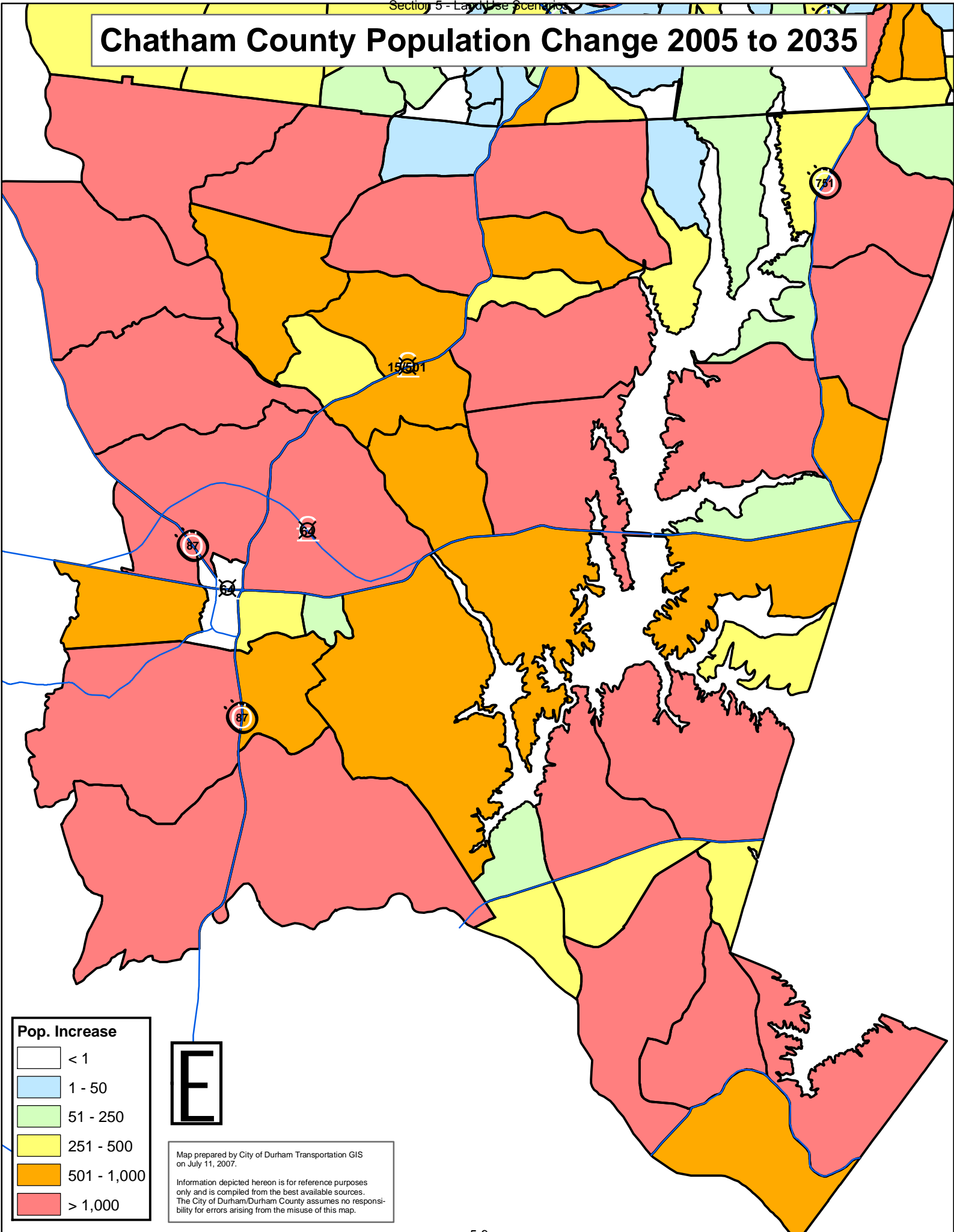
Map prepared by City of Durham Transportation GIS on July 11, 2007.  
Information depicted hereon is for reference purposes only and is compiled from the best available sources. The City of Durham/Durham County assumes no responsibility for errors arising from the misuse of this map.

# Orange County Population Change 2005 to 2035





# Chatham County Population Change 2005 to 2035



**Pop. Increase**

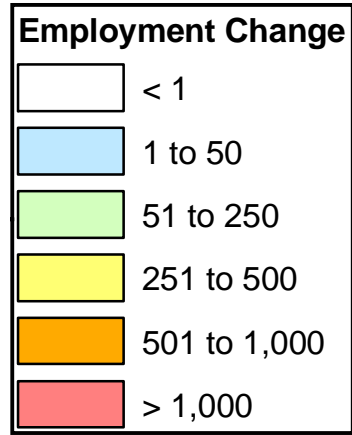
- < 1
- 1 - 50
- 51 - 250
- 251 - 500
- 501 - 1,000
- > 1,000



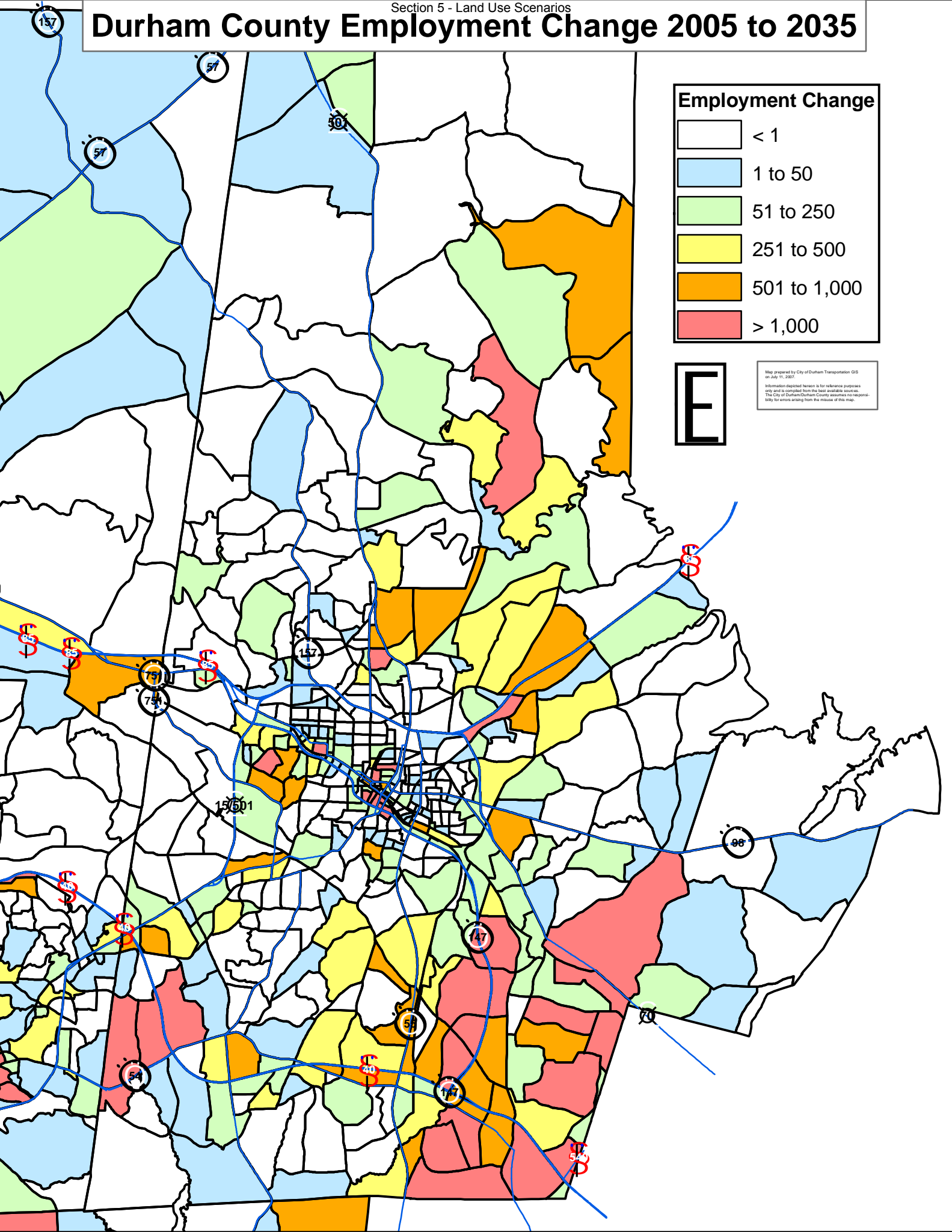
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# Durham County Employment Change 2005 to 2035

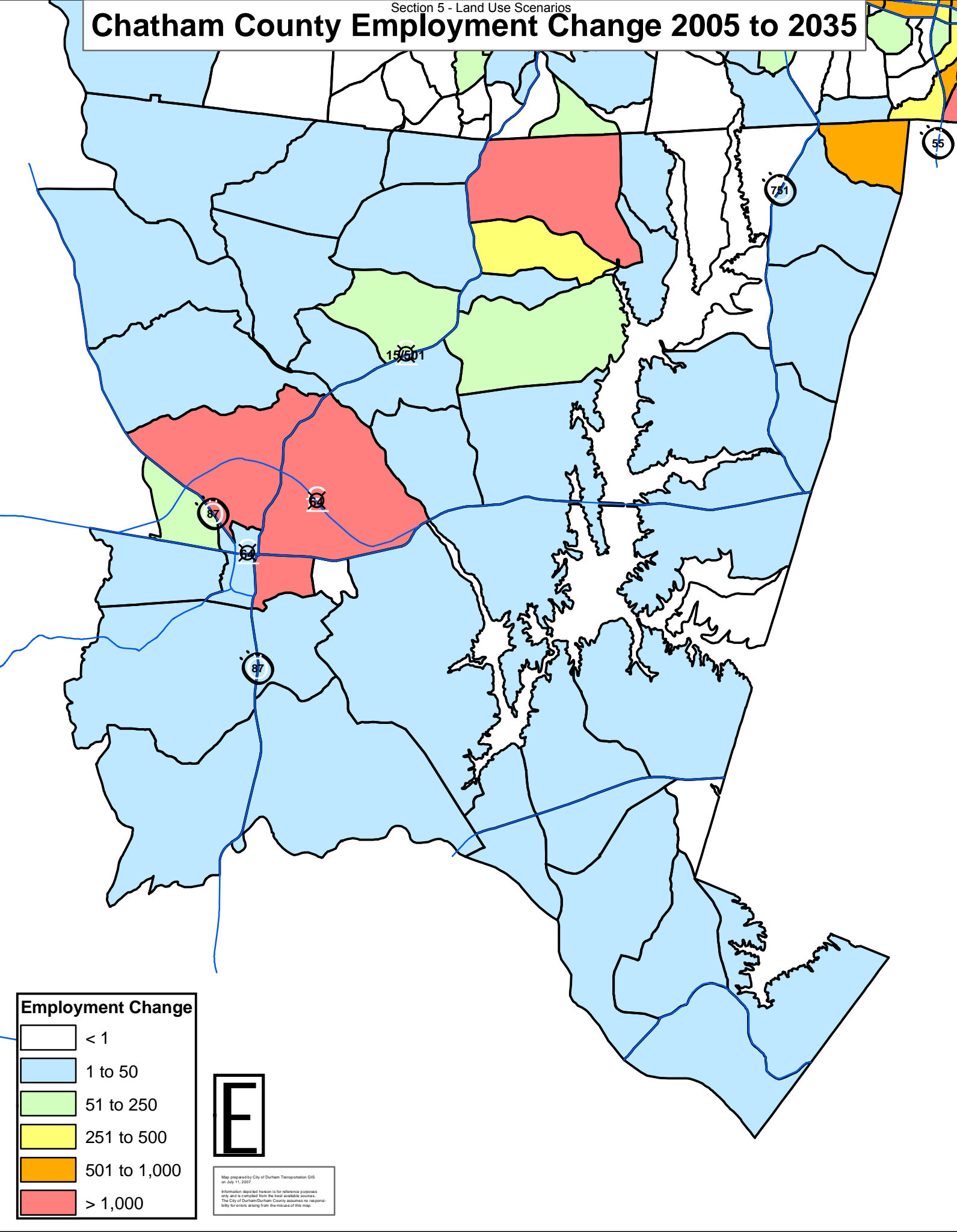


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









# Chatham County Employment Change 2005 to 2035



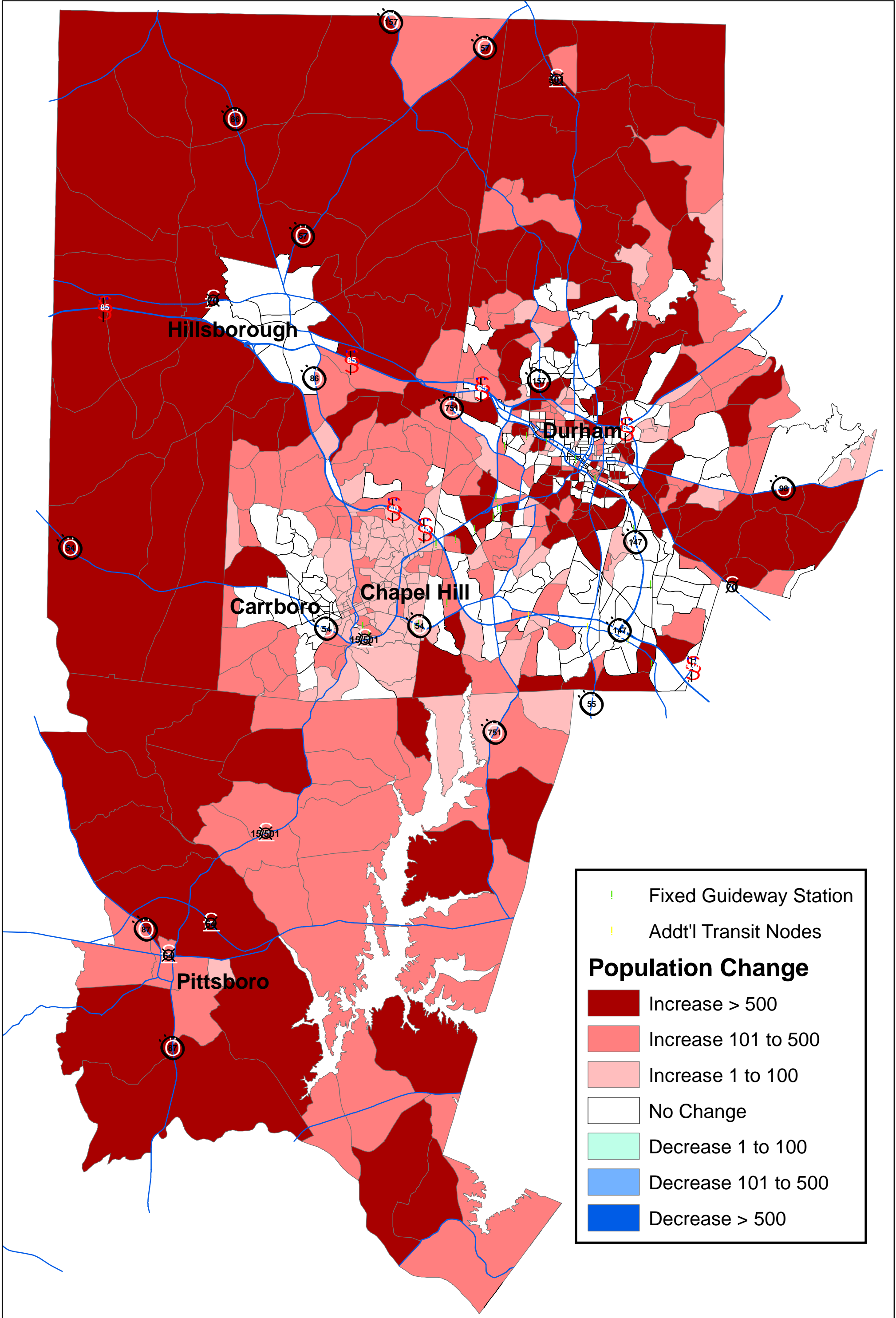
### Employment Change

-  < 1
-  1 to 50
-  51 to 250
-  251 to 500
-  501 to 1,000
-  > 1,000

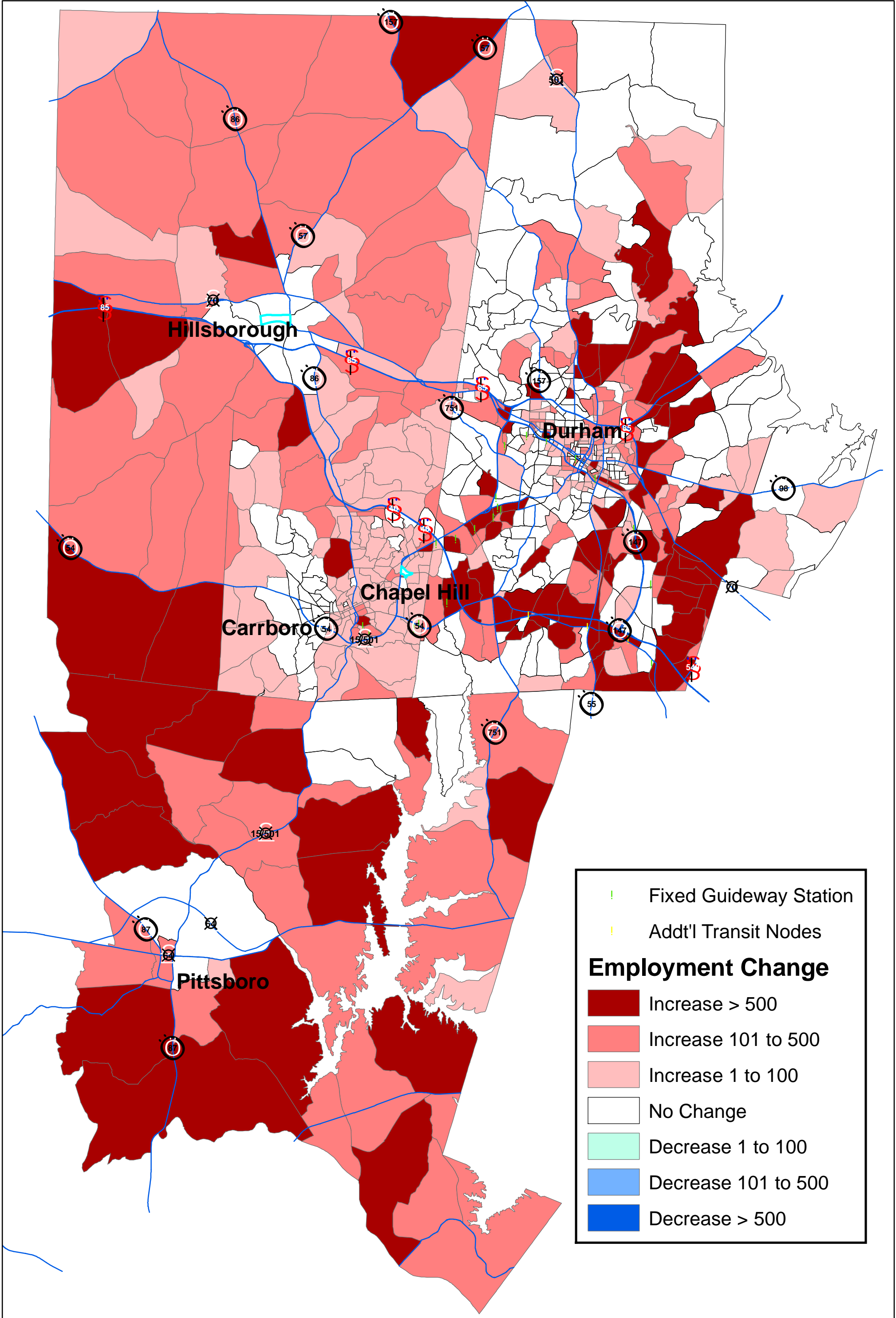


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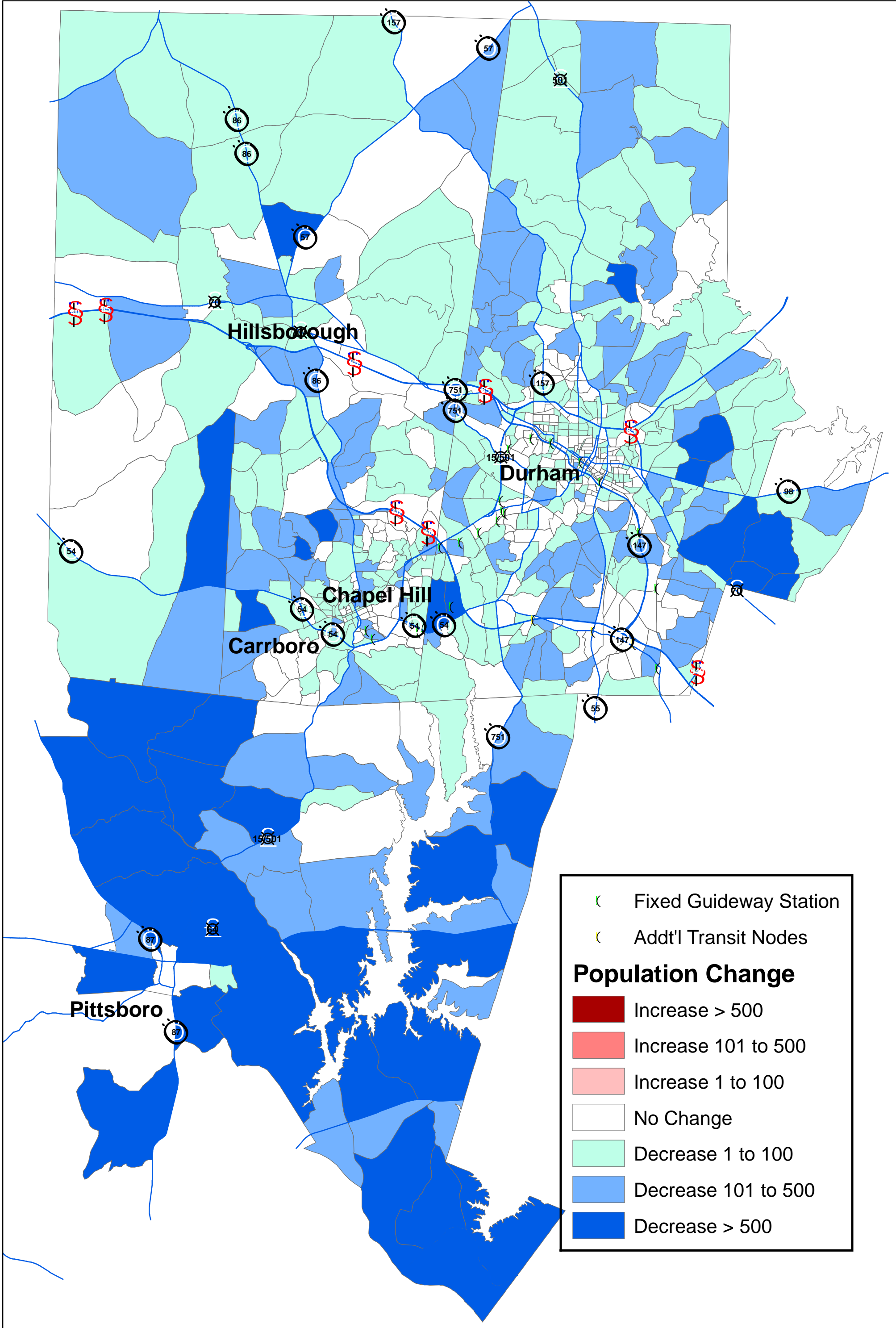
# Buildout L.U. Scenario -- Population Compared to Baseline



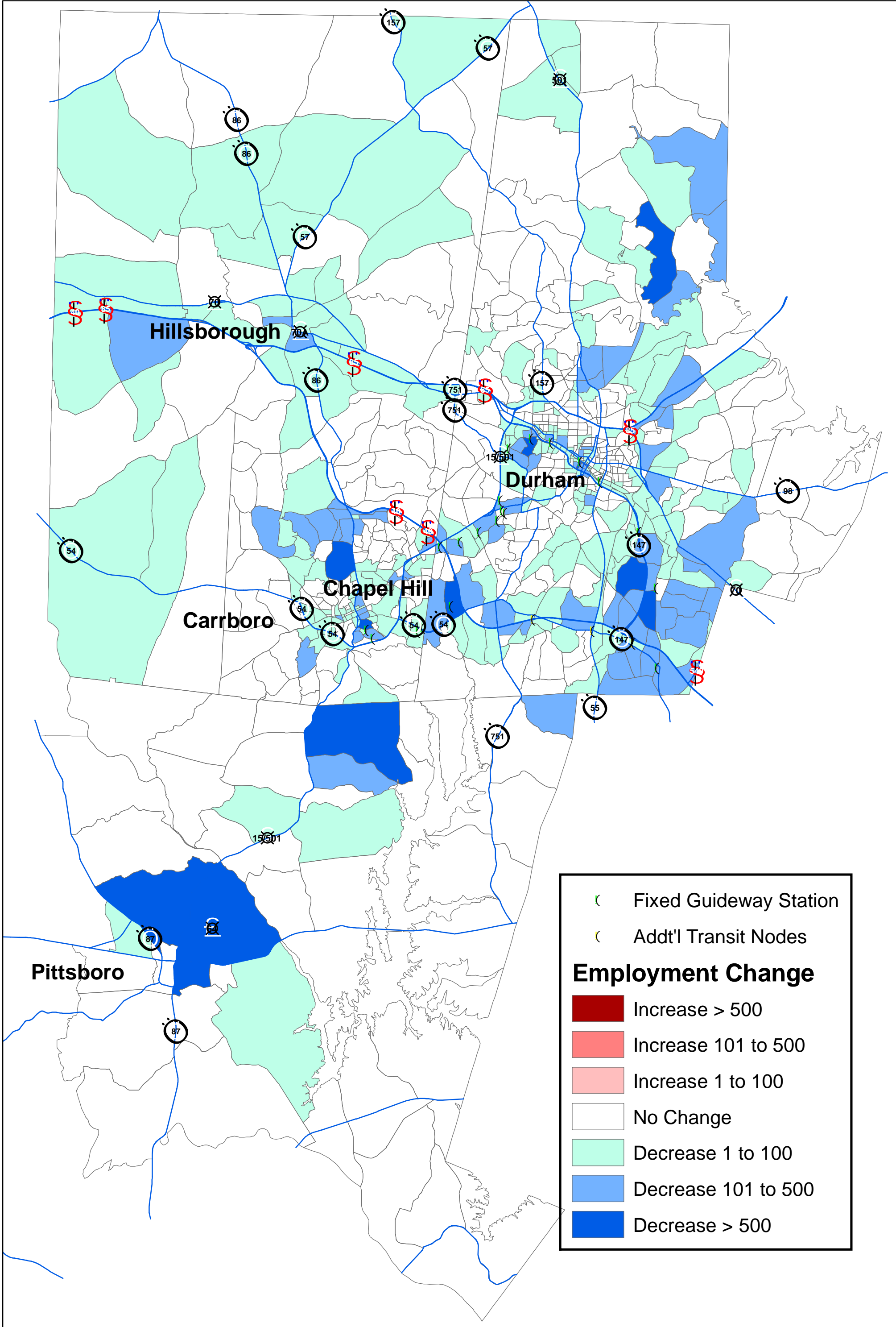
# Buildout L.U. Scenario -- Employment Compared to Baseline



# Constrained L.U. Scenario -- Population Compared to Baseline

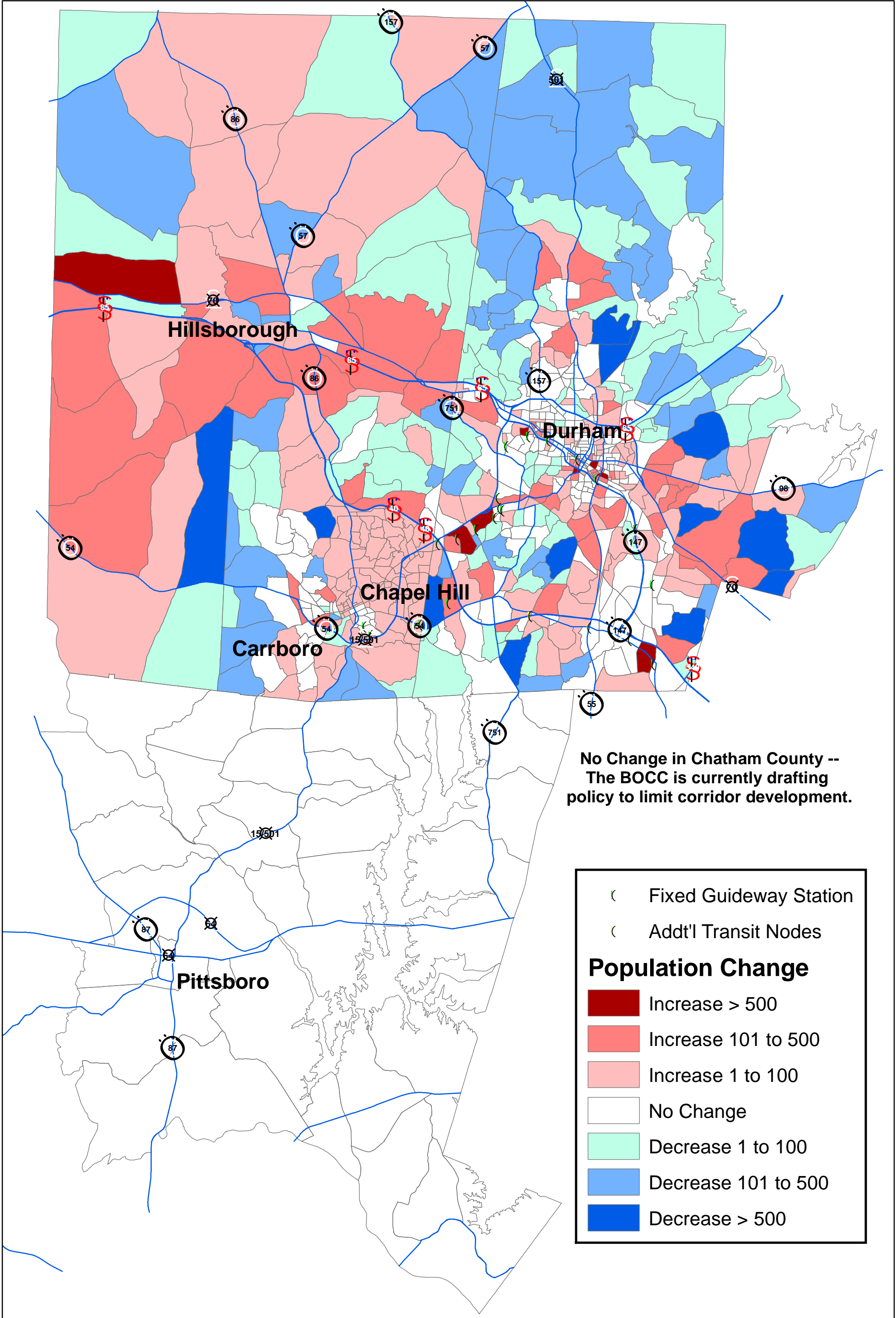


# Constrained L.U. Scenario -- Employment Compared to Baseline

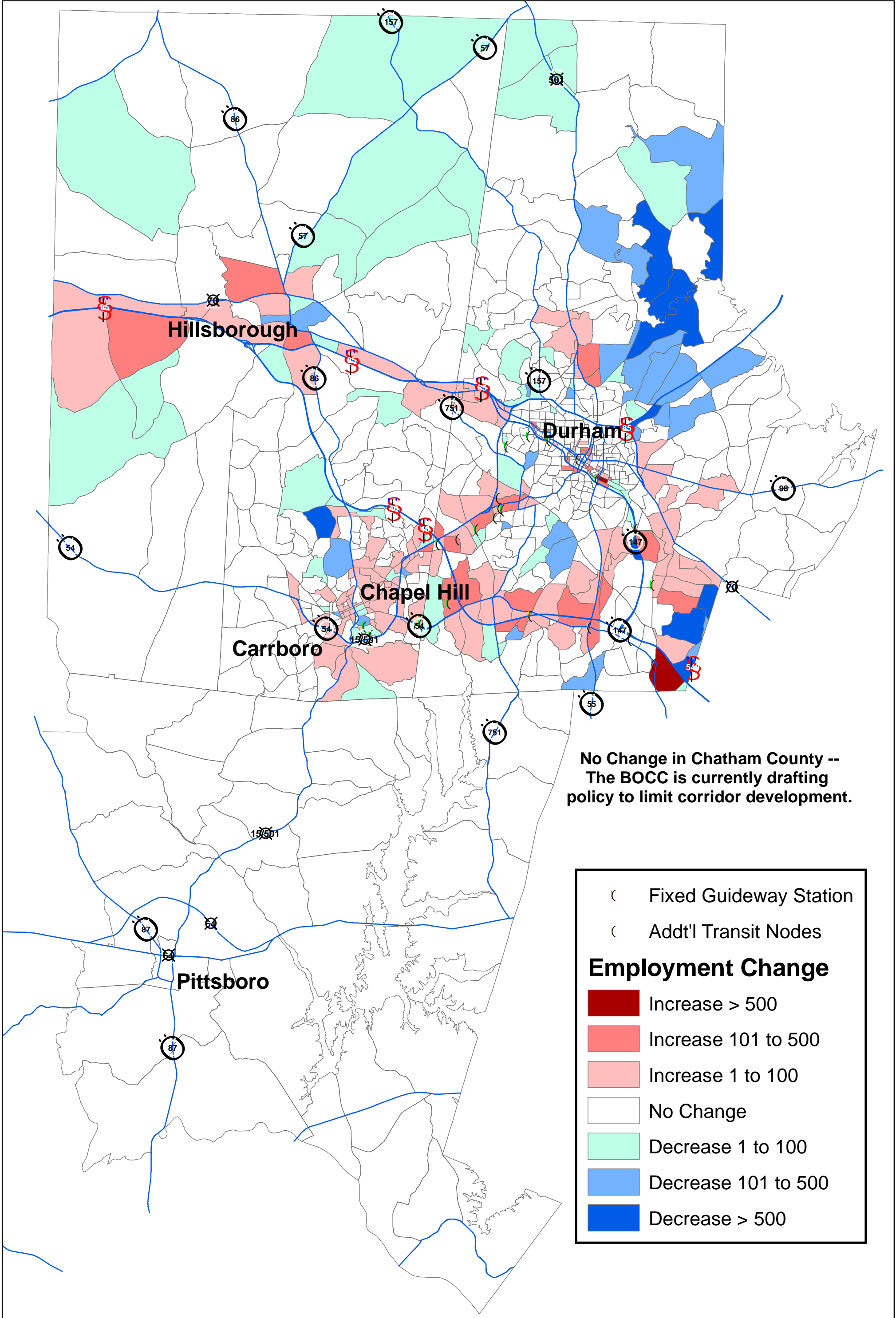




# Travel Corridor L.U. Scenario -- Population Compared to Baseline

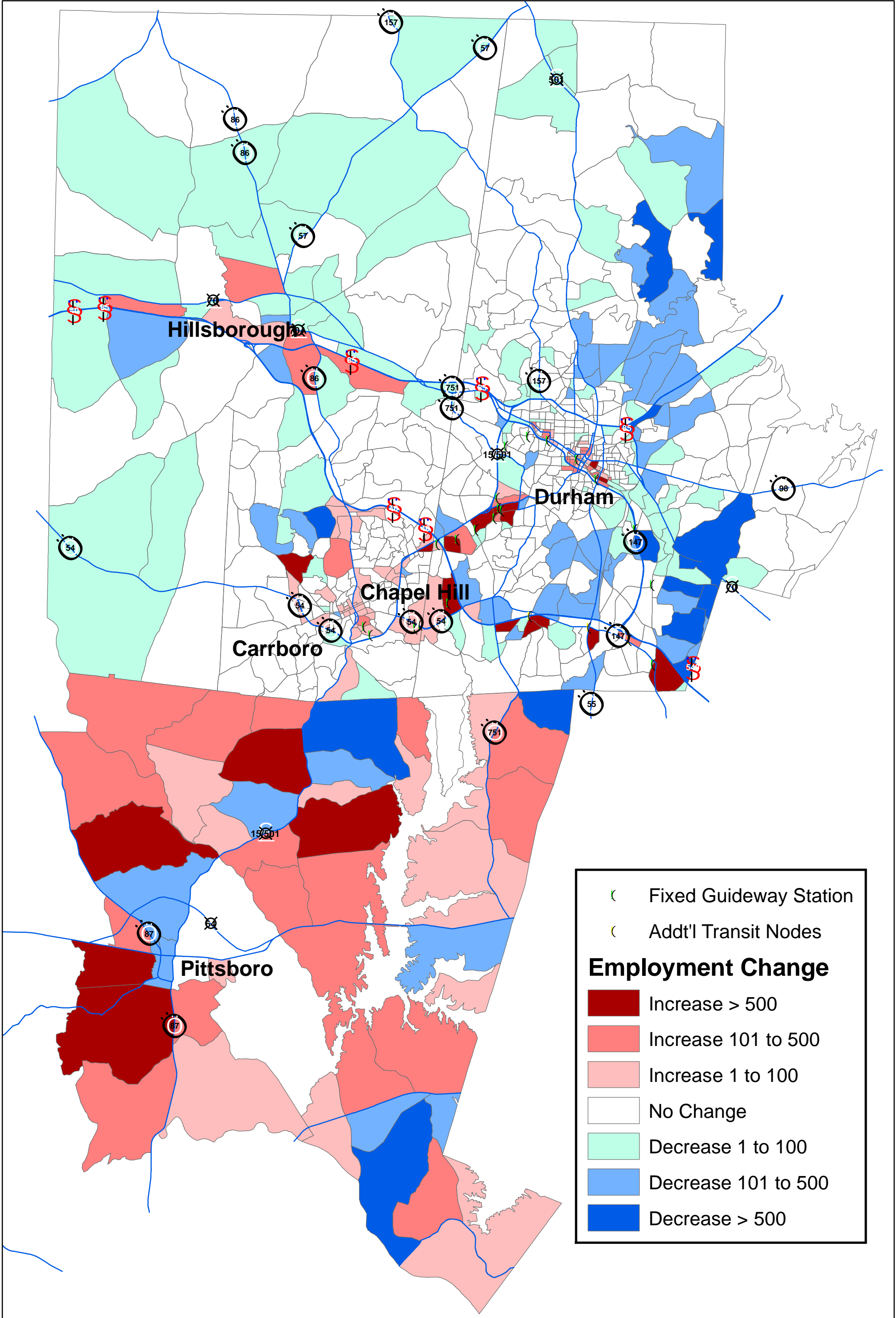


# Travel Corridor L.U. Scenario -- Employment Compared to Baseline





# Transit Node L.U. Scenario -- Employment Compared to Baseline



## **Policy Direction for Land Use Scenarios**

### **Introduction**

In preparing the Long Range Transportation Plan (LRTP), the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (MPO) has developed a series of alternative land use scenarios. The purpose of these scenarios is to explore how patterns of land use different from those reflected in adopted land use plans would affect travel demand. The MPO staff presented those scenarios to the Transportation Advisory Committee (TAC) in spring 2008.

A reasonable question that follows is, “What objectives and policies would the MPO’s jurisdictions have to put into place to begin moving the community in the direction outlined in the scenario?” Below is a preliminary response to the question. This memo presents various sample policy directions that local governments could pursue to begin to implement the scenarios.

The policy directions suggested below span a range of complexity and political acceptability. Some are relatively easy to implement, while others may require complex planning studies and revisions to land use codes. They may require significant research, legal advice, and potentially enabling legislation to implement. Some may be inexpensive, while others may require a significant shift in priorities for operating and capital budgets. Note that this list of policy directions is preliminary and not exhaustive. Other policy directions or variations of these might be the best fit for the implementing the changes that the scenarios envision. Clearly, broader discussion with a variety of stakeholders about long range community goals and objectives would be needed to reach agreement how best to proceed.

### **Scenario 1 -- Baseline**

The baseline scenario represents the fundamental projection of the MPO’s future for purposes of transportation modeling. Fundamentally, the scenario assumes that land is developed over the next few decades in a manner consistent with the adopted land use plans, policies, and official actions of MPO jurisdictions. Projections of employment and housing were developed by determining what amount of housing and employment could be expected from each of several hundred traffic analysis zones, based on the future land use anticipated. Assumptions are used to account for: a) land undevelopable for environmental reasons (floodplains, stream buffers, etc.); b) the density and intensity of future development; and c) the proportion of development that might be expected by the 2035 planning horizon of the LRTP. The Baseline Scenario forms the basis for the adopted LRTP and the Air Quality Conformity Determination.

### **Scenario 2 -- Build-Out**

The Build-Out Scenario is similar to the Baseline Scenario in that it represents the amount of housing and employment that could be expected if the MPO area were to develop in a manner consistent with adopted land use plans, policies, and official actions of MPO jurisdictions. However, the Build-Out Scenario is not “time constrained.” It does not focus on a future

year, 2035, as the Baseline Scenarios does, but instead on an end state. It assumes that the entire scope of the MPO is developed.

### **Scenario 3 -- Constrained Growth**

The Constrained Growth Scenario is the first of three that asks the question, “What might the future projections of employment and housing, and ultimately travel demand, be if the MPO was to alter its land use and development policies?” This scenario assumes that long range land use plans and development regulations would be consciously changed to scale down the amount of new development allowed each year. It also assumes that mechanisms be established to prevent growth beyond a certain annual target level.

**Scenario Objective:** Local governments in the MPO should employ conscious planning and policy actions to constrain growth in certain locations, resulting in forecast housing and employment by 2035 of approximately 10 percent less than for the Baseline Scenario, and up to 35 percent in Chatham County.

#### **A. Land Use Planning**

1. Develop a systematic and defensible method for determining the maximum amount of development that the local jurisdiction wants to accommodate each year and the basis for that determination.
2. Change local urban growth area boundaries to limit the extent of urban and suburban development.
3. Restrict the extension of sewer and water utilities.

#### **B. Land Use Regulation**

1. Develop a systematic and defensible method of evaluating and selecting highly desirable development projects that will be considered for legislative approval each year.

### **Scenario 4 -- Travel Corridors**

The Travel Corridors Scenario speculates about what might be the effect on housing, employment, and travel demand from a conscious effort to achieve a different land use pattern in the MPO area. The focus in this scenario is on new development along major arterial roadways. This approach assumes the same amount of employment and housing growth, but assigns it to locations different than in the Baseline Scenario.

**Scenario Objective:** Local governments in the MPO should employ conscious planning and policy actions to focus a significant portion of future growth into transit-oriented corridors, including Downtown Durham. Ensure that new development is located and designed in an appropriate manner and that appropriate regional and local transit service are available. Develop effective strategies to encourage new development in Corridor areas and discourage new development elsewhere.

### **A. Land Use Planning**

1. Through the Comprehensive Plan Future Land Use Map, identify transit oriented corridors as the land within a certain distance (perhaps ¼ mile) from major arterial streets. Examples in Durham include Roxboro Road, Main Street/Hillsborough Road, University Drive/Chapel Hill Road, Alston Avenue/NC 55, Holloway Street/NC 98, Miami Blvd, and NC 54. Other examples include: US 15-501 (Gateway area) in Chapel Hill; I-85 in Orange County; NC 54 by-pass in Carrboro; and Old NC 86 in the southern part of Hillsborough.
2. Prepare detailed small area plans to identify locations in transit-oriented corridor areas for mixed use and high intensity development, transit stops/stations, structured parking, pedestrian/bicycle facilities, other infrastructure, etc.

### **B. Land Use Regulation**

1. Create a transit-oriented corridor zoning overlay district or base district.
2. Establish minimum land use intensity (residential density in dwelling units per acre and non-residential floor area ratios) for new development in the transit-oriented corridor district.
3. Require a high level of pedestrian and bicycle connections within the transit-oriented corridor district and between the district and surrounding neighborhoods.
4. Require accommodation for bus transit in specific locations identified in the small area plan for the transit-oriented corridor.
5. Prepare design guidelines and review new development against the guidelines to ensure that new development is transit, pedestrian, and bicycle friendly.
6. Prohibit auto-intensive land uses.
7. Significantly restrict surface parking and encourage/require structured parking.
8. Amend the development review and approval process to provide a higher priority and reduced application fees to new development in transit-oriented corridors and a lower priority and higher application fees for new development outside of transit-oriented corridors.

### **C. Transportation System Management (TSM)**

1. Systematically assess the designated transit-oriented corridors to identify opportunities for TSM and roadway improvements to better coordinate traffic flow, especially with increased bus traffic.
2. Incorporate a program of TSM and roadway improvements into the jurisdiction's CIP.

### **D. Transportation Demand Management (TDM)**

1. Prepare a TDM Plan for each transit-oriented corridor, including objectives and strategies to reduce traffic congestion; manage parking; and make the corridor area a desirable place to live, work, and visit.
2. Require that TDM improvements and programs be included in any new development in accordance with the TDM Plan.

### **E. Transit Service**

1. Provide a high level of bus transit service along the arterials in the transit-oriented corridors.
2. Ensure that transit amenities are convenient and comfortable to encourage transit use. Amenities could include benches, shelters, lighting, landscaping, public art and graphics, ticket vending machines, rider information displays, bicycle facilities, etc.

### **F. Parking**

1. Prohibit commercial parking lots as a stand-alone use in transit-oriented corridors.
2. Reduce or eliminate required parking in transit-oriented corridors.
3. Establish a maximum parking requirement in transit-oriented corridors.

## **Scenario 5 -- Transit Compact Zone**

The Transit Compact Zone Scenario also speculates about what might be the affect on housing, employment, and travel demand from a conscious effort to achieve a different land use pattern. The focus in this scenario is on new development in transit-oriented compact neighborhoods in strategic location in the MPO. Likewise, this approach assumes the same amount of employment and housing growth as the Baseline Scenario, but assigns it to different locations.

**Scenario Objective:** Focus a significant proportion of future growth in compact neighborhoods. Ensure that that new development is located and designed in an appropriate manner and that appropriate regional and local transit service are available. Develop effective strategies to encourage new development in Transit Compact Zones and discourage new development elsewhere.

### **A. Land Use Planning**

1. Through the Comprehensive Plan Future Land Use Map, identify transit-oriented compact neighborhoods as the land within a certain distance (perhaps ½ mile) from regional transit stops or stations. Examples in Durham include Roxboro Road, Main Street/Hillsborough Road, University Drive/Chapel Hill Road, Alston Avenue/NC 55, Holloway Street/NC 98, Miami Blvd, and NC 54. Other examples include: US 15-501 (Gateway area), Carolina North, and UNC Hospitals in Chapel Hill; I-85 in Orange County; NC 54 by-pass in Carrboro; and Old NC 86 in the southern part of Hillsborough
2. Prepare detailed small area plans to identify locations in transit-oriented compact neighborhoods for mixed use and high intensity development, transit stops/stations, structured parking, pedestrian/bicycle facilities, other infrastructure, etc.

### **B. Land Use Regulations**

1. Create a transit-oriented compact neighborhood zoning district.



2. Establish minimum land use intensity (residential density in dwelling units per acre and non-residential floor area ratios) for new development in the transit-oriented compact neighborhood district.
3. Require a high level of pedestrian and bicycle connections within the transit-oriented compact neighborhood district and between the district and surrounding neighborhoods.
4. Require accommodation for bus transit in specific locations identified in the small area plan for the transit-oriented compact neighborhood.
5. Prepare design guidelines and review new development against the guidelines to ensure that new development is transit-, pedestrian-, and bicycle-friendly.
6. Prohibit auto-intensive land uses.
7. Significantly restrict surface parking and encourage/require structured parking.
8. Amend the development review and approval process to give a higher priority and reduced application fees for new development in transit compact zones and a lower priority and higher application fees for new development outside of transit compact zones.

#### **C. Transportation System Management (TSM)**

1. Systematically assess the designated transit-oriented compact neighborhood districts to identify opportunities for TSM and roadway improvements to better coordinate traffic flow, especially with increased bus traffic.
2. Incorporate a program of TSM and roadway improvements into the jurisdiction's CIP.

#### **D. Transportation Demand Management (TDM)**

1. Prepare a TDM Plan for each transit-oriented compact neighborhood district, including objectives and strategies to reduce traffic congestion; manage parking; and make the corridor area a desirable place to live, work, and visit.
2. Require that TDM improvements and programs be included in any new development in accordance with the TDM Plan.

#### **E. Transit Service**

1. Provide a high level of regional transit between and bus feeder transit services to the transit-oriented compact neighborhoods.
2. Ensure that transit amenities are convenient and comfortable to encourage transit use. Amenities could include benches, shelters, lighting, landscaping, public art and graphics, ticket vending machines, rider information displays, bicycle facilities, etc.

#### **F. Parking**

1. Prohibit commercial parking lots as a stand-alone use in transit-oriented compact neighborhood districts.
2. Reduce or eliminate required parking in transit-oriented compact neighborhood districts.