

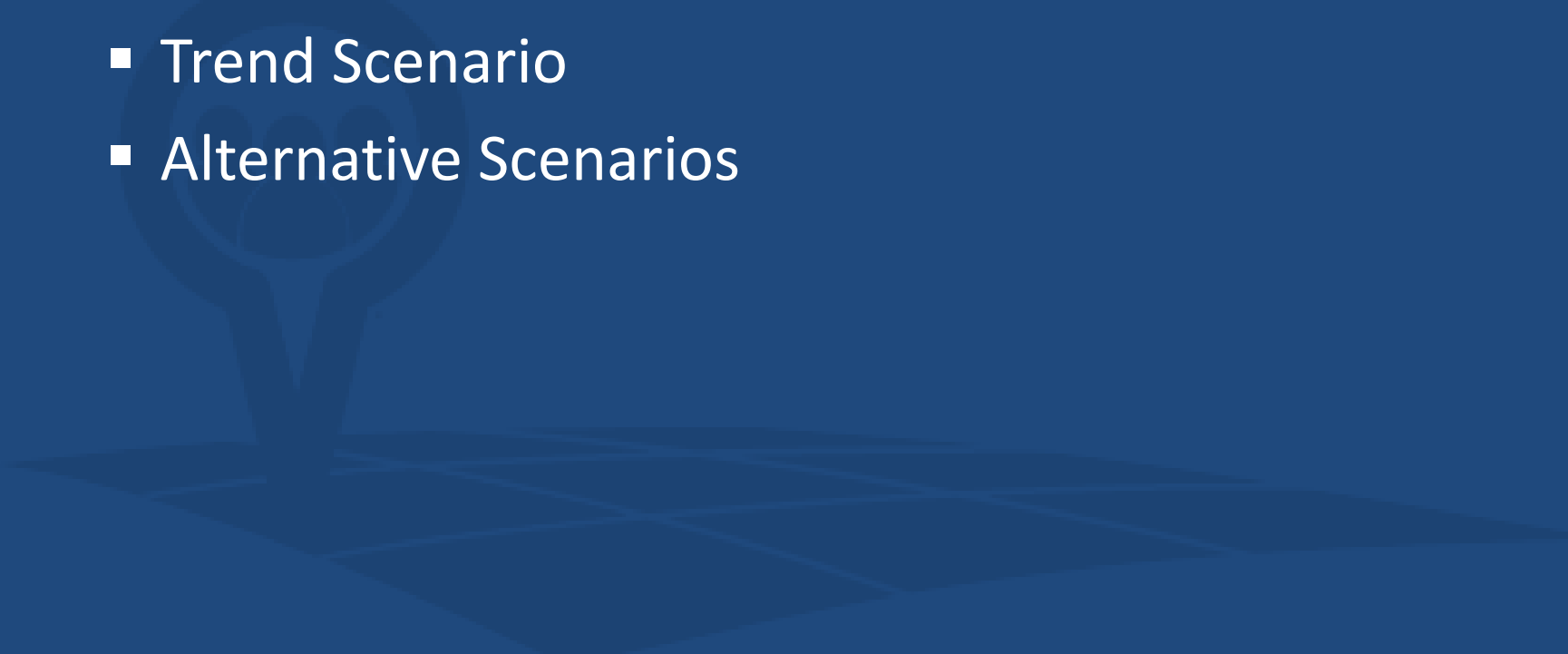


Tools Summit / Scenario Planning Workshop  
*Building Scenarios: Techniques and Technical Tools*

# This Session

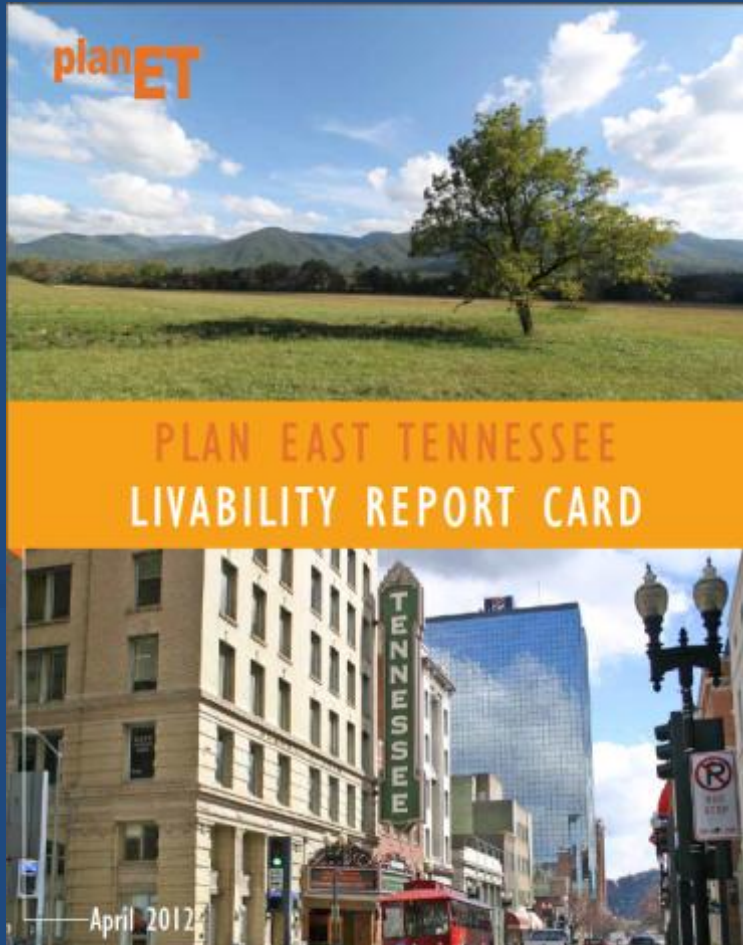
- Introduction
- Parts of a Scenario Planning Analysis
  - Current Conditions / Baseline
  - Trend Scenario
  - Alternative Scenarios
- Tools Demonstration
  - CommunityViz
  - Envision Tomorrow
  - Metroquest
- Office Hours

# Introduction

- Parts of a Scenario Planning Analysis
    - Current Conditions / Baseline
    - Trend Scenario
    - Alternative Scenarios
- 
- A faint, stylized graphic in the background features a lightbulb with a grid pattern on the floor beneath it, suggesting ideas and planning.

# Baseline: Current Conditions

- Purpose
  - Quantify current conditions
  - Context against which to compare scenarios
  - Build data, technical, and community capacity



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# Baseline: Current Conditions

## Metropolitan Area Planning Council, MA (Boston Region)

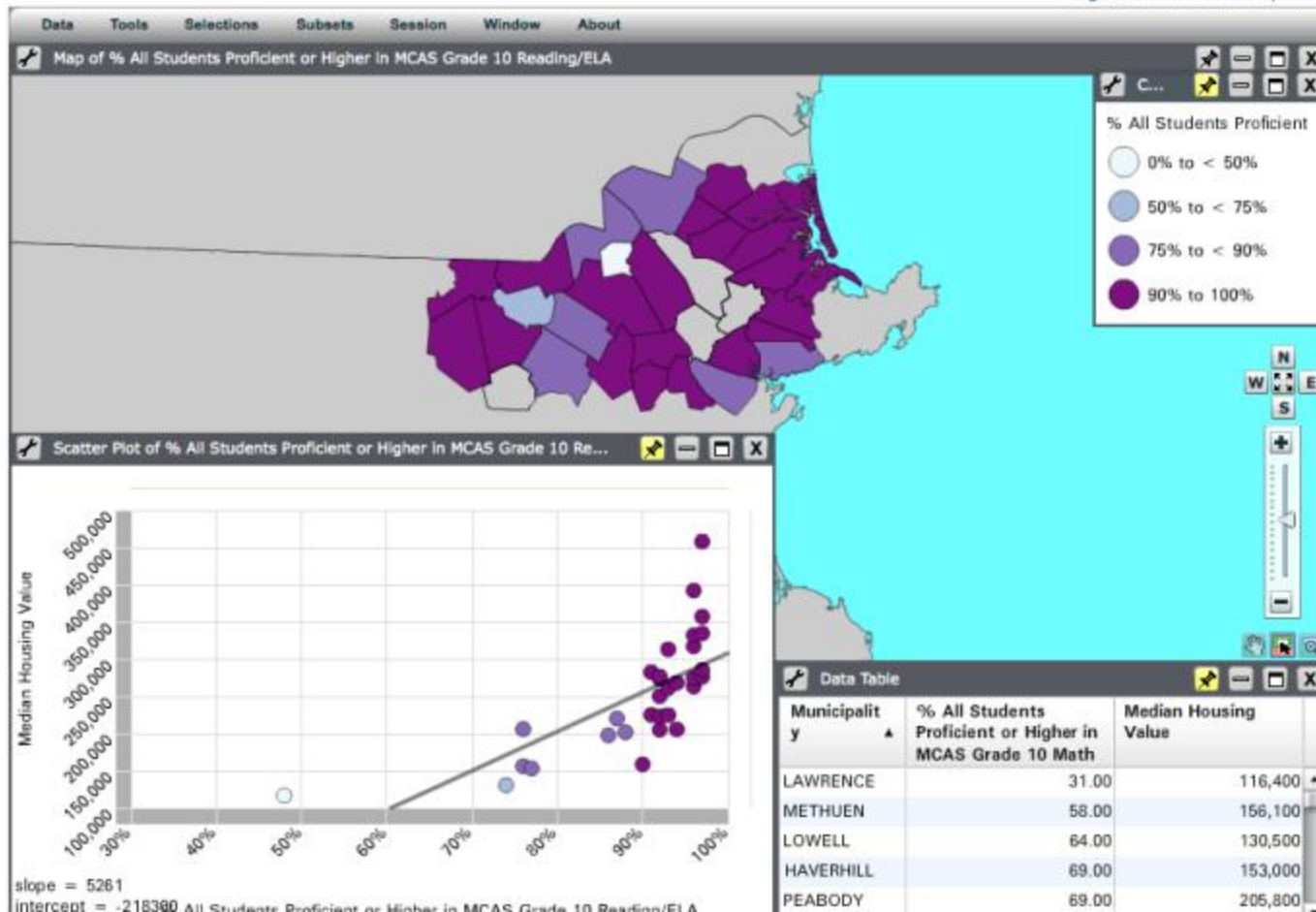
### 10th Grade Reading Proficiency

By agoldhagen

Based on 10th Grade Reading Proficiency, by agoldhagen

Year(s): 2010-11 • Source(s): DESE

[Login to Save Visualization](#) | [Embed](#)



# Baseline: Current Conditions



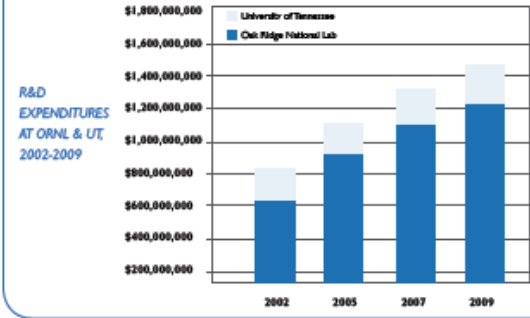
## Economic Engines

Research and development and security activities are critical pieces of the region's economy. Financial services and insurance, industrial machinery, rubber and aluminum products, machine tools, information services, and plastics manufacturing also have emerged as important industry clusters.

### ORNL & UT ARE MAJOR EMPLOYERS & ATTRACT INVESTMENT TO THE REGION

With over 13,000 jobs, the U.S. Department of Energy's Oak Ridge National Laboratory (ORNL) is the region's largest employer. The University of Tennessee (UT) is the region's second-largest employer with almost 8,000 jobs. These institutions added over 3,400 jobs between 2006 and 2010.

Research and development (R&D) investments at ORNL and UT not only stimulate technology development, but also promote technology-based businesses that generate high-quality jobs in the region. R&D expenditures at ORNL have almost doubled since 2002, growing from \$620 million in 2002 to almost \$1.3 billion in 2009. R&D expenditures at UT increased from approximately \$188 million in 2002 to \$278 million in 2009. Total R&D expenditures at these two institutions represented more than five percent of the region's GDP in 2009.



### The region has industry clusters that could provide competitive advantages

These six industry clusters are projected to add jobs over the next decade and could be important emphases for the region's business retention and expansion efforts.

1. Financial services & insurance
2. Industrial machinery
3. Rubber & aluminum products
4. Machine tools
5. Information services
6. Plastics manufacturing

### HOW DO WE COMPARE?

- R&D expenditures at ORNL grew at twice the national rate between 2002 and 2009.
- Aluminum products and industrial equipment jobs are significantly more concentrated in the region than in the national economy (50 percent and 200 percent, respectively).
- The region's information services cluster grew twice as fast as the national rate between 2006 and 2011.
- Plastics manufacturing showed strong growth in the region between 2006 and 2011; this industry lost jobs nationally during the same period.
- Financial services/insurance jobs are expected to become more concentrated in the region while the national economy loses jobs in this industry cluster.

## REGIONAL LIVABILITY REPORT CARD

The Report Card summarizes ratings for all of the focus area trends/issues sections found on pages 8 – 39 of the PlanET Livability Report. It provides a brief overview of the region's strengths and areas that need improvement. Ratings are based on overall regional statistics and not how a particular community or county performs in a given area.

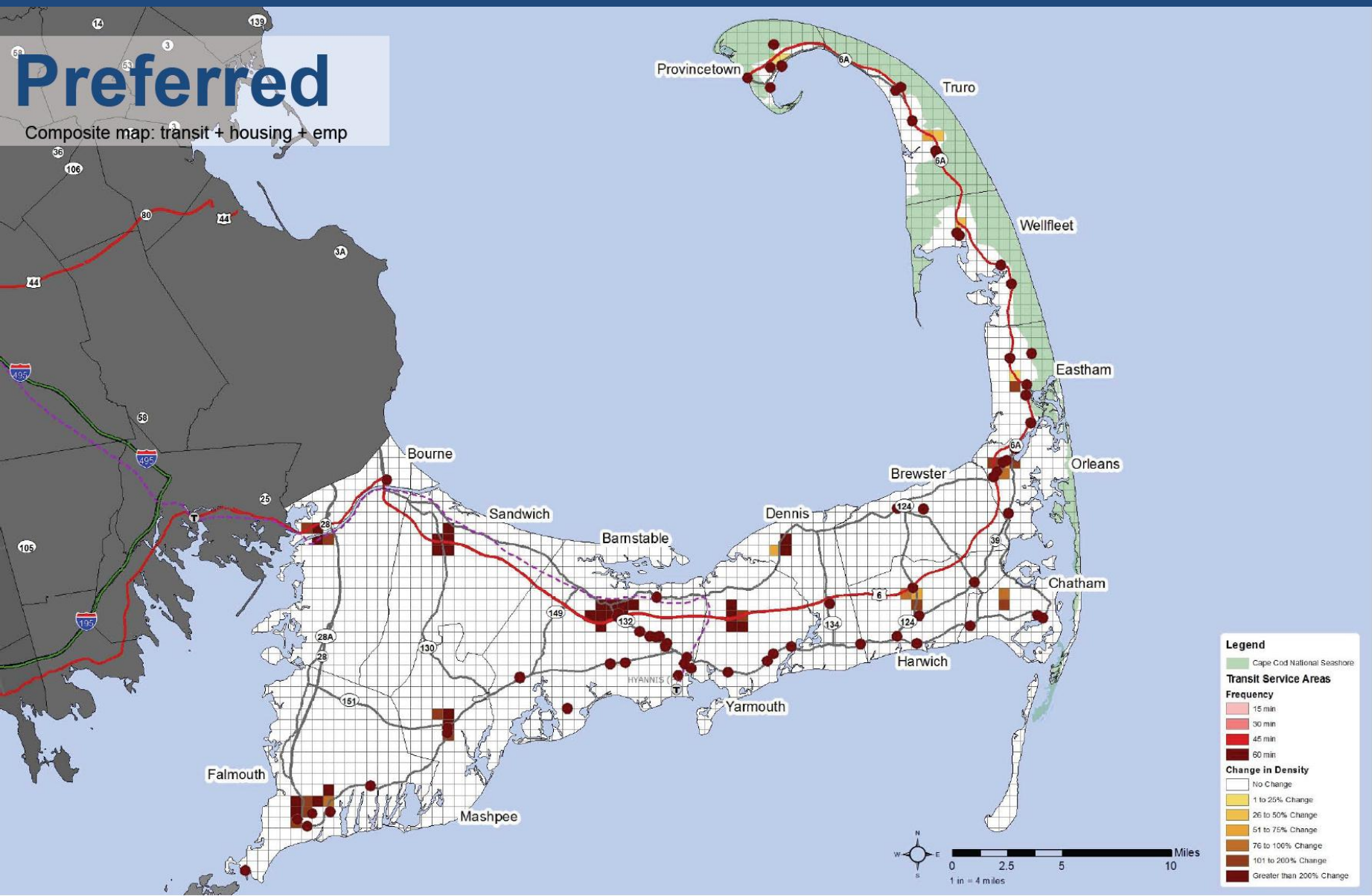
Trends/Issues	REGIONAL STRENGTH	IN GOOD SHAPE: CONTINUE TO IMPROVE	CAUTION: NEEDS IMPROVEMENT	REGIONAL WEAKNESS: NEEDS ATTENTION
<b>Economy</b>				
Economic Engines	★			
Employment Levels		+		
Workers			◆	
Jobs				☒
<b>Transportation &amp; Infrastructure</b>				
Regional Commutes & Highway Congestion	★			
Transportation Costs				☒
Alternatives to Automobile Transportation			◆	
Air Travel			◆	
Infrastructure & Development		+		
<b>Housing &amp; Neighborhoods</b>				
Housing Values, Sales, & Rentals		+		
Housing Tenure		+		
Housing Affordability	★			
<b>Healthy Communities</b>				
Rates of Disease/Illness				☒
Health Insurance			◆	
Access to Medical Services & Healthy Foods		+		
Crime		+		
<b>Environment</b>				
Air Quality				☒
Water Quality			◆	
Agriculture				☒
Parks, Recreation, & Tourism	★			

# Baseline: Data Management

## Capacity Assessment Tool

Scenario Planning Capacity Assessment					
<b>Instructions</b> This tool is intended to help agencies understand their capacity to undertake scenario planning. The following are datasets, technologies and techniques which are commonly used in scenario planning. This first sheet is best used as a starting point for identifying potential gaps in data or other resources. The second sheet can be used to help identify possible resources for finding data. We'd love to get your feedback on how to make this tool more useful. Send comments and suggestions to:	Organization Name				
	Project				
1. Data readiness	Comments	Availability			Date
		<i>Fill in all cells with a 0 or 1; where 1 indicates</i>			
<i>Complete this table for each of the following datasets.</i>		<i>Not Available</i>	<i>Partially Available</i>	<i>Fully Available</i>	<i>(app</i>
<b>Boundary</b>		-	-	-	
Municipal Boundaries		-	-	-	
County Boundaries		-	-	-	
Census Blocks		-	-	-	
Census Block Groups		-	-	-	
Census Tracts		-	-	-	
Traffic Analysis Zones (TAZ)		-	-	-	
Zip Codes		-	-	-	
School Districts		-	-	-	
Special Districts (BID, MUD, TIF)		-	-	-	
<b>Property and Buildings</b>		-	-	-	
Parcels		-	-	-	
Tax Assessment Records		-	-	-	
Foreclosures		-	-	-	
Current Land Use		-	-	-	
Current Zoning		-	-	-	
Building Polygons		-	-	-	
Future Land Use/Zoning Plans		-	-	-	
Future Growth Allocation Models		-	-	-	

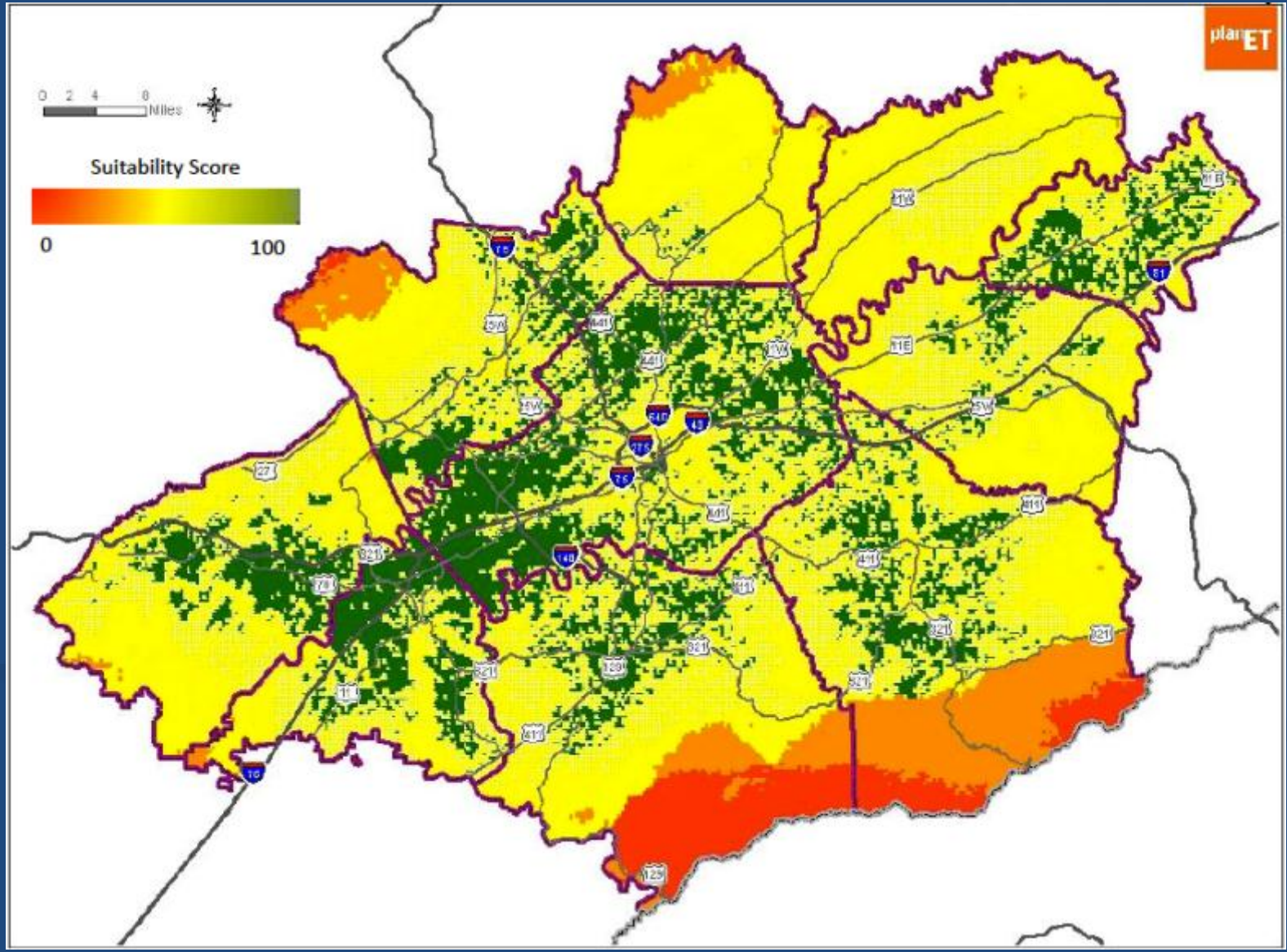
# Baseline: Data Management











# Baseline: GIS Framework

## Land Suitability Analysis



# Baseline: GIS Framework

## Placetypes

Placetype	Rural Residential	Suburban Residential (Low Density)	Suburban Residential (Moderate Density)	Suburban Apt	Strip Commercial	Community Activity Center
Character/ description	Large lot, single-family home sites within a rural setting. Each lot typically has direct access to the main arterial.	Low-density, suburban-style home sites characterized by larger lots/yards, curvilinear cul-de-sac street networks with few access points.	Similar in character to the Low Density placetype, but at slightly higher densities and with some attached dwelling units (i.e. townhomes).	Single use apartment communities, gated with an internal circulation system. Generally located in proximity to commercial areas.	Strip-style commercial development adjacent to arterials, characterized by single lot depth and large setbacks.	Suburban-style, internally-oriented "power center" typically anchored by a national tenant and includes out-parcels. Located at the intersection of major arterials.
Average scale	10 acres	60 acres	60 acres	10 acres	60 acres	60 acres
Primary Uses	Single-family homes	Single-family homes	Single-family homes	Multi-family residential (townhomes and apts/condos)	Commercial	Commercial
Secondary Uses	None	None	Townhomes	None	Office	None
Residential Density	2 du/ac (single-family)	3 du/ac (single-family)	4 du/ac (single-family)	18 du/ac (multi-family)	NA	NA
Non-residential Intensity	NA	NA	NA	NA	0.20 - 0.25 FAR	0.2 FAR
Building Heights	1-2 stories	1-2 stories	1-2 stories	1-4 stories	1-2 stories	1-2 stories
Open Space	10% Passive	10%, Active (pocket parks, regional parks)	5%, Active (pocket parks, regional parks) and Passive	5% Passive	5% Passive	5% Passive
Connectivity	Low	Low	Low	Low	Low	Low
Current Zoning	A-1	R-1	R-1	R-3	C-2, C-3, C-5	C-2, C-3
Primary Modes	Automobile	Automobile	Automobile	Automobile	Automobile	Automobile
Secondary Modes	None	None	None	Walking	None	None
Representative Photos	  	  	  	  	  	  

# Baseline: GIS Framework

Placetype	Rural Residential	Suburban Residential (Low Density)	Suburban Residential (Moderate Density)	Suburban Residential (High Density)
Character/description	Large lot, single-family home sites within a rural setting. Each lot typically has direct access to the main arterial.	Low-density, suburban-style home sites characterized by larger lots/yards, curvilinear cul-de-sac street networks with few access points.	Similar in character to the Low Density placetype, but at slightly higher densities and with some attached dwelling units (i.e. townhomes).	Single use apartment gated with an internal street. Generally located in commercial areas.
Average scale	10 acres	60 acres	60 acres	10 acres
Primary Uses	Single-family homes	Single-family homes	Single-family homes	Multi-family residential (townhomes and apartments)
Secondary Uses	None	None	Townhomes	None
Residential Density	2 du/ac (single-family)	3 du/ac (single-family)	4 du/ac (single-family)	18 du/ac (multi-family)
Non-residential Intensity	NA	NA	NA	NA
Building Heights	1-2 stories	1-2 stories	1-2 stories	1-4 stories
Open Space	10% Passive	10%, Active (pocket parks, regional parks)	5%, Active (pocket parks, regional parks) and Passive	5% Passive
Connectivity	Low	Low	Low	Low
Current Zoning	A-1	R-1	R-1	R-3
Primary Modes	Automobile	Automobile	Automobile	Automobile
Secondary Modes	None	None	None	Walking
				

# Baseline: GIS Framework

## Indicators: Cape Cod

- Purpose: Evaluate impacts of different spatial strategies and possible futures
- Key Points
  - Scenario Indicators vs Monitoring Indicators
  - Choosing indicators
    - Major Issues
    - Data Availability
    - Ability to Inform Decision-Making

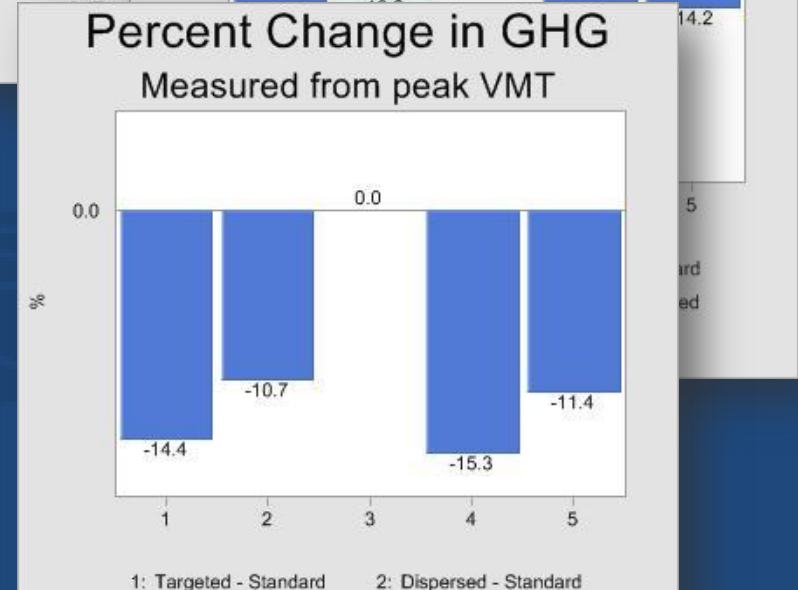
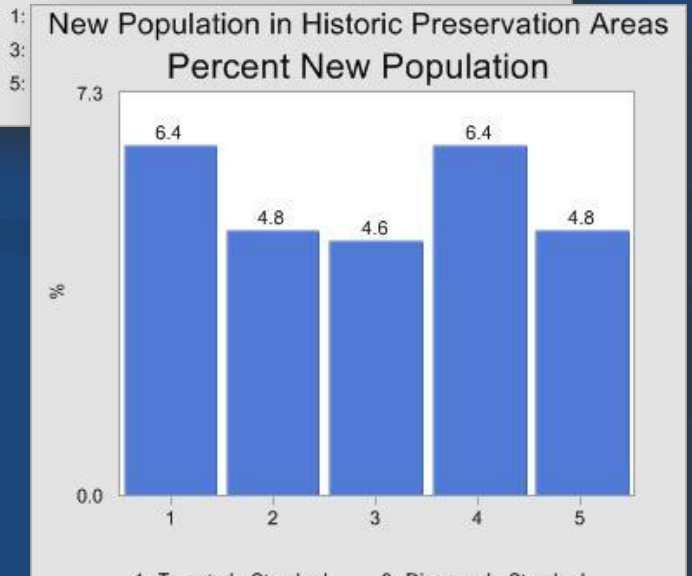
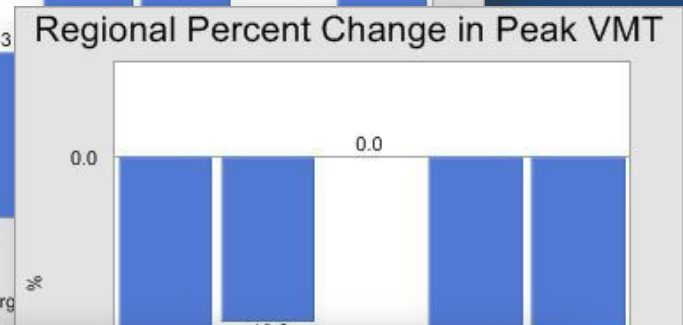
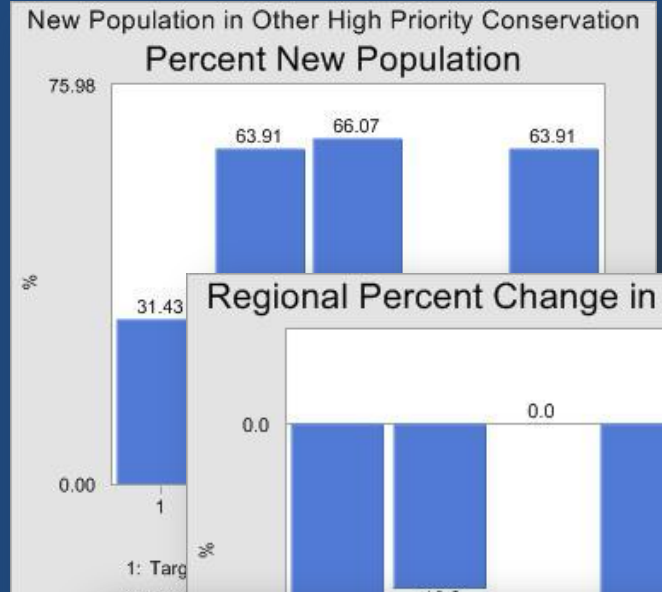
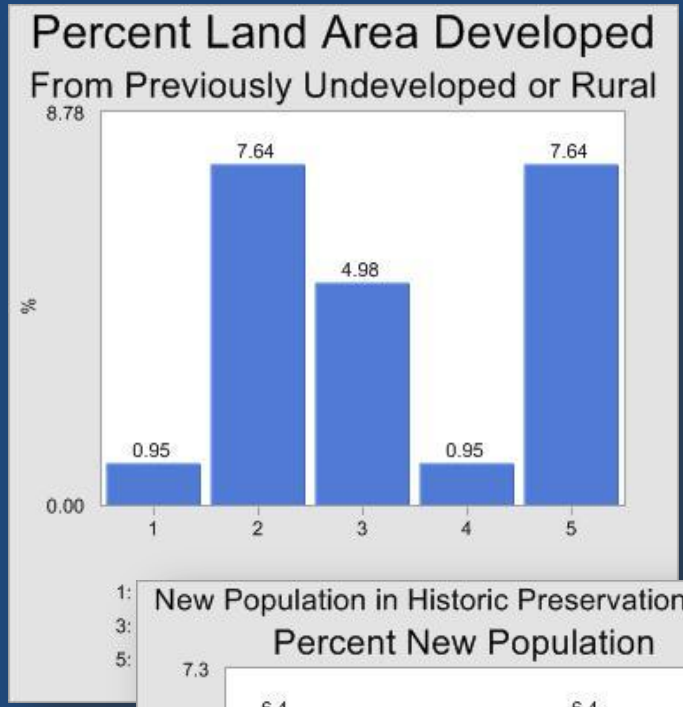
# Baseline: GIS Framework

## Indicators: Cape Cod

- **Vehicle miles traveled (VMT):**
  - Regional percentage change in peak VMT.
- **GHG emissions:**
  - Percentage change in GHG emissions.
- **Impact of sea-level rise (SLR):**
  - Percentage of new population in vulnerable areas
- **Preservation of natural/existing ecosystems:**
  - Percentage of new population in critical habitat areas.
  - Percentage land area developed (from previously undeveloped or rural)[15].
  - Percentage of new population in undeveloped or rural lands.
  - Percentage of new population in other high priority conservation areas[16].
- **Impact on other areas:**
  - Percentage of new population in water resource and wellhead protection areas and percentage of new population in areas with less than three dwelling units per acre
- **Accessibility indicators:**
  - Percentage of new population & employees served by transit.

# Baseline: GIS Framework

## Indicators



# Baseline: GIS Framework

## Equity Indicators: Opportunity Mapping

Education	Economic Health	Housing and Neighborhood Quality	Mobility and Transportation	Health and Environment
<ul style="list-style-type: none"><li>• math test scores</li><li>• reading test scores</li><li>• student poverty</li><li>• teacher qualification</li><li>• graduation rates</li></ul>	<ul style="list-style-type: none"><li>• access to living wage jobs</li><li>• job growth trends, 2000–2010</li><li>• unemployment rate</li></ul>	<ul style="list-style-type: none"><li>• vacancy rate</li><li>• foreclosure rate</li><li>• high cost loan rate</li><li>• housing stock condition</li><li>• crime index</li></ul>	<ul style="list-style-type: none"><li>• cost per commute</li><li>• proximity to express bus stops</li><li>• average transit fare</li><li>• percent of commuters who walk</li></ul>	<ul style="list-style-type: none"><li>• distance to nearest park or open space</li><li>• proximity to toxic waste release</li><li>• percent of area that is within a food desert</li></ul>

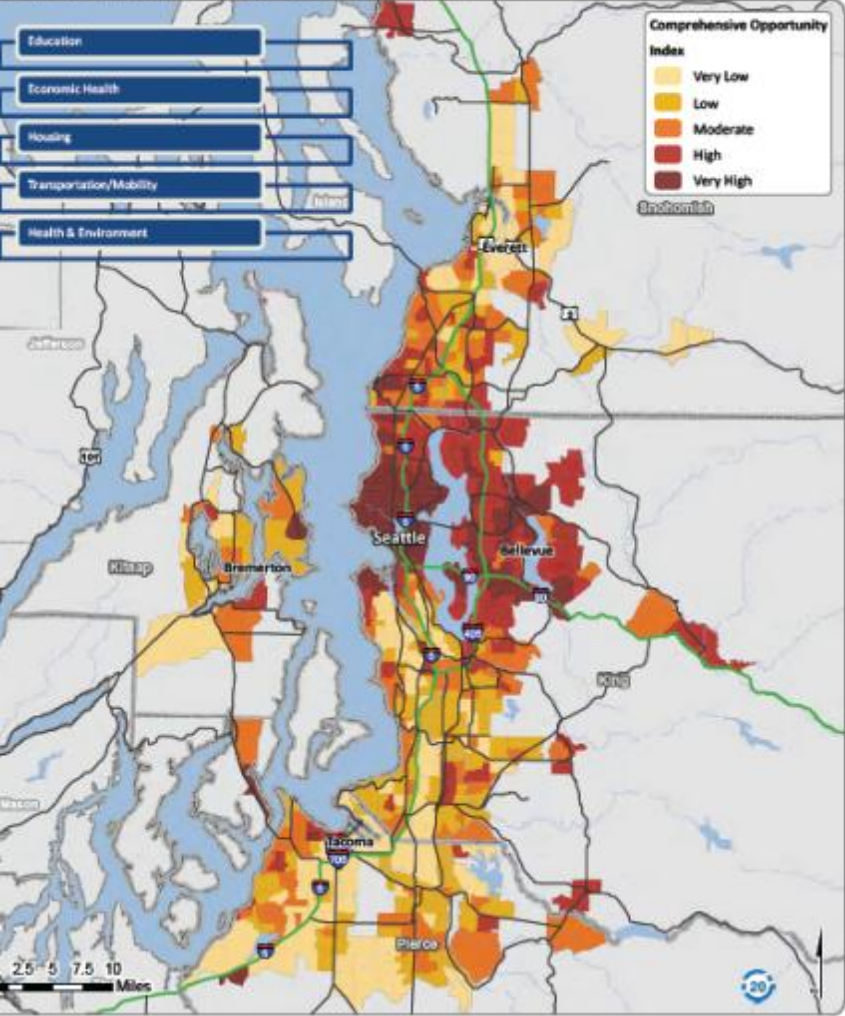
# Baseline: GIS Framework

## Equity Indicators: Opportunity Mapping

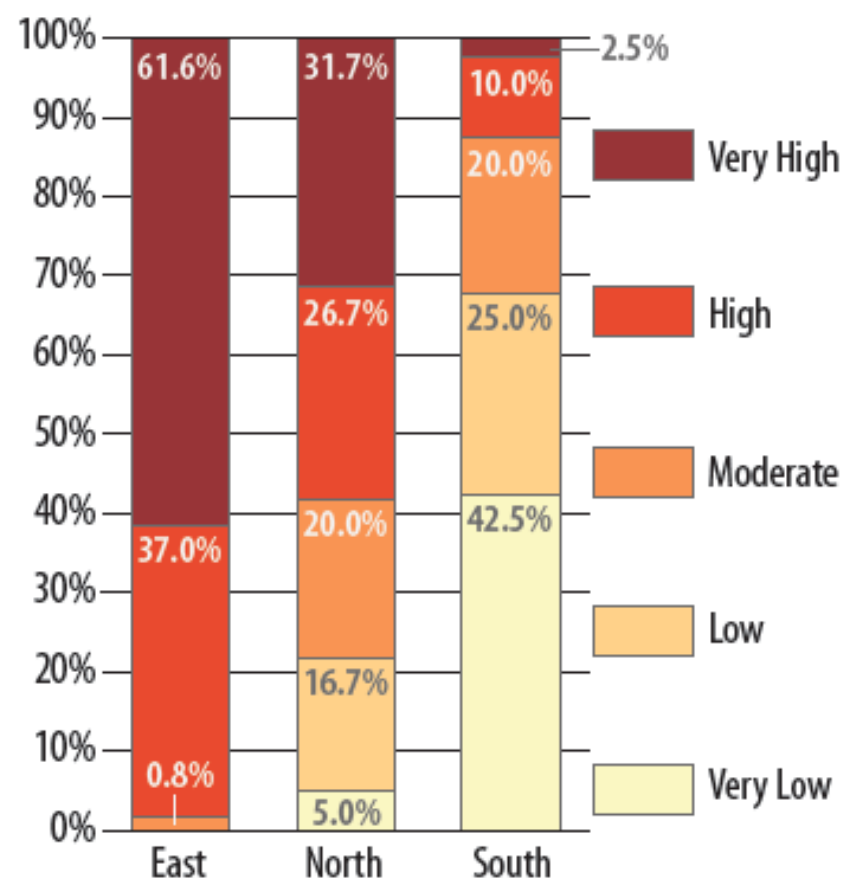
**Map 1.1 Comprehensive Opportunity Map**  
Puget Sound Urbanized Area

**Kirwan Institute**  
Many Differences. One Destiny.

Source: Puget Sound Regional Council, 2011; Environmental Protection Agency, 2010; Washington Dept. of Ecology, 2011; ESRI Business Analyst, 2010; American Community Survey, 2000-2010; U.S. Census, 2010; Tetrad, Inc. PCensus Dbc, 2010; Washington State Report Card, 2010-2011



**Figure 9. Light Rail Corridor Opportunity Analysis**



Source: PSRC



# Trend Scenario

- Purpose
  - Understand Driving Forces
  - Imagine what might happen without intervention



# Trend Scenario

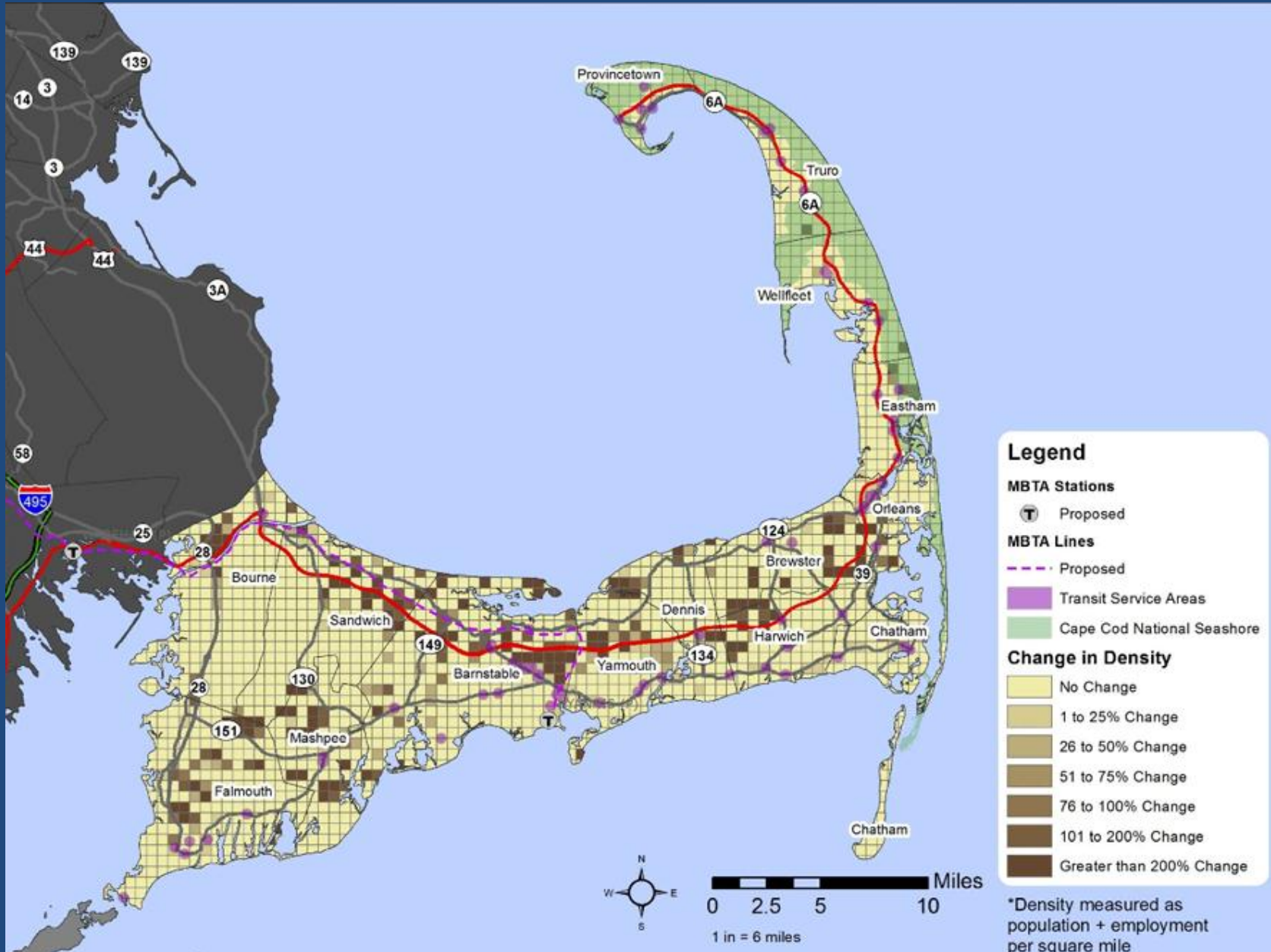
- Purpose
  - Understand Driving Forces
  - Imagine what might happen without intervention

## *ELVIS IMPERSONATORS REACH AN ALL-TIME HIGH*

*The number of Elvis Presley impersonators has reached an all-time record high – there are now at least 85,000 Elvis's around the world, compared to only 170 in 1957 when he died. At this rate of growth, experts predict that by 2019 Elvis impersonators will make up a third of the world population!*

*-ScienceWorld Online 3rd December 2000*

# Trend Scenario



**Legend**

**MBTA Stations**

- Proposed (T symbol)

**MBTA Lines**

- Proposed (dashed purple line)

- Transit Service Areas (purple shaded area)
- Cape Cod National Seashore (green shaded area)

**Change in Density**

- No Change (lightest yellow)
- 1 to 25% Change (light yellow)
- 26 to 50% Change (yellow-orange)
- 51 to 75% Change (orange)
- 76 to 100% Change (orange-brown)
- 101 to 200% Change (brown)
- Greater than 200% Change (darkest brown)

\*Density measured as population + employment per square mile

# Alternative Scenarios

- Purpose: Test the impacts and communicate the trade-offs of different spatial strategies.
- Sample workflow
  - Develop a narrative for each scenario.
  - Use GIS to locate placetypes and other features in locations that reflect the narrative for each scenario.
  - Evaluate the scenario against the evaluation criteria/indicators.