

# **PELLISSIPPI PARKWAY EXTENSION**

## **INDIRECT AND CUMULATIVE EFFECTS ANALYSIS METHODOLOGY AND BACKGROUND INFORMATION**

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The National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations require the indirect and cumulative effects of a project be analyzed in addition to direct impacts (40 CFR §1508.25 (c)). Indirect (sometimes referred to as secondary) and cumulative effects are analyzed to determine how each proposed alternative, if built, may affect the different resources in the project area. Each alternative that is being considered may have impacts of varying degrees. Differences in the degree of impacts are one of the measures that decision-makers use to help them evaluate and compare each alternative.

This indirect and cumulative impact analysis (ICI) presents a comprehensive, long-term look at how the construction of the Pellissippi Parkway Extension and other past, present and future planned development and transportation projects might result in additional resource impacts.

### **Indirect Effects**

Indirect impacts are defined as impacts that may be caused by a project, but would occur in the future or outside the project area and are reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate and related effects on air and water and other natural systems (40 CFR 1508.7) Reasonably foreseeable actions/projects include:

- A project identified in a local or regional comprehensive land use plan;
- A subdivision plat that has been filed with the local government, county or other plat-approving agency;
- Population/development trends that are identified in local or regional comprehensive land use plans;
- Planned transportation improvements by city or county governments; and
- Local or regional infrastructure projects that could impact resources (schools, hospitals, etc.).

Actions that are not usually considered reasonably foreseeable include:

- Possible, but not likely actions/projects; and
- Actions that have little or no influence on the transportation decision.

Often, if a project does not have a direct effect on a resource, it will often not have an indirect effect on that resource. Occasionally, however, a project may not have a direct effect but it will have an indirect effect. In general, highway projects most commonly result in indirect impacts to land use, community and economic resources, farmland, water resources, water quality, wetlands and terrestrial ecology.

#### ***Reasonably Foreseeable***

Courts have defined reasonably foreseeable as an action that is sufficiently likely to occur, that a person of ordinary prudence would take into account in making a decision.

## **Cumulative Effects**

Cumulative impacts are the combined effects of all past, present and reasonably foreseeable projects (not just the current project and not just highway projects) on a given resource (e.g. wetlands); regardless of who has built the project (includes developers, localities, etc., not just state departments of transportation or federal agencies). If a project will not cause direct or indirect impacts on a resource, it will not contribute to a cumulative impact on the resource.

# **1.0 OVERVIEW**

## **1.1 Approach**

The assessment of indirect and cumulative effects involves the assessment of past, present and reasonably foreseeable future impacts. The time frame established for this indirect and cumulative impact analysis (ICI) is 1977 through the future time frame of 2030.

Past resource impacts were assessed primarily through overlaying past and present land use and resource maps to identify changes in land use and the implications of those changes on resources. Resource impacts expected to occur in the present time frame involved overlaying existing land use/resources with planned projects/developments identified in local plans and through discussions with local planners. The assessment of present impacts considers projects expected to occur within the next three years (through 2012).

## **1.2 Existing Land Use Management and Controls**

Reasonably foreseeable future impacts were assessed by analyzing public plans, policies and laws and through discussion with the Blount County Planning Office. When analyzing future land use, one of the key defining factors is state and local development policies. The following sections describe the planning processes in place at the state, regional, county and city levels that affect land use within the project area.

### **Statewide Planning**

#### ***Public Chapter 1101***

In May 1998, the Tennessee General Assembly enacted Public Chapter 1101 (PC 1101). PC 1101 provided a framework for growth policy development within each county without imposing a single statewide solution, allowing counties flexibility to tailor growth plans to their locality. Under PC 1101, counties were required to develop a comprehensive growth policy that outlined anticipated development during the next 20 years. The growth plans were to be based on a 20-year projection of growth and land use and divide the county into three types of areas: 1) Urban Growth Boundaries (UGBs), 2) Planned Growth Areas (PGAs), and 3) Rural Areas (RAs). Municipalities were responsible for proposing UGBs and counties were responsible for proposing PGAs and RAs. Prior to formally proposing the UGBs, PGAs, and RAs to the coordinating committee, the municipality and the county, respectively were responsible for holding two public hearings on the proposed boundaries in order to obtain public feedback. The following are definitions of UGB, PGA, and RA as defined in PC 1101.

Urban Growth Boundaries are to include territory:

- reasonably compact but large enough to accommodate 20 years of growth;
- that is contiguous to the existing municipal boundaries;
- that is reasonably likely to experience growth over the next 20 years, based upon history, economic, and population trends, and topographical characteristics;
- where the municipality is better able than other municipalities to efficiently and effectively provide urban services; and
- that reflects the municipality's duty to fully develop the area within the current boundaries, while controlling and managing growth outside those boundaries, taking into account the impact on agriculture, forests, recreation, and wildlife.

Planned Growth Areas are to include territory:

- that is reasonably compact yet sufficiently large to accommodate residential and nonresidential growth projected to occur during the next 20 years;
- that is not within the existing boundaries of any municipality or within an urban growth boundary;
- that is reasonably likely to experience growth over the next 20 years, based upon history, economic and population trends, and topographical characteristics; and
- that reflects the county's duty to manage natural resources and to manage and control urban growth, taking into account the impact on agriculture, forests, recreation, and wildlife.

Rural Areas are to include territory:

- that is not within an urban growth boundary or a planned growth area;
- that is to be preserved over the next 20 years as agricultural, forest, recreation, or wildlife management areas, or for uses other than high-density development; and
- that reflects the county's duty to manage growth and natural resources in a way that reasonably minimizes detrimental impact to agricultural, forest, recreation, and wildlife management areas.

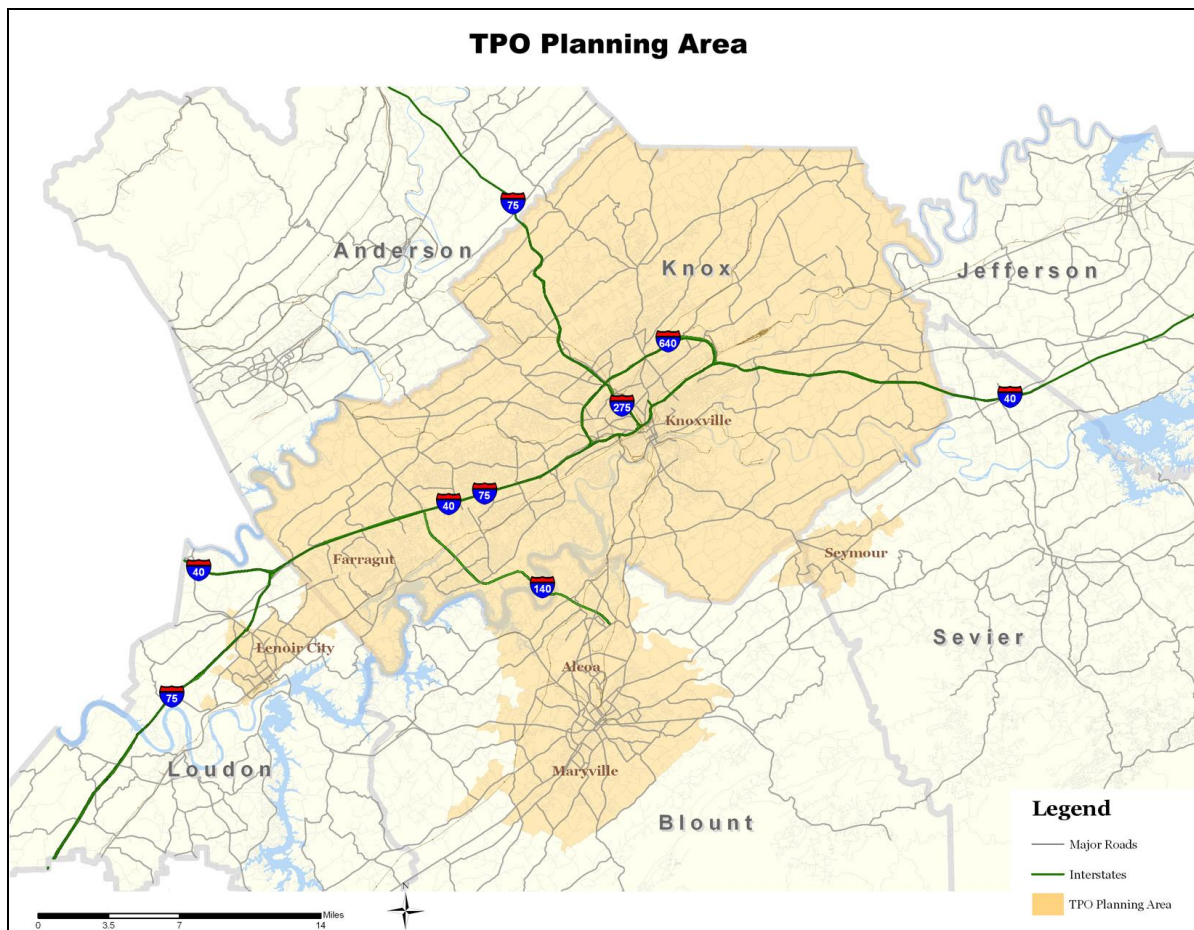
## **Regional Planning**

### ***Knoxville Regional Transportation Planning Organization***

The Knoxville Regional Transportation Planning Organization (TPO) is the federally designated Metropolitan Planning Organization (MPO) for the Knoxville Urban Area, which is the 2000 U.S. Census defined urbanized areas of Knox, Blount, Loudon, and Sevier counties. An MPO is a planning agency established by federal law to assure a continuing, cooperative, and comprehensive transportation planning process takes place that results in the development of plans, programs, and projects that consider all transportation modes and supports the goals of the community. Any urbanized area or contiguous urbanized areas, as defined by the U.S. Census Bureau, containing a population of greater than 50,000 are required to have an MPO. The planning boundaries of the TPO consist of all of Knox County and the 2000 Census defined urbanized portions of Blount, Loudon, and Sevier Counties, which includes the cities of Alcoa, Maryville, and Lenoir City and the unincorporated area of Seymour (Figure 1).

The Knoxville Regional Transportation Planning Organization's transportation planning process functions through an active committee structure. The TPO is composed of a 13 member Executive Board and a 22 member Technical Committee. The Executive Board is

**Figure 1: TPO Planning Area**



Source: Knoxville Regional TPO website

comprised of principal elected officials from the Town of Farragut, City of Alcoa, City of Maryville, Blount County, Loudon County, Lenoir City, Sevier County, the State of Tennessee, East Tennessee Development District, and two elected officials from both Knox County and the City of Knoxville. Specific planning activities and documents required of the TPO include:

#### Unified Planning Work Program (UPWP)

The Unified Planning Work Program, a document identifying the specific work tasks, funding source, and responsible agency, is prepared on an annual basis by the TPO with input from the Technical Committee. Each participant in the process provides a description of tasks to be accomplished, schedule for completion, and estimated cost. The elements of the Unified Planning Work Program must address the four functions of the continuing transportation planning process, namely, administration, surveillance, technical analysis, and plan reappraisal. The TPO participants shall carry out the elements of the Unified Planning Work Program.



### Long Range Transportation Plan (LRTP)

The Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) requires that each MPO with a population of at least 200,000 develop an intermodal transportation plan with at least a 20-year horizon. The plan must be updated every three years to keep consistent with existing conditions, reevaluate proposed plans, programs and projects, and validate air quality conformity analysis. The Long Range Transportation Plan is adopted by the TPO Executive Board and Regional Transportation Planning Council. In addition, the plan must include congestion management strategies, show costs, sources of revenue, and how the plan is financially constrained, reflect operations and management of the transportation system, and list all public involvement procedures and include all public comment on the plan. The current 2005-2030 Knoxville Regional Long Range Transportation Plan was adopted on April 11, 2005 and updated in September 2007.

### Transportation Improvement Program (TIP)

The Transportation Improvement Program documents the cooperatively developed program of projects selected by the Technical Committee to be implemented during the program period of three years. This document provides a description of each project, estimated cost, and year in which implementation activity is scheduled. The TIP must be financially constrained and meet air quality conformity requirements. It includes all federally funded projects and all regionally significant projects. The TPO Director initiates, coordinates, and prepares the Transportation Improvement Program for transmittal to TDOT for subsequent transmittal to the Federal Highway Administration and Federal Transit Administration.

### Congestion Management Systems (CMS) Plan

The Knoxville Urban Area is identified as a Transportation Management Area (TMA) because it contains a population of greater than 200,000. As a result, the TPO is responsible for developing a CMS Plan for the TPO Planning Area. There are six components of a CMS Plan that must be included: System Monitoring, Performance Measures, Congestion Identification, Mitigation Strategies, Implementation Strategy, and Monitoring of CMS Effectiveness.

### ***South Rural Planning Organization***

In December 2005, the Tennessee Department of Transportation established twelve Rural Planning Organizations (RPO) across the state. The purpose of the RPOs is to involve local stakeholders in areas outside MPOs in transportation planning and the transportation decision-making process. The RPOs consider multi modal transportation needs on a local and regional basis; review long-term needs and short-term funding priorities; and make recommendations to TDOT.

The RPOs are comprised of an Executive Board and a Technical Committee. Executive Board membership consists of county mayors, municipal mayors, state legislators, and other stakeholders. The Technical Committee membership consists of county and city appointees who are most knowledgeable about transportation issues in their community. The South RPO serves Anderson, Cocke, Jefferson, Monroe, and Roane counties and the portions of Blount, Loudon, and Sevier counties that are outside the Knoxville Regional Transportation Planning Organization's boundaries. The South RPO is coordinated by the East Tennessee Development District (ETDD).

## **County and City Planning**

### ***Blount County***

The Blount County Planning Department is a division of County government under the County Executive. The Department provides staff support to the Planning Commission, and general planning services to the County government and the public. The Department reviews subdivision plats, answers development questions posed by the public, provides data services to the public and other County departments, and supports long range planning efforts. The Blount County Planning Commission is responsible for planning the orderly development of the county. The Planning Commission has the prime responsibility for formulating and administering subdivision regulations. The Planning Commission has an advisory role in zoning regulations.

### ***City of Alcoa***

In the City of Alcoa, the planning office resides in the Planning and Codes Department, which is a division of City government under the City Manager. The planning staff provide support to the Alcoa Regional Planning Commission and Board of Commissioners, and general planning services to the city government and the public. The planning staff duties include:

- provide assistance to citizens regarding zoning, sign, and landscaping ordinances, subdivision regulations, and general land use issues;
- review rezoning, zoning, sign ordinance and landscaping ordinance text amendments;
- review subdivision requests;
- review site plans;
- review special exception, variance, zoning ordinance interpretation and appeal requests; and
- prepare community plans, such as comprehensive plans, land use plans, major road plans, etc.

The Alcoa Regional Planning Commission is responsible for guiding and accomplishing a coordinated and harmonious development of the City. The Planning Commission reviews and approves site and concept plans for the development and/or re-development of commercial, office, industrial and planned sites, as well as all minor and major subdivision plats. The Planning Commission also makes recommendations to the Board of Commissioners regarding amendments to the Comprehensive Plan and Maps, annexations, zoning assignments and re-designations, amendments to the Zoning and Land Use Control and Standards for Land Subdivision text, as well as any other recommendations which guide the City's growth and development.

### ***City of Maryville***

In the City of Maryville, all planning and development activities are coordinated by the Development Services Department. The divisions in this department include Economic Development, Current Planning, Long-Range Planning, Codes Enforcement, Special Projects, and Data Analysis/Mapping. The services provided by the Development Services Department are designed to support balanced and innovative development within the City and provide for future growth. The Current Planning Division reviews development proposals, codes and ordinances, and policies to ensure consistency with City policy and

land development code requirements. The Long-Range Planning Services Division conducts studies, produces plans, identifies program needs, and develops policies that promote the physical, economic, and social development of the community. The division advances the orderly growth of the community through long-range land use planning; environmental planning, small area planning, and corridor planning.

The Maryville City Council sets policy, approves the budget, and determines the tax rate.

## **Zoning**

Zoning is another key factor when it comes to analyzing land use since it implements land use planning in Blount County and the cities of Alcoa and Maryville. The link between planning and zoning is critical. Zoning controls are based on the planning principles set forth in approved and adopted plans. Although the recommendations in plans shape communities by recommending the location, type and density of land use, and proposing a desirable zone for particular tracts of land, these recommendations are largely implemented through the zoning process.

Zoning is the legal tool to implement plan recommendations and is a legislative action taken by the governing bodies. Zoning involves imposing specified conditions regulating the use of a particular parcel or parcels of land.

## **2.0 ELEMENTS OF INDIRECT AND CUMULATIVE EFFECTS**

### **2.1 Resources**

**Resources that would be directly impacted by the proposed in order to determine environmental resources to be evaluated Cumulative Effects Analysis.**

Table 1 lists those resources assessed in the indirect and cumulative effects analysis. Boundaries for these resources were used to create the overall ICI boundary.

## **2.2 Geographical Boundaries**

The ICI boundaries cover sufficient area to allow for flexibility in the development of alternatives and encompasses all areas that may be directly affected. Indirect and cumulative effects are further removed from the project alternatives than direct impacts; therefore, the geographic limits for the analysis of indirect and cumulative effects reach beyond the defined project study area.

Multiple resource boundaries were reviewed to determine appropriate ICI boundaries using the environmental resources that may be affected by direct or indirect impacts of the project as a guide. The boundaries identified for the ICI analysis are listed below and described in the following sections.

**Table 1: ICI Resources**

<b>Resource</b>
Residences and Businesses
Farmlands
Cultural Resources -Historic Resources -Archaeological Resources
Socio-Economic Resources
Recreational Resources
Physical Environment -Floodplains and Hydrology
Natural Resources -Terrestrial Resources -Aquatic Resources -Wetlands -Threatened and Endangered Species
Visual Resources
Air Quality
Climate Change

- Alternatives/Study Area Boundary
- Induced Development Boundary
- Natural Resources Boundary
- Visual Resources Boundary
- Air Quality Boundary

### **2.2.1 Alternatives/Study Area Boundary**

The Alternatives/Study Area boundary was included in the ICI analysis since it contains the direct impacts from the build alternatives. The study area boundary is the area expected to contain the direct impacts of the No Build and Build Alternatives. Alternatives mapping and the study area boundary were overlaid to ensure the ICI boundary encompasses the entire project study area. It should be noted that the ICI boundaries extend beyond the Alternatives Study Area Boundary.

### **2.2.2 Induced Development**

The Induced Development boundary was used in the analysis for indirect and cumulative impacts to farmlands, cultural resources, and socio-economic elements. The boundary extends across portions of Alcoa, Maryville, Louisville, Rockford and unincorporated areas of Blount County. Because induced development effects are further removed from the project than direct impacts, the geographic limits for this analysis extend beyond the Alternatives/Study Area Boundary. The study area boundary includes the boundary of the study area for the economic study, which extends roughly 5 miles beyond the midpoint of proposed project corridor in all directions, and the Urban Growth Boundaries (UGBs) for Alcoa and Maryville and the Planned Growth Areas (PGAs) boundaries for Blount County.

### **2.2.3 Natural Resources**

The Watershed boundary was used to assess potential indirect and cumulative impacts to natural environmental resources affected by the project, specifically wetlands, streams, aquatic habitat, terrestrial habitat, floodplains and threatened and endangered species.

### **2.2.4 Visual Resources**

The Visual Resources boundary was used to assess potential impacts to visual resources. This boundary for the ICI visual resources analysis is larger than that for direct visual resources impacts.

### **2.2.5 Air Quality**

The Air Quality boundary was used to assess potential indirect and cumulative impacts to air quality. This boundary matches the Environmental Protection Agency (EPA) PM<sub>2.5</sub> non-attainment boundary for the region and incorporates the ozone non-attainment boundary.

## **2.3 Time Frames**

An ICI analysis must address three time frames: past, present and reasonably foreseeable future. Below is a description of each time frame.

### **Past Actions**

Past actions are defined as actions that occurred before the project was initiated that may have influenced population and land use in the project area. Examples of past actions include events such as the construction of major roads, planning milestones, such as the implementation of land use policies and plans, the opening or expansion of major employers, etc.

### **Present Actions**

Present actions include all existing or current activities that are currently influencing population and land use. Often the present time frame includes near-future actions that are likely to occur three to five years out from the current year.

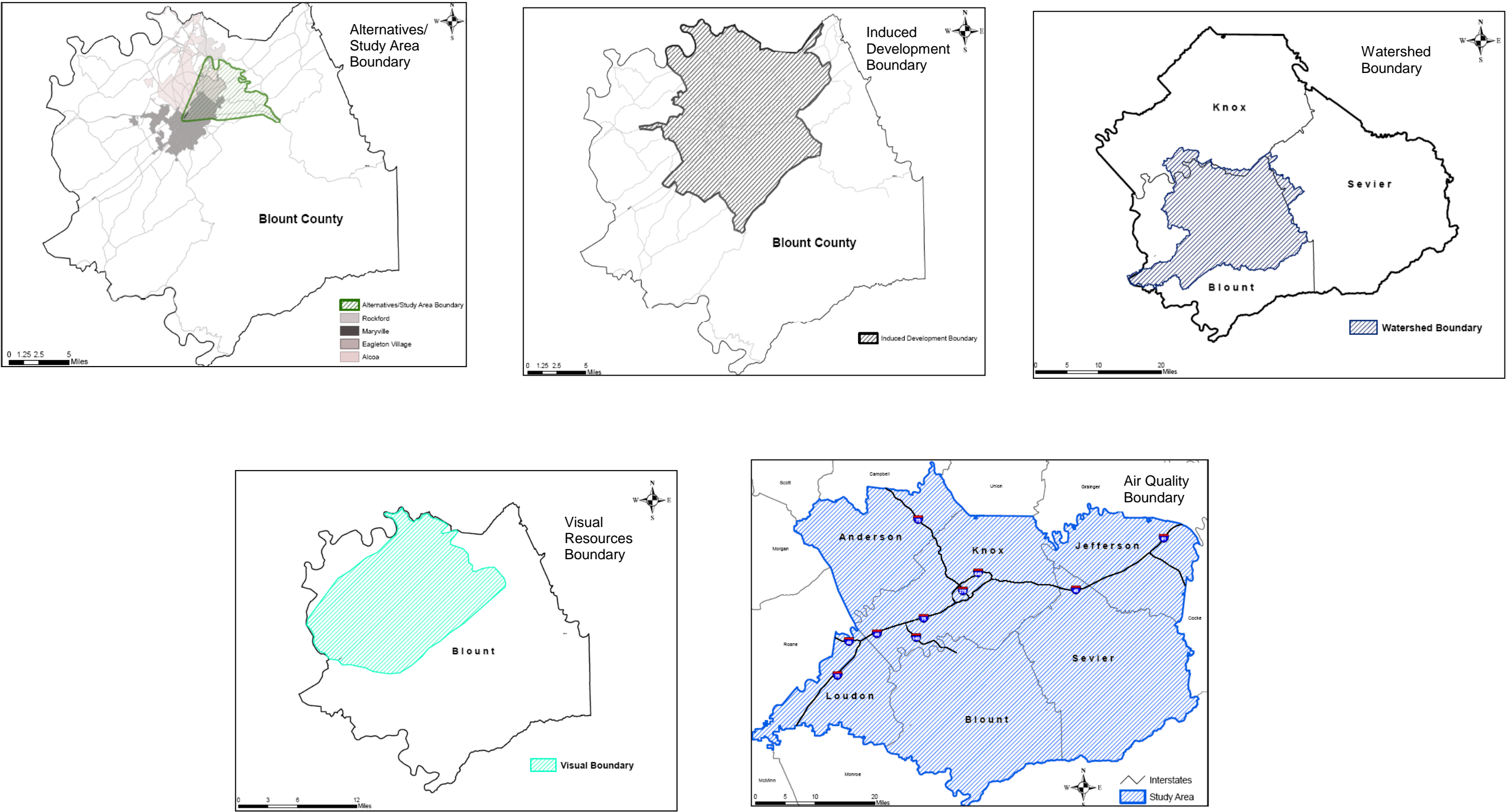
### **Reasonably Foreseeable Future Actions**

Reasonably foreseeable future actions include actions in the planning or budgeting phase that may influence future population and land use trends. Examples include the improvement of existing roads, construction of new roads and other transportation improvements; construction of new subdivisions, employment centers, etc.

### **2.3.1 Past and Present Time Frame**

The types of data collected to determine the past time frame include events in the historic context of the area that may have influenced population and land use. The historic timeline of significant events is shown in Table 2.

Figure 2: ICI Study Boundaries



**Table 2: Historic and Projected Timeline of Significant Events**

Population	Transportation Event	Land Use Event
1900-1909	1900	Blount County population is 19,206.
	1906	Branch line of the Louisville-Nashville Railroad arrives in Maryville.
	1907	Town of Maryville incorporated.
1910-1919	1910	Blount County population is 20,809.
	1910	Alcoa Aluminum begins program of dam building to furnish power to smelting operations.
	1913	First Alcoa smelter opens
	1916	Maryville's first water system completed.
	1919	City of Alcoa chartered.
1920-1929	1920	Blount County population is 28,800.
	1920	First Alcoa fabrication operation begins.
	1929	McGhee – Tyson Airport established as a private airfield at Alcoa).
1930-1939	1930	Blount County population is 33,989.
	1930	Construction begins on US 321.
	1933	TVA created by US Congress; begins construction of dams/reservoirs in Tennessee Valley, including Ft. Loudon Dam and Reservoir.
	1934	Land acquisition begins for Great Smoky Mountains National Park (1/3 of park land in Blount County).
	1935	Expansion of McGhee – Tyson Airport begins.
	1939	US 411 extended from Georgia to Maryville.
1940-1949	1940	Blount County population is 41,116.
	1940	Great Smoky Mountains National Park dedicated by President Roosevelt.
	1947	Blount Memorial Hospital opens.
1950-1959	1950	Blount County population is 54,691. Alcoa population is 6,355. Maryville population is 7,742.
	1951	US 411 extended from Maryville to Greenville.
	1952	Alcoa Zoning Ordinance adopted.



Population	Transportation Event	Land Use Event
1960-1969	<b>1960</b>	Blount County population is 57,525. Alcoa population is 6,395. Maryville population is 10,348.
	<b>1960s</b>	City of Maryville annexes land from Blount County.
1970-1979	<b>1970</b>	Blount County population is 63,744. Alcoa population is 7,739. Maryville population is 13,808.
	<b>1970s</b>	City of Maryville annexes land from Blount County.
	<b>1977</b>	Pellissippi Parkway constructed from Oak Ridge Highway (SR 162) to I-40/I-75, connecting Farragut and Knoxville.
1980-1989	<b>1980</b>	Blount County population is 77,770. Alcoa population is 6,870. Maryville population is 17,400.
	<b>1980s</b>	City of Maryville annexes land from Blount County.
	<b>1982</b>	World's Fair held in Knoxville, received over 11 million visitors.
	<b>1986</b>	Pellissippi Parkway extension included in 1986 Urgent Highway Needs Plan enacted by the General Assembly.
	<b>1988</b>	Land development regulations adopted by City of Maryville.
	<b>1989</b>	Expansion of Blount County Industrial Park in Maryville begins.
1990-1999	<b>1990</b>	Blount County population is 85,969. Alcoa population is 6,400. Maryville population is 19,208.
	<b>1990</b>	1990-2010 General Plan for Maryville developed.
	<b>1990s</b>	City of Maryville annexes land from Blount County.
	<b>1992</b>	Pellissippi Parkway between Northshore Drive in Knox County and US 129 (Alcoa Highway) in Blount County completed.
	<b>1997</b>	Original section of Pellissippi Parkway extended to Northshore Drive.
	<b>1998</b>	Public Chapter 1101 enacted.
	<b>1999</b>	Blount County Policies Plan approved.

Population	Transportation Event	Land Use Event
	<b>1999</b>	Maryville Urban Growth Plan adopted.
2000-2009	<b>2000</b>	Blount County population is 105,823. Alcoa population is 7,734. Maryville population is 23,120.
	<b>2000</b>	Conceptual Land Use Plan for Blount County adopted.
	<b>2003</b>	Pellissippi Parkway between US 129 and Cusick Road opened.
	<b>2005</b>	Pellissippi Parkway between Cusick Road and SR 33 opened.
	<b>2006</b>	City of Alcoa 2025 Comprehensive Plan.
	<b>2006</b>	Maryville Zoning and Land Use Ordinance adopted.
	<b>2008</b>	Revised Blount County Policies Plan adopted.
	<b>2009</b>	Blount County Green Infrastructure Plan developed.
2010 – 2019	<b>2010</b>	Blount County projected population is 123,830. Alcoa projected population is 8,909. Maryville projected population is 27,734.
2020 - 2029	<b>2020</b>	Blount County projected population is 151,018. Alcoa projected population is 10,682. Maryville projected population is 34,373.

The past time frame of 1977 marks the construction of the section of Pellissippi Parkway from Oak Ridge Highway (SR 162) to I-40/I-75, connecting Farragut to Knoxville via a four-lane divided highway to the interstate. The development of an improved system of roadways in the region helped improve accessibility and mobility throughout the region. As Pellissippi Parkway was developed, it linked Blount County to a larger regional economy. As roadways were expanded in the area, such as US 411, sewer also was expanded, in turn stimulating development. An expansion of the tourism industry, driven in large part by the development of the Great Smoky Mountains National Park has also influenced land use in the region.

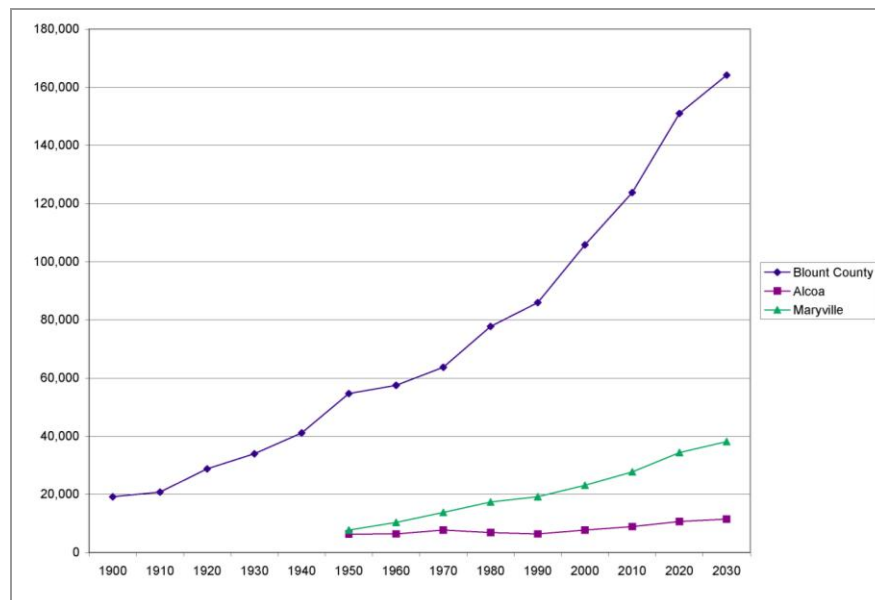
It was determined that three years from present (2012) would adequately assess the present/near future timeframe, particularly given the current economic downturn.

## General Population Trends

Population data within the ICI boundary were analyzed to determine trends and a suitable past time frame based on existing population census data. Population data from 1900 to 2000 for Blount County and from 1950 to present for Alcoa and Maryville (dates for which city/town level population data was available). Figure 3 highlights population trends between the 1900s until 2030.

The 1970s time frame was evaluated since the population in Blount County grew significantly throughout the 1970s (22 percent). Growth in the county slowed to 10.5 percent between 1980 and 1990 and accelerated again between 1990 and 2000 (23 percent). Population in Maryville grew 199 percent between 1950 and 2000. Much of the growth between 1950 and 1990 was due in large part to annexation, which according to the Maryville 2010 Plan, reflects a significant trend toward urbanization. The Plan also acknowledges that factors contributing to the increase include economic development and job growth and in-migration related to retirement location decisions.

**Figure 3: Population Trends**



Source: US Census

### 2.3.2 Future Time Frame

The future time frame of 2030 was determined based primarily on the planning horizon for most of the land use planning documents. In addition, population projections are available through 2030, allowing a more accurate depiction of future population within the ICI boundary.

## 3.0 DATA AVAILABILITY AND ANALYSIS METHODOLOGY

The availability of data was identified at the beginning of the ICI analysis and is summarized in

Table 4.

**Table 3: Data Availability and Analysis Methodology**

. The table shows the resources used in the analysis and the data used for determining potential indirect and cumulative effects.

Maps of socioeconomic, cultural and natural resources were overlaid on current and future land use maps to determine if indirect or cumulative development would affect that resource. Trend analyses, matrices and overlays comparing past conditions to existing conditions assessed probable future conditions within the ICI boundary and time frames.

Table 4.

**Table 3: Data Availability and Analysis Methodology**

shows methods used to perform the analysis for each resource incorporated in the ICI analysis. Planning documents that were used in the various analyses are listed in

Table 4.

**Table 3: Data Availability and Analysis Methodology**

<b>Resource</b>	<b>Analysis Methodology</b>	<b>Data Availability/Sources</b>
<i>Land Use</i>	The potential for indirect and cumulative impacts on land use was determined by examining current land use plans and policies; comprehensive plans; growth policies; urban growth boundary maps; past and present residential development trends; commercial trends; census data; and economic forecasts.	Comprehensive Plans (Blount County, Alcoa); Growth Policies (Blount County); Urban Growth Boundary mapping (Blount County, Alcoa, Maryville), Census Tract Data (US Census), Land Use Mapping (Blount County GIS, City of Alcoa)
<i>Farmlands</i>	<p>The potential for indirect and cumulative impacts to agricultural land was determined by overlaying historic aerial photography where available with existing land use mapping to evaluate development activities that impacted past agricultural lands (i.e., construction of roadways, changes in land use, residential and commercial development, etc.) Present (near future) and future agricultural impacts were also assessed by overlaying existing resource mapping with future land use maps and urban growth boundary maps.</p> <p>Trends in agricultural land use were identified by comparing past and present agriculture census data for the area.</p>	Comprehensive Plans (Blount County, Alcoa); Growth Policies (Blount County); Urban Growth Boundary mapping (Blount County, Alcoa, Maryville), Census Tract Data (US Census), Land Use Mapping (Blount County GIS, Alcoa), County Soil Survey (NRCS), US Agriculture Census, Historical aerial photography, US Department of Agriculture (USDA).
<i>Cultural Resources</i>	The potential for indirect and cumulative impacts on cultural resources was determined by overlaying existing resource mapping with future land use maps and urban growth boundary maps. When assessing present and future impacts, existing laws currently implemented to protect these resources were considered. This analysis methodology is based on current data. Private development projects are not held to the same standard of protection for these resources as are state and federally-funded projects, which must comply with state and federal regulations.	Historic and archaeological survey reports (SHPO), land use mapping, urban growth boundary mapping.

<b>Resource</b>	<b>Analysis Methodology</b>	<b>Data Availability/Sources</b>
<i>Socio-Economic Resources</i>	An input-output based economic impact modeling approach was employed to determine potential induced impacts of the project. RIMS II economic multipliers from the US Bureau of Economic Analysis were used as a foundation for the economic impact model.	Knoxville Regional Travel Demand Model, Blount County property tax assessment data, TAZ data, land use and zoning plans, policies, and urban growth boundaries (Blount County, Alcoa, Maryville)
<i>Recreational Resources</i>	The potential for indirect and cumulative impacts on the Great Smoky Mountains National Park was determined by examining visitation numbers and travel time savings of the project.	Visitation data (Great Smoky Mountains National Park), Pellissippi Economic and Fiscal Impact Analysis, 2009 (PB)
<i>Visual Resources</i>	The potential for indirect and cumulative visual impacts was determined by overlaying existing land use mapping, future land use mapping and topographic maps of the area to determine potential areas of encroachment into key viewsheds (i.e. Smoky Mountains National Park).	Land Use Mapping (Blount County GIS, Alcoa), topographic mapping (USGS).
<i>Air Quality</i>	The potential for indirect and cumulative impacts on air quality was determined through a regional analysis and review of the regional long range transportation plan. The plan includes a transportation conformity determination for the entire region, as it accounts for future emissions from all mobile sources and ensures that attainment for ozone and PM <sub>2.5</sub> will not be delayed by future projects.	2005-2030 Knoxville Regional Long Range Transportation Plan, adopted September 24, 2007. Air Quality Technical Report for Pellissippi Parkway Extension, June 2009.
<i>Floodplains</i>	The potential for potential for indirect and cumulative floodplain impacts was determined by overlaying present and future land use maps, urban growth boundary maps, future road projects listed in the TIP and LRTP on floodplain maps. When assessing present and future impacts, existing laws currently being implemented to protect floodplains were considered.	Comprehensive Plans (Blount County, Alcoa); Growth Policies (Blount County); Regional Long Range Transportation Plan, Urban Growth Boundary mapping (Blount County, Alcoa, Maryville), Land Use Mapping (Blount County GIS, Alcoa, Maryville), zoning maps (Blount County, Alcoa, Maryville), FEMA FIRM maps.

<b>Resource</b>	<b>Analysis Methodology</b>	<b>Data Availability/Sources</b>
<i>Terrestrial Habitat and Wildlife</i>	The potential for indirect and cumulative impacts on terrestrial habitat and wildlife was determined by overlaying present and future land use maps, urban growth boundary maps, future road projects listed in the TIP and LRTP on maps of current habitat. The Blount County Green Infrastructure Plan was also reviewed for identification of areas that the county thinks it is important to preserve.	Comprehensive Plans (Blount County, Alcoa); Growth Policies (Blount County); Regional Long Range Transportation Plan, Urban Growth Boundary mapping (Blount County, Alcoa, Maryville), Land Use Mapping (Blount County GIS, Alcoa, Maryville), zoning maps (Blount County, Alcoa, Maryville), Blount County Green Infrastructure Plan
<i>Aquatic Habitat and Wildlife (Water Quality)</i>	The potential for indirect and cumulative impacts on aquatic habitat and wildlife was determined by overlaying present and future land use maps, urban growth boundary maps, future road projects listed in the TIP and LRTP on a map showing the streams/water resources in the area. The Blount County Green Infrastructure Plan was also reviewed for identification of areas that the county thinks it is important to preserve.	Comprehensive Plans (Blount County, Alcoa); Growth Policies (Blount County); Regional Long Range Transportation Plan, Urban Growth Boundary mapping (Blount County, Alcoa, Maryville), Land Use Mapping (Blount County GIS, Alcoa, Maryville), zoning maps (Blount County, Alcoa, Maryville), Blount County Green Infrastructure Plan
<i>Wetlands</i>	The potential for indirect and cumulative wetland impacts was determined by overlaying present and future land use maps, urban growth boundary maps, future road projects listed in the TIP and LRTP on wetland maps. When assessing potential impacts, existing laws currently being implemented to protect wetlands were considered.	Comprehensive Plans (Blount County, Alcoa); Growth Policies (Blount County); Regional Long Range Transportation Plan, Urban Growth Boundary mapping (Blount County, Alcoa, Maryville), Census Tract Data (US Census), Land Use Mapping (Blount County GIS, Alcoa), zoning maps (Blount County, Alcoa, Maryville), National Wetland Inventory (NWI) maps.



<b>Resource</b>	<b>Analysis Methodology</b>	<b>Data Availability/Sources</b>
<i>Threatened and Endangered Species</i>	<p>The potential for indirect and cumulative impacts to threatened and endangered species was determined by identifying areas of suitable habitat for the species and overlaying present and future land use maps, urban growth boundary maps and future road projects listed in the TIP and LRTP.</p> <p>When assessing present and future impacts, existing laws currently implemented to protect these resources were considered.</p>	<p>Comprehensive Plans (Blount County, Alcoa); Growth Policies (Blount County); Regional Long Range Transportation Plan, Urban Growth Boundary mapping (Blount County, Alcoa, Maryville), Census Tract Data (US Census), Land Use Mapping (Blount County GIS, Alcoa), zoning maps (Blount County, Alcoa, Maryville), Natural Heritage database for threatened and endangered species.</p>

**Table 4: Planning Documents Used in ICI Analysis**

<b>Tennessee</b>
<ul style="list-style-type: none"> <li>Public Chapter 1101</li> </ul>
<b>Knoxville Regional Transportation Planning Organization</b>
<ul style="list-style-type: none"> <li>Draft 2009 – 2034 Regional Mobility Plan, 2009</li> <li>Draft Air Quality Conformity Determination Addressing the PM 2.5 and Ozone Standards for the Knoxville Regional 2009 – 2034 Long Range Mobility Plan and the Lakeway Area Metropolitan Transportation Organization 2034 Long Range Transportation Plan, 2009</li> <li>2005 – 2030 Knoxville Regional Long Range Transportation Plan Update, 2007</li> </ul>
<b>Blount County</b>
<ul style="list-style-type: none"> <li>Blount County Zoning Map, 2009</li> <li>Blount County Green Infrastructure Plan, 2009</li> <li>Revised Blount County Policies Plan, 2008</li> <li>Revised Blount County Zoning Regulations, 2006</li> <li>Blount County Growth Strategy, 2005</li> <li>Blount County Urban Growth Plan</li> <li>Blount County Land Use Concept Plan, 2000</li> </ul>
<b>City of Alcoa</b>
<ul style="list-style-type: none"> <li>City of Alcoa Zoning Map, 2008</li> <li>Major Thoroughfare Map, 2008</li> <li>City of Alcoa Future Land Use Map, 2007</li> <li>2025 Comprehensive Plan, 2006</li> <li>City of Alcoa Zoning Ordinance, 2002</li> <li>Alcoa Urban Growth Plan</li> </ul>
<b>City of Maryville</b>
<ul style="list-style-type: none"> <li>City of Maryville Annexation History Map, 2009</li> <li>City of Maryville Maryville Zoning Map, 2009</li> <li>City of Maryville Future Land Use Map</li> <li>City of Maryville Zoning and Land Use Ordinance, 2006</li> <li>Maryville Urban Growth Plan, 1999</li> <li>Maryville 1990 – 2010 General Plan</li> </ul>

## 4.0 LAND USE AND DEVELOPMENT

### 4.1 Past Land Use

Past land use maps from 1977 were not available for Blount County, or the cities of Alcoa and Maryville. Maps prepared by the Blount County Planning Department showing residential growth in county between 1950 and 1999 were available and were utilized in this analysis (Figure 4).

As can be seen in the residential growth maps in Figure 4, residential growth between 1950 and 1999 tended to occur most densely along and to the south of US 411 and along US 321 (Lamar Alexander Parkway) and SR 33 (Old Knoxville Highway). In the 1970's, residential and agricultural land were the dominant uses within the study boundaries, with commercial land uses located primarily along the arterials. The shift from rural to suburban land uses is evident between 1950 and the present.

## **4.2 Present Land Use**

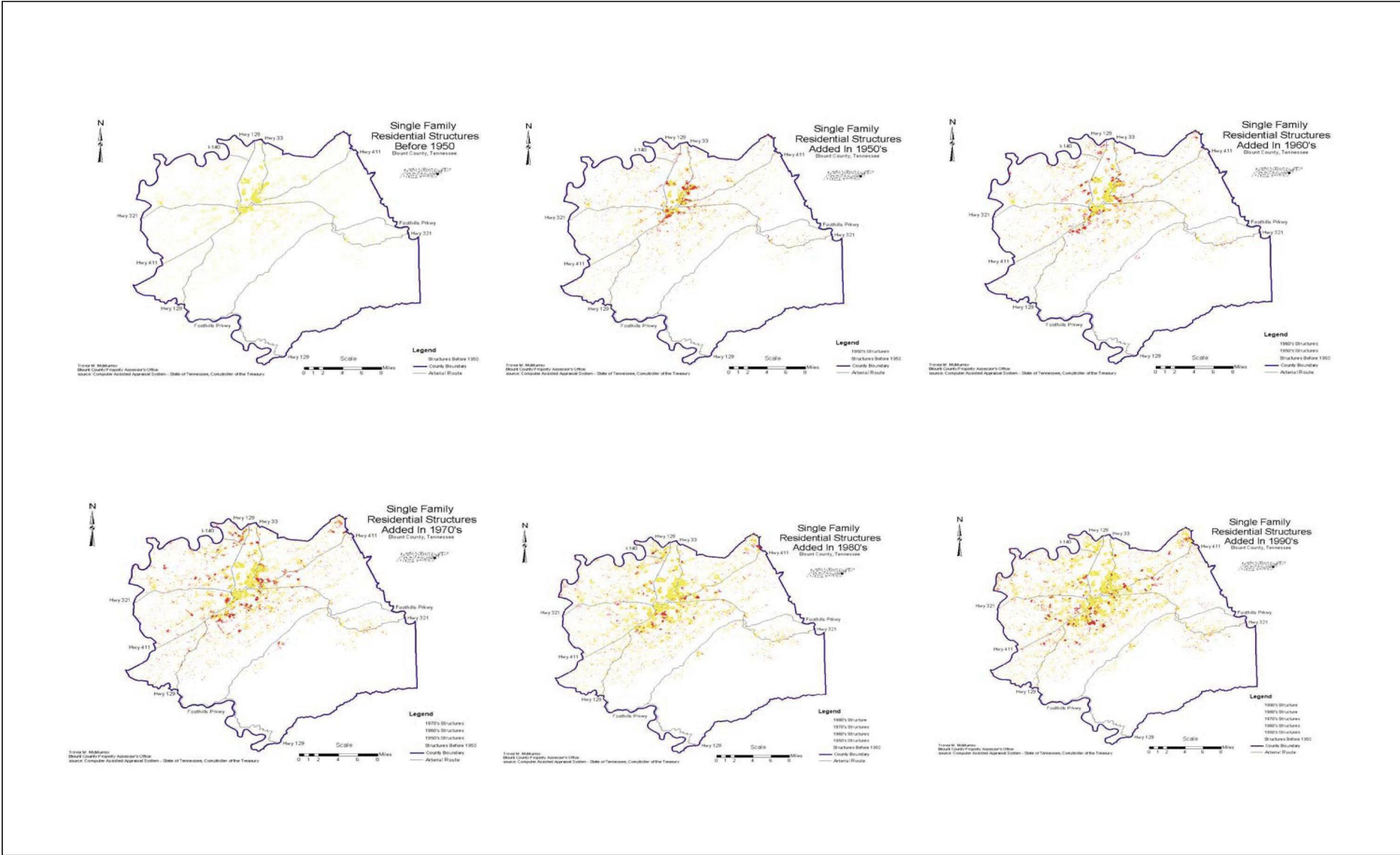
Land use data from the Blount County GIS was used to analyze present land use trends. Current land uses are shown in Figure 5.

Residential development in the area is primarily composed of single-family dwellings, with some mobile homes and condominiums. Commercial uses in the project area are primarily along SR 33 and along US 321. They consist primarily of small or fast food restaurants, local retail shops and gas/convenience stations. In addition, several small-scale farming operations are in the project area.

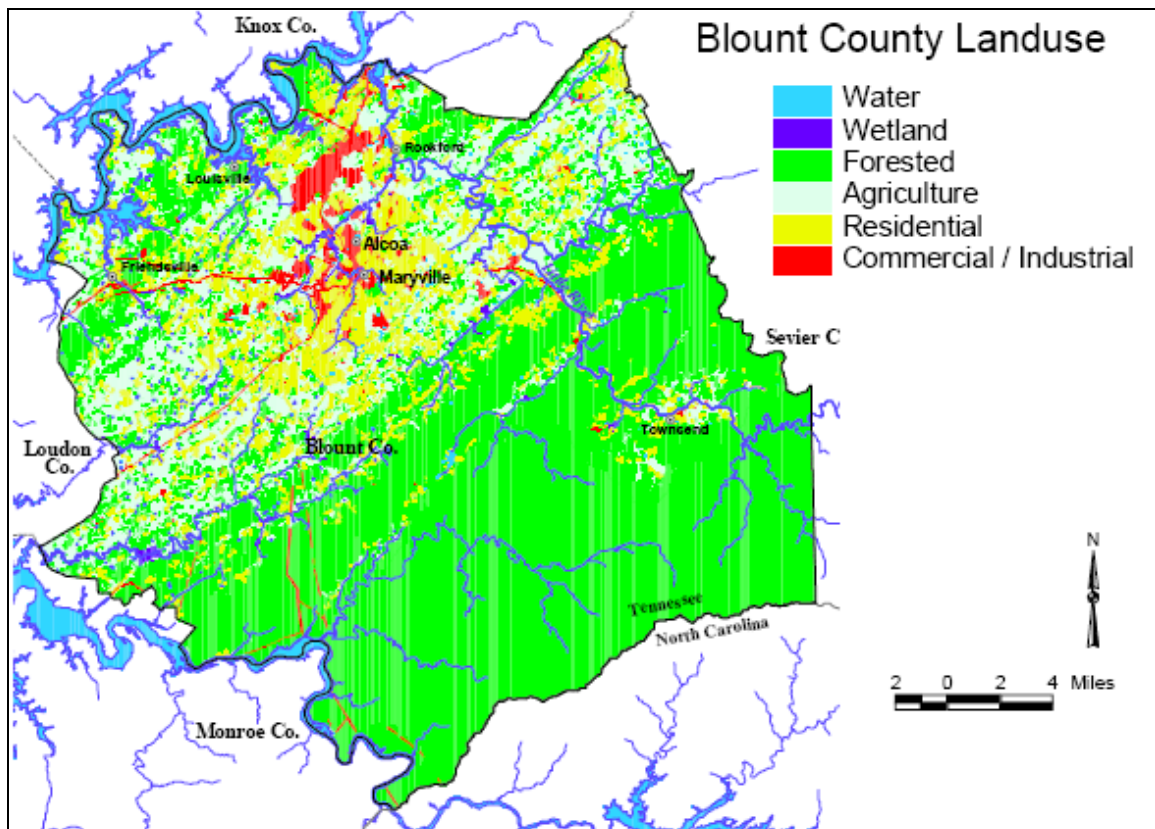
Most of the industrial development is centered in Maryville and Alcoa and along I-140, US 129/Alcoa Highway, and US 321, to the west of the project area. A large industrial enterprise is at the northern edge of the project area; Clayton Homes, Inc. is a modular and manufactured housing company headquartered in Maryville. This operation is situated on the west side of SR 33, south of the half interchange with Pellissippi Parkway (I-140).

For the existing land uses in the area, Blount County and the Cities of Maryville and Alcoa enforce zoning and land use ordinances. Alcoa and Maryville have established Urban Growth Boundaries (**Error! Reference source not found.**).

Figure 4: Residential Growth Between 1950 and 1999

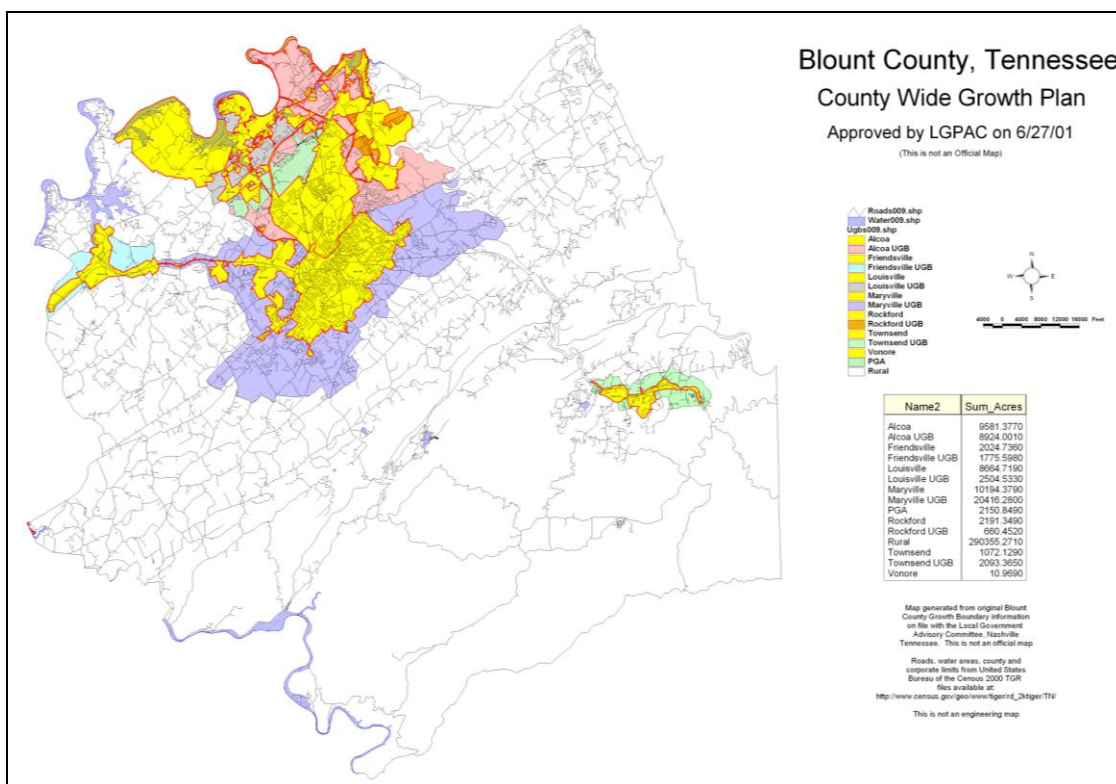


**Figure 5: Current Land Use**



Source: Blount County Planning Department



**Figure 6: Urban Growth Boundaries**

### 4.3 Future Land Use

**Future development is defined as development within the ICI boundary that would occur between the 2010 and 2030 timeframe. Blount County, Alcoa and Maryville each have future land use plans (Figure 8**

Figure 9, and Figure 10). In addition, Blount County adopted a Green Infrastructure Plan in July 2009. The purpose of the Green Infrastructure Plan is to focus on why green infrastructure is important, identify avenues of implementation, identify priority geographical areas for green infrastructure to guide future activities, and identify and prioritize actions and resources necessary to address green infrastructure. The planning process for the Green Infrastructure included a series of eight mapping workshops where the public participated in identifying priority areas within the county and its municipalities. A separate workshop, with the same format, was held for members of the planning commissions. Two major geographical areas were identified as top priority. The first priority was the Little River. The second priority was the Chilhowee Mountain range, including Happy Valley and West Millers Cove to the south bordering the Great Smoky Mountains National Park; parts of East Millers Cove to the south of Chilhowee Mountain and northeast of the Little River; and the knobs or hills to the immediate north of Chilhowee Mountain.

Identified future land use within the area includes the following:

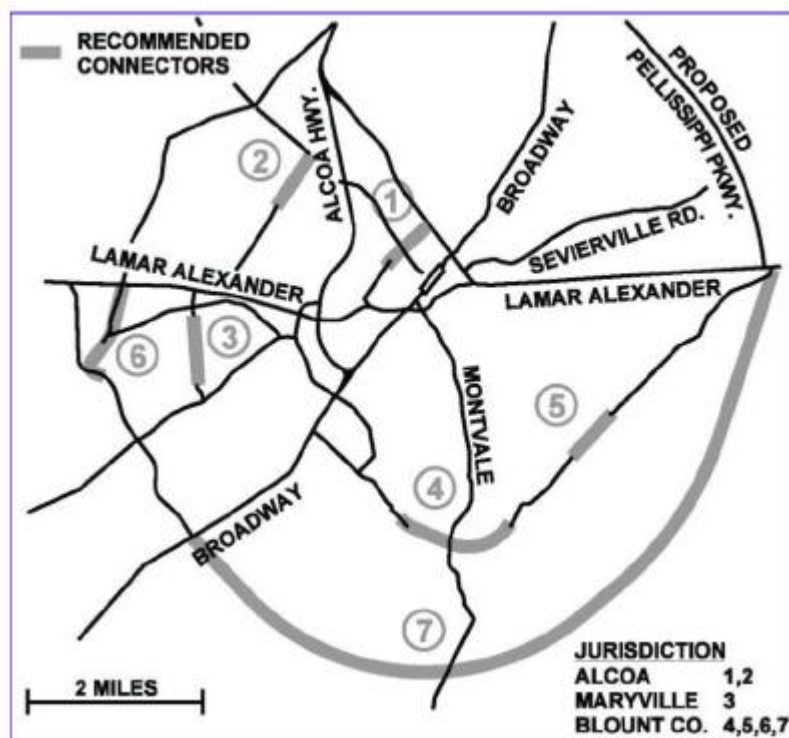
Projects in the TPO's 2008 – 2011 Transportation Improvement Plan (TIP):

- **Alcoa Highway Bypass (Relocated Alcoa Highway)** – TDOT and the TPO are currently investigating the feasibility of constructing a bypass of Alcoa Highway (US 129/SR 115) from near Hall Road to South Singleton Station Road to allow through traffic to bypass the extensive commercial area known as the Motor Mile. This roadway is also referred to as Relocated Alcoa Highway. The existing road currently serves multiple purposes including providing local business access; carrying traffic to and from the McGhee Tyson Airport; serving as the primary commuting route to and from Knoxville; and providing access from the I-40/Knoxville area and points west to the southern end of the Great Smoky Mountains National Park and nearby recreational opportunities. As Blount and Knox counties have continued to grow, these contrasting priorities for the roadway have adversely affected safety and capacity on US 129.
- **Alcoa Highway Improvements** – This project proposes improving Alcoa Highway (US 129/SR 115) from Pellissippi Parkway to south of the Little River from four lanes to six lanes.
- **Foothills Parkway** – This project would construct the two-lane section of the Foothills Parkway from US 321 to the Sevier County Line.

Projects in the TPO's 2005 – 2030 Long Range Transportation Plan (LRTP):

- **Peppermint Road From Wildwood Road to Sevierville Road (US 411)**– This project proposes to reconstruct this section of Peppermint Road. The timeframe for this project is 2020.
- **Broadway Avenue (SR 33) From Old Niles Ferry Road to Wildwood Road** – This project proposes widen this section of Broadway Avenue (SR 33) from two lanes to four lanes. The timeframe for this project is 2030.
- **Corridors 1-7** – These projects were initially proposed in the 2005 *Blount County Growth Strategy* developed by Hunter Interests, Inc. Corridors 1-5 would help to create a series of circumferential roads to help improve circumferential connectivity around Maryville (Figure 7). Corridor 7 would create a two-lane southern loop that would create a bypass of Maryville for through traffic. This project would be approximately 13 miles long on new location. Corridors 1 and 6 propose to reconstruct a two-lane section of roadway. Corridor 2 proposes to construct a new five-lane road. Corridors 3, 4, and 5 propose to construct new two-lane roads. The proposed timeframe for Corridors 1, 2, 4, and 5 is 2014. The proposed timeframe for Corridors 3 and 6 is 2020. The proposed timeframe for Corridor 7 is 2030.

**Figure 7 Proposed Circumferential Corridors**



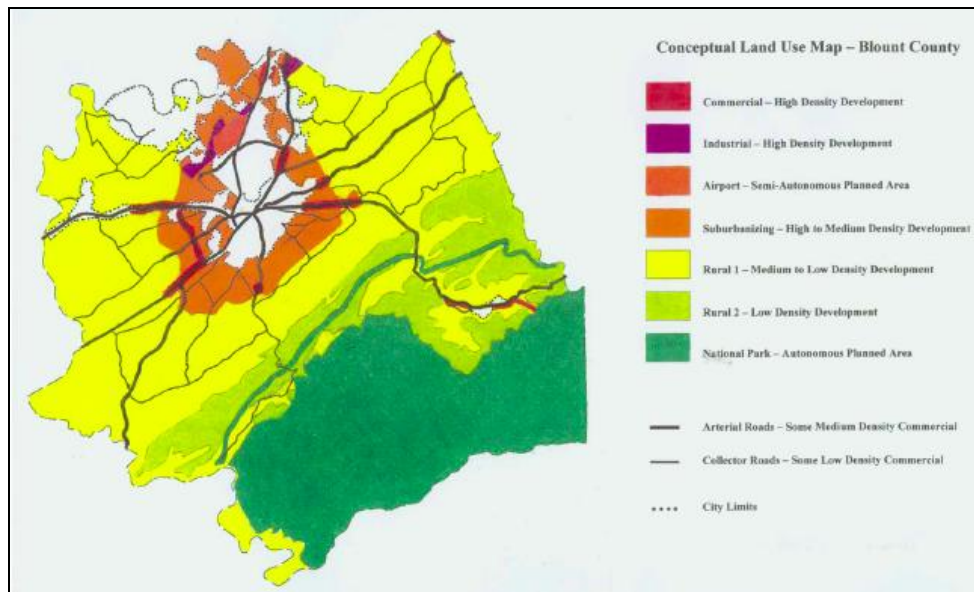
Source: 2005 Blount County Growth Strategy, Hunter Interests, Inc.

Other projects:

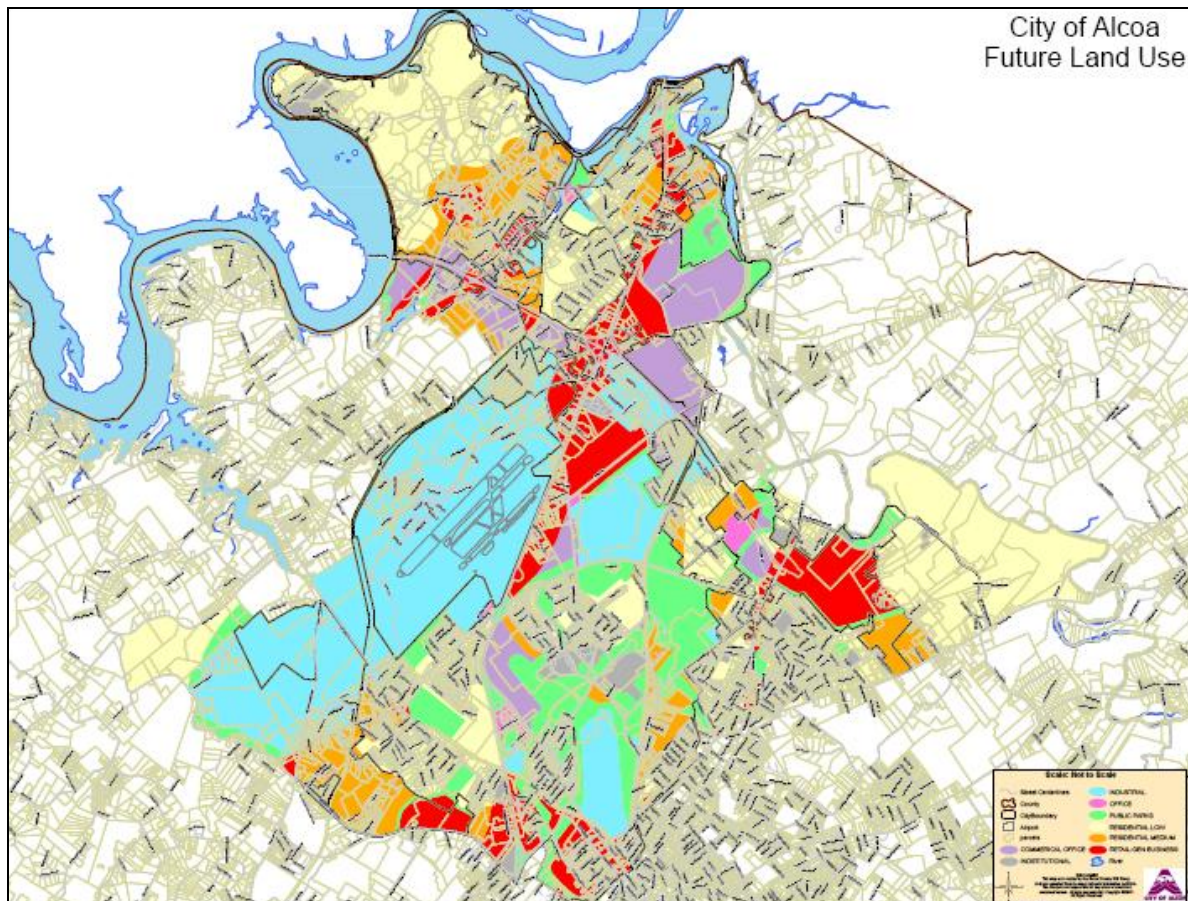
- **Pellissippi Place Research and Development Park** – The cities of Alcoa and Maryville, and Blount and Knox counties have partnered to facilitate the development of the new 550-acre Pellissippi Place, a mixed-use development on the southeastern side of SR 33, immediately across from the current terminus of Pellissippi Parkway (I-140). Pellissippi Place is intended to complement the high-tech environment of the Oak Ridge National Laboratory in Knox County, providing space for high-tech business and research firms, as well as retail and residential uses. The business and research component of Pellissippi Place is projected to open in 2010. Employment in the Pellissippi Place complex is estimated at about 4,300 by 2014 and by 2030, the projection is for approximately 7,400 employees. Local officials see the extension of Pellissippi Parkway as an important component in the financial viability of the park. Preliminary plans for the development anticipate the completion of Pellissippi Parkway as it was conceived during the EA stage.



**Figure 8: Blount County Future Land Use Map**



**Figure 9: City of Alcoa Future Land Use Map**



**Figure 10: City of Maryville Future Land Use Map**

