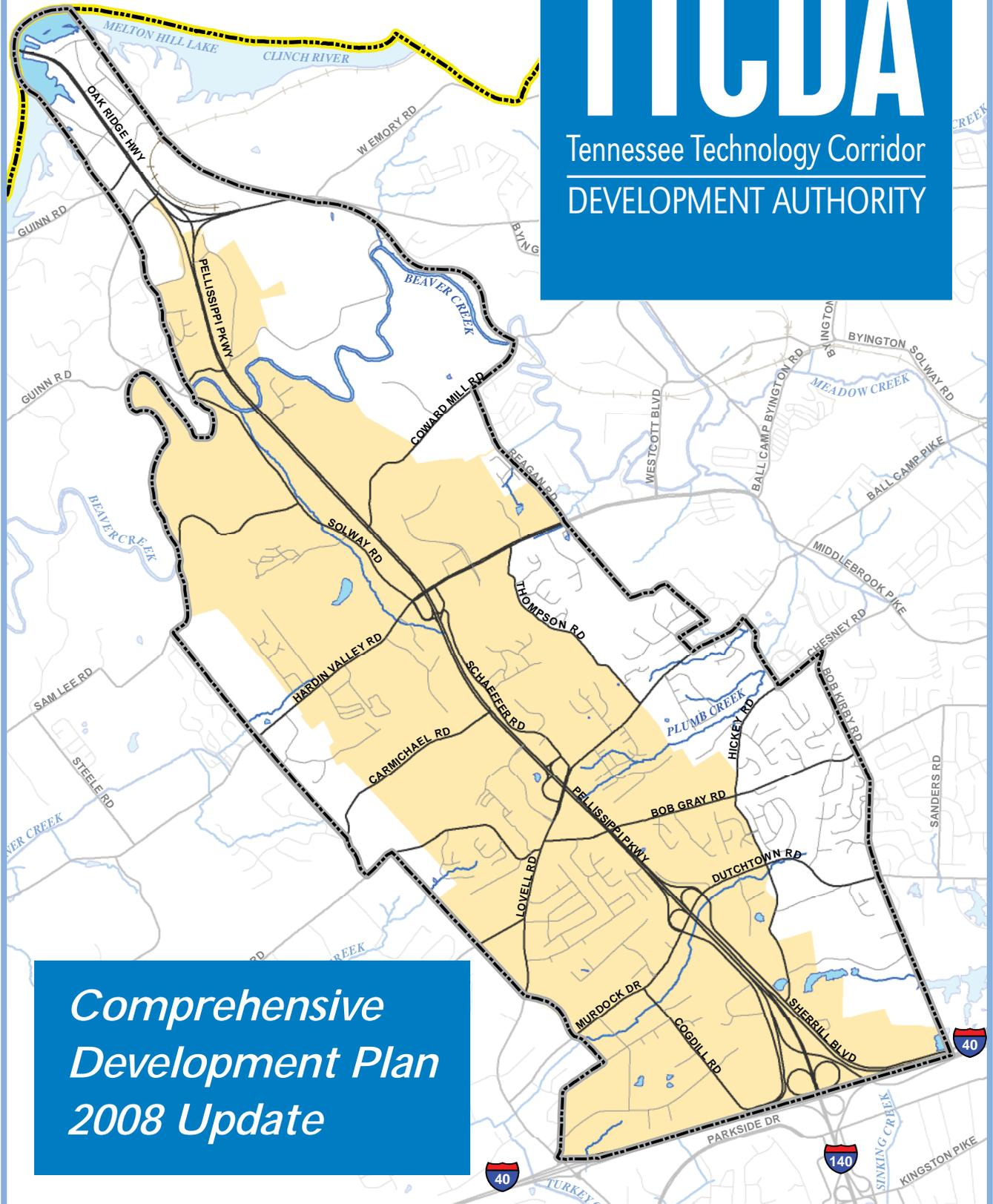


# TTCDA

Tennessee Technology Corridor  
DEVELOPMENT AUTHORITY

*Comprehensive  
Development Plan  
2008 Update*







*Comprehensive  
Development Plan  
2008 Update*

*October 2008*

This plan was adopted by:

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# Summary

The Technology Corridor has now been in existence for twenty-five years. The original vision for the corridor included technology-based economic development along an access-controlled freeway, and the establishment of the Pellissippi State Technology Community College, all to be created within the beautiful rolling terrain.

Successes in realizing that vision have been substantial:

- Among the scores of new businesses that call the corridor home are 13 research and development firms, employing more than 1,900 persons.
- Pellissippi State Technical Community College, which was created to prepare students for technology-based employment or further undergraduate education, now has an enrollment exceeding 8,600; the college has more than 600 graduates annually.
- Creation of Pellissippi Parkway, the grade-separated access points at Hardin Valley Road, Lovell Road and Dutchtown Road, and I-40 and Murdock Road improvements, have enhanced economic development and traffic flow.
- Attractive landscape and building design have resulted in an atmosphere that the corridor provides a permanent “address” for firms desiring to locate in the county.

Still, there have been several failures which have led away from success:

- A lack of vision in purchasing land, resulting in the loss of controlling the land for economic development purposes
- The eroding of the Tennessee Technology Corridor Development Authority's position from a fully-staffed development/marketing agency to a development review body
- Changes away from office and technology-based zoning and land use, particularly residential development, slicing away the potential for business and job growth.
- Decisions to allow direct road access to the Parkway, having dangerous implications for safe traffic flow
- Shortcomings in infrastructure development – particularly road and sewer extensions – that are needed for economic development

Looking to the future, the potential construction of State Route 475 – often referred to as the Orange Route or the Knoxville Beltway – has significant implications for the corridor. Most notably, the route and its interchange will result in the loss of about 240 acres that have been planned for economic and related development. However, the route could provide positive solutions to access problems to and along the Parkway.

## Plan Recommendations

A summary of the recommendations of this plan and the responsibilities to implement them are as follows:

1. Set aside several tracts for technology-based and related economic development purposes, particularly the area northward from Pellissippi Corporate Center and the area north of Sam Lee Road. **Responsibility:** Development Corporation of Knox County or similar organization (e.g. Industrial Development Board)
2. Provide opportunities for mixed-use development that will include office and technology-based uses, housing, retail (scaled to the needs of the setting) and natural and recreational open spaces. **Responsibilities:** MPC (land use codes to allow such development); Knox County, its Development Corporation, and the private sector (land acquisition and infrastructure development)
3. Eliminate uncontrolled access points along the corridor. **Responsibility:** Tennessee Department of Transportation (TDOT), Knox County and Transportation Planning Organization
4. Develop road and sewer extensions along the corridor. **Responsibility:** Knox County through Capital Improvement and Tax Increment Financing Programs, in conjunction with TDOT and West Knox Utility District
5. Foster and/or strengthen a regional technology-based development and marketing strategy involving public and private entities, Knox County, Knoxville, Blount County and Oak Ridge. **Responsibility:** Tennessee Technology Corridor Development Authority, the Development Corporation, Innovation Valley, East Tennessee Economic Development Agency, and local chambers of commerce



# Introduction

## History

The Tennessee Technology Corridor is a geographic area established primarily for the attraction, expansion and support of technology-based economic development. In 1983 the Tennessee General Assembly passed legislation creating the Tennessee Technology Corridor Development Authority (TTCDA) for the purpose of overseeing development in the Technology Corridor as designated by state law. A grant from the Appalachian Regional Commission allowed a team of consultants to develop land use concepts and development guidelines which address setbacks, lot coverage, signage, landscaping, lighting and access. The Knoxville-Knox County Metropolitan Planning Commission (MPC) prepared a comprehensive development plan based on the consultants' work, and the Knox County Commission adopted this plan in 1984. The result was the creation of the 7,000 acre Technology Overlay Zone within the Technology Corridor. The Technology Overlay Zone runs to either side of Pellissippi Parkway from Oak Ridge Highway to I-40/75 (see Map 1).

Highlights of the original 1984 plan that are still relevant today include:

- Preserve and enhance natural features, including forested ridges, rolling hills and stream valleys.
- Develop full access control along Pellissippi Parkway and bikeways along the corridor.
- Confine warehousing and distribution uses to the Lovell Road/Lexington Drive area.
- Reserve designated areas for research and development purposes.

- Extend utility (water and sewer) systems to provide the infrastructure for economic development.
- Create educational programs and facilities to meet technology-based development needs.

Initially, the TTCDA was given a broad range of powers to fulfill its mission as an economic development entity. Although the state legislation creating the authority is virtually unchanged since its passage, the TTCDA serves almost exclusively as a land use control agency, overseeing the review and approval of development proposals within the Technology Overlay Zone.

## Purpose

The purpose of this updated plan is to address economic development opportunities and to foster the continuation of the high quality development that has transpired in the Technology Corridor. The plan includes:

- A **background section** that examines current conditions, including land use and zoning trends, issues and concerns pertaining to infrastructure and regulatory procedures, perceptions and observations about the status of the Technology Corridor, and both national and regional implications for the corridor's future.
- An **updated plan** that recommends new land use concepts, changes to the **Design Guidelines**, investment towards expanded infrastructure, support for land acquisition, and consideration of potential regional approaches to economic development.

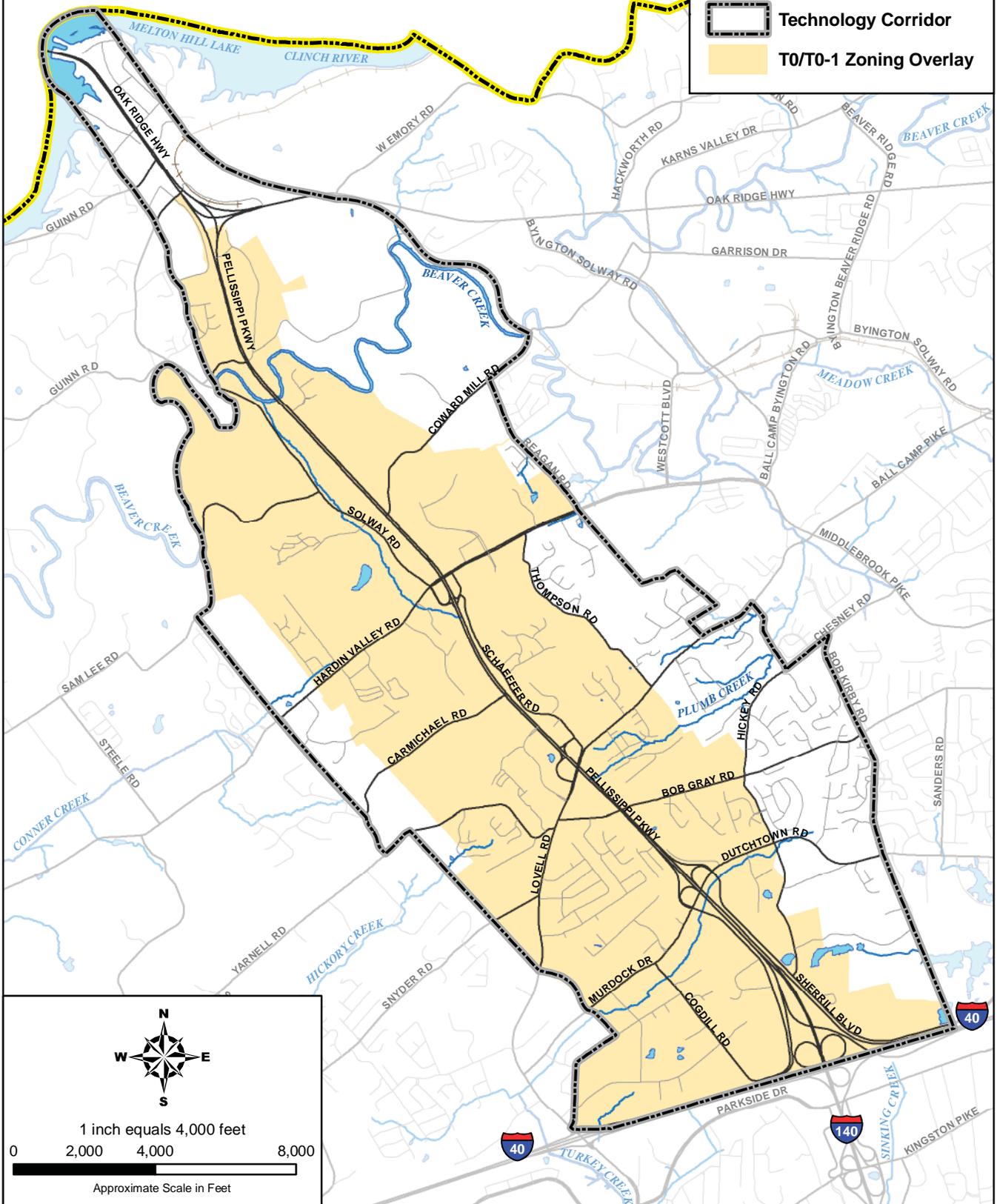
*Below: Pellissippi Parkway, looking north from Dutchtown Road*



# Map 1: Technology Corridor and Zoning Overlay

## Legend

-  Technology Corridor
-  T0/T0-1 Zoning Overlay



# Background

As early as December 2003, MPC staff, working with the TTCDA Board, posed the following questions that would be significant in revising the comprehensive development plan:

- To what extent has the corridor developed as envisioned in adopted plans?
- Does the land within the corridor represent significant acreage that should be preserved for tax base and employment growth?
- If the land in the corridor is threatened by non-technology-based development, is this a policy and decision-making issue that should be resolved? If “non-technology based” uses continue to locate in the corridor, will “technology based” uses be less likely to find the corridor attractive?
- Should a distinction be made between short-range and long-range objectives for the corridor?
- How does State Route 475 impact the viability of the corridor?

- Should “buffer uses” be recommended to maintain separation between technology-based uses and low-density residential subdivisions?
- Have the TTCDA *Design Guidelines* been a hindrance or supportive of development within the Technology Corridor? What changes can be made to these regulations or to the TTCDA review procedures to make the process more user-friendly and acceptable to developers and property owners?

The following discussion examines the issues that these questions raise and forms the basis for proposed changes in the Comprehensive Development Plan and the corresponding area in the Northwest County Sector Plan. Topics to be considered include:

- Changes in land use and zoning
- Impact of State Route 475 on the corridor
- Impact of current regulations and review procedures
- Impressions of the corridor’s status
- National and regional implications affecting the corridor’s future

*Below: An aerial view of Pellissippi Corporate Center in 2006*



**Table 1: 1983 EXISTING LAND USE TECHNOLOGY CORRIDOR and ZONING OVERLAY**

1983 Land Use Categories	Technology Corridor		Zoning Overlay	
	Acres	%	Acres	%
Agriculture/Forestry/Vacant	4,409.45	62.84	2,947.03	67.10
Commercial	66.47	0.95	43.44	0.99
Manufacturing (Industrial) and Wholesale	66.49	0.95	55.89	1.27
Multi-Family Residential	24.32	0.35	0.06	0
Office	51.99	0.74	36.61	0.83
Private Recreation	3.71	0.05	1.05	0.02
Public/Quasi Public	172.57	2.46	62.58	1.42
Right of Way and Open Space	778.27	11.09	553.21	12.60
Rural Residential	591.29	8.43	353.45	8.05
Single Family Residential	743.48	10.60	302.77	6.89
Transportation/Communications/Utilities	18.15	0.26	19.14	0.44
Under Construction and Other Uses	9.53	0.14	7.98	0.18
Water	80.78	1.15	8.69	0.20
TOTALS	7,016.51	100	4,391.90	100

**Table 2: 2005 EXISTING LAND USE TECHNOLOGY CORRIDOR and ZONING OVERLAY**

2005 Land Use Categories	Technology Corridor		Zoning Overlay	
	Acres	%	Acres	%
Agriculture/Forestry/Vacant	2,888.90	41.17	1,806.51	41.12
Commercial	121.25	1.73	101.96	2.32
Manufacturing (Industrial) and Wholesale	112.16	1.60	101.56	2.31
Multi-Family Residential	120.64	1.72	72.85	1.66
Office	285.63	4.07	270.78	6.16
Private Recreation	88.02	1.25	54.57	1.24
Public Parks	51.47	0.73	2.16	0.05
Public/Quasi Public	504.08	7.18	396.01	9.01
Right of Way and Open Space	899.92	12.83	657.37	14.96
Rural Residential	691.58	9.86	314.74	7.16
Single Family Residential	1,016.37	14.48	449.68	10.24
Transportation/Communications/Utilities	56.49	0.80	57.35	1.31
Under Construction and Other Uses	99.48	1.42	99.15	2.26
Water	80.78	1.15	8.69	0.20
TOTALS	7,016.51	100	4,393.38	100

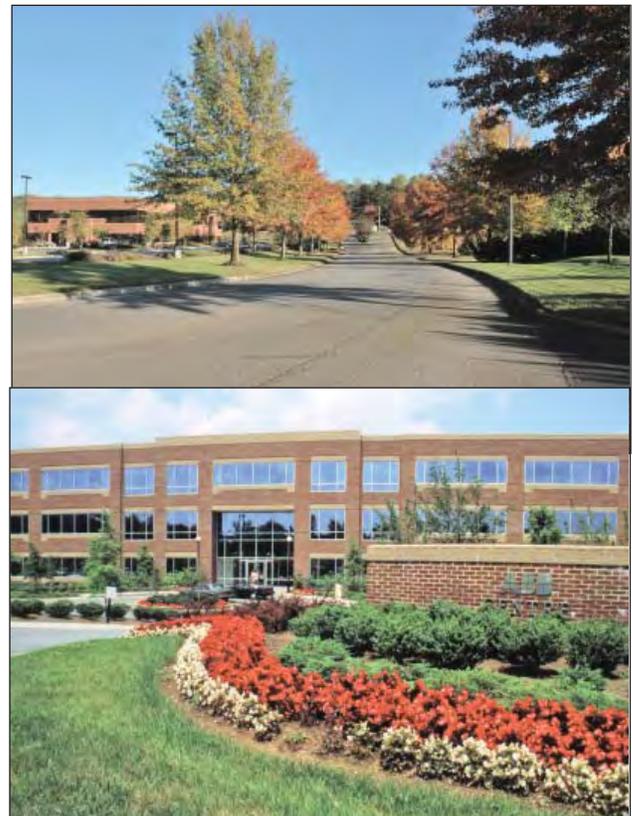
### Land Use Changes

All forms of development — research firms, offices, industries, houses and retail stores — have occurred over the past 25 years. The changes are depicted in Tables 1 and 2.

Originally, there were almost 2,950 acres within the Zoning Overlay which were vacant or in agricultural use, and were available for technology-based development. By 2005, the amount of vacant and agricultural land had been reduced by about one-third to slightly more than 1,800 acres. When slopes (that is, hillsides more than 25 percent) and floodplains are taken into account, the amount of relatively unconstrained land for future development, is approximately 1,500 acres (see Table 3).

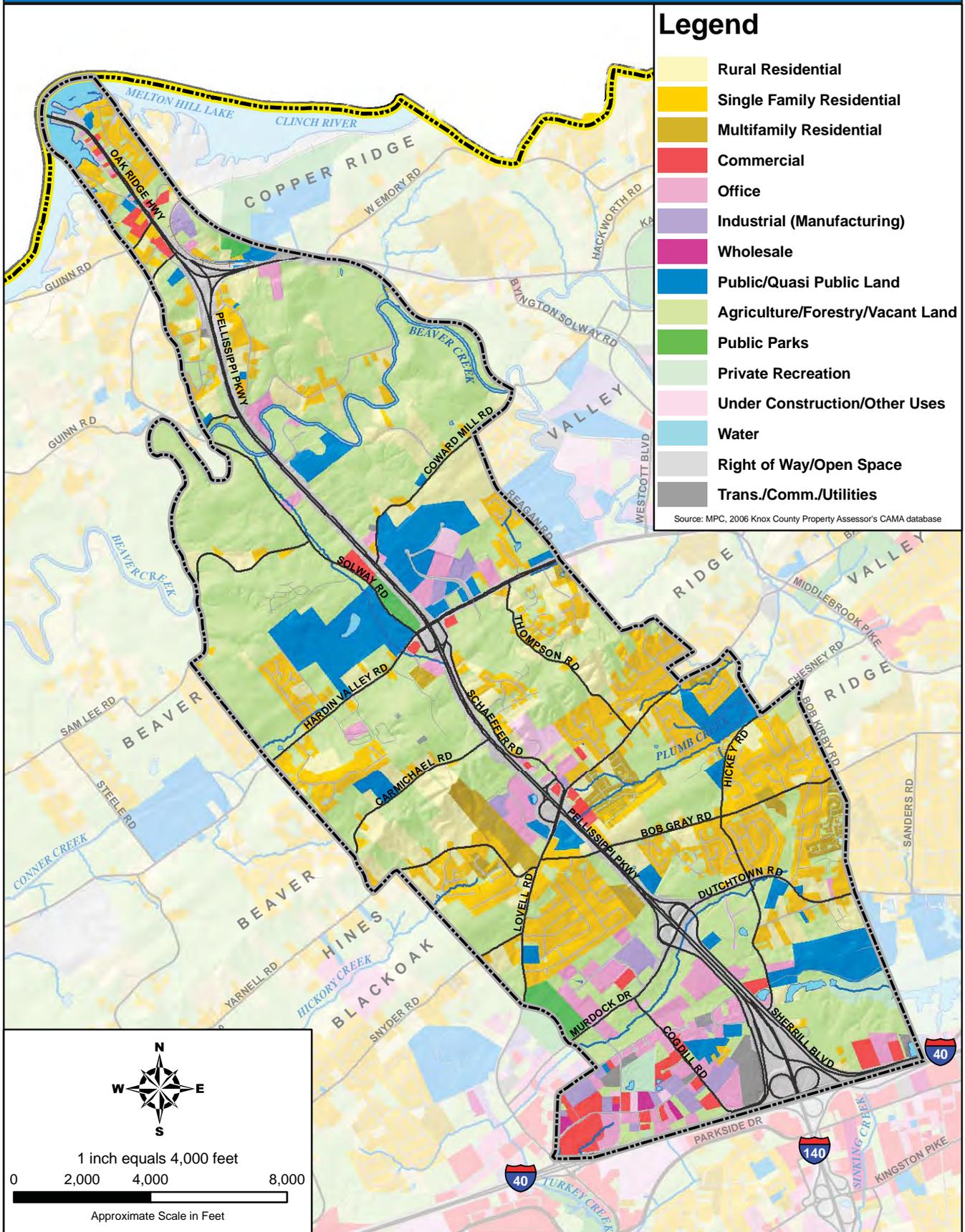
**Table 3: 2005 PERCENT SLOPE OF AGRICULTURE, FORESTRY and VACANT LAND TECHNOLOGY CORRIDOR and ZONING OVERLAY**

2005 Percent Slope	Technology Corridor		Zoning Overlay	
	Acres	%	Acres	%
< 15%	1,607.63	55.65	1,020.27	56.48
15 - 25%	755.24	26.14	488.45	27.04
> 25%	525.90	18.20	297.85	16.49



*Above: Centerpoint Business Park has been the focus of significant office development.*

# Map 2: Existing Land Use



Some of the land development can be considered a fulfillment of the original vision. However, residential rezonings and subsequent housing development have incrementally chipped away at the land base that was intended for technology-based purposes. The existing land use is shown on Map 2. The following points summarize the primary development trends:

- **Public and Quasi-Public Uses:**  
396 acres of land, including the establishment of Pellissippi State Technical Community College and the Pellissippi Corporate Center, are consistent with the vision of creating technology-based uses. Church development, representing 22 churches on a total of 110 acres, is also included in this category.
- **Manufacturing and Wholesale Uses:**  
Since 1983, 45 acres have been developed for these purposes. Most of this was developed in the Dutchtown Road/Lexington Drive area (west of Pellissippi Parkway) as designated in the original land use plan.
- **Office Uses:**  
In 1983, there were only 36 acres of office uses. Now there are approximately 270 acres. Some office development, which has been positive for the image of the corridor, was created in Planned Commercial zones (such as the offices at CenterPoint Business Park).

One departure from the original plan has been the development of “call centers”, which were allowed with changes to the “Scientific Production” and “Business Park” zoning.

- **Commercial uses:**  
About 100 acres of retail and service-oriented development, like fast-food restaurants and convenience stores, have developed in areas which were proposed for commercial development. These include the south side of the Hardin Valley Road/Pellissippi Parkway interchange and the east side of the Lovell Road/Pellissippi interchange. Some additional land has been rezoned for commercial development within the boundaries of Pellissippi Corporate Center. Such development is consistent with the intent of the original plan to allow a limited amount of retail uses to serve area employees, students and visitors. More recent

zoning changes, particularly to the west of Hardin Valley Road/Pellissippi Parkway interchanges, will expand retail commercial activity.

- **Transportation/Communications/Utilities:**  
By 2005, more than 57 acres were absorbed by these uses. This can largely be attributed to the creation of additional rights-of-way, although at least one transportation use, the National Transportation Research Center, is clearly a research/development facility and is located in Pellissippi Corporate Center.
- **Residential Uses:**  
If the corridor had developed as envisioned, there would not have been substantial increases in residential uses. With changes to zoning, however, there have been approximately 150 acres of new low-density residential and land use, development and 72 acres of new medium density residential development. Hypothetically, the original rural residential uses (defined as one house on 2 to 10 acre lots) would likely be redeveloped or converted to office or research/development uses over time; that has not transpired significantly as there are still 314 rural residential acres.

Again, the “bottom line” is that approximately 1,500 acres of underutilized land without significant development constraints remains for future development.

Much of the 1,050 developed acres can be characterized as having job producing activities:

- 270 acres of office development
- 396 acres of land devoted to public or quasi-public uses (such as the community college and land prepared for development in the corporate center)
- 45 acres of industrial or wholesale uses (largely in the area south of Dutchtown Road)

Firms that can truly be characterized under the original intent of “scientific production”, however, have been limited. Presently, 13 companies representing more than 1,900 employees, have locations within the Technology Corridor.

**W**hen the Technology Corridor was established in 1983, the term “scientific production” was used to describe the predominant land uses that were to be encouraged, especially within the Technology Overlay zone. The intent of the provisions of the SP-1/SP Scientific Production zone in the city and county zoning ordinances was to establish a district where research facilities, pilot plants, prototype production facilities, and manufacturing operations requiring a high degree of scientific input could be located in attractive, park-like settings. In the 1990s, the BP-1/BP Business and Technology Park zone replaced the Scientific Production zone. This new zone included many of the uses established under the scientific production zone, as well as conventional offices, call centers and other non-technology-based uses.



*Call centers and mail order facilities were added to the list of permitted zoning uses and more of a departure to the original technology-based development objective.*

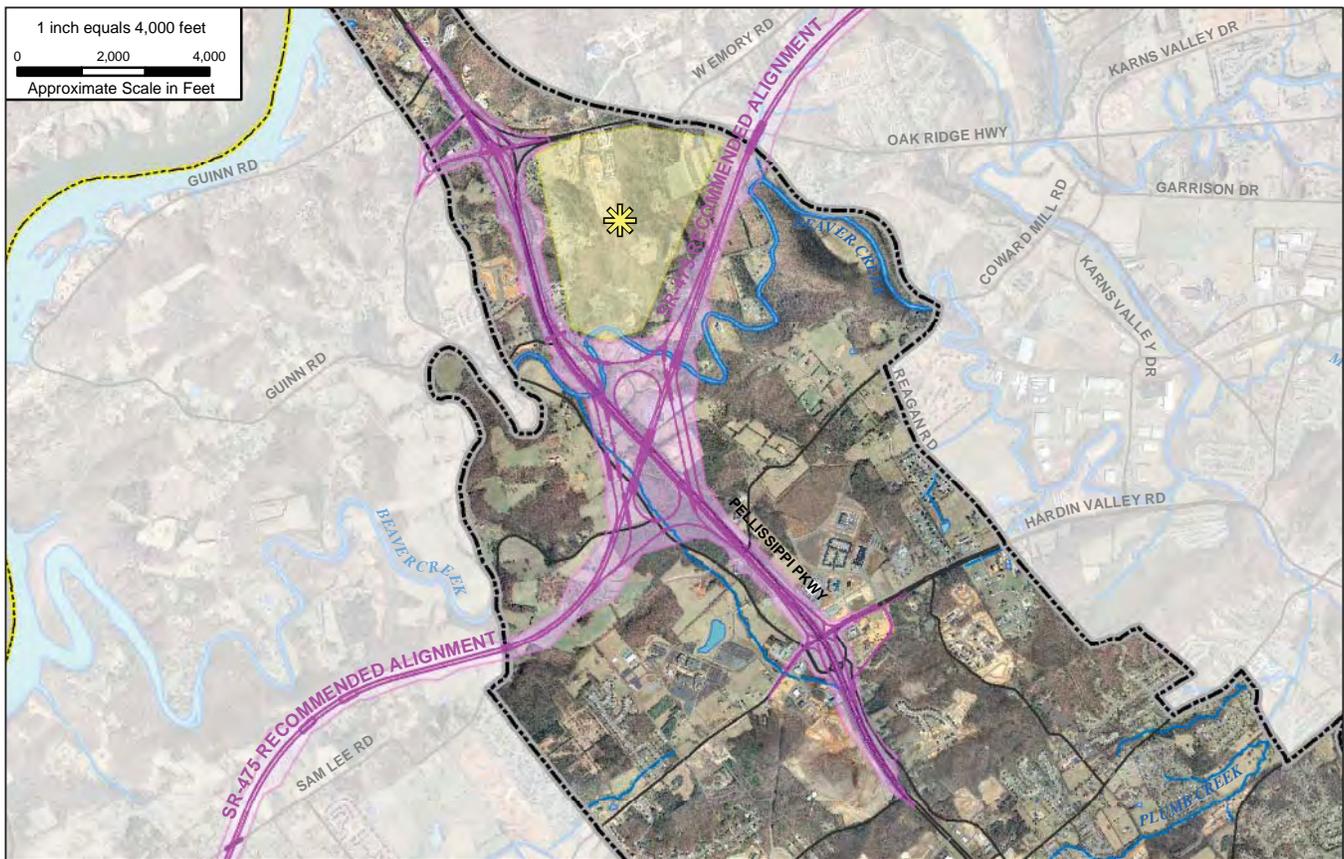
## Zoning Changes

After the original plan was created, a decision was made to rely on zoning as the primary means to implement the plan. A consideration to purchase land for the technology uses, a strategy that was offered in light of the success of North Carolina's Research Triangle, was rejected. Later, some land was purchased for office and research/development park uses, and two publicly-sponsored business parks were established: CenterPoint Business Park and Pellissippi Corporate Center. Both of these parks have been developed under the authority of the Development Corporation of Knox County, and each has been very successful. However, a trend toward the incremental conversion of land that was designated for technology and business park uses to residential uses began in the 1980s and has continued.

The loss of land which was largely targeted for scientific production (later research development uses) has been substantial; more than 400 acres were rezoned for residential uses. Additionally, almost 400 acres were rezoned for commercial, office and industrial purposes. Table 4 depicts these conversions:

Table 4: 1983-2006 TECHNOLOGY OVERLAY ZONE CONVERSION OF ACREAGE TO NON-BUSINESS/TECHNOLOGY PARK USES	
Rezoned to:	Acreage
RESIDENTIAL	400
COMMERCIAL	240
OFFICE	11
INDUSTRIAL	134
Total Acreage Converted	785
Acreage Rezoned/Maintained as Business/Technology Park = 117	

Some of the conversions resulted in significant losses in potential technology-based development. Most notable were rezonings in the Reagan Road and Bob Gray Road areas. The initial conversions led to other rezonings, resulting in hundreds of acres of conversion to residential uses. A by-product of this conversion is that the development of new residential uses could create built-in opposition to proposed technology park development on nearby lands zoned and/or proposed for such uses.



*The proposed State Route 475, as it crosses Oak Ridge Highway and intersects with Pellissippi Parkway, will create a triangular area of approximately 330 acres with good visibility from three major transportation routes.*

### Impact of State Route 475 on the Corridor's Viability

The proposed State Route 475 will connect I-75 in Anderson County with I-40/75 in Loudon County and cross a portion of northwest Knox County. The new facility, which will be an access controlled, four-lane divided highway, will have a length of approximately 38 miles and will be designed with two grade-separated interchanges. One interchange will be at Clinton Highway and Strader Road in Anderson County, while the second interchange will be at Pellissippi Parkway south of Beaver Creek in Knox County. In addition, the current interchanges with Pellissippi Parkway and Oak Ridge Highway and Hardin Valley Road will be redesigned, and Pellissippi Parkway will be converted into an access-controlled highway from just south of the Hardin Valley Road interchange to just north of the Oak Ridge Highway interchange. The route is depicted above.

Current plans and right-of-way requirements will have both positive and negative impacts on the future of the Technology Corridor as a viable location for economic development opportunities.

The design and location of the proposed interchange with Pellissippi Parkway will require the acquisition of a substantial amount of land. Approximately 240 acres will be needed for the relatively wide rights-of-way, to allow room for cut-slopes and fills. Much of this land is either zoned, or developed, with technology and business park uses, or could potentially be designated for such uses over the long term.

However, the route's proposed location will enhance visibility and access for several properties not currently considered to be viable sites for economic development purposes. The new state route, as it crosses Oak Ridge Highway and intersects with Pellissippi Parkway, will create a triangular area of approximately 330 acres with good visibility from three major transportation routes (see asterisk on map). This area can be further enhanced for economic development opportunities with improved interior access and connections to any of these routes. The updated land use plan identifies this area as a mixed-use area, enabling technology and business park uses, as well as office, commercial and residential uses.

In addition, other transportation improvements are occurring which will have a beneficial impact on the corridor's viability for economic development opportunities. Current plans call for the development of parallel feeder roads on either side of the parkway for the purpose of enhancing access options throughout the corridor and to open up previously marginal lands for technology and business park uses, as well as other uses that can foster economic growth. On the west side of Pellissippi Parkway, a north side connection is now taking shape that could connect the Solway area in the north with Lovell Road in the south. Two mixed use developments, one north of Lovell Road and the other between Hardin Valley Road and Carmichael Road, have set aside property for a new roadway that could eventually be aligned with a re-routed Solway Road near Pellissippi State Technical Community College. On the east side, proposed improvements to Schaeffer Road, providing a direct connection with Cheralala Boulevard and the existing Sherrill Boulevard, will provide needed linkages in a route that could extend to the north of Pellissippi Corporate Center. Both new north-south roads could then be connected at several points to provide separated east-west connections over the parkway. Such improvements can only make the Technology Corridor a more attractive location for new development opportunities.

**Impact of TTCDA Regulations and Review Procedures on the Volume of Development in the Corridor**  
One observation about the corridor has been that the established process for regulating development in the Technology Overlay, including administration of the TTCDA *Design Guidelines*, has hindered rather than facilitated development. The state enabling legislation creating the corridor outlines the basic regulatory duties of the TTCDA Board of Commissioners, and the Knoxville and Knox County Zoning Ordinances provide additional detail on procedural requirements. Certain applications require the review of both the TTCDA Board and MPC based on zoning ordinance requirements. The fact that developers and property owners are required to go through what may be an additional step for the approval of a rezoning or a development plan has been cited as being unnecessary and time consuming, resulting in a negative impact on the level of development.

Regardless of this opinion, an examination of actual development activity would indicate otherwise. Since fiscal year 1983-1984, when the first applications were approved by the TTCDA Board, and through 2006-2007, more than 4.7 million square feet of technology, office and retail space have been approved. In the last five years of that period, more

*The aesthetic quality of development in the corridor has been very positive.*



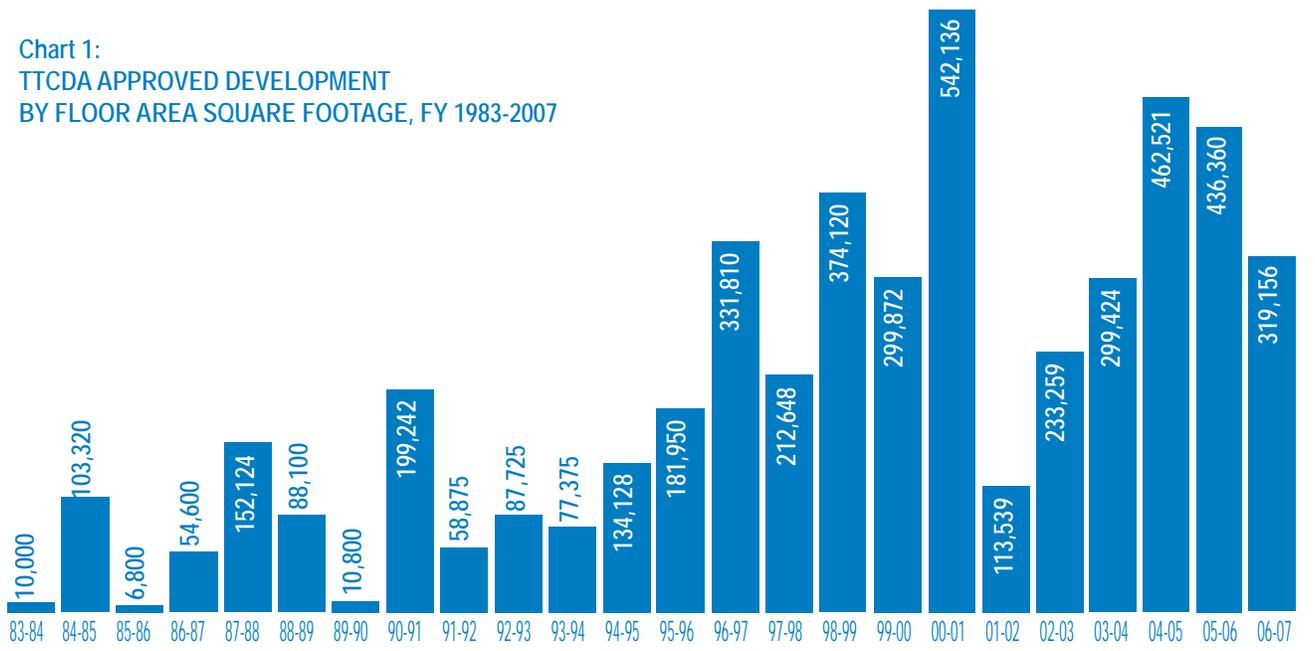
than 1.7 million square feet of new space has been approved, indicating that the pace of development has accelerated. Recent major new developments that reflect this trend include the following:

- Three new buildings in Century Park, a 75-acre business park located on Sherrill Boulevard south of Dutchtown Road.
- Brinks Home Security, a 46,500-square-foot technical services center in Pellissippi Corporate Center.
- A 61,000-square-foot, four-building office park on 8.5 acres on Mabry Hood Road.
- A 10.5-acre business park, with 126,000 square feet of office/warehouse space on Dutchtown Road south of Murdock Road.
- Stowers Rental & Supply Company, a 42,892-square-foot heavy equipment company on Lexington Drive.
- A 110,000-square-foot office park, the Commons at Hardin Valley, on the south side of Hardin Valley Road west of Pellissippi Parkway.

Admittedly, overall development, including residential and other development proposals not requiring TTCDA consideration, has been on the increase in the area along Pellissippi Parkway, especially extending into Hardin Valley. Based on the volume of approved new floor space, development activity within the Technology Overlay has kept pace with overall development trends and shows no signs of letting up.

Further support for the idea that the Technology Corridor concept and its related regulatory procedures and requirements have not hindered development can be found in a study prepared in 1996 at the request of the TTCDA. This analysis entitled, *A Study of the Impact of Regulation on the Marketability and Land Values in the Tennessee Technology Corridor*, was prepared by University of Tennessee finance professor Thomas P. Boehm. The study offered two conclusions. Regarding development activity, the study confirmed that “activity levels are as high or higher for properties within the corridor as for similar properties outside the corridor (i.e., compared to the balance of west Knox County and to Knox County as a whole.)” The study further concluded that “comparable properties inside the corridor have sold for a substantial premium relative to properties outside the corridor.” In short, and as stated in the analysis, “Taken together, these facts do not support the contention that the regulatory environment within the corridor has, in any way, negatively affected development.”

Chart 1:  
TTCDA APPROVED DEVELOPMENT  
BY FLOOR AREA SQUARE FOOTAGE, FY 1983-2007



*Conversion to residential uses is viewed as the biggest threat to economic development.*



### Observations and Impressions about the Corridor's Status

In addition to background data, TTCDA and MPC staff used four measures of professional and public input to gather observations and impressions about the status of the Technology Corridor: A focus group session with the former TTCDA executive directors; a workshop with the current TTCDA board; a public meeting at Pellissippi State Technical Community College in 2006 to provide an overview of preliminary plan concepts; and meetings with developers and related interests to examine the potential for mixed-use development projects and associated rezonings needed to create such projects. Staff members also worked with the director of the Development Corporation of Knox County in considering potential sites for economic development opportunities in the corridor. The following are the comments that came out of the focus group meeting and the TTCDA board workshop.



*Landscaping & sign regulations have enhanced all forms of development.*

### TTCDA Focus Group Observations

The following is a summary of observations from a group of former TTCDA executive directors in a workshop held on May 24, 2006:

- The biggest threat to the Technology Corridor as an economic development area is residential development in areas designated for business and technology park uses. There seems to be no shortage of land in Knox County for housing, while there is a shortage of land for economic development.
- Zoning (for technology-based uses) has been an ineffective tool to hold land for economic development. The former directors recommended that land be purchased and held for economic development purposes.
- The design guidelines have been effective in creating attractive office and technology parks. Standards for commercial development are also effective (e.g. landscape and monument sign standards have resulted in attractive businesses).
- Changes to design guidelines should reflect the trend toward smaller lot developments, while keeping campus-like projects.
- Poor sewer system coverage and road connectivity have hampered development in the Technology Corridor. Capital improvements in this regard have been lacking over the years.
- Oak Ridge and Blount County business and technology park opportunities take away the advantages that the Technology Corridor once had.
- The Solway area as a gateway to the Technology Corridor has never been addressed and has aesthetic and transportation issues.
- Other forms of development (New Urbanism and town centers) could offer a greater mix of uses and development intensity.

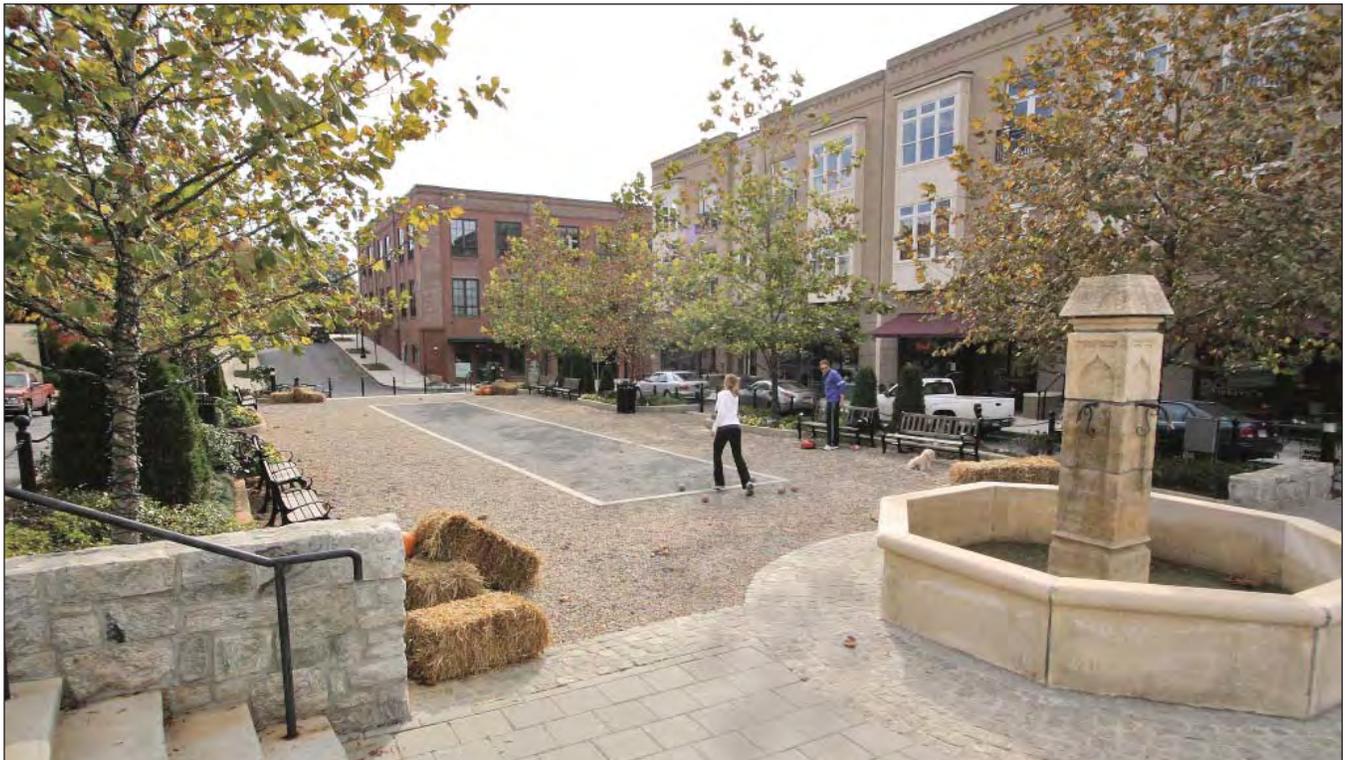
## TTCDA Board Workshop

In June 2006, MPC/TTCDA staff met with the TTCDA Board at Pellissippi State Technical Community College to share the focus group observations and identify issues related to the future of the corridor. The issues are as follows:

- **Infrastructure Extension Policy:**  
Road and sewer extensions are needed for potential development sites. Designated capital improvement funds, tax increment financing, and other financing methods should be sought.
- **Sewer Extensions:**  
Opportunities to extend West Knox utility systems northward toward the Solway area would create mixed use and economic development opportunities.
- **Road System Connectivity:**  
Key concerns are a divided alignment of the new intersection of Solway Road with Hardin Valley Road, continuing the connection between Hardin Valley Road (across Carmichael Road) to Lovell Road, and an extension northward from Pellissippi Corporate Center.
- **Controlled Freeway Access:**  
This goal, identified in a regional transportation plan, is still viewed as a major need, with the creation

of parallel arterial access as the prudent means to foster safety and efficiency for adjoining development.

- **Mixed Use Development Opportunities:**  
Allowing residential uses with potential for limited commercial development and mandating office or technology-related uses should be explored.
- **“Business Corridor” Concept:**  
In contrast to a pure “technology corridor,” a corridor of wider ranging office and similar job producing use may have merit.
- **Transitions:**  
Business and technology parks can be a transition from commercial or mixed use centers.
- **Alternative Development Means:**  
The design guidelines should be amended to allow for other forms of development (for instance, a mixed use development that is more compact than the conventional research park). The guidelines should also be amended to foster density limitations on steeper slopes.
- **Design Guideline Document:**  
A more “user friendly” set of guidelines (well illustrated and depicting various forms of development) should be created.



*An example of mixed use development with office, retail and residential uses (Glenwood Park in Atlanta, Georgia)*

## Office and Business Park Studies Relative to the Corridor

MPC staff, working in conjunction with the Development Corporation of Knox County, completed two studies to identify office and business park sites throughout Knox County (2002, 2005). The sites were identified by consideration of arterial road and freeway access, terrain (relatively flat), compatibility with surrounding land uses and proximity to utilities. Potential sites, in or adjacent to the corridor, are as follows:

- Solway/Oak Ridge Highway, south side west of Beaver Creek (business park)
- Reagan Road area, west and north of Beaver Creek (business park)
- Dead Horse Lake area (office park)

Other considerations in the course of those studies included an expansion of the Pellissippi Corporate Center northward and a mixed use center (office, retail and residential) located north of State Route 475 to Beaver Creek.

## National and Regional Implications

### ***National Implications***

The original Technology Corridor concept of creating a campus-like setting for technology-based firms was in keeping with an emerging trend in the 1980s. Such parks (also referred to as science parks and technology parks) were often created in conjunction with the research arm of a university and local, state and economic development interests. Stanford (1951) and North Carolina's Research Triangle (1959) set the tone for attracting technology-based firms (and sometimes incubating start-up firms to form profitable enterprises). Many universities and occasional governmental interests followed the early models. Such parks sometimes foster specific research (for example, biotechnology parks have emerged in association with medical schools, in places like San Diego and Boston, and with institutions like the National Institutes of Health in Maryland and Virginia). Today, biotechnology and information technology remain as foremost interests in many research parks.

The University of Virginia's Fontaine Research Park has been a success story as well as the Research Triangle with more than 130 firms and over 38,000 employees. Battelle reported in a 2007 study (*Characteristics and Trends in North American Research Parks: 21st Century Directions*) that over 300,000 university research park jobs have been created nationwide, each generating an additional 2.57 jobs in the economy.

There are at least 110 research parks in the U.S. and Canada (Association of University Research Parks). A review of the location and management principles of such parks reveal several important considerations relative to the future of the Technology Corridor. Successful parks typically have many of the following characteristics:

- ***Land Ownership:***  
A university, non-profit or governmental body set aside or purchased the land for the park at the onset of the development process.
- ***University Affiliation:***  
A directly-owned or a university-related non-profit organization operates and owns the research park (more than 70 percent of research parks surveyed). However, such parks tend to grow, on average, 6.7 percent slower than other parks (one reason being that some universities feel that they can wait for the right type of firms to locate within their parks; another reason being that faculty/staff is sometimes required to be engaged in the operation of a firm which is selected for the park).
- ***Staff or Board Approval:***  
A vast majority of parks require that a design board/staff approve design plans and the firms that will locate within the park.
- ***Proximity to a University:***  
Many parks are located adjacent to a campus. The mean distance away from campuses is 5.7 miles. (Research/teaching staff are not enamored with the idea of traveling time-consuming distances from campus; in general, parks that are farther away from campus grow more slowly.)
- ***Start-up Costs:***  
About half the parks were established through public funding.



*The experiences of the University of Virginia's research park development are illustrative: A bio-medical park next to campus was filled by tenants in the space of a few years; another park eight miles away (while steadily developing) has a 20-year build-out.*

- **Operating Budgets for Park Administration:**

Substantial operating budgets are typical. While 36 percent of parks have annual budgets of less than \$1 million more than 45 percent have budgets between \$1 million and \$6 million.

- **Marketing:**

More than 90 percent used economic development agencies to attract tenants. Public incentives (such as property tax abatements and start-up assistance) are commonly used. A common barrier to success was a lack of public funding for infrastructure (e.g., road and sewer networks).

- **Success Breeds Success:**

Firms that supply the original tenants of a park tend to locate near their clients, establishing a basis for long-term growth in parks.

- **Mixed Use Development:**

Several places have embarked on a combination of research and office space, retail and housing, all created under a master planned park. The University of Virginia Foundation has established such a park north of Charlottesville, where a walkable "Main Street" with developing retail services and offices will be surrounded by townhouses. Beyond this New Urban core, a more conventional, green field campus-like setting is home to the research and development firms.

### **Regional Implications**

Prior to the creation of the Tennessee Technology Corridor in 1983, local officials envisioned the original corridor one day extending beyond its initial boundaries in West Knox County into Anderson and Blount counties. The primary link in this extension would be Pellissippi Parkway, which would continue from its terminus at I-40/75 through Southwest Knox County to Alcoa Highway, which offered easy access to McGhee-Tyson Airport. On the other end of the corridor would be the vast array of research and development facilities associated with the Oak Ridge National Laboratory and the various corporations that have been involved in nuclear and other forms of research over the years. In the middle would be an interstate connection to the headquarters of the Tennessee Valley Authority and the main campus of the University of Tennessee in and near Downtown Knoxville. The university is now in the early stages of developing a plan for a research and academic village to be located on a portion of the agricultural campus.

Although the idea to expand the Tennessee Technology Corridor has never materialized beyond occasional discussion, the time may be appropriate to reconsider establishing a regional approach for the corridor. Currently, Oak Ridge and Roane County are poised to take advantage of a substantial amount of vacant property once used for

the federal operations there and now available for private technology and business park development. Estimates indicate that more than 7,000 acres are currently available at several locations for a wide range of uses. In Blount County, more than 1,200 acres spread over several sites are available for business park development. This includes the 450-acre research and development park that will

be developed as a cooperative venture between the cities of Alcoa and Maryville, and Knox and Blount counties. The proposed location for this new Pellissippi Place development will be near the intersection of I-140 (Pellissippi Parkway) and SR 33 (Old Knoxville Highway). Vacant portions of the ALCOA complex may also be suitable for reuse as a business park.



*Renderings and Master Plan for the new Pellissippi Place, to be located in Blount County near the intersection of I-140 (Pellissippi Parkway) and SR 33 (Old Knoxville Highway). The park will feature 230 acres of corporate office space and another 125 acres set aside for mixed-use development to include residential and retail projects.*





# The Plan

There are three major sections to the Plan: the *Land Use Plan*, *Transportation Improvements Plan*, and *Community Facilities and Utilities Plan*. The following is a detailed description of each plan element.

## The Land Use Plan

The Land Use Plan (see Map 3) will serve as a guide for growth and provide a framework for making zoning and subdivision decisions. Several revisions to the former land use plan address changes that have evolved in permitted uses under the zoning code (like a broader list of office uses) and trends in rezonings (like changes to residential) and to provide opportunities for a mix of land uses on several important parcels. Emerging and potential transportation changes were also considered.

This plan will be incorporated into the Northwest County Sector Plan, the City of Knoxville's One-Year Plan for properties located inside the city limits, and the Knoxville-Knox County General Plan. Amendments to this plan may be considered in accordance with criteria identified in the plan. The General Plan is a 30-year comprehensive plan, outlining a long-range vision and development policies.

## Recommended Overall Policies

The following are the overall land use designations proposed for the study area. The location principles and recommended zoning for these designations are outlined in greater depth in Appendix A.

### **LOW DENSITY RESIDENTIAL (LDR)**

**Definition:** Housing at densities of less than 6 dwelling units/acre in the City, or 5 dwelling units/acre in the County

**Plan Location:** Most LDR is comprised of existing subdivisions, although there are some pockets of undeveloped land that could serve to attract infill projects.

### **MEDIUM DENSITY RESIDENTIAL (MDR)**

**Definition:** Housing at densities from 6 to 24 dwelling units/acre in the City, or 5 to 12 dwelling units/acre in the County

**Plan Location:** An area located on the west side of Pellissippi Parkway, south of Bob Gray Road, is designated for MDR uses. Additional MDR development may occur in mixed-use areas as described below.

### **MEDIUM DENSITY RESIDENTIAL/OFFICE (MDR/O)**

**Definition:** Medium density housing and/or office uses in transitional areas, or adjacent to major thoroughfares

**Plan Location:** Areas along the west side of Pellissippi Parkway, south of Bob Gray Road, and on the east side of the parkway, between Hardin Valley Road and Lovell Road, and north of Bob Gray Road

### **OFFICE (O)**

**Definition:** Business and professional offices and office parks

**Plan Location:** Several locations are shown in the study area, including CenterPoint Business Park along the east side of Pellissippi Parkway north of Lovell Road, southwest of the Hardin Valley Road/Pellissippi Parkway interchange, and north of Beaver Creek and west of the parkway.

### **TECHNOLOGY PARK (TP)**

**Definition:** Offices & research development facilities

**Plan Location:** Specific areas for TP uses include an area situated north and south of Murdock Drive/Dutchtown Road and the existing Pellissippi Corporate Center, extending north to the proposed right-of-way of State Route 475. TP uses may also be permitted as part of mixed use development as described below and in an area located on the east side of Pellissippi Parkway, north of Lovell Road.

### **GENERAL COMMERCIAL (GC)**

**Definition:** Existing strip commercial corridors, providing a wide range of retail and service-oriented uses

**Plan Location:** Existing concentrations are located at or near the Pellissippi Parkway interchanges with Lovell Road and Hardin Valley Road, the Solway area on both sides of Oak Ridge Highway and in the extreme southwest corner of the study area.

### **MIXED-USE SPECIAL DISTRICTS (MU)**

(Designated by unique designation, MU-NWCO1, MU-NWCO2, etc.)

**Definition:** Areas designated to address urban design, pedestrian and transit-oriented development and vertical mixed-uses in specific circumstances

**Plan Location:** Several MU areas are proposed for the study area and are described more fully in this section (pages 22 - 27).

### **LIGHT INDUSTRIAL (LI)**

**Definition:** Industrial areas, intended for light manufacturing and warehouse/distribution uses

**Plan Location:** LI uses are proposed in an established area generally bounded by Murdock Road/Dutchtown Road on the north, Pellissippi Parkway on the east, I-40/75 on the south, and Lovell Road on the west.

### **MAJOR RIGHTS-OF-WAY (R-O-W):**

**Definition:** Rights-of-way of interstates and very wide parkways and arterial highways

**Plan Location:** This would include I-40/75, Pellissippi Parkway, and the proposed State Route 475.

### **PUBLIC PARKS AND REFUGES (P)**

**Definition:** Parks, wildlife refuges or similar public or quasi-public parks, open spaces and greenways

### **CIVIC/INSTITUTIONAL (CI):**

**Definition:** Major public and quasi-public institutions, including schools, colleges, churches, correctional facilities, utilities and similar uses.

**Plan Location:** Pellissippi State Technical Community College is the major CI in the study area.

### **OTHER OPEN SPACE (OS)**

**Definition:**

Cemeteries, private golf courses and similar uses

### **HILLSIDE/RIDGE TOP PROTECTION AREAS (HP)**

**Definition:** Ridge crests, and hillsides and ravines that have a slope of 15 percent or more

**Plan Location:** Residential: very low density housing. Other uses via use on review. Portions of the study area are characterized by steep slopes.

### **STREAM PROTECTION AREAS (SP)**

**Definition:** Areas subject to flooding, which would be primarily along Beaver Creek

### **WATER (W)**

**Definition:** Major streams and water bodies, including Melton Hill Lake/Clinch River

### State Route 475 Considerations

The land use plan designations would *not* be affected by the construction of Route 475 or the abandonment of that project. The designated mixed-use and technology park districts around the interchange would simply be larger. As noted in this document's transportation plan, the other Route 475-related improvements (including the Solway interchange parallel road system and elimination of direct access at George Light and Coward Mill Roads), should be funded regardless of a Route 475 decision.

In creating development plans near the proposed Route 475 corridor, it is recommended that buildings and roads not be located within the projected right-of-way. Transferring densities and intensities of uses to another portion of the site is an option that can be considered.



## Recommended Concepts for Mixed-Use Special Districts

The following explains in greater detail the basic elements of each of the eight Mixed Use Special Districts proposed for the study area.

### ***DEAD HORSE LAKE MIXED USE SPECIAL DISTRICT (MU-NWCO1)***

This area has the potential to develop as a mixed use district, which includes office, medical facilities and medium density housing. Retail uses, such as restaurants, which are ancillary but support the mix of uses, may be appropriate. Provisions for development should include the following:

- ***Future Development/Redevelopment:***

A mix of office and technology-based uses should be encouraged in the area north and east of Sherrill Boulevard, incorporating all or parts of the Dead Horse Lake golf course property as a redevelopment opportunity. Parcels (over 15 acres) that are on or adjoin the golf course may be considered for a combination of office, technology-based and medium-density residential development. The residential component of such mixed-use projects should not exceed 50 percent of the development's floor area. The open space surrounding the lake should be conserved for stormwater protection purposes and as an amenity with new residential and office uses. The exposure of the property along Sherrill Boulevard as it heads north toward Mabry Hood Road makes the property especially attractive for office development, with possible hotels and related uses included in the mix. Other than hotel development, retail uses should be limited to no more than 10 percent of the parcel's floor area development. Multi-story development (including parking structures) should be a primary consideration to reduce the amount of impervious surfaces and, consequently, flooding in the drainage basins. Environmental and flood impact analyses may be warranted with development plan review to ensure that flood problems are not worsened.

- ***Connectivity/Circulation:***

Direct connections from individual sites to Sherrill Boulevard should be minimized to preserve this street as a traffic mover between the Cedar Bluff commercial/Park West Hospital area and points

north. Instead, a network of internal roadway and pedestrian connections between tracts will be needed to develop and maintain development continuity. City, county and state officials should examine the feasibility of providing a bridge connection over I-40/75 to connect this mixed use area with the Parkside Drive/Kingston Pike development corridor to the south.

- ***Location/Orientation of Uses:***

Offices and institutional uses should be oriented to Sherrill Boulevard. Medium density and office uses should be developed within the interior of the area (toward the lakes).



*Example of the office uses that are being created in this district.*

- ***Parking:***

Shared parking, parking to the side and rear of buildings, and under-building parking structures should be encouraged and used. Measures, such as parking structures and under-building parking may be warranted to reduce the amount of impervious surfaces and, consequently, flooding in the Ten Mile Creek drainage basin.



*Multi-level parking structures are one way to reduce the amount of impervious surfaces and the problems of stormwater runoff.*

- ***Other design elements:***

Landscaping, lighting and signage should be consistent and compatible throughout the area. Street trees should be planted within medians, sidewalk planting strips and wells.



*A view across Pellissippi Parkway of the first of three office buildings in the Century Park development*

**CENTURY PARK  
MIXED USE SPECIAL DISTRICT  
(MU-NWCO2)**

This area should be developed as a mixed-use district, allowing office, technology-based, and retail development (especially that which serves the park's occupants and adjacent uses). Retail uses, other than a hotel, should be limited to 10 percent of the development's floor area in this district. Provisions for future development should include the following:

- **Future Development/Redevelopment:**  
Development should be composed primarily of a mix of uses, focusing on office development and retail uses that serve the park and adjacent uses. Vertical mixed use buildings, such as offices above restaurants, are appropriate. Multi-level structures, including hotels and related uses, would be appropriate, especially along Sherrill Boulevard to take advantage of exposure to Pellissippi Parkway.
- **Connectivity/Circulation:**  
Continuity and connectivity in streets, sidewalks, and pathways are necessary to support the diversity of land uses. All components of future development should have internal street access from one building to another, with more than one means to reach adjoining thoroughfares. Separated sidewalks should be created with each development and on-street parking should be allowed on streets, separating pedestrians from travel lanes and providing immediate access to adjoining uses.

- **Location/Orientation of Uses:**  
Office uses (at least on upper floors) should be closest to Sherrill Boulevard and Pellissippi Parkway, promoting corporate identity along the parkway and I-40/75. Retail development should be concentrated along the south side of Dutchtown Road or as a ground floor use in a multi-story building.
- **Parking:**  
In order to limit storm water runoff, parking structures should be considered for larger users, and off-street surface parking should be primarily located to the side or behind buildings. Shared parking and parking space credits (on-street parking and transit connections) should be encouraged.
- **Other Design Elements:**  
Landscaping, lighting and signs should be compatible from one block to another. Street trees should be planted within medians, sidewalk planting strips and wells.

**DUTCHTOWN ROAD/LOVELL ROAD  
MIXED USE SPECIAL DISTRICT  
(MU-NWCO3)**

This area can take advantage of parkway frontage for office and technology park uses if a linkage can be established between Dutchtown Road and Lovell Road using the alignment of Sanctuary Lane. Provisions for future development should include the following:

- **Future Development/Redevelopment:**  
A mix of office and technology park uses would be appropriate in this location. Low level structures should be the predominant building type in order to maintain a consistent scale with nearby low density residential areas.
- **Connectivity/Circulation:**  
As a condition of approval, development plans should include right-of-way dedication for the completion of the new north/south connector road. The realignment of Sherrill Boulevard from the south might be necessary to allow for a smooth north/south connection across Dutchtown Road. New developments should include street connections between uses, as well as separate pedestrian connections.
- **Location/Orientation of Uses.**  
The area does not have enough depth to require anything but orientation of uses toward the Pellissippi Parkway.
- **Parking:**  
Off-street parking should be allowed only to the side or rear of buildings. Shared parking arrangements between the different uses should be required.
- **Other Design Elements:**  
Landscaping, lighting and signs should be compatible throughout the area. Street trees should be planted along the new connector road, primarily within sidewalk planting strips. Height limitations for hillside and ridge development are three stories (35 feet).

**SADDLEBROOK  
MIXED USE SPECIAL DISTRICT  
(MU-NWCO4)**

This area, much of which is already developed, will contain a shopping center near the Lovell Road/Yarnell Road intersection, an adjoining medium density residential development and office buildings toward the ridge to the north. Provisions for future development should include the following:

- **Future Development/Redevelopment:**  
Not much land remains to be developed in this area, although the southern portion, which is proposed to be developed as a shopping center, remains vacant. Shopping center uses should be those that cater to the needs of surrounding neighborhoods and non-residential developments. Regional-serving retail uses (any development in excess of 50,000 square feet at ground level) should not be allowed at this location.
- **Connectivity/Circulation:**  
Sidewalk and/or pathway connections must be made between components of this development and adjoining development, particularly to the north. A north/south road connection is necessary from Lovell Road/Yarnell Road to the north to connect to Hardin Valley Road.
- **Location/Orientation of Uses:**  
The general development pattern has already been established in this area and development of office and multifamily residential uses is underway. Only a small area along Lovell Road/Yarnell Road remains to be developed where a shopping center has been proposed.
- **Parking:**  
Off-street parking spaces should be located to the side or rear of buildings whenever possible.
- **Other Design Elements:**  
The steep slopes of the ridge should be replanted with a mix of native deciduous and evergreen trees. A buffer should be created along the stream flowing from the north. Height limitations for hillside and ridge development are three stories (35 feet).

**CARMICHAEL ROAD/  
HARDIN VALLEY ROAD  
MIXED USE SPECIAL DISTRICT  
(MU-NWCO5)**

Concept plans have been approved for several sites within this area. A mix of uses can be considered, allowing office, high technology, retail (especially that which serves developed uses within the area) and medium density residential. The new Valley Vista Road connecting Hardin Valley and Carmichael roads provides enhanced access that will foster development. Provisions for future development should include the following:

- **Future Development/Redevelopment:**  
Development should be composed primarily of mixed uses, including vertical mixed use buildings (such as offices above restaurants).
- **Connectivity/Circulation:**  
Continuity in the street, bicycle and pathway systems are necessary to provide continuous access parallel to Pellissippi Parkway and to join Hardin Valley Road to Lovell Road. All components of future development should have street and sidewalk access from one building to another and pathway access to the Pellissippi Greenway. No direct vehicular access to the Parkway should be allowed. Separated sidewalks should be created with new development.
- **Location/Orientation of Uses:**  
Office and technology-based uses should be established next to the parkway, while office, retail and medium density residential uses should be established along the new public road connecting Hardin Valley and Carmichael Roads. Office and retail uses have been approved for the property fronting Hardin Valley Road,
- **Parking:**  
Off-street parking should be primarily located under buildings, taking advantage of the slope, or to the side or rear of buildings. Shared parking (for instance, between office and church uses) should be encouraged.
- **Other Design Elements:**  
Landscaping, lighting and signs should be compatible from one block to another. Street trees should be planted with the development. Height limitations for hillside and ridge development are three stories (35 feet).

**PELLISSIPPI STATE TECHNICAL  
COMMUNITY COLLEGE/  
STATE ROUTE 475  
MIXED USE SPECIAL DISTRICT  
(MU-NWCO6)**

This area is located between the north edge of the campus and the proposed right-of-way for the State Route 475 freeway. It is well positioned to have office or technology park uses, particularly with the “corporate visibility” that will result from freeway construction and its proximity to the Technical Community College. Clustered housing is also considered to be a logical use, providing a residential location near the college and employment opportunities in the area. Commercial uses may be created as vertical mixed uses. Provisions for future development should include the following:

- **Future Development/Redevelopment:**  
Development should be composed of mixed uses, including office, technology-based, and residential. The proportion of residential floor area should not exceed 50 percent of any development.
- **Connectivity/Circulation:**  
Continuity in streets, sidewalks and pathways is necessary to support diversity of land uses. A connecting road must be depicted on development plans linking Hardin Valley Road with Sam Lee Road. Sidewalk or pathway connections must be made between a development and the community college campus. Separated sidewalks should be created in conjunction with development, separating pedestrians from the travel lanes and providing immediate access to adjoining uses.
- **Location/Orientation of Uses:**  
Office and technology-based uses should be located closest to Hardin Valley Road. This area (the eastern portion of the site) is also where vertical mixed use is most appropriate (for example, offices above a restaurant or a business supply store). Low to medium density residential uses are allowed, either in a cluster or in a vertical mixed-use building.
- **Parking:**  
Off-street parking should be primarily located to the side or behind buildings. On-street parking and shared parking may be appropriate.
- **Other Design Elements:**  
Consistent landscaping, lighting and signage should be required. Height limitations for hillside and ridge development are three stories (35 feet).

**BEAVER CREEK  
MIXED USE SPECIAL DISTRICT  
(MU-NWCO7):**

Located on rolling farmland to the south of Beaver Creek, this area has the capacity to be developed as an office or technology park, or as a mixed use project that includes residential uses. As proposed, State Route 475 and a realigned Sam Lee Road will impact potential development. Provisions for future development should include the following:

- **Future Development/Redevelopment:**  
A master plan should be created for the entire area. Future development can be composed of vertical mixed-use buildings (such as offices above restaurants) in a "core area" at the intersection of Sam Lee Road and Lovell Road. At least 25 percent of the development area should be devoted to office or technology-based uses. Steep slopes and flood plains must be depicted on the development plan as conservation areas.
- **Connectivity/Circulation:**  
Sidewalk and/or pathway connections must be made between components of the development. A stream protection buffer and greenway should be established along Beaver Creek.

- **Location/Orientation of Uses:**  
Office uses, technology-based and neighborhood commercial uses should be located closest to Solway Road and the new Sam Lee Road intersection. Office and technology park uses are also recommended toward the edge of the property north of the State Route 475 right-of-way, given the corporate visibility that this portion of the site will have. The balance of the area (between the proposed greenway and new Sam Lee Road) is recommended for office or technology park or low and medium density residential uses (up to twelve dwelling units per acre).
- **Parking:**  
Under building parking should be used in this area where slopes exceed 25 percent and to reduce runoff to Beaver Creek.
- **Other Design Elements:**  
Consistent landscaping, lighting and signage should be required. Height limitations for hillside and ridge development are three stories (35 feet).



*This site on Rather Road has potential for technology-based or light manufacturing uses.*

**PELLISSIPPI PARKWAY/  
OAK RIDGE HIGHWAY  
MIXED USE SPECIAL DISTRICT  
(MU-NWCO8)**

This general area will have significant potential for higher intensity development if adequate infrastructure is created in concert with State Route 475 improvements. The area is characterized by greatly varying topography; the steeper slopes and a former demolition debris landfill are constraints to a portion of its development. With the proposed freeway and ramp system to Oak Ridge Highway, it is a logical location for limited commercial development, given slope and landfill constraints.

- **Future Development/Redevelopment:**  
Because of the potential for enhanced access and the exposure this location will have to three major transportation routes, this area presents strong opportunities for a mix of office, commercial, technology-based and light industrial development. Steep slopes and flood plains must be depicted on the development plan as conservation areas. Unless geotechnical analysis proves otherwise, the former landfill site should be left as a park or other open space, (see proposed "Three Rs Park" in Community Facilities and Utilities Plan map on page 31).
- **Connectivity/Circulation:**  
Road improvements should include an extension of Emory Road that aligns with the TDOT-proposed access road toward the eastern edge and is designed to accommodate development on either side of the new road; a continuation of those road improvements, allowing improved access to the future George Light overpass; and a continuation of George Light Road (northbound) to join with Oak Ridge Highway.

A stream protection buffer and greenway should be established along Beaver Creek in keeping with State Route 475 Plan proposals. Sidewalk and/or pathway connections must be made between components of the development.

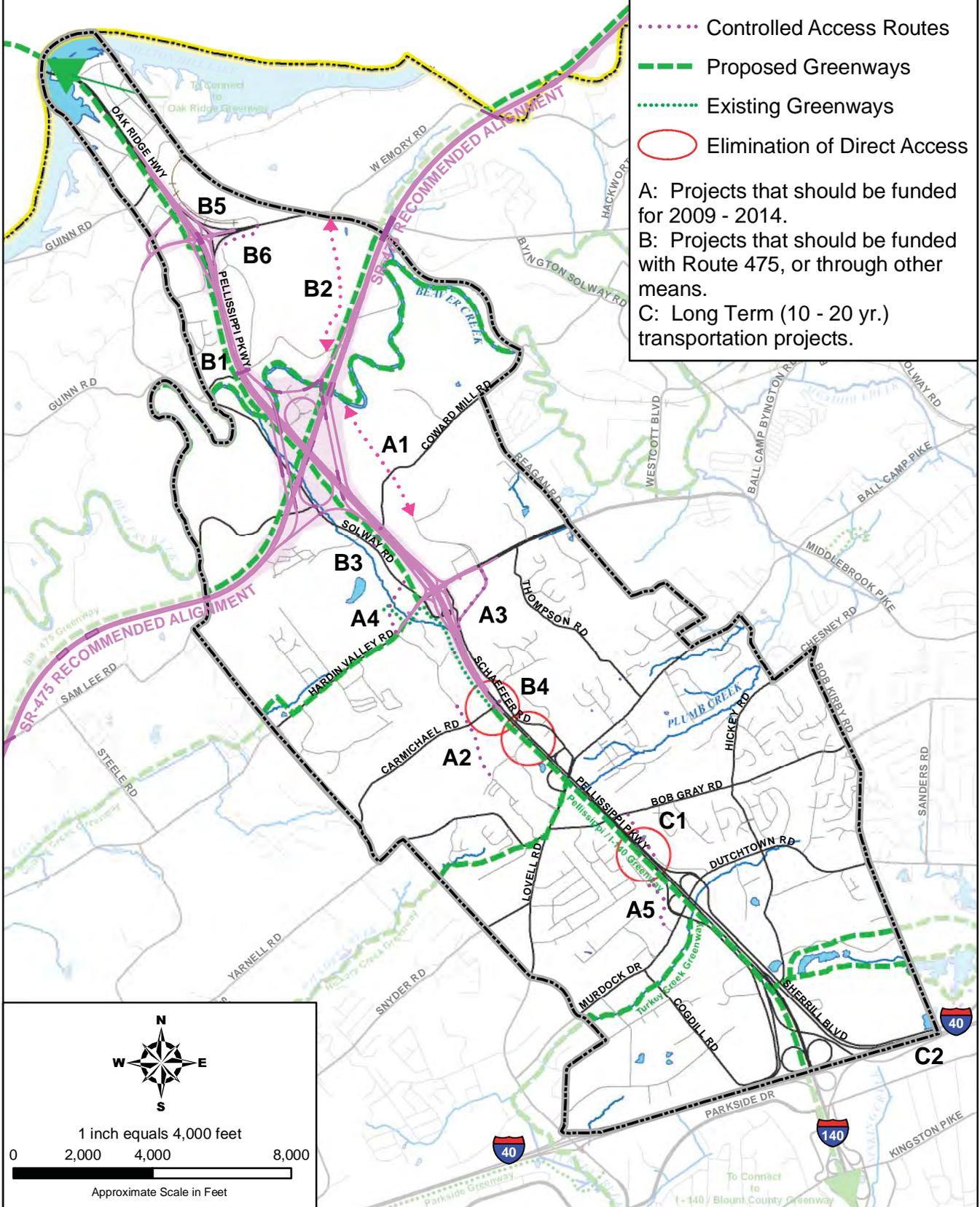
- **Location/Orientation of Uses:**  
Particularly for economic development purposes, office, technology-based or light industrial uses should be created on the flatter eastern portion of the area next to State Route 475. Future commercial development should be limited to the northwest corner of the area (at the proposed George Light Road extension to Oak Ridge Highway). Vertical mixed use buildings (such as restaurants at ground level with offices above) are also appropriate in this area. The hillier southern portions of the site should be used for office or residential purposes. Older residential structures which line George Light Road should be considered for reuse/redevelopment for office or medium density residential purposes, particularly after the State Route 475 and related road improvements are in place.
- **Parking:**  
Structures for parking under buildings are possible, given the nature of the property.
- **Other Design Elements:**  
Landscaping, lighting and signage should be consistent in scale and overall design. Height limitations for hillside and ridge development are three stories (35 feet).

# Map 4: Transportation Improvements Plan

## Legend

- ⋯ Controlled Access Routes
- Proposed Greenways
- ⋯ Existing Greenways
- Elimination of Direct Access

- A: Projects that should be funded for 2009 - 2014.
- B: Projects that should be funded with Route 475, or through other means.
- C: Long Term (10 - 20 yr.) transportation projects.



## Transportation Improvements Plan

The Transportation Improvements Plan (see Map 4) provides an overview of the projects that are recommended in various adopted plans and those that have been identified during the process of updating the Comprehensive Development Plan. Prior to the implementation of some of these projects, there should be opportunities for additional public input to address issues related to adjacent land use, neighborhood protection, and environmental and historic resource preservation. It is vital to develop and maintain a transportation network that is accessible and provides mobility to all people who work, go to school or live within or near the corridor. To meet this goal this plan recommends the following guiding principles:

- Develop continuous road systems while curtailing direct, often unsafe access to Pellissippi Parkway.
- Create and maintain sidewalks, bike lanes, greenways and other facilities for alternative transportation.
- Maintain services for the elderly, disabled, and low-income residents. Promote programs provided by the East Tennessee Human Resources Agency, Community Action Committee and KAT.

Additionally, the following two principles should be considered in designing the road cross-sections and intersections of transportation projects.

- ***Context Sensitive Design:***

This is a process that addresses the physical setting of a potential project and preserves scenic, aesthetic, historic, environmental and other resources, while maintaining mobility and safety. This facility planning should revolve around a collaborative, interdisciplinary approach that incorporates the desires and concerns of all in the area. The planning for State Route 475 has an element addressing context sensitive design.

- ***Complete Streets:***

Any road projects, public or private, should adhere to the principle of creating Complete Streets. Complete Streets are designed to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a Complete Street. The pedestrian and bicycle facilities depicted in the Transportation and Community Facility Plans are priorities in establishing a Complete Streets program.

Some considerations for more detailed road designs are outlined below.

## Recommended Improvements

To facilitate an improved transportation network, the following projects are needed. They are designated as being A, B or C projects, according to priority:

- A. These projects should be programmed as capital improvements, 2010-2015. They are envisioned as immediate necessities in view of economic development, and in the case of access control, as measures to avoid accidents along the parkway.
  - A1 Extend Cherahala Boulevard to Coward Mill Road and northward to Horseshoe Bend Business Park.
  - A2 Extend Valley Vista Road to create a connection between Hardin Valley Road and Lovell Road.
  - A3 Realign Schaeffer Road so that the northern terminus aligns with Cherahala Boulevard at Hardin Valley Road.
  - A4 Realign Solway Road so that the southern terminus aligns with Valley Vista Road.
  - A5 Develop a new road that connects with the Parkway Heights Condominiums to Dutchtown Road or, alternatively to Bob Gray Road.
- B. B List projects are recommended in conjunction with State Route 475 construction. Should a decision be made in the future to abandon the State Route 475 project, the following projects should be programmed as "A List projects."
  - B1 Extend George Light Road over the Pellissippi Parkway.
  - B2 Develop a new road on the north side of State Route 475, east of Pellissippi Parkway, connecting George Light Road with Oak Ridge Highway including improvements to Rather Road and a connection to Emory Road.
  - B3 Extend Coward Mill Road to Solway Road by means of an overpass over the Pellissippi Parkway.
  - B4 Extend Carmichael Road to Schaeffer Road by means of an overpass over the Pellissippi Parkway.

- B5 Realign Solway Road to the north to create a full access controlled interchange with Oak Ridge Highway and Pellissippi Parkway.
- B6 Extend George Light Road to Oak Ridge Highway.

C. These projects are envisioned as part of a long term (10 to 20 year) program, largely to create better connectivity in the Technology Corridor.

- C1 Extend Sanctuary Drive to Bob Gray Road.
- C2 Develop a new road connection by means of an overpass over I-40/75 between Sherrill Boulevard and Sherlake Lane.

### Access Control

#### along Pellissippi Parkway

Develop Pellissippi Parkway as a fully accessed controlled freeway by the elimination of all at-grade intersections and access points between Solway Road to the north and I-40/75 to the south. The following at-grade intersections should be eliminated:

#### **A. Short range: Place the following right-of-way closures in Capital Improvement Programs 2010-2015:**

- Schaeffer Lane access when Schaeffer Road is extended to Hardin Valley Road
- Carmichael Road access closure when Valley Vista Road is completed to Lovell Road
- CenterPoint Boulevard with Yarnell Road and related intersection improvements
- Odin Street with connections to Discovery Lane

#### **B. Midrange: Complete the following closures with the State Route 475 project:**

- Solway Road
- George Light Road (all three points)
- Horseshoe Bend Lane
- Coward Mill Road

### Alternative Transportation Modes

#### **Policies and Recommended Improvements:**

Policies regarding sidewalks and greenway trail development are as follows:

- Include separated sidewalks along at least one side of all roads within the corridor. This should include retrofitting existing roads to accommodate the sidewalks.
- For those roadway overpass/underpasses proposed for SR 475, Pellissippi Parkway and I-40/75, reserve a minimum 5-foot-wide shoulder for pedestrian/bicycle pathways along the roadway.

The following are recommended as improvements to alternative transportation modes within the Technology Corridor listed in order of priority:

1. Continue the existing Pellissippi Greenway that now exists from Hardin Valley Road to south of Carmichael Road to CenterPoint Business Park. Provide for connections north into Anderson County with the State Route 475 project.
2. Develop a greenway along Beaver Creek.
3. Develop a greenway along the new State Route 475.
4. Develop a greenway loop connecting Webb School and Christian Academy of Knoxville campuses with the Dead Horse Lake development opportunity site.



*Extending George Light Road over the Pellissippi Parkway is recommended for this dangerous intersection.*



## Community Facilities and Utilities Plan

The Community Facilities and Utilities Plan (see Map 5) contains recommended projects to be implemented for the first five and the next 10 years following plan adoption. They should be reviewed annually when preparing capital improvement programs. Improvements recommended in this section represent ongoing efforts as well as input from residents attending sector plan workshops and public meetings.

### *Educational Facilities*

The anchor of the community facilities system is Pellissippi State Technical Community College, which was established in 1974 to educate a work force in the essential knowledge of science and technology. Its graduates have entered the labor force and serve firms within and well beyond the corridor. The college's primary campus, which has been at the present location on Hardin Valley road since 1986, also serves as a place for recreation, public events and public arts. Campus expansion and road, bike and sidewalk linkages are foremost needs. Additionally, three county schools, Karns High School, Hardin Valley Academy and Hardin Valley Elementary School are near the corridor.

### *Utilities*

Sanitary sewer services are the only major utility which is lacking in the entire corridor. West Knox Utility District provides water and sewer services to most of the area. The area north of Beaver Creek is particularly lacking in sewer services. Provision of that service is needed for economic development purposes. Developing force mains and increasing the capacity of the force main at Beaver Creek are the most pressing needs. At this time the sewage treatment plant near WestBridge Business Park has enough capacity to handle the proposed land use changes that are identified between Hardin Valley Road and Oak Ridge Highway.

### *Parks, Open Spaces and Recreational Facilities*

The long-term status of existing sports fields is uncertain. The American Youth Soccer Organization uses the fields at Hardin Valley Road/Pellissippi Parkway, which are part of the Pellissippi State Technical Community College campus and could be developed in the future. Similarly, the soccer fields and walking track at US Cellular are part of that telecommunications firm's property and may not be available for long term recreation use.



*The Pellissippi Greenway*

A Pellissippi Greenway trail, which can be used for bicycling, walking and jogging, was started in the early 1990s. It extends from the community college campus to Carmichael Road, largely within the Pellissippi Parkway right-of-way.

While community-based recreation facilities have been created in the form of community parks and sports complexes, no neighborhood parks, which are traditionally located within walking distance of residential areas, are in existence in or near the corridor.

Several open space systems should be created, including greenways with trails that follow the parkway and Beaver Creek. Additionally, two portions of a proposed ridge-line greenbelt system should be established to protect such resources as the forested hillsides. These greenbelts along Beaver Ridge and the north face of Black Oak Ridge can be a combination of public and private lands. The conservation and related purposes of these systems are to avoid erosion and flooding, protect habitats, provide walking and outdoor recreation opportunities, and recognize the natural edges to such communities as Karns and Hardin Valley.



*Pellissippi State Technical Community College*

### Recommended Improvements

The following improvements, if implemented, will enhance the framework of educational, utility and parks and recreation facilities found in the area.

#### ***Pellissippi State Technical Community College***

Maintain the strength and foster the expansion of the corridor's primary educational institution, which provides the focus for a walkable mixed use center near Hardin Valley Road and Pellissippi Parkway.

- Expand the campus to Hardin Valley Road and northward toward State Route 475.
- Provide road and sidewalk connectivity with future development in the area.

#### ***Parks and Recreation Policies:***

- Require park spaces within those mixed-use development projects that can serve workers, visitors and residents; 15 to 20 percent of mixed-use areas should be set aside as parks, plazas, squares or other open space.
- Set aside space for stream buffers and trails along the creeks and water bodies.
- Establish the greenbelt and greenway systems through a combination of land use codes, donations and purchases.

### ***Parks and Recreation***

#### ***Recommended Improvements:***

(listed in order of priority)

1. Establish a community park along Conner Creek near Hardin Valley Academy, particularly to offset the potential loss of Pellissippi/AYSO and US Cellular field space.
2. Develop a multi-purpose greenway trail along Conner Creek/Hardin Valley Road, with State Route 475 development.
3. Acquire sites for 5- to 20-acre neighborhood parks in the adjoining residential areas.
4. Complete the Pellissippi Greenway (Oak Ridge to Blount County).
5. Develop the Beaver Creek greenway trail
6. Consider reuse of the former Solway-area demolition landfill as a park.
7. Establish the State Route 475 greenway.

### ***Sanitary Sewer***

Create and maintain the sanitary sewer infrastructure that will sustain further corridor development.

- Expand pump station capacity, especially near Beaver Creek.
- Extend sewer systems northward beyond Beaver Creek.



# Plan Implementation

## Strategies and Related Considerations

The original objectives in creating the Technology Corridor have been undermined to a significant degree. As noted in the background section, several decisions were made or circumstances arose that did not support the creation of widespread technology-based development. These included:

- The initial failure to buy large areas for research park purposes, and instead, to rely on “technology-based” zoning
- The lack of funding for a TTCDA staff, cutting ties with the University of Tennessee, and losing a marketing program
- The incremental decisions to rezone “technology-based” parcels to permit more than 400 acres of residential development
- The changes to the “technology-based” zoning ordinance to allow a wider range of other development (for example, call centers)
- The lack of public investment in infrastructure, particularly road and sewer systems

Still, the direction of the corridor’s development is characterized by several positive factors: the creation of high quality development, a continuing emphasis on job creation, and the role of Pellissippi State Technology Community College in education. These are hallmarks of the Corridor’s success that can be reinforced with more emphasis on capital and administrative investment. To those ends, the following program is recommended:

### ***New Regional Approach to Technology-Based Development***

As pointed out in the analysis, the various emerging research and business parks in Oak Ridge and Blount County have great potential but are still in the initial stages of attracting firms. It was also pointed out that the operations of the Technology Corridor Development Authority has been distilled down to design review, losing marketing, day-to-day staffing, and ties to the university and other research entities.

To foster opportunities for greater success among the area’s economic development organizations, an effort should be made to determine what improvements, if any, are needed to strengthen the region’s ability to attract new technology-based investment.

One starting point for a closer look might be the East Tennessee Economic Development Agency, a public entity that partners with the State of Tennessee Department of Economic and Community Development and the Tennessee Valley Authority to market a 15-county region for business recruitment. Currently, the agency primarily serves in a marketing capacity in support of local jurisdictions in attracting new businesses to the region. Should consideration be given to expanding the agency’s role to include land acquisition and infrastructure development as a means to enhance local economic development initiatives? The answer to this question may be no, but the opportunity for an expanded role for the agency should be explored.

Another established effort deserving consideration would be Innovation Valley, Inc., a multi-county consortium of economic development agencies and chambers of commerce.

Other approaches could include the following:

- The creation of a consortium of governments and research entities from Oak Ridge (Roane), Knox County and Blount County to develop a regional approach to technology-based development, working with each other and state and federal resources for infrastructure development, land acquisitions and coordinated management for some operational and marketing functions.
- The expansion of the role of the Development Corporation of Knox County to be the land acquisition, management and marketing entity for targeted tract development in the corridor.

### ***Land Banking/Public Land Purchases***

Using the 2005 MPC inventory, ***Potential Locations for Business Park Development***, as a basis to explore other business park location possibilities, the Development Corporation of Knox County should consider land banking as a tool for acquiring properties that have potential for development of technology-based, business and/or office uses. As pointed out in the inventory, land banking is used by cities and economic development organizations ***“not only for Greenfield development, but also for brownfield redevelopment.”*** The Technology Corridor includes several opportunity areas that could be purchased and land banked by the Development Corporation until the proper time for their development.

The 2005 study identified a 143-acre site located just outside the corridor on Oak Ridge Highway, approximately 0.6 miles east of Pellissippi Parkway. This site could be merged with the Pellissippi Parkway/Oak Ridge Highway Mixed Use Development Area (MU 8), as identified in the land use section on mixed use area concepts. As pointed out, the proposed State Route 475 will improve this area's visibility for more intense development than what is now found in the area.

The 2005 study also listed Pellissippi Corporate Center, which was developed by the Development Corporation, as an existing business park site. Although the center is approaching build out, there may be an opportunity for possible expansion of the center to the north, across Coward Mill Road to the proposed State Route 475. With provisions for adequate water and sewer and needed road improvements, this area could also be land banked and preserved for future development.

In both these situations, the Development Corporation should consider land banking as a viable economic development tool. The 2005 business park site inventory also should be revised to include an analysis in greater detail of these two opportunities to determine their true potential and the kinds of improvements that would be necessary to make them marketable areas for new development. Knox County's recent commitment to the mixed-use Pellissippi Place project in Blount County is a clear example of public involvement in fostering local economic development. This commitment should continue with the support of a sound land banking program in the Technology Corridor.

### ***Public Investment in Infrastructure/ Tax Increment Financing***

Another technique that can be used to foster economic growth is the use of tax increment financing. As an example of public investment, tax increment financing, or TIF, is available in Tennessee and can be used to pay for such things as infrastructure improvements that otherwise might not be possible using more conventional financing means. As described in the March 2007 ***TACIR Staff Research Brief*** published by the Tennessee Advisory Commission on Intergovernmental Relations: ***TIF offers “self-financing” for development projects, allowing local governments to encourage development, and to compete for businesses, without having to pay upfront development costs. Local governments have found TIF to be especially useful in funding infrastructure improvements needed to attract development.***

To date, the lack of public investment in continuous road systems, and sewer extensions has been a serious shortcoming in realizing overall development. Carefully used, TIF could be used to help pay for needed road improvements and extensions to enhance accessibility to properties that are difficult to get to for economic development purposes. Some of the projects listed in this report under Proposed Transportation Improvements could be candidates for the use of TIF as a way to pay for their construction. Other uses of TIF could support sewer extensions to targeted areas, as well as sewer infrastructure development related to the State Route 475 project.

### ***Role of the TTCDA Board***

The role of the authority and its board has changed substantially over the years, essentially going from a fully staffed organization that was involved in recruitment and other day-to-day development activities to a design review body. Measured against the parameters for successful research park development (see pages 15-16), the future of the TTCDA operation raises serious concern. One possible approach to maintaining the board's review function is to support a transition of the board into a design review committee within the framework of the zoning ordinances. Such a body would have the primary responsibility for development plan approval of projects in the Technology Overlay.

Two approaches should be examined. Using the City's Downtown Design Review Board as a model, the board could transition into a locally appointed committee that would be under MPC's umbrella, but have the charge to review and approve project proposals. Appeals of committee decisions would then be forwarded to MPC. A second approach would be to abolish the board and re-establish the review of project proposals as an MPC staff responsibility. Plans would be reviewed against the Design Guidelines, but any deviation from the Design Guidelines would require consideration by MPC under an alternative compliance provision. These and other changes in the process would probably require amendments to or repeal of the state enabling legislation creating the Tennessee Technology Corridor.

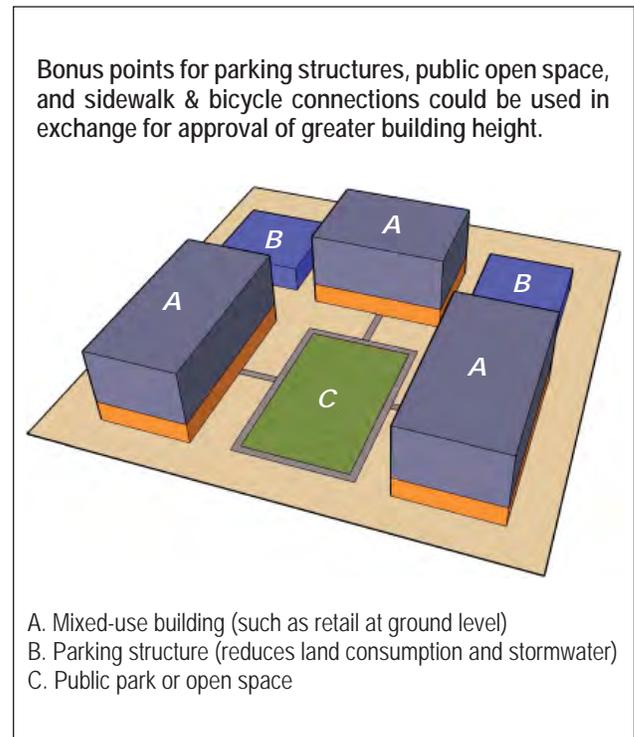
### **General Rezonings and Zoning Ordinance Amendments**

Revising the slope preservation requirements for better effectiveness in maintaining the corridor's steeper terrain and updating the policy design standards to better reflect current trends in development should be a prime consideration. The land use plan calls for several mixed use areas and targeted technology-based development sites. The zoning for those areas should be aligned with the proposed land use (see Map 3, page 21), fostering economic development and flexibility for a mix of uses on certain tracts. In addition, to fulfill the vision of a well-designed and developed Technology Corridor, new zoning classifications and related changes should be made to both zoning ordinances. Such revisions should include form-based zoning, updated policy and landscaping requirements and updated permitted uses for zones already in place.

The following zoning code revisions are recommended:

- Add a new "specific plan" district to the zoning codes to allow mixed-use development that meets the intent of the proposed special districts. Such plans, based on certain open space conservation and development standards, would have to be approved by the TTCDA Board and Planning Commission. Each plan would include the general location of buildings, architectural standards, land use allocations, infrastructure (road, sewer and storm water systems), open space and other amenities.

- Change the maximum height standard up to ten stories for sites with a slope of 0 to 15 percent. These taller buildings could be approved via a bonus point system that creates requirements for parking structures, sidewalk and bicycle connections, and publicly-useable and oriented open spaces for such higher intensity uses. Additional stories could be approved in exchange for creating common open space, parking structures and mixed-use development that reduces reliance on the automobile (see illustration below).



- Adopt new hillside and ridge line protection standards, limiting clearing and intensity of development on steep slopes.
- Create shared off-street parking standards whereby the required number of spaces can be reduced in appropriate situations. For example, a church next to office uses can virtually share all common parking because church operational hours (Sundays and, typically, Wednesday evenings) are opposite Monday through Friday, eight to five office hours.
- Include development incentives for those properties with buildings whose design achieves LEED (Leadership in Energy and Environmental Design) certification, as determined by the U.S. Green Building Council

### ***Creating a Means for Alternative Compliance***

On occasion TTCDA and its staff have been approached by development interests with concepts for larger buildings than what is currently allowed under the existing floor area ratio standards. There may be opportunities for flexibility in project development, particularly if some purposes of the plan and public interests are to be served, such as open space protection, solving direct access problems and reducing traffic generation with, for example, mixed-use projects. Three measures should be explored to potentially enable taller and more site intensive development:

- A bonus point system where criteria are established for on-site and off-site improvements that serve the overall public good
- A fee-in-lieu or similar financing system, such as tax increment financing (TIF), where funds are set aside to realize public projects within the corridor
- A means to allow small, disjointed areas of steep slope, or other environmentally-critical features, to be developed if a like or greater amount of land is set aside for protection as green space

### ***Post Development Compliance Review***

One issue identified and discussed during a presentation of the draft plan was the need for more effective post development compliance review. Such review would better ensure that projects are implemented according to their approved Certificates of Appropriateness and that there is consistency in how the Design Guidelines are applied from project to project.

### ***Updating the Design Guidelines***

Several revisions to the design guidelines were found to be in order. The existing guidelines, which were written to create a park-like setting with landscaping, sign controls and buildings of high quality, are still largely valid for campus-style development. Guideline improvements that have been suggested in the course of this update include updating setback requirements that better address development of smaller lots, reduced setbacks for monument signage, revised standards for signage illumination, revisions to the requirements for exterior illumination and revisions to the standards to maintain areas with steep slopes.

A major shortcoming with the existing guidelines is that they do not lend themselves to the creation of mixed use projects that are concentrated in pedestrian friendly settings (such as New Urban types of development). New guideline provisions, which include a means of alternative compliance for interests who wish to pursue concentrated mixed use projects, have been drafted and are available for review on MPC's website ([www.knoxmpc.org](http://www.knoxmpc.org)). It is also recommended that the updated guidelines be illustrated and as part of the new guidelines and include provisions for "New Urban " mixed-use development.

### ***Growth Policy Plan Changes***

The northern portion of the corridor, including areas to the west and beyond the future State Route 475 alignment, should be changed from a rural to a planned growth designation. This area is targeted for economic, commercial and residential development in this plan. Consequently, when the Knoxville Knox County Farragut Growth Policy Plan is updated, the Planned Growth Boundary should be expanded northward.

### ***Solway Small Area Plan***

The corridor boundary includes the Solway area (each side of Oak Ridge Highway to Melton Hill Lake). This area has been the "step child" of the corridor in that it has been perpetuated as a commercial strip, not realizing the employment-generating opportunities nor the design standards of the uses along the parkway. Higher intensity development should be sought, especially those uses that take advantage of position next to the lake. Plan considerations should include:

- Access control and beautification along Oak Ridge Highway
- More intensive forms of long-term development (for example, mixed-use office, technology-based, residential and retail projects)
- More emphasis on marina-oriented uses and recreation opportunities at the lake edge

A small area plan is the appropriate step to work with area interests to explore these proposals.

***Expansion of the Technology Overlay***

There are several opportunities for development north of Beaver Creek beyond the current overlay boundary. With the prospective development of State Route 475 and the long overdue upgrade of the Pellissippi Parkway/Oak Ridge commercial development highway interchange, there will be significant changes in the Solway area. The extension of the overlay northward along with a concerted program of infrastructure (road and sewer) improvements, land banking and quality design control composition can position this area into a prominent role as a gateway for the corridor's economic, housing and commercial development.



# Appendix A:

## General Plan Land Use Classifications

AGRICULTURAL and RURAL RESIDENTIAL LAND USE CLASSIFICATIONS		
<p><b>Agricultural (AG) and Agricultural Conservation (AGC)</b></p> <p>This includes farmland in the county's Rural Area as designated in the Growth Policy Plan. Undeveloped tracts with the best soils for agriculture are considered as the primary areas for agricultural conservation (AGC). Agricultural land uses are not generally recommended in the City of Knoxville, nor in the County's Planned Growth Area.</p>		
<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Farmland in the Rural Area as designated in the Growth Policy Plan</li> <li>• Land where soils are designated as prime or locally important by the U.S. Department of Agriculture are considered for agricultural conservation (AGC)</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>County's Rural Area: A new zone AC (Agricultural Conservation) is proposed for Agricultural Conservation (AGC) areas, allowing agriculture and one dwelling unit per 30 acres, minimum. (Note: This density will require a change to the zoning ordinance.) Additionally, conservation easement and related programs should be considered to preserve prime farmland.</p>	<p><b>Other Zoning to Consider:</b></p> <p>A or PR @ densities of one dwelling unit per acre where dwellings are clustered in one portion of a subdivision.</p>
<p><b>Rural Residential (RR)</b></p> <p>Very low density residential and conservation/cluster housing subdivisions are typical land uses.</p>		
<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Rural areas characterized as forested (tree covered), especially on moderate and steep slopes</li> <li>• Sites adjacent to agricultural areas (AG or AGC) where conservation/cluster housing subdivisions may be appropriate</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>County's Rural Area: OS, E, RR (Rural Residential, a new zone with densities of one dwelling unit per acre or less), or PR @ densities of one dwelling unit per acre where dwellings may be clustered in one portion of a subdivision</p>	<p><b>Other Zoning to Consider:</b></p> <p>A in the Growth Plan's Rural Area</p>
RESIDENTIAL LAND USE CLASSIFICATIONS		
<p><b>Traditional Neighborhood Residential (TDR)</b></p> <p>This land use is primarily residential and is characterized by neighborhoods where a mix of detached and attached houses, sidewalks, smaller lots and alleys have typically been or are to be created. Densities in the range of 4 to 8 dwelling units per acre are typical.</p>		
<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Neighborhoods like those in the 'Heart of Knoxville' where lots are typically less than 50 feet wide, and usually have sidewalks and alleys. This area is essentially the 19th and early 20th century grid street neighborhoods, mostly located within the I-640 beltway.</li> <li>• City's Urban Growth Area or county's Planned Growth Areas where neighborhood or community mixed use development is identified (see Mixed Use and Special Districts section)</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: R-1A or RP-1 [with an Infill Housing (IH-1), Neighborhood Conservation (NC-1) or Historic (H-1) Overlay]; TND-1; and new residential zone(s), based on lot sizes less than 7,500 square feet</p> <p>County's Planned Growth Area: PR and new TND zoning.</p>	<p><b>Other Zoning to Consider:</b></p> <p>City: R-1, R-1A and RP-1 (without overlays), R-2 County's Planned Growth Area: RA, RB and PR (with conditions for sidewalks, common open spaces &amp; alleys)</p>

**RESIDENTIAL LAND USE CLASSIFICATIONS (continued)**

**Low Density Residential (LDR)**

This type of land use is primarily residential in character at densities of less than 6 dwelling units per acre (dus/ac). Conventional post-1950 residential development (i.e. large-lot, low-density subdivisions) and attached condominiums are typical.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Land served by water and sewer utilities and collector roads</li> <li>• Slopes less than 25 percent</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: R-1, R-1E and RP-1 at less than 6 dus/ac and new residential zones based on lot sizes greater than 7,500 square feet and 75 feet or greater frontage.</p> <p>County's Planned Growth Area: RA, RAE and PR at less than 6 dus/ac.</p>	<p><b>Other Zoning to Consider:</b></p> <p>City: R-1A and A-1</p> <p>County: A and RB</p>
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**Medium Density Residential (MDR)**

Such land uses are primarily residential at densities from 6 to 24 dwelling units per acre (city) and 6 to 12 (county). Attached houses, including townhouses and apartments are typical. Mobile home parks are another form of this land use.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• As transitional areas between commercial development and low density residential neighborhoods</li> <li>• On land with less than 15 percent slopes</li> <li>• Along corridors that are served by or proposed to be served by transit, with densities proposed to be above 12 dwelling units per acre and to be served by sidewalks</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: R-2, R-3 and R-4 (within the 'Heart of Knoxville' area such zoning should be accompanied by an IH-1, NC-1 or H-1 overlay); otherwise, R-1A, RP-1, RP-2 or RP-3. Densities above 12 dus/ac should be within ¼ mile of transit service with sidewalk connections to transit service.</p> <p>County's Planned Growth Area: PR, densities above 12 dus/ac should be within ¼ mile of transit service with sidewalk connections to transit service; RB at 6 or more dus/ac may be considered with use on review. (Note: This proposed 6 dus/ac threshold for use on review will require a zoning ordinance change.)</p>	<p><b>Other Zoning to Consider:</b></p> <p>City's Urban Growth Boundary: R-2, R-3 and R-4</p>
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**High Density Residential (HDR)**

This land use is primarily characterized by apartment development at densities greater than 24 dwelling units per acre.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• On major collector and arterial streets, adjacent to regional shopping and major office districts (office sites allowing four or more stories); these sites must be identified in sector or small area plans</li> <li>• Within the CBD or its adjacent areas, such as portions of the Morningside community</li> <li>• On relatively flat sites (slopes less than 10 percent)</li> <li>• Along corridors with transit and sidewalks</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: C-2, RP-2 and RP-3, and new form-based codes (e.g. South Waterfront). R-3 and R-4 (with an IH-1, NC-1 or H-1 overlay in the 'Heart of Knoxville' area)</p>	<p><b>Other Zoning to Consider:</b></p> <p>TC-1 and TC (where higher density residential is part or a mixed-use project)</p>
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**Medium Density Residential/Office (MDR/O)**

Office and medium residential uses typically have similar development characteristics: scale of buildings, areas devoted to parking, yard spaces and location requirements (on thoroughfares). In areas designated MU-MDR/O, either use can be created. These uses provide a buffer to low density residential areas, particularly when located adjacent to a thoroughfare or as a transition between commercial uses and a neighborhood.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• See Medium Density Residential (MDR) criteria</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: RP-1, RP-2, RP-3</p> <p>County: PR</p>	<p><b>Other Zoning to Consider:</b></p> <p>City: O-1, O-2</p> <p>County: OB</p>
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## OFFICE and BUSINESS/TECHNOLOGY LAND USE CLASSIFICATIONS

### Office (O)

This land use includes business and professional offices and office parks.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Low intensity business and professional offices (less than three stories) may be transitional uses from commercial or industrial uses to neighborhoods</li> <li>• Generally level sites (slopes less than 15 percent)</li> <li>• Access to major collector or arterial streets, particularly within one-quarter mile of such thoroughfares</li> <li>• Highest intensity office uses (development that is four or more stories), should be located in close proximity to arterial/freeway interchanges or be served by transit</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: O-1, O-2, O-3, or a new office zone that requires site plan review</p> <p>County's Planned Growth Area: OA, OC, PC (with covenants) or a new office park zone that requires site plan review</p>	<p><b>Other Zoning to Consider:</b></p> <p>In areas that are identified in sector plans exclusively as office land uses, OB.</p>
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### Technology Park (TP)

This land use primarily includes offices and research and development facilities. The target area for such development has been the Pellissippi Technology Corridor. Additional districts could be created in other areas of the city or county. The development standards that are adopted by the Tennessee Technology Corridor Development Authority should be used for such districts.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Within the Technology Corridor or subsequent areas designated for Technology Park development</li> <li>• Sites near freeway interchanges or along major arterials</li> <li>• Water, sewer and natural gas utilities available</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: BP-1</p> <p>County's Planned Growth Area: BP and PC (with covenants limiting uses to research/development)</p>	<p><b>Other Zoning to Consider:</b></p> <p>EC (with limitations to require office and research/development uses)</p>
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## RETAIL and RELATED SERVICES LAND USE CLASSIFICATIONS

### Rural Commercial (RC)

This classification includes retail and service-oriented commercial uses intended to provide rural communities with goods and services that meet day-to-day and agricultural-related needs.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• At the intersection of two thoroughfares (arterial or collector roads)</li> <li>• Rural commercial nodes should generally not exceed more than 300 feet in depth and lots and not extend more than 300 feet away from the intersection</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>County's Rural Area: CR PC as provided in Growth Policy Plan</p>	<p><b>Other Zoning to Consider:</b></p> <p>CN</p>
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### Neighborhood Commercial (NC)

This classification includes retail and service-oriented commercial uses intended to provide goods and services that serve the day-to-day needs of households, within a walking or short driving distance. Neighborhood commercial uses may also be accommodated within neighborhood centers (see Mixed Use and Special Districts).

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Generally located at intersections of collectors or arterial streets at the edge of or central to a neighborhood</li> <li>• New NC should not be zoned for or developed within ½ mile of existing commercial that features sales of day-to-day goods and services</li> <li>• Automobile-oriented uses (e.g. gas stations or convenience stores) should be located on arterial street at the edge of neighborhood</li> <li>• Should not exceed the depth of the nearby residential lots and not extend more than a block (typically no more than 300 feet) away from the intersection</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: C-1 County's Planned Growth Area: CN</p>	<p><b>Other Zoning to Consider:</b></p> <p>SC-1</p>
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### Community Commercial (CC)

This land use includes retail and service-oriented development, including shops, restaurants, and what has come to be known as "big box" retail stores; typical service area includes 20,000 to 30,000 residents. Community commercial uses may also be considered within community centers (see Mixed Use and Special Districts).

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Locate at intersection of arterial streets</li> <li>• Sites should be relatively flat (under 10 percent slope) and with enough depth to support shopping center and ancillary development.</li> <li>• Vehicular and pedestrian connections should be accommodated between different components of the district (e.g. between stores, parking areas and out-parcel development)</li> <li>• Infrastructure should include adequate water and sewer services, and major arterial highway access</li> <li>• Community commercial centers should be distributed across the city and county in accordance with recommended standards of the Urban Land Institute</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>Because of traffic and lighting impacts (potential glare) and buffering needs of surrounding interests, 'planned zones' should be used.</p> <p>City: SC-2, PC-1 and PC-2.</p> <p>County's Planned Growth Boundary: PC or SC</p>	<p><b>Other Zoning to Consider:</b></p> <p>As infill development within areas already zoned C-3, C-4, C-5 and C-6 (City), and CA, CB and T (County)</p>
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**RETAIL and RELATED SERVICES LAND USE CLASSIFICATIONS (continued)**

**Regional Commercial (RS)**

This land use includes retail and service-oriented development that meets the needs of residents across Knox County and surrounding areas. Development typically exceeds 400,000 square feet; malls have been a typical form and 'life-style centers' (e.g. Turkey Creek) are examples. Regional Commercial uses may also be considered in Regional Centers (see Mixed Use and Special Districts).

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Flat sites (under 10 percent slope)</li> <li>• Locate near interstate interchanges with major arterial highway access</li> <li>• Water, sewer, gas and stormwater systems should be capable of handling the development</li> <li>• Vehicular and pedestrian connections should be accommodated between components of the development</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>Because of the magnitude of the traffic and environmental impacts, planned zones should be used.</p> <p>City: SC-3, PC-1 and PC-2</p> <p>County's Planned Growth Boundary: PC</p>	<p><b>Other Zoning to Consider:</b></p> <p>As infill development within areas already zoned C-3, C-4, C-5 in the City CA, CB and SC in the County</p>
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**General Commercial (GC)**

This category includes previously developed strip commercial corridors providing a wide range of retail and service-oriented uses. Such land use classification and related zoning should not be extended because of the adverse effects on traffic-carrying capacity, safety and environmental impacts. Redevelopment of commercial corridors, including mixed use development, should be accommodated under planned or design-oriented zones.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Existing commercial areas</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: C-6 and PC-1</p> <p>County's Planned Growth Area: PC</p> <p>New corridor design overlays when designated as special districts (see Mixed Use and Special Districts)</p>	<p>C-3, C-4, C-5, SC-1, SC, CA and CB for infill commercial development in areas previously zoned for commercial uses</p>
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## MIXED USE and SPECIAL DISTRICTS

There are several types of mixed-use areas: neighborhood, community and regionally-scaled districts and urban corridors. Mixed Use areas can be developed with higher intensity uses because of infrastructure and ability to sustain alternative modes of transportation. Development plan review is crucial. These areas should typically be created with sidewalks. Shared parking may be considered.

Automobile and truck-dependent uses, such as heavy industrial, distribution and highway-oriented commercial uses should not be located in neighborhood, community and regional mixed-use centers.

There are likely to be several distinctions between types of mixed use designations. Each Sector Plan and the One Year Plan will have a separate section which outlines the intent of each mixed use district and the development criteria for the district.

### 1. Neighborhood Mixed Use Center (MU-NC)

These are the least intense of the proposed mixed use districts. Residential densities of 5 to 12 dus/ac are appropriate within the area. Locations at the intersection of a local street and thoroughfare are generally most appropriate. The surrounding land uses should primarily be planned for low or medium density residential. The buildings of these centers should be designed with a residential character and scale to serve as a complement to the surrounding neighborhoods.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Flat terrain (slopes generally less than 10 percent)</li> <li>• Served by or planned to be served by sidewalks</li> <li>• The location does not include auto and truck-oriented uses such as industrial, strip commercial and warehouse/distribution uses unless the proposal calls for a redevelopment of such areas</li> <li>• At the intersection of a local street and throughfare</li> <li>• Next to low or medium density residential</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>TND-1</p>	<p><b>Other Zoning to Consider:</b></p> <p>Other form- or design-based codes</p>
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### 2. Community Mixed Use Center (MU-CC)

These centers are envisioned to be developed at a moderate intensity with a variety of housing types (8 to 24 dus/ac). The core of the district, with its predominant commercial and office uses, should be within ¼ mile of the higher intensity residential uses (such as townhouses and apartments). The district should be located within a ¼-mile radius of an intersection of the thoroughfare system (a collector/arterial or arterial/arterial intersection). In addition to sidewalks, the district should be served by transit. Redevelopment of vacant or largely vacant shopping centers are considerations for these centers.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Flat terrain (slopes generally less than 10 percent)</li> <li>• Location does not include auto/truck-oriented uses such as industrial, strip commercial and warehouse/ distribution, unless the proposal calls for redevelopment of such areas</li> <li>• Within a ¼-mile radius of an intersection (a collector/ arterial or arterial/arterial intersection)</li> <li>• Commercial/office core should be within ¼ mile of the higher intensity residential uses (townhouses &amp; apts.)</li> <li>• Served by or planned to be served by sidewalks and transit services</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>TC-1, TC</p>	<p><b>Other Zoning to Consider:</b></p> <p>Other form- or design-based codes</p>
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**MIXED USE and SPECIAL DISTRICTS (continued)**

**3. Regional Mixed Use Center (MU-RC)**

These are envisioned to be highest intensity mixed use centers. These districts should be served by sidewalk and transit systems and be located on a major arterial, adjacent to an Interstate highway or adjacent to downtown. Housing densities in the core of such districts can be 24 or more dus/ac. Downtown Knoxville's Central Business District is a regional mixed use center.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Flat terrain (slopes generally less than 10 percent)</li> <li>• Served by or planned to be served by sidewalks</li> <li>• Location does not include auto/truck-oriented uses such as industrial, strip commercial and warehouse/distribution, unless proposal calls for redevelopment of such areas</li> <li>• On a major arterial, adjacent to an interstate highway or adjacent to downtown</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>C-2 in the Central Business District (Downtown); an adaptation of C-2 for the 'Downtown North' area (Central City Sector); TC-1, TC or new form-based codes (and regulating plans) for other community and regional centers</p>	<p><b>Other Zoning to Consider:</b></p> <p>Other form- or design-based codes</p>
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**4. Urban Corridor Mixed Use (MU-UC)**

Several street corridors within the city have potential for redevelopment with a mix of retail, restaurants, office and residential uses. Commercial cores should be created at points (nodes) along these corridors, allowing a vertical mix of uses (for example, shops at ground level and apartments above); such nodes should not be more than four blocks long.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Corridors should have sidewalks, transit services, street trees and related beautification</li> <li>• Capable of sustaining on-street parking along corridor or along side streets</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: form-based or design-based codes (e.g. South Waterfront)</p>
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**5. Special Mixed Use District (MU with reference number)**

These can include designations to address urban design, pedestrian and transit-oriented development and vertical mixed use in designated areas. The areas may include older portions of the city or county where redevelopment and/or preservation programs are needed for revitalization purposes.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Case-by-case analysis is recommended</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>TND-1, TC-1, TC, especially in greenfield areas, or form-based or designed-based codes as noted in the Sector Plan and One Year Plan for each of these districts.</p>
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**6. Special Corridors (CD with reference number)**

These can include designations to address urban design and environmental concerns along commercial or industrial corridors (where overlays for aesthetic reasons or sidewalks may be recommended, like the Chapman Highway corridor). Other potential corridor designation could include rural/farmland conservation areas.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Case-by-case analysis is recommended</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>Should be noted in Sector Plan &amp; One Year Plan for each of these districts.</p>
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## INDUSTRIAL AND WAREHOUSE/DISTRIBUTION LAND USE CLASSIFICATIONS

### **Light and Heavy Industrial (LI and HI) and Mining (HIM)**

These classifications are typically used to identify older industrial areas, which were intended for manufacturing, assembling, warehousing and distribution of goods. Light industrial uses include such manufacturing as assembly of electronic goods and packaging of beverage or food products. Heavy industrial uses include such processes used in the production of steel, automobiles, chemicals, cement, and animal by-products and are viewed as clearly not compatible with areas designated for residential, institutional, office and retail uses. Quarry operations and asphalt plants are a particular form of heavy industrial, generally located in rural areas.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Existing industrial areas</li> <li>• Within one mile of an interstate interchange with access via standard major collector or arterial streets</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p><b>City:</b> I-1, I-2, I-3 and I-4 (infill development, using those zones, may be appropriate); C-6, PC-2 and a new planned, industrial zone, that requires site plan review, may be warranted to address environmental and transportation issues and surrounding community concerns.</p> <p><b>County's Planned Growth Boundary:</b> LI; EC zone should be used in future development</p>	<p><b>Other Zoning to Consider:</b></p> <p><b>County:</b> I (Industrial) should be used in cases involving rezonings to accommodate mining activities and should be accompanied by buffering and other conditions to protect adjacent property owner. PC, LI, I and CB may be considered for infill industrial development.</p>
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### **Business Park (BP) Type 1**

Primary uses are light manufacturing, office and regionally-oriented warehouse/distribution services in which tractor-trailer transportation is to be a substantial portion of the operations. A zoning category which requires site plan review is expected in the development or redevelopment of such areas. Site plans shall address landscaping, lighting, signs, drainage, and other concerns that are raised in the rezoning process. Substantial landscaped buffers are expected between uses of lesser intensity, particularly residential, office and agricultural uses.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Relatively flat sites (predominant slopes less than 6 percent) out of floodplains</li> <li>• Relatively large sites (generally over 100 acres)</li> <li>• Away from low and medium density areas or where truck traffic would have to go through such areas</li> <li>• Areas with freeway and arterial highway access (generally within two miles of an interchange)</li> <li>• Rail access is a consideration</li> <li>• Can be served with sanitary sewer, water, natural gas</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p><b>City:</b> I-1, C-6, PC-2 or a new Planned Industrial Park zone</p> <p><b>County's Planned Growth and Rural Areas:</b> EC</p>	<p><b>Other Zoning to Consider:</b></p> <p>PC</p>
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**INDUSTRIAL AND WAREHOUSE/DISTRIBUTION LAND USE CLASSIFICATIONS (continued)**

**Business Park (BP) Type 2:**

Primary uses are light manufacturing, offices, and locally-oriented warehouse/distribution services. Retail and restaurant services, which are developed primarily to serve tenants and visitors to the business park can be considered. A zoning category which requires site plan review is expected in the development or redevelopment of such areas. Site plans must include provisions for landscaping, lighting and signs. Substantial landscaped buffers are necessary between uses of lesser intensity, particularly residential, office and agricultural uses.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Relatively flat sites (predominant slopes less than 6 percent) out of floodplains</li> <li>• Relatively large sites (generally over 100 acres)</li> <li>• Away from low and medium density areas or where truck traffic would have to go through such areas</li> <li>• Freeway and arterial highway access (generally within two miles of an interchange)</li> <li>• Rail access is a consideration</li> <li>• Sites that can be served with sanitary sewer, water and natural gas</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p><b>City:</b> I-1, C-6, PC-2 or a new Planned Industrial Park zone</p> <p><b>County's Planned Growth and Rural Areas:</b> EC</p>	<p><b>Other Zoning to Consider:</b></p> <p>PC</p>
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**PARK, PUBLIC INSTITUTIONAL, OTHER OPEN SPACE & ENVIRONMENTAL PROTECTION**

**Public Parks and Refuges (PP)**

This land use classification contains existing parks, wildlife refuges or similar public or quasi-public parks, open spaces and greenways. It also contains quasi-public spaces, which are owned by civic or related organizations. Location criteria is not needed relative to large components of the park system, like community, district and regional parks and refuges; these areas are generally established through capital expenditures or land transfers from state or federal governments.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Neighborhood parks, squares and commons should be within ¼ mile of residents in the traditional residential areas (particularly the 'Heart of Knoxville') and within ½ mile of residents within the balance of the city and county's Planned Growth area.</li> <li>• Greenways should be located along or within the flood plains of streams and rivers/reservoirs. Other potential locations include ridges and utility corridors.</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p><b>City:</b> OS-1</p> <p><b>County's Planned Growth and Rural Area:</b> OS, E and OC</p> <p>A new zone should be created to designate parks, schools and similar institutional lands for both city and county jurisdictions.</p>	<p><b>Other Zoning to Consider:</b></p> <p>Other zones that allow parks and open space as permitted uses</p>
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**Civic/Institutional (CI)**

Land used for major public and quasi-public institutions, including schools, colleges, the university, churches, correctional facilities, hospitals, utilities and similar uses.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Existing public uses, other than parks and greenways</li> <li>• Quasi-public uses of two acres or more</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City and County: New zoning categories for such uses or continue to use conventional zones (e.g. O-1, O-2 and OB)</p>	<p><b>Other Zoning to Consider:</b></p> <p>Zones that allow CI as permitted uses</p>
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**Other Open Space (OS)**

Land uses include cemeteries, private golf courses, and similar uses.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>• Existing cemeteries, private golf courses and private open spaces</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p>City: OS-1 and a new zone created to designate parks, schools and similar institutional lands</p> <p>County's Planned Growth and Rural Area: OS, E, OC</p>	<p><b>Other Zoning to Consider:</b></p> <p>City: A-1</p> <p>County: A</p>
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**PARK, PUBLIC INSTITUTIONAL, OTHER OPEN SPACE & ENVIRONMENTAL PROTECTION**

**Hillside/Ridge Top Protection Areas (HP)**

This classification is used to identify hillsides, ridges and similar features that have a slope of 15 percent or more. Open space, recreation land or very low density housing (one dwelling unit per two acres) is recommended for slopes exceeding 25 percent. For slopes of 15 to 25 percent, housing densities should not exceed 2 dus/ac). Office uses may also be considered. Building height should not exceed 35 feet.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>Hillsides greater than 15 percent slope</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p><b>City:</b> RP-1, OS-1 and a new hillside protection zoning overlay, that has standards for various residential and office land uses and the amount of land disturbance that can take place relative to the degree of slope.</p> <p><b>County's Planned Growth and Rural Areas:</b> OS, E, A (on slopes less than 15 percent) and PR; a new hillside protection zoning overlay, that has standards for various residential and office land uses and the amount of land disturbance that can take place relative to the degree of slope.</p>	<p><b>Other Zoning to Consider:</b></p> <p>Other zones that require use-on-review</p>
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**Stream Protection Areas (SP)**

Typically these are areas which are subject to flooding. Such areas include both the floodway, which carries the significant portion of stormwater, and the 500-year flood fringe, which the city and county govern with various stormwater regulations.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>Floodways and flood fringes</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p><b>City:</b> F-1 and 'planned zones' (such as RP-1 and PC-1), which entail site plan review.</p> <p><b>County's Planned Growth Area:</b> F and 'planned zones' (such as PR and PC), that require site plan review to address flooding and stream protection issues</p>
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**Water (W)**

Typically includes the French Broad River, Holston River, Fort Loudoun Lake/Tennessee River, and Melton Hill Lake/Clinch River.

<p><b>Location Criteria:</b></p> <ul style="list-style-type: none"> <li>Rivers, TVA reservoirs</li> </ul>	<p><b>Recommended Zoning and Programs:</b></p> <p><b>City:</b> F-1</p> <p><b>County:</b> F</p>
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**Major Rights of Way (ROW)**

Generally, the rights-of-way of interstates and very wide parkways and arterial highways are depicted on the future land use map.

## Appendix B:

# Technology Corridor Focus Group, April 2005

### **Participants:**

David Patterson, first TTCDA Executive Director; Alex Fisher, former TTCDA Executive Director, former Tennessee Economic Development Director, now associated with ORNL; Todd Napier, former TTCDA staff, currently Director of the Development Corporation of Knox County; Mark Donaldson, MPC Executive Director, and Buz Johnson, current TTCDA Executive Director

### **MPC Staff:**

Michael Carberry (facilitator) and Bryan Berry

### Focus Group Observations

- The biggest threat to the Tech Corridor's sustainability as an economic development area is the encroachment of residential development into areas designated for Business and Technology Park (BP).
- Opposition to office and business park development has occurred with the encroachment of housing onto land that was originally proposed for Tech Park uses.
- There is little to no shortage of land for housing in Knox County; however, there is a severe shortage of land for economic development purposes (relatively flat land with good infrastructure).
- BP zoning has been ineffectual as a tool to hold land for economic development purposes.
- The design standards have largely worked in creating the park-like setting for office and technology park uses. The standards for commercial development (particularly signs and landscaping) have also resulted in more aesthetically pleasing development.
- A list of potential changes to the design guidelines was distributed by the current director, Buz Johnson (see Appendix A). Participants felt

the changes are appropriate. Other guideline discussion: The setback standards for commercial development are difficult to meet, particularly in regard to commercial development. Setbacks in relation to signs are too far away from the travel lanes to be easily read.

- The proposed mixed-use development in Blount County (Pellissippi Research Centre at I-140/Old Knoxville Highway), which includes a research park, residential and retail, could be a model for another form of development along the Tech Corridor.
- Research faculty that may work in a technology park are sensitive to their travel time (both journeys from home to technology parks and campus to technology parks). The distance and travel time from the UT campus is a concern.
- The regional opportunities for business and research/development parks has changed dramatically since the advent of the Technology Corridor. Oak Ridge/Roane County will have more than 5,000 acres of available space for such development as the Horizon and Heritage Centers. Blount County also is moving into this market. Land near the Knoxville Airport and the corporate holdings of Alcoa are also possible development sites. In summary, the Technology Corridor does not have the location advantages that it once had.
- Reliance on zoning as an implementation measure was a mistake. In meeting with officials of North Carolina's Research Triangle, advice was given to the Tennessee interests to purchase and hold the land. To a great degree this advice was not heeded and land acquisition funds were only occasionally appropriated.
- Another shortcoming in the development of the Technology Corridor has been the lack of infrastructure, including poor connectivity in and development of an adjacent road system and sewer system coverage.

- The early vision was to provide a series of technology parks along the corridor (not continuous Technology Park development). Participants noted that this concept is still valid.
- Some uses, which are likely to be a good fit, are not currently permitted (e.g., CTI, an imaging company with large space needs, could not be allowed). More flexibility was recommended to accommodate such uses.
- Solway, a gateway of the corridor, has never been addressed and has aesthetic and transportation issues.
- The question was raised “are things too green”? Participants noted that other forms of development such as (New Urbanism) are also aesthetically pleasing and could offer a greater mix of uses and intensity in development.
- Other aspects of space concerns include “nanotechnology” – based operations; the cooling requirements for “nano,” typically result in larger scale facilities.
- The concept of an “edge city” in the I-40/75 and Pellissippi Parkway “cross hairs” (i.e., Parkside Drive, Sherrill Blvd., etc.) was discussed. The redevelopment potential is viewed as an issue that should be addressed. Better access (including pedestrian and automobile) was recognized as a challenge.
- The availability of land was viewed as limited. The balance of the Knox County area to the south toward Blount County was not seen as a logical extension of the Technology Corridor (being largely developed to Northshore Drive and having poor access and a “Rural” Growth Management Plan designation). Most promising development opportunities that were discussed include the land to either side of Beaver Creek and the proposed State Route 475 alignment.



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