Planners and community leaders across the country recently have observed increased public interest in reducing or reversing the trend of urban sprawl and its consequences. These efforts largely are motivated by the impacts associated with suburban development patterns: consumption of sensitive land for development, costly expansion of public infrastructure, and increasing traffic congestion. The physical distance between complementary land uses (e.g., between home and work, home and school, or home and shopping) and a lack of overall street connectivity leads to unintended consequences:

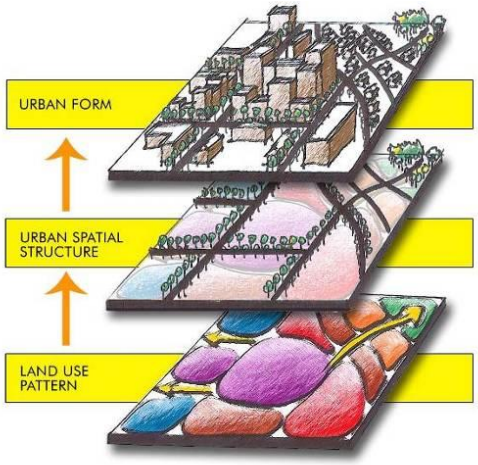
- Increased vehicle miles traveled and energy consumption;
- Longer commute times;
- Increased air pollution;
- Heightened infrastructure and public service costs; and
- Decreased resource lands.

The *KYOVA 2040 Metropolitan Transportation Plan* respects the variety of local smart growth planning initiatives underway—such as investment in downtowns, suburban place-making, and rural preservation—and promotes transportation improvements sensitive to the overall goals of these initiatives within the context of the regional transportation system. Land use and urban form considerations included in the *KYOVA 2040 MTP* focus on the inherent relationship between land use (demand), urban form (design), and transportation (supply) for improving the efficiency of the regional transportation system while promoting livability within local communities.

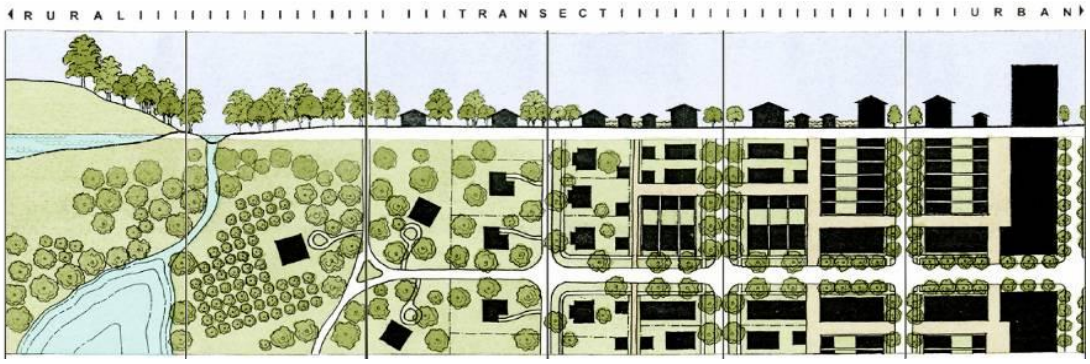
The consideration of land use during the development of the *KYOVA 2040 MTP* is not a replacement for quality land use planning nor does it intend to supplant local planning initiatives of the member jurisdictions. Instead, it serves as an additional piece of information that should be studied. Land use is an important consideration because transportation professionals are quickly concluding that the days of addressing transportation needs through supply side (building more roadway capacity) strategies are limited. This is particularly true in the KYOVA region given its challenging natural environment. In addition, the competition for transportation resources and aging infrastructure suggests that a comprehensive approach that considers both the demand and supply sides of the equation represents a successful strategy. Regions that embrace this approach to planning will be better positioned to maintain quality of life and economic vitality.

Land Use and Urban Form

Land use serves as the foundation of the built environment. It defines the type, mix, and general location of uses within communities and ultimately defines the boundaries for neighborhoods, commercial nodes, and employment centers. Communities make efforts to influence patterns of land use when they develop a future land use map within a comprehensive plan. A comprehensive plan typically represents the community's vision for how to promote local growth and prosperity.

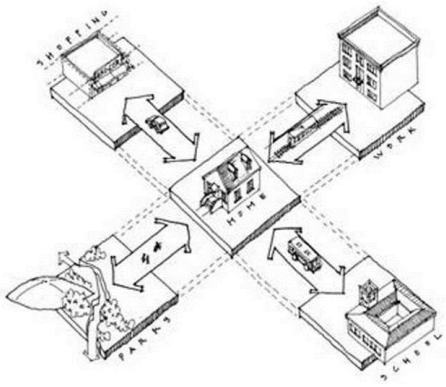


Urban form is the physical expression of land use as vision becomes reality in the physical world. It is commonly measured by street patterns, block lengths, building heights, building setbacks, average residential density, and average non-residential intensity. Putting these design elements in categories allows the region's consistency to be measured and identifies the natural progression from rural to suburban to urban. The components of urban form traditionally are regulated through the community's zoning ordinance, subdivision ordinance, engineering specifications, or architectural design standards.



This diagram illustrates how the transect classifies elements of the human environment from rural to urban, in a left-to-right sequence. (Source: Duany, Plater-Zyberk, 2007)

The transect, popularized most recently by town-planner Andres Duany, provides a framework for organizing design elements that characterize urban form observed in the human environment. It is based on a continuum from natural environment to urban core. Different categories are used for specific urban form types which vary in intensity and urban character (see diagram above). The number of urban form categories in a transect varies from community to community based on the complexity of their built and natural environments.



Urban Form and Travel Behavior

As explained above, urban form represents physical elements of the built environment. These physical elements can influence the comfort, speed, cost, convenience, attractiveness, and safety of movement between places in the community. Transportation infrastructure and systems can affect how land is developed in terms of size, shape, and intensity.

Where land uses fall and how they are designed (i.e., urban form) can favor one mode of travel over others and may influence overall travel behavior by changing the ease of use or accessibility of various modes of travel for meeting daily needs. For example, if low-density development is spread out, residents of such areas must rely almost entirely on automobiles to get from place to place. On the other hand, denser urban centers that combine complementary uses near each other enable greater choice in transportation.

Evaluating the relationship between land use, urban form, and travel behavior produces several benefits. When collectively considered more informed decisions can be made which have a positive impact on the region including:

1. Impacts to sensitive land uses (such as environmentally-sensitive areas) can be minimized when facilities identified for transportation investments are located after considering appropriate land use patterns and development intensities for the area.
2. Prime locations for development can be stimulated if transportation investments consider available capacity or appropriate mobility options.
3. Complementary activities can be placed next to existing or planned transportation infrastructure, making the most of land use opportunities and dedicated transportation investments.
4. The quantity and location of travel demand can be influenced by land use decisions, highlighting the factors (i.e., trip generation, trip length, and travel mode) that influence the efficiency of a proposed transportation system.
5. Combining specific streetscape design elements can transform transportation corridors from vehicle-dominated thoroughfares into community-oriented streets that safely and conveniently accommodate all modes of travel.

Influence of Urban Form – The Four D's

The Four Ds—density, diversity, design, and (travel) distance—are characteristics of urban form that influence travel behavior. Regions that understand these characteristics can use them to leverage their growth so that it aligns with their desire for a more effective and efficient transportation system. The following is a brief summary of the four Ds influence on travel behavior.

Density

Some people dislike references to residential density and non-residential intensity because they envision problems associated with traffic congestion or unattractive buildings. Other people view the benefits associated with the availability of housing options. Those who promote residential density and non-residential intensity likely view the diverse housing and travel options as beneficial to the community because of the variety offered.

In general, residential density refers to the number of housing units per area of land. It is most commonly reported in dwelling units per acre but also can be reported in persons per acre using household size characteristics. Dense urban projects sometimes measure residential density in floor-area-ratio (FAR), which is the ratio of gross building floor area to the total lot area. Non-residential intensity (e.g., commercial, office, or industrial uses) is commonly reported in floor-area-ratio for both suburban and urban conditions. In the KYOVA region, location often is the main factor in determining density and intensity. The farther away from the urban core, the more likely an area is to have lower density and intensity.

The Trends and Conditions Report (December 2004) prepared by the Florida DOT and the Center for Urban Transportation Research at the University of South Florida stated: Independent of other factors, increased residential density and non-residential intensity create higher travel demand for a geographic area, but it also encourages shorter trip lengths and more mobility options (i.e., transit, bicycle, and walking) that more efficiently links complementary land uses within a concentrated area.

Diversity

One type of development gaining in popularity is walkable mixed-use development. By creating places where people can live, play, work, and shop in one general area, these developments combine various public amenities with compatible land uses in a centralized location. Successful mixed-use developments around the country generally include residential uses and one or more of the following: commercial, office, light industrial, civic, hotel, public parks or plazas, and dedicated open space. Promoting a mix of land uses in new development often is associated with the initiatives of smart growth, new urbanism, transit-oriented development, and traditional neighborhood development.

While mixed-use developments come in a variety of forms, they typically are categorized as either vertical mixed-use buildings or horizontal mixed-use sites. Both vertical and horizontal mixed-use developments contribute positively to the creation of places that enliven urban districts while meeting the everyday needs of the community. They offer many advantages over single-use developments in fostering a more efficient, livable transportation system: shorter trip lengths, modal choice (i.e., automobile, transit, bicycle, and walking), convenient access, and internal trip capture.

In some communities, hurdles remain to building mixed-use development because of the local government's continued adherence to Euclidean zoning, which generally isolates residential, commercial, office, and industrial uses to separate zoning districts. The KYOVA region can consider establishing flexible, performance-based standards for appropriate locations in the community (e.g., downtown, main street, neighborhood centers, other core areas) to support emerging urban centers through policy.

Design

Urban design is the essence of city-building. It shapes the blocks, neighborhoods, and districts that give our cities identity and provides overall organization to the built environment. Various elements of urban design provide a three-dimensional physical form to the requirements for density and diversity established in locally adopted comprehensive plans or zoning ordinances. The emphasis for urban design is the public realm, which is created by public space (e.g., streets, plazas, open space) and the buildings that define them. Urban design looks at the various elements that influence these spaces and applies design elements to provide connections between people, places, and buildings.

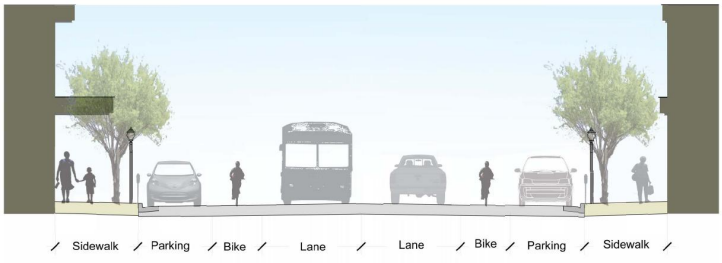
Specific elements of urban design—street pattern, streetscape design, block size, building scale and massing, parking, and landscaping—influence travel mode choice and travel behavior when supported by appropriate minimum densities and diversity of land uses. These design elements provide context to the transportation system and celebrate the street network as the centerpiece to the public realm.

Combining design elements (e.g., bicycle lanes, sidewalks, bus stops, street trees, and on-street parking) in the streetscape can transform transportation corridors from vehicle-dominated thoroughfares to community-oriented streets that safely and conveniently accommodate all modes of travel. The type, placement, and scale of design elements included in the streetscape for transportation corridors generally vary with the context of the surrounding environment.

The orientation, scale, and massing of buildings on a site relative to the adjacent transportation corridor can reinforce those design elements that support a complete street or multimodal corridor concept. Literature from around the country cites safe, predictable connections between adjacent properties, orientation of buildings and parking that favor a park once mentality, and elimination of excessive parking requirements as ways to promote a more balanced transportation system that favors walking between nearby destinations once arriving to the site by automobile or regional transit.

Quality urban design embraces the public realm as a component of the built environment.

Many of the urban design concepts are explored in further detail in the Downtown Huntington Access Study, a sister study to the *KYOVA 2040 MTP*.



Fourth Avenue Improvements
Two Lanes Undivided Roadway
with Parallel Parking and Bike Lanes Both Sides

Distance

The travel distance between origin and destination is one primary factor (along with travel mode choice) for influencing travel behavior. The physical distance between complementary land uses in more rural or suburban settings tends to promote automobile travel, particularly since safe, convenient facilities usually are not available for pedestrians and bicyclists.

Mixed-use, highly-dense urban environments decrease the travel distance between complementary land uses, and support transit, bicycle, and walking as viable alternatives to the automobile for meeting daily travel needs.

How do communities integrate the land use, urban form, and transportation elements of local smart growth initiatives emerging in the KYOVA region?

1. Continue to support local initiatives that result in a more efficient, livable transportation system (street connectivity, complete streets, walkable mixed-use developments, etc.).
2. Partner with local, regional, state, and federal agencies that share a common vision for implementing smart growth development.
3. Develop livable street design guidelines for major arterial and collector streets (begin with endorsement of the cross-section design recommendations in this report and expand to include the Institute of Transportation Engineers/Congress for the New Urbanism recommendations). Include recommendations for cross-section, lane width, planting specifications, sidewalk, street lighting, etc. Ultimately, this will facilitate standardization of design treatments in the different communities.
4. Prepare best development practices and conduct design summits to educate and encourage developers to incorporate these principles into their land use planning and development process.
5. Respect local government control and their desire to implement smart growth initiatives when programming improvements to the regional transportation system.
6. Build grassroots support for amending the local comprehensive plans to encourage through policy more sustainable development patterns.
7. Establish flexible, performance-based zoning and subdivision standards that support emerging smart growth initiatives through regulation. Give consideration to form-based codes or unified development codes that better integrate use standards and development controls.
8. Develop design guidelines that establish development priorities and core design principles for implementing smart growth initiatives.
9. Prioritize projects in the capital improvements plan that influence the timing and location of new development to better utilize existing infrastructure including roads, transit, and utilities.
10. Understand that "one size does not fit all" for implementing smart growth development. New plans, programs, or policies adopted by elected officials should acknowledge the differences between rural, suburban, and urban settings.
11. Reinvest in existing infrastructure and promote infill development or redevelopment that can be served by transit instead of continued sprawl out from the core of the community.
12. Identify "champions of change" for continuing the momentum of smart growth from initial vision through project ribbon cutting.
13. Seek state and federal funding supportive of activities to improve the quality of development and protect human health and the environment.

Accommodating Future Growth

The KYOVA study area has experienced modest growth over the years even as the physical geography created challenges to connectivity. Yet, transportation professionals still must predict where, when, what type, and how much growth will occur over time. These predictions become the cornerstone of the growth forecasts used to build travel models that seek to identify future needs in the area. Therefore, the consideration of land use takes on an empirical role in the development of the *KYOVA 2040 MTP*.

Areas of potential growth were identified by geographic constraints analysis, community plans, and local interviews. To develop a uniform way to refer to the form of growth, a series of character areas specific to the region were developed. Character areas are different categories of land use that help define development patterns. Forecasting different categories of land use will improve the accuracy of the socioeconomic characteristics of the region considered as part of the *KYOVA 2040 MTP*. The ten character areas were developed:

Mixed Use

- City Living (CL)
- Town Living (TL)
- Village Living (VL)

Suburban Fringe

- Traditional Suburb (TS)
- Clustered Suburb (CS)
- Rural Living Suburb (RLS)

Redevelopment/Infill Areas

- Urban Industrial (UI)
- Rural Industrial (RI)
- Commercial: Urban Mixed Use (UC)
- Rural/Suburban Mixed Use (R/SC)

The remainder of this chapter focuses on the creation and application of the character areas as well as the identification of areas likely to receive future growth. The section begins with a brief description of each proposed character area as well as supportive graphics.

Mixed Use

City Living (CL)

City living areas such as those found in Huntington are characterized by a mix of residential, office, civic and commercial structures. City centers such as the downtown areas are exciting and vibrant living environments due to their mixture of land uses. Higher population densities can be found in city living areas as individuals live, work, and shop within a central area. The densities and proximity of uses foster a pedestrian-friendly environment. Transit access via local bus service is available in core areas of the City living area. Population densities fluctuate daily as individuals commute from urban and rural areas to work and shop within city living areas. City living areas are served by a complex network of roads including local, regional and interstate facilities.

Town Living (TL)

Town living areas such as those found in Ironton, Barboursville, Wayne, and Milton are characterized by a mix of land uses such as residential, commercial, retail, office, and some industrial. Town living areas are connected to the rural and city areas through enhanced roadway networks. This community type has a medium population density due to the influence of residential land uses. A town environment does contain some pedestrian features, while also catering to vehicle use.

Village Living (VL)

Village living areas are characterized by a mix of residential and agricultural land uses. Village living areas in the long established hamlets of Athalia, Lesage and Lavalette and other similar small communities contain a high degree of separation between structures due to land uses that promote large lot sizes and the preservation of open spaces and wooded areas. Village living areas have lower population levels than those found in urban and city areas. Due to the spacing of land uses, villages cater primarily to the automobile mode of travel.

Suburban Fringe

Traditional Suburb (TS)

Traditional suburbs such as Freeman Estates and Harveytown in West Virginia and Rockwood in Ohio are made up of large-lot residential structures with little to no retail or commercial land uses. These areas contain low to medium population densities. Access is achieved through local streets and collectors.

Clustered Suburb (CS)

Clustered suburbs such as Saddlebrooke and Cornerstone are a mix of single and multifamily residential structures in close proximity to supporting commercial centers. Moderate population densities can be found as land uses are mixed together. Conservation-based cluster subdivisions leave large areas of open space to provide individuals with uninterrupted views of the surrounding environment. Pedestrian access is considered in design, primarily within neighborhoods. Access is achieved through local streets and collectors.

Rural Living Suburb (RLS)

Rural living suburbs such as Amilda, Salt Rock, and Waterloo are made up of large-lot residential structures that have a high degree of separation between buildings. Most of the natural landscape is left intact as structures are sparsely integrated into the rural environment. Access is achieved through local streets and collectors that connect to driveways.

Redevelopment/Infill Areas

Redevelopment/Infill Areas include urban, suburban and rural fringe areas where redevelopment of existing uses, infill within existing developed areas, and adaptive reuse of existing structures can all help to revitalize existing communities. These areas include a variety of uses including industrial, commercial, residential, and mixed uses.

Urban Industrial (UI)

Urban industrial areas such as Kinetic Park in Huntington are in close proximity to a mix of commercial and residential structures. Vehicle as well as pedestrian access between land uses is possible in urban industrial areas. These areas may be targeted for redevelopment efforts that could expand the mixture of uses and change the transportation needs.

Rural Industrial (RI)

Rural industrial areas such as those located near Lesage are usually found in an area isolated from other uses. These isolated areas are typically situated on, or surrounded by, large parcels of open land. Rural industrial areas are often distant from residential or commercial uses. Rural industrial access is limited to vehicles using local streets or collectors.

Commercial: Urban Mixed Use (UC)

Urban commercial areas such as Pullman Square are usually a mix of various types of commercial structures that provide a variety of goods and services. In certain areas, the urban streetscape supports pedestrian access between the residential and commercial areas. Parking lots for vehicle access are also available.

Rural/Suburban Mixed Use(R/SC)

Scattered rural neighborhoods such as Salt Rock, Rome Township, and Prichard are served by commercial stores that provide mainly general services due to the high degree of separation between buildings and neighborhoods. Suburban areas may have a mix of land uses that collectively create centralized commercial areas that are easily accessible by vehicle. However, in both areas, parcel-level access via individual driveways is predominant along regional corridors and collectors.

Table 8.1 communicates the relative density ranges for each of the KYOVA character areas.

Table 8.1 – Character Area Density Range

Character Area	Floor Area Ratio	Dwelling Units per Acre
City Living (CL)	2.0	10 to 15
Town Living (TL)	0.25 to 0.75	4 to 8
Village Living (VL)	0.05 to 0.25	1 to 4
Traditional Suburb (TS)	n/a	1 to 4
Clustered Subdivision (CS)	0.25 to 0.75	4 to 8
Rural Living (RLS)	n/a	0.1 to 0.5
Urban Industrial (UI)	0.25 to 0.5	n/a
Rural Industrial (RI)	0.25 to 0.5	n/a
Urban Mixed Use (UC)	2.0	n/a
Rural/Suburban Mixed-Use (R/SC)	n/a	0.1 to 1

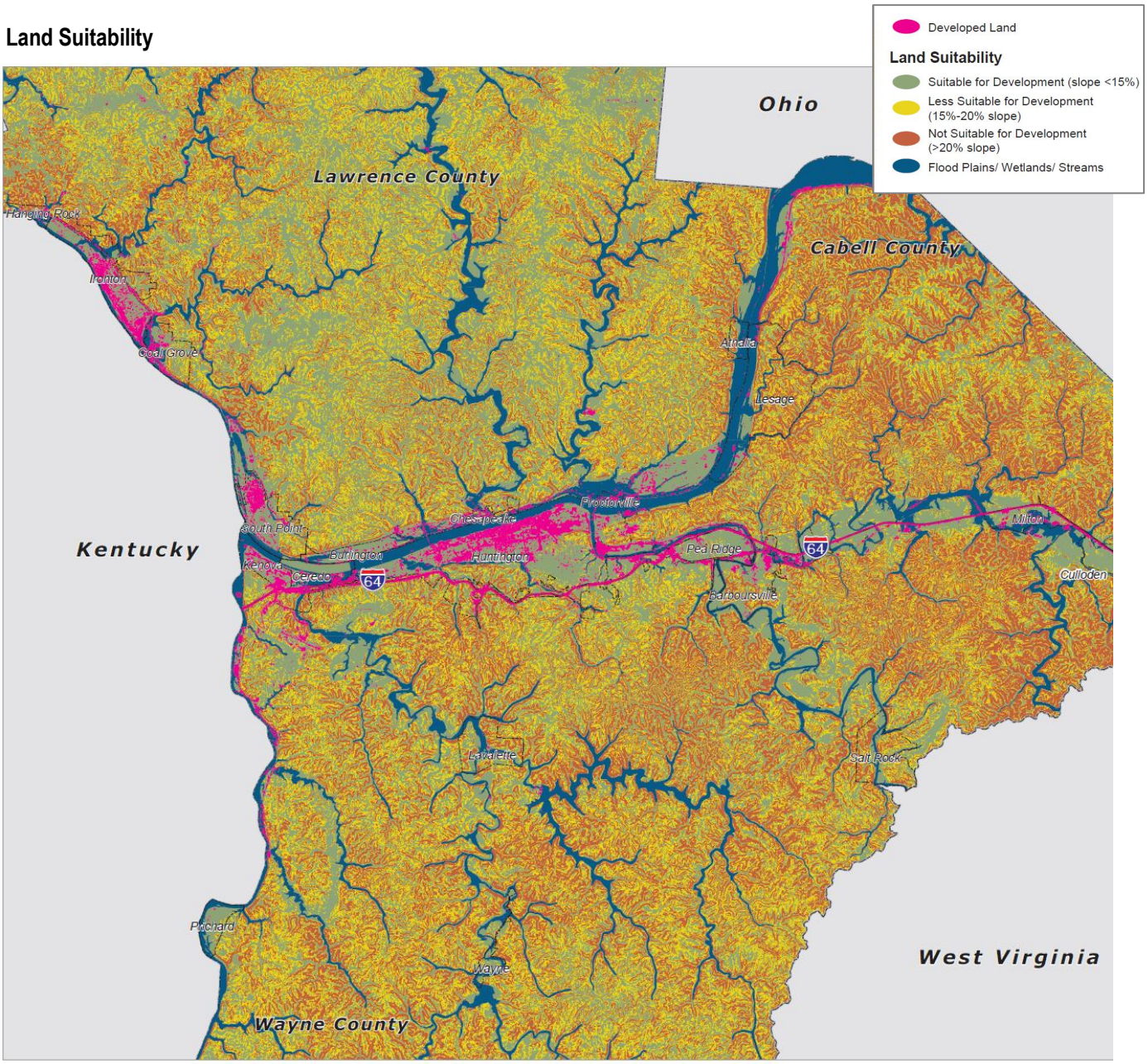
Suitability Assessment

During the planning process, a variety of information was collected to verify the suitability of certain lands for future growth. An inventory of existing conditions was completed for the region using geographic information system (GIS) data, aerial photography, field photos, and windshield surveys. This information was used to characterize the study area based on existing land use patterns and development conditions. Particular attention was paid to physical features in the context of the surrounding environment. Several conditions were noted:

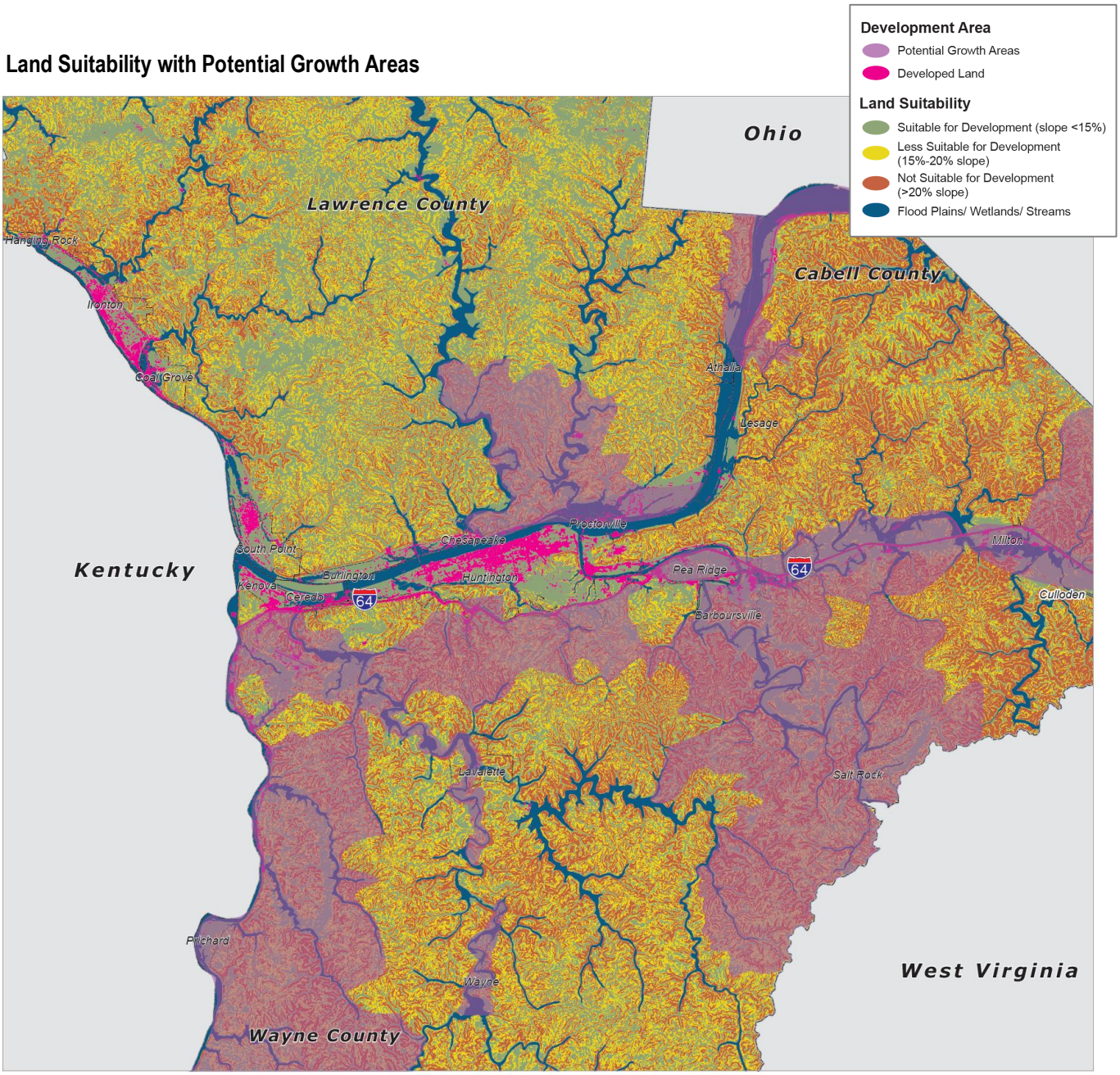
- Distribution of open space
- Size and character of buildings
- Land use mix
- Size and character of streets
- Available travel modes
- Internal and external connections
- Topography and environmental constraints

In addition, a review was conducted of locally adopted plans, programs, and policies administered by the region's member jurisdictions. This information was used to inventory existing development controls for preparing a "business-as-usual" development scenario. The review included local plans, policies and development codes. The result was a series of thematic maps that communicate constraints, suitability, and future growth areas. This information was reviewed and endorsed by plan participants. Ultimately, the information was used to assist with the allocation of forecasted socioeconomic data (housing and employment) and used to feed the "demand" side of the regional travel model. The maps on the following pages are the results of this work.

Land Suitability



Land Suitability with Potential Growth Areas



The Land Suitability map shown above considers the suitability of land to receive future growth. Not to be confused with a regulatory plan, this map is simply an expression of where growth likely will occur based on the suitability of land to receive growth. Suitability is an expression of a combination of market forces, environmental conditions, accessibility to public infrastructure, and proximity to existing development.

Figure 8.1 (Future Growth Classification) on the following page represents the consideration of suitability and then applies the designation of appropriate and predicted character areas described earlier in this chapter. The result is a representation of a likely growth future for the region based upon data available at the time of this plan.

More information regarding the allocation of future growth can be found in the travel demand model documentation available under separate cover.

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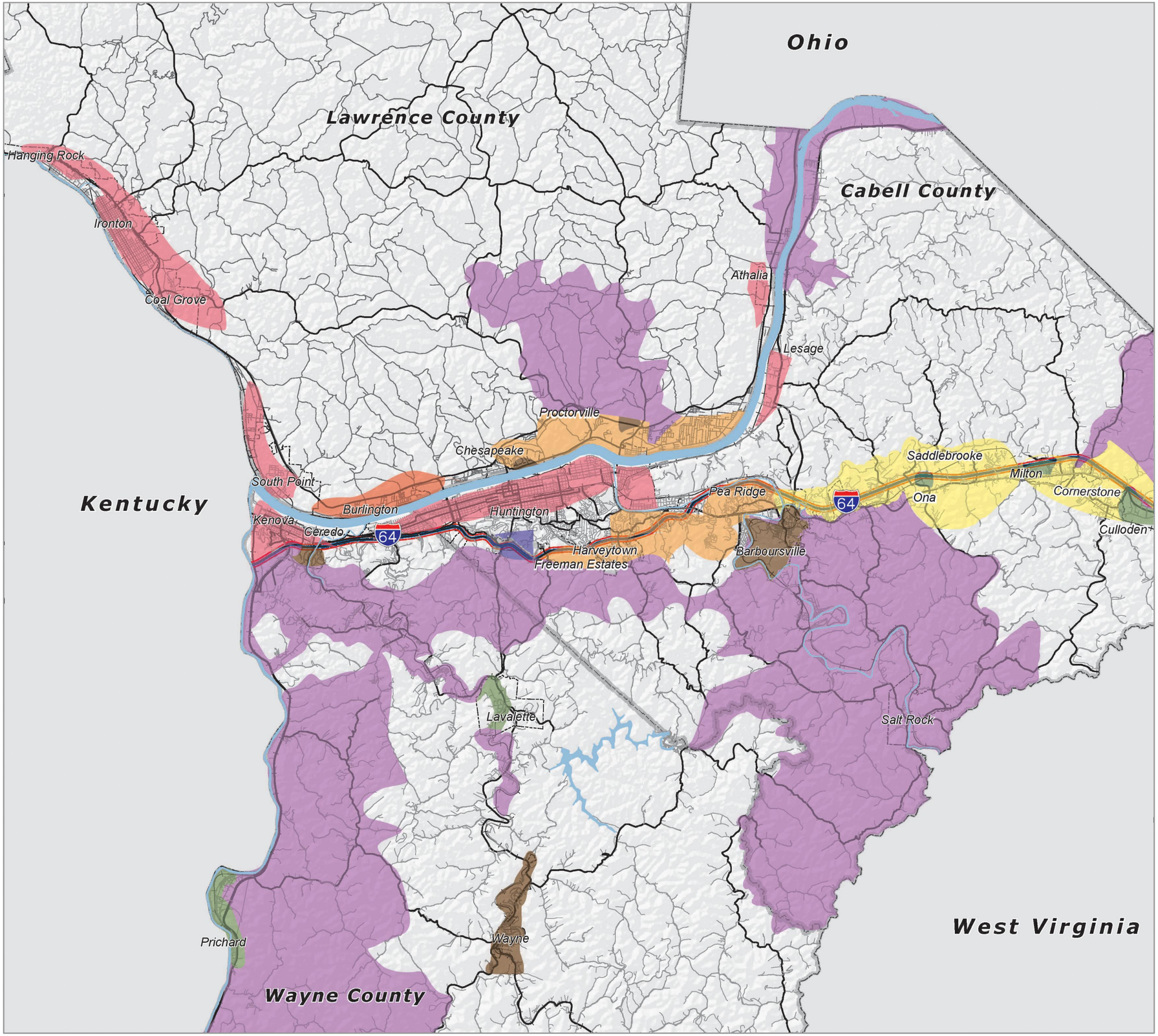
Figure 8.1

Future Growth Classification

Character Areas

- City Living (CL)
- Town Living (TL)
- Village Living (VL)
- Traditional Suburb (TS)
- Clustered Suburb (CS)
- Rural Living Suburb (RLS)
- Potential Redevelopment or Infill Areas



0 1.5 3 Miles

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