

Jefferson Area Eastern Planning Initiative



THOMAS JEFFERSON PLANNING DISTRICT COMMISSION

Policy Report

FEBRUARY 21, 2002

Advisory Committee

Co-Chairs:

- *Howard Evergreen, Louisa & Fluvanna Housing Foundations
- *David Kalergis, Virginia Gateway

Members

- *Calvin Biesecker, Greene Future
- *Nancy Brockman/ Jim Elmore, Piedmont Council of the Arts
- Bob Burkholder, VA Farm Bureau Greene Co.
- Rick Carter, Blue Ridge Homebuilders
- Sue Chapin, League of Women Voters
- Bobbye Cochran, C/A Tourism Council (retired)
- Bob DeMauri, Thomas Jefferson Partnership for Economic Development
- Mark Giles, Virginia National Bank
- *Paul Grady, Albemarle Citizen Representative
- Robert Hauser, Charlottesville Regional Chamber of Commerce
- Richard Havasy, Louisa Planning Commission
- *Laura Hawthorne, University of Virginia
- *Katie Hobbs, Albemarle Neighborhood Assoc.
- *Greg Jackson, Charlottesville-Albemarle Bicycle Alliance
- Jay Kessler, Leadership Charlottesville Alumni Assoc.
- *Karen Klick, Piedmont Housing Alliance
- Charles Layman, Fluvanna Citizen Representative
- *Kevin Lynch, Charlottesville Federation of Neighborhoods
- *Gary Okerlund, Charlottesville Citizen Representative
- James Peterson, Region Ten Community Service Board
- *Trip Pollard/ Bruce Appleyard, Southern Environmental Law Center
- *Wayne Poore, Louisa citizen Representative
- Vernon Rathbone, Fluvanna Planning Commission
- Linda Seaman, Charlottesville-Albemarle School Business Alliance
- Marshall Slayton, Charlottesville Planning Commission
- Theresa Tapscott Albemarle Housing Improvement Program
- *Sally Thomas, TJ Venture & Charlottesville-Albemarle MPO
- *Rodney Thomas, Albemarle Planning Commission
- *Ben Walter/ Bob Wack, Jefferson Area Board for Aging
- Bob Watson, Charlottesville Area Association of Realtors
- *Jeff Werner, Piedmont Environmental Council
- Jim Wilson, UVA Real Estate Foundation
- *Shelly Wright, Jefferson Area Disability Services Board (Fluvanna Rep)

Ex Officio:

- *Phillip Anns, Thomas Jefferson PDC
- Carter Myers, Commonwealth Transportation Board
- *Thanks to Committee members with outstanding dedication.*

Project Team

Thomas Jefferson Planning District Commission

Hannah Twaddell, Project Manager
Ryan Mickles, Planner; Galin Boyd, Intern
Nancy K. O'Brien, Executive Director (1999-2001);
Harrison B. Rue, Executive Director (2002--)

Renaissance Planning Group, Inc.

Chris Sinclair, Glen Duke, Whit Blanton, Kevin Tilbury

SAIC

Christy Williams, Jana Lynott, Edward Studholme

Rhodeside and Harwell, Inc.

Deana Rhodeside, John Meisel

UVA Design Resources Center

Kenneth Schwartz, Kathy Galvin

UVA Institute for Environmental Negotiation

Bruce Dotson, Jonathan Church

Staff Liaisons

Albemarle County: Wayne Cilimberg, Juandiego Wade

Charlottesville: Jim Tolbert, Ron Higgins, Dan Painter

Greene County: Nick Hahn

Louisa County: Melvin Carter, Pete Bradshaw

Fluvanna County: Cabell Lawton, Christi Shields

Nelson County Comprehensive Plan (related study): Fred

Boger; Chris Gensic & Bill Wanner of the TJPDC

VDOT: Wayne Woodcock, Bill Guiher, Larry Hagin

Charlottesville Transit Service: Helen Poore, Charles Petty

JAUNT: Donna Shauneseey

RideShare: Caryn Fiedler

*Special Thanks to **FHWA** staff Ivan Rucker of the Virginia Division, Felicia Young and Elizabeth Fischer of the TCSP program. In addition, Scott Carson formerly of the FHWA Virginia Division and Dave Roberts formerly of the Thomas Jefferson PDC were instrumental in shaping the vision and funding for this project.*

This report was funded by the Federal Highway Administration (FHWA) Transportation and Community and Systems Preservation (TCSP) grant program. Additional support was provided by the Thomas Jefferson PDC and the Charlottesville-Albemarle Metropolitan Planning Organization. The contents of this report are the responsibility of the Thomas Jefferson PDC and do not necessarily reflect the opinions of the Federal Highway Administration.



WHAT DOES THE FUTURE HOLD?

The small city and surrounding rural areas that make up the Charlottesville, Virginia region are changing and growing rapidly. Some are excited about the new economic and cultural development this growth presents. Others are concerned that the natural beauty of the Blue Ridge Mountains and the historical ambience of Monticello are encroached upon by strip commercial development and dispersed subdivisions. Most people enjoy the new opportunities presented by growth, but they also fear the truly unique qualities of this place could be lost.

These concerns prompted the Thomas Jefferson Planning District Commission (TJPDC) to form a Sustainability Council charged with developing a vision for using resources so as to preserve them for future generations. The Council's consensus building effort resulted in the broadly supported 1998 "Sustainability Accords and a Vision of Sustainability." The Accords, summarized in *Exhibit 1*, call for a new way of thinking about the future and a more mindful approach to the conduct of daily life.

The Eastern Planning Initiative

In the context of the Sustainability Accords, the Charlottesville-Albemarle Metropolitan Planning Organization and TJPDC decided to find new ways to handle the transportation demands of economic and population growth. The TJPDC won a grant from the Federal Highway Administration Transportation and Community and System Preservation (TCSP) program to conduct the Jefferson Area Eastern Planning Initiative (EPI) for the City of Charlottesville, the eastern portions of counties Albemarle and Greene, and the whole of counties Fluvanna and Louisa.

The initiative has two primary objectives – to develop a set of modeling tools capable of concurrently evaluating transportation and land use options in light of the Sustainability Accords; and to lay the groundwork for a regional vision of sustainable transportation and land use. The study clearly indicates the following points:

If the region develops in a "business as usual" style, with recent development trends continuing in a dispersed pattern over the next 50 years –

- *Single-occupant automobiles will dominate the transportation system*
- *Demands for a bigger road system could total \$1 billion*
- *People will be forced to drive long distances to accommodate daily needs*
- *Few if any people, regardless of age or ability, will have meaningful walking, cycling, or transit choices*
- *Air quality will suffer*
- *70,000 acres of today's farms and forests will be lost*

If localities commit to a regional landscape that encourages growth in strategically located, walkable, mixed-use communities while preserving rural areas –

- *Road expansion can be limited to a human-scaled network that costs half as much as the dispersed system*
- *A host of well-utilized transit, pedestrian, and bicycle investments can be made using funds that would otherwise have to go to road expansion*
- *People can drive shorter distances or choose walking, cycling or transit to get to jobs, shopping, and leisure activities*
- *Overall roadway congestion will be reduced from 44% predicted in the dispersed scenario to 29%*
- *Air quality will be preserved*
- *Nearly 55,000 of the 70,000 acres of farms and forests lost in the dispersed scenario will be saved*

This study presents alternative land use and transportation patterns that achieve the Sustainability Accords, and identifies key success factors needed for a sustainable future. The EPI Advisory Committee strongly encourages localities in the region to consider seriously the implications of land use decisions as shown by this study, and to build a shared vision for the future.

✓ Encourage and maintain strong ties between the region's urban and rural areas
✓ Strive for a size and distribute the human population in ways that preserve vital resources
✓ Retain the natural habitat
✓ Ensure water quality and quantity are sufficient to support people and ecosystems
✓ Optimize the use and re-use of developed land and promote clustering
✓ Promote appropriate scale for land uses
✓ Retain farm and forest land
✓ Develop attractive and economical transportation alternatives
✓ Conserve energy
✓ Provide educational and employment opportunities
✓ Increase individual participation in neighborhoods and communities

Exhibit 1 – 1998 Sustainability Accords (Ed.)

EPI Process

The EPI Advisory Committee, made up of elected officials, study area residents, and leaders from business, development, environmental and community groups, met nine times and hosted four public workshops between January 2000 and October 2001. The committee worked on three key questions:

- *How will we live?* – In what types of communities do we want to live and work by the year 2050?
- *Where will we live?* – What areas in the region are suitable for urban development and what areas are off limits?

- *How will we get there?* – What steps are needed to move the region from where it is now to the desired types of communities and growth patterns?

These three questions helped organize the Advisory Committee's meetings and the public workshops. The first workshop was held on April 8, 2000. The public reviewed the existing community types in the region and made suggestions for improving community design to support a better quality of life. During the second workshop on September 9, 2000 participants envisioned ways to organize communities in regional patterns over the next fifty years. Based on the ideas from this workshop, the project team tested several land use and transportation scenarios using the CorPlan computer model developed for the study. Local residents commented on the scenarios during a series of workshops held the second week in February 2001. During the last workshop, an open house on June 2, 2001, the public had a chance to respond to the EPI findings and proposed action steps.

This report presents the study findings and proposed policy direction. Details of the process are found in the EPI Technical Report and Handbook, which are available, along with free copies of the CorPlan model, from the TJPDC and FHWA.

Baseline “Business As Usual” Scenario

The region's urban development prior to the 1950s was limited to downtown Charlottesville, the University of Virginia and compact neighborhoods nearby. Since then, almost all development has been suburban, most spreading from Charlottesville along US 29 north and US 250 east, and some around small towns like Palmyra. The Advisory Committee wanted to understand the impacts of this type of development on quality of life. As a basis for measuring the consequences of development alternatives, the project team first inventoried existing conditions (Exhibit 2) and prepared a scenario in which recent trends would continue to the year 2050 (Exhibit 3).

The Virginia Employment Commission predicts the total population in Charlottesville and all of Albemarle, Greene, Louisa and Fluvanna Counties will increase from around 180,000 in 2000 to 330,000 by 2050. The “business as usual” scenario assumed all of the new residents would live and work in suburban type

communities. Development would continue to spread along the country roads that lead out of Charlottesville. Developed land in the region would increase from 160,000 acres to 280,000 acres.

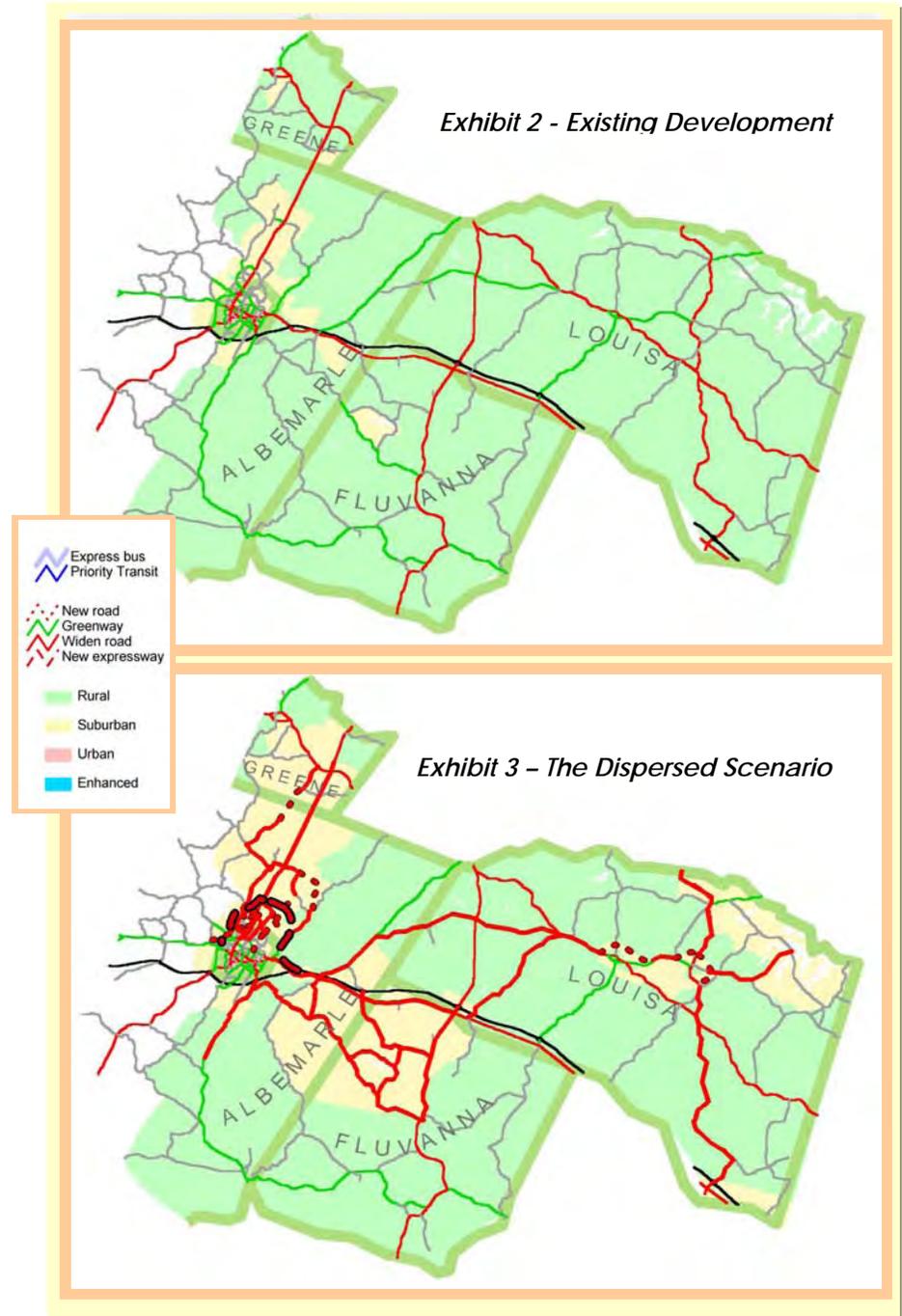
Dispersed development would create congestion, forcing the Virginia Department of Transportation (VDOT) to widen over 170 miles of roads. The proposed US 29 bypass currently under scrutiny would have to be completed, as would an extension around the city to I-64. Because dispersed growth does not support walking or transit, no major expansion of the region's fixed-route transit service would be feasible.

With no constraints, strip commercial development would extend north on US 29 to Ruckersville and east on US 250 to Zion Crossroads. Both roads would be widened to at least six lanes, with frequent traffic signals for access to shopping and office centers. These new areas would not be connected, forcing drivers onto congested arterials to make even the shortest trips. Commuter congestion periods would get longer, and lunchtime would become a third peak period because most workers would have to drive to lunch. Nearly half (44 percent) of the miles traveled daily would be congested.

New residents would live in single-family-home subdivisions or apartment complexes separate from adjacent development. Children would not be able to walk to schools or parks; they would have to take the school bus or be driven everywhere, even to nearby activities. People with disabilities and non-drivers would have to rely on taxis or costly public van services.

Magnificent rural vistas would be replaced by cluttered views of buildings and signs. More than 70,000 acres, 15 percent of today's farms and forests, would give way to suburban development, mostly along once-peaceful country roads.

The sense of community in small towns and villages like Louisa, Palmyra and Stanardsville would diminish as people traveled to suburban strips. Jobs, housing, and shopping areas would be kept separate. With the loss of activity in existing towns and the lost opportunities for connections in developing areas, there would be few convenient major gathering places other than downtown Charlottesville and the University of Virginia. Congestion would make these places difficult to access, adding another challenge to people who wanted a sense of community.



HOW WILL WE LIVE?

At their first meetings, the Advisory Committee focused on the question “How will we live?” Their responses mirrored the Sustainability Accords: the region’s residents should have the choice to live and work in walkable communities that are built at a human scale, provide gathering places, incorporate the region’s cultural heritage and are in harmony with the surrounding natural environment.

“I know I’m in a really livable neighborhood when I see people’s pet cats out sunning themselves in the yards. It means the traffic is slow and the people are friendly, making the neighborhood safe for everyone.”

-Greg Jackson, EPI Advisory Committee

Community Elements

During the initial inventory of the region, the project team identified twenty distinct types of communities such as the historical downtown Charlottesville and the University of Virginia areas, the new Forest Lakes mixed-use community along US 29, and rural residential areas (Exhibit 4). The team drew snapshots that showed how buildings, open space and streets were organized within a typical quarter mile area (a five minute walk) of each community. These were called community elements.

During the first workshop, people evaluated how the existing community elements met the Sustainability Accords. Community elements such as downtown Charlottesville, and rural small towns and villages were consistent with the Sustainability Accords. Suburban elements like strip commercial retail along US 29 and highway-oriented areas near rural interchanges needed improvements. Workshop participants offered the following suggestions on how to make these community elements (italicized in Exhibit 4) more livable and sustainable:

- Provide a focal point and distinguishable boundaries
- Increase the number and variety of activities
- Make better use of open spaces
- Build at a more human scale
- Make more pedestrian friendly

Urban	Suburban	Rural
✓ Residential	✓ Residential	✓ Small town
✓ Mixed-use	✓ Mixed-use	✓ Village
✓ University/institution	✓ Retail	✓ Residential
✓ Parks/recreation	✓ Office	✓ Mixed-use
	✓ Institutional	✓ Industrial
	✓ Industrial	✓ Parks/recreation
	✓ Parks/recreation	✓ Agricultural/forestral
	✓ Conservation	✓ Conservation

Exhibit 4 - Community Elements
(Enhancements proposed for italicized elements)

The similarity of the workshop’s recommendations with the Sustainability Accords and the Advisory Committee’s description of ideal communities is quite noticeable, suggesting a broadly held, common notion of livability. Recommendations from two other initiatives in the region, Albemarle County’s Development Areas Initiatives Steering Committee (DISC) and Charlottesville’s Commercial Corridor Study, corroborate this common notion.

Based on the participant’s suggestions, the project team created enhanced community element designs that would be used later

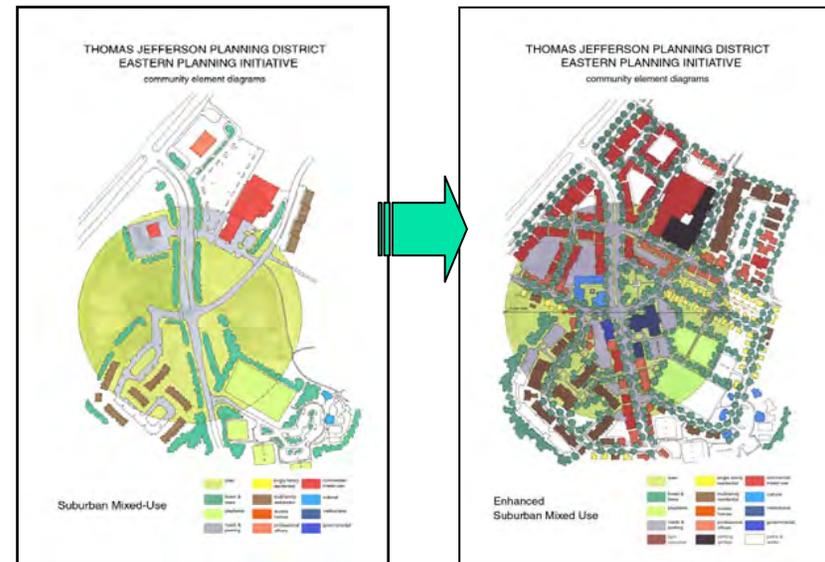


Exhibit 5 - Existing and Enhanced Community Element

to create possible future development scenarios (Exhibit 5).

Exhibit 5 shows the design enhancements made to the suburban mixed-use element. The community center, or school, shown in the middle of the enhanced version provides a focal point. The shorter blocks in the refined street network enhance the human scale by bringing buildings closer together. The proximity of buildings increases the number and variety of activities within walking distance. And open space is available to the public and easily accessed from anywhere in the community element. By using these enhanced suburban designs, development and growth can be embraced at a suburban density while achieving the sense of place and walkability of more urban elements.

Similar enhancements were made to each of the community elements italicized in Exhibit 4. Diagrams, photographs and physical inventories of the features in the community elements are available in the Technical Report. The complete set of elements was later used as the building blocks to create a range of regional alternative future scenarios.

From Community Elements to Communities

Community elements describe how buildings, open space and streets can be organized within a quarter mile area. The elements connect to form communities, which in turn connect to become towns and cities.

Exhibit 6 illustrates how the quarter-mile enhanced suburban community elements can be clustered like puzzle pieces into a square mile area roughly the size of downtown Charlottesville and its surrounding neighborhoods. The exhibit shows a group of enhanced residential elements connected with an enhanced mixed-use element in the middle. The elements interconnect through low-speed, walkable connector streets, enabling the elements to form a larger community. Thus a community street system is integral to building communities.

By comparison, the streets of traditional suburban elements feature cul-de-sacs with one entrance to the main road. This type of street system makes it virtually impossible to create an interconnected larger community. When a region develops this way, the resulting pattern is the disconnected, auto oriented business-as-usual scenario, with its attendant consequences.



Exhibit 6 – Connecting the Elements to Form Communities

WHERE WILL WE LIVE?

Alternative Scenarios

The TJPDC Sustainability Council, the Albemarle County Development Area Initiatives Committee, the EPI Advisory Committee and the public clearly want something different from the business as usual scenario. The community elements from the first workshop and “dot maps” from a second workshop helped the project team develop three land use and transportation scenarios that dramatically differ from business as usual.

The Dot Map Game

The community elements provide a context for how desirable communities can be built. The next question is; “Where should these communities be built?” Answers started coming from a “dot map” game played during the second public workshop. Participants were given colored dots representing each of the major community element classes (urban, suburban, enhanced suburban, small town/village and rural). The dots were sized to reflect a square mile cluster of community elements, with each supporting a different capacity for residents and jobs. Each group put enough dots on a study area map to accommodate the year 2050 population growth of 150,000 projected by the Virginia Employment Commission (later on, the team developed scenarios that assumed slower growth for comparison).

Each group created a map to reach a goal such as preserving rural areas, meeting market demand, balancing tax revenues among localities, or creating a regional rail system. Participants could arrive at the target through a variety of dot combinations.

None of the six groups playing the game chose traditional suburban community dots. All placed urban or enhanced suburban dots along US 29 north of Charlottesville and US 250 east of the city, and small town/village dots on existing towns to indicate they wanted to preserve the characteristics of those places. Most placed urban / enhanced suburban dots on Ruckersville and Zion Crossroads. One group placed dots around the Town of Louisa rather than Zion Crossroads. Another placed dots around Stanardsville rather than Ruckersville.

From Dot Maps to Regional Scenarios

Based on the dot maps, the project team used the CorPlan computer model developed for the EPI to create three regional development scenarios called Town Centers, Urban CoreL, and Urban CoreM (Exhibits 7, 8 and 9). The team then developed traffic projections and transportation systems for each scenario using TranPlan, a four-step traffic model similar to the Charlottesville-Albemarle MPO’s MINUTP model. All the scenarios excluded development on environmentally sensitive areas such as severe slopes and floodplains, or land protected by policy, such as conservation easements and historical districts.

All three scenarios include a new urban type community located in the Hollymead area along US 29 near the airport. Urban communities fill the US 29 corridor from the University of Virginia (UVA) to Hollymead in the Urban CoreL and Urban CoreM scenarios, which require extensive redevelopment along US 29. The Town Centers scenario envisions enhanced suburban communities around existing subdivisions that replace or preclude strip commercial centers. All the scenarios assume urban or enhanced suburban communities in Pantops east of Charlottesville. The Southwest Mountains bound urban development east of Pantops and north of I-64.

All the scenarios assume some urban or enhanced suburban community development in selected areas outside of Charlottesville-Albemarle. The Town Centers scenario includes enhanced suburban development areas of around 3,000 acres (slightly less than five square miles) at Zion Crossroads and Ruckersville. The Urban CoreL scenario assumes urban development in and around the Town of Louisa, while the Urban CoreM scenario assumes urban development in Zion Crossroads and Stanardsville.

Two caveats about the scenarios are noted: 1) the traffic model does not account for congestion-relieving benefits offered by such measures as overpasses and grade separated interchanges; and 2) the proposed new roads in the scenarios report were developed by the consultant for sketch purposes only and were not reviewed for their location, street design, or their community and environmental impacts.

Exhibit 7 Town Centers Scenario

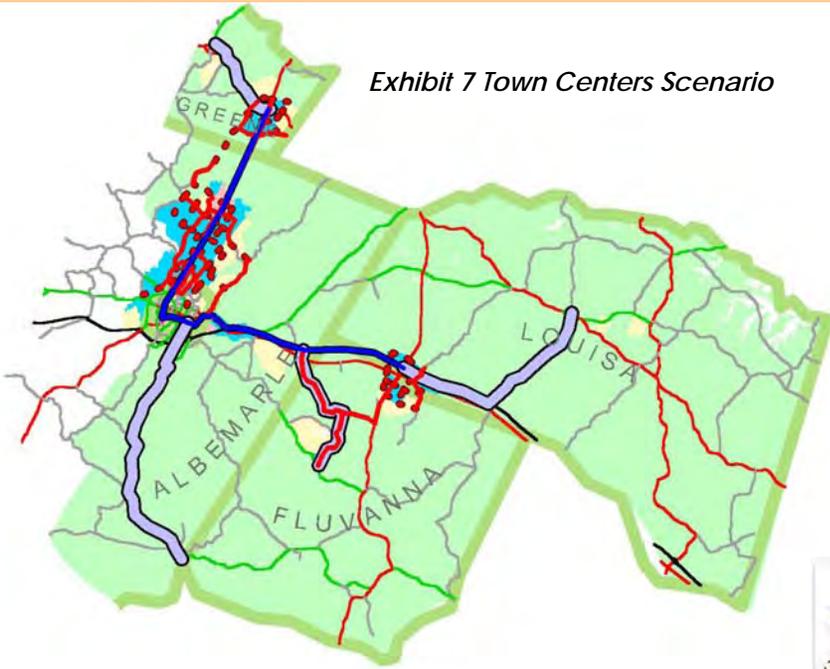


Exhibit 8 Urban CoreM Scenario

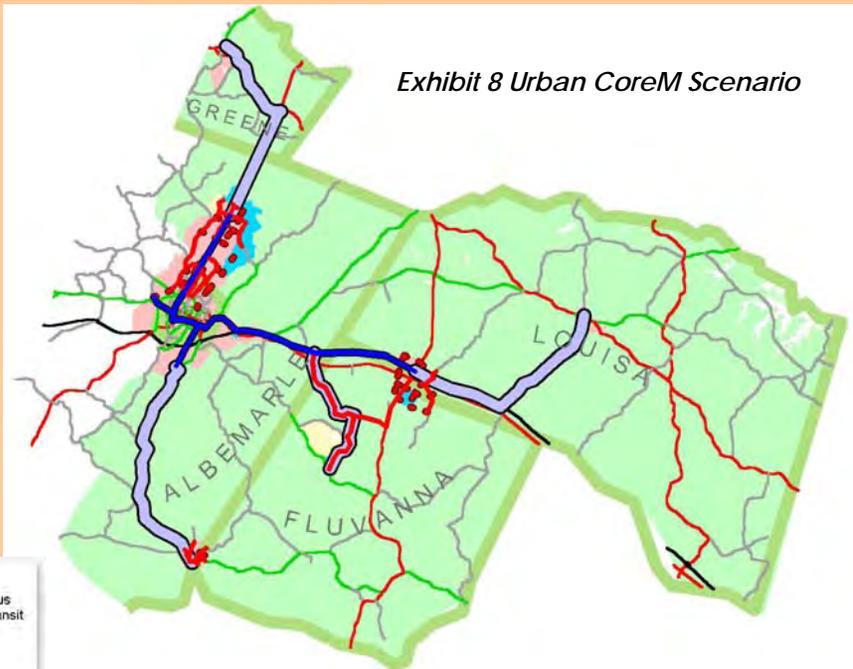


Exhibit 9 Urban CoreL Scenario

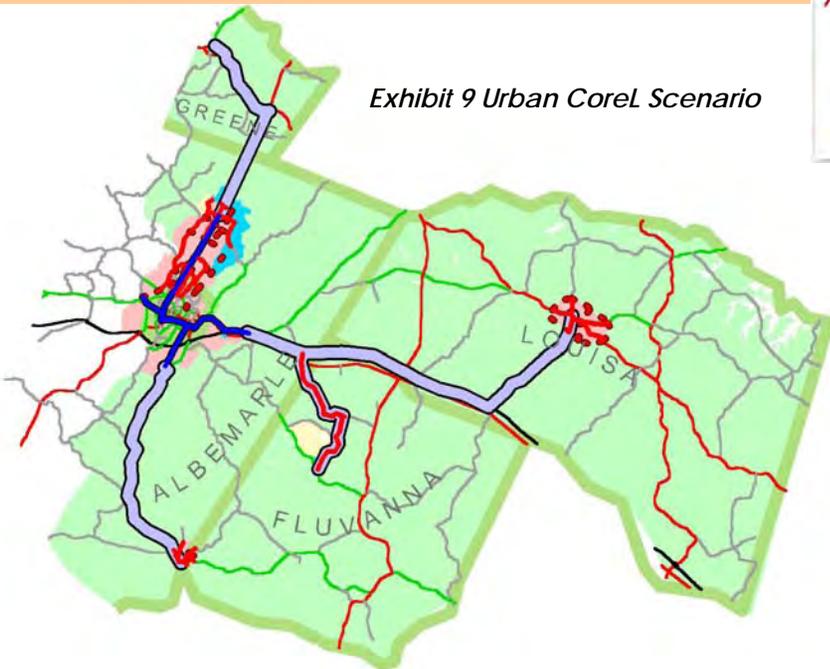
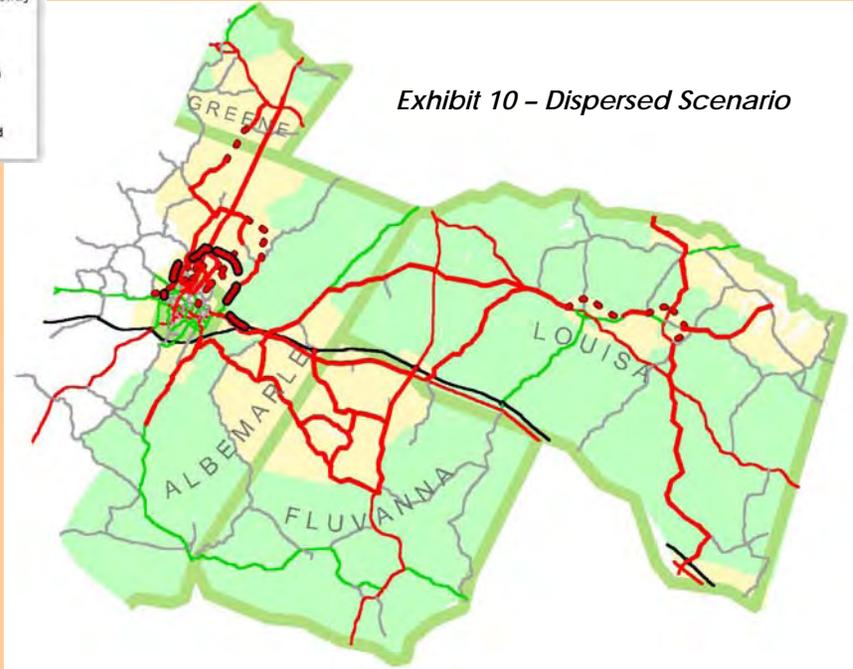


Exhibit 10 - Dispersed Scenario



Connecting Communities

A low-speed, walkable community street system is integral to the Town Centers, Urban CoreL and Urban CoreM scenarios. Based on Albemarle County's "Development Areas Initiative" (DISC) Study, the system features neighborhood streets that connect with main streets and avenues, which in turn connect with boulevards. Neighborhood streets are designed primarily to provide access to homes. Main streets and avenues are designed as major streets within communities that provide access to neighborhood streets and the community's commercial and civic centers. Boulevards are designed to connect communities with each other. The entire community street system is designed to balance walking, bicycling, transit and automobile travel.

Community street systems already exist in Charlottesville. Main Street acts as a boulevard connecting several communities; Market Street is an avenue serving downtown commercial and civic cores; and First and Second Streets are neighborhood streets providing access to homes.

The boulevards connect urban communities from the City north to Hollymead and east to Pantops, as well as within Zion Crossroads and Ruckersville in the Town Centers scenario. But access on the rural sections of Routes 29 and 250 between the urban core and suburban/rural areas is controlled to avoid encouraging development outside of designated areas.

Walkable Communities Support Transit

Walkable urban and enhanced suburban communities concentrated along corridors increase the viability of transit. As the region develops, the bus system can be extended and frequency can be increased. This sets the stage for possible future busways or light rail.

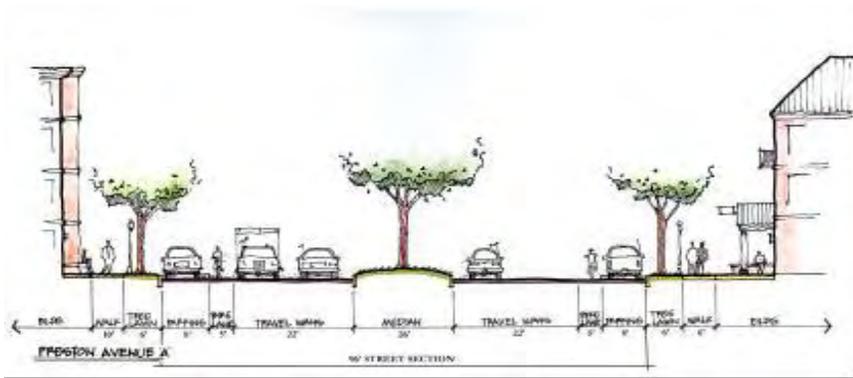
Community-Oriented Streets and Boulevards

The street network should always serve the desired community characteristics, not the other way around. The proposed boulevards –

- Connect closely spaced urban and enhanced suburban communities
- Fit with the size and scale of the communities they serve
- Are no more than four lanes wide
- Are designed for speeds of no more than 35 miles per hour
- Are spaced no more than a mile apart
- Integrate features like raised pedestrian crosswalks, bike lanes, and walkable intersections
- Carry no more than 30,000 vehicles per day
- Feature bus service at least every 15 minutes at peak periods and every half hour other times
- Are lined with buildings placed close to the street
- Include on-street parking, separating pedestrians from traffic



Two Lane Streetscape



Four Lane Cross Section

Charlottesville Commercial Corridor Study, Volume 1

Exhibit 11 - Boulevard Characteristics



Exhibit 12 - Hollymead Town Center Sketch
This vision for a mixed-use, walkable community serving the Hollymead area of Albemarle County adjacent to US 29 was created by Walter Kulash of Glatting, Jackson, Inc. The design includes a network of streets, sidewalks and paths framing a vital town center that includes homes, shops, workplaces, and entertainment centers. Grade-separated overpasses and underpasses on Route 29 help separate local from through traffic, facilitating the creation of the center.

Connectivity, Access, and Choices: Comparing the Alternatives

The Town Centers, Urban CoreL and Urban CoreM scenarios provide some real differences to the dispersed scenario. Rather than isolate strip commercial and office centers along major roadways, the alternative scenarios cluster working, shopping and entertainment activities to bring people together. Walking from work to lunch is convenient and enjoyable, encouraging workers to get out and about. Because so many are walking, streets are noticeably alive with people and not nearly as congested for those driving. The lunchtime rush hour could be a thing of the past; morning and afternoon rush hours can be lessened or at least contained. The travel model estimates that around 27 percent of the total miles driven will be congested with the walkable, interconnected communities of the Town Centers scenario and even less congested under the Urban CoreL and Urban CoreM scenarios (Exhibit 13). This is quite an improvement from the 44 percent congestion under the business as usual scenario.

The scenarios don't require all, or even most people, to live in urban downtown environments. People will continue to be free to choose life in the country (in fact, more countryside will be preserved), but choices will be available for those who want to live in walkable suburban communities or the urban core.

Also, in response to preferences expressed at the workshops, the scenarios don't propose that any communities feature significantly higher densities than those in downtown Charlottesville today. It would have been possible to accommodate virtually all the population growth in a tighter urban ring, but this would have required taller buildings and more density than people said they wanted. The big difference made by the enhanced suburban communities in this study is due to their design. Because of the interconnected community street system and the mix of activities in close proximity, people will have a choice to walk, bike or take short vehicle trips to places only accessible by the car nowadays.

Rural vistas will not disappear to the same extent as they will under the business as usual scenario. Less than 15,000 acres of farms and forests will be developed, much less than the 70,000

acres lost under the dispersed scenario (Exhibit 13). Land development and design guidelines, using the urban and community elements as a context, can provide a framework within which unique communities can develop and flourish.

The sense of community supported by thoughtfully designed places can help unite neighborhoods and the region. Exhibit 13 shows how the scenarios compare using measures based on the 1998 Sustainability Accords. On all measures, the Town Centers, Urban CoreL and Urban CoreM scenarios compare favorably to the Dispersed, or business as usual scenario.

Measure / Sustainability Accord	Dispersed	Town Ctr	CoreL	CoreM
Pct. Farms and Forests Retain resources/habitat/farms/forests	55	64	65	65
Pct. Developed Retain resources/habitat/farms/forests	45	36	35	35
Pct. Living In Clustered Communities Optimize use/cluster/human scale	13	61	68	68
Pct. Non -auto Trips Transportation Alternatives	4	15	18	18
Annual Gallons Gas Consumed (billions) Conserve Energy	155	121	110	114
Pct. Travel Congested Employment / Education Access	44	27	20	21
Water Quality and Quantity Water Quality and Quantity	Poor	Good	Good	Good

Exhibit 13 - Scenario Comparisons

Regional Travel Characteristics

Exhibit 14 presents a more detailed comparison of the travel characteristics for the scenarios. There are some caveats to this comparison that should be noted. The results are from a traditional travel model that is limited in its ability to estimate the influences of community design, such as pedestrian-friendly streets, on travel characteristics, such as transit ridership. Policy strategies were not tested, such as controlling the availability and price of parking, which can further stimulate transit ridership. In addition, bicycle and walk trips were combined in the model; given the bicycle-friendly nature of the streets and boulevards, and the closeness of the communities, it would be useful to test how many medium distance trips, perhaps between one and five miles, could be reasonably allocated to bicycles. While the project team used emerging research on these relationships in order to augment the model results, the EPI study may still underestimate the effects of walkable, interconnected communities, and further study is recommended as the data and the state of the practice on these issues improve.

Given these caveats, the results still clearly indicate that the Town Centers, Urban CoreL and Urban CoreM scenarios compare favorably on all measures, including congestion, despite their much lower price tag for highway improvements. The region can reduce year 2050 vehicles miles traveled by 20 to 30 percent, vehicle hours traveled by 40 to 50 percent and congestion levels by up to 50 percent for less than half the price of highway expansion under business as usual. The Town Centers scenario calls for \$460 million in road investments over 50 years versus \$1 billion for the Dispersed scenario. The highway cost savings for the Town Centers, Urban CoreL and Urban CoreM scenarios can be used to fund significant transit improvements.

	Dispersed	Town Centers	Urban CoreL	Urban CoreM
Total person trips (000s)	1,900	1,900	1,900	1,900
Vehicle trips (000s)	1,300	1,100	1,000	1,100
Walk trips (000s)	73	274	322	341
Vehicle miles traveled (000s)	15,700	12,300	10,900	11,200
Vehicle hours traveled (000s)	730	450	370	380
Average speed (mph)	22	28	29	29
Pct. VMT congested	44%	27%	20%	21%
Highway improvement costs (millions)	\$ 1,040	\$ 460	\$ 320	\$ 320

All statistics are reported for an average weekday in 2050
Data from TRANPLAN assignment report

Exhibit 14 - Travel and Impact Comparisons

Note: The traffic model does not account for congestion relieving benefits offered by such measures as overpasses and grade separated interchanges.

What the Community Thinks

The Advisory Committee presented the Dispersed and three alternative scenarios to the public during a series of public workshops held in February 2001. Participants were asked during the first part of the workshop to suggest and agree on land use and transportation goals. Once again, the responses supported the 1998 Sustainability Accords.

During the second part of the workshop, participants reviewed and commented on the scenarios. No one favored the Dispersed scenario, indicating significant support for change.

Although not asked to choose among the scenarios, participants indicated some preferences: the Town Centers scenario was generally supported in the Greene, Louisa and Fluvanna workshops and the Core scenarios were favored in Charlottesville and Albemarle.

HOW DO WE GET THERE?

Given the broad-based support for change, the next question for the Advisory Committee to answer was – What steps could the region take to change business as usual? The Committee agreed that while the EPI can provide a good policy framework for regional development, governments, organizations, private interests and others that have a stake in developing the region should take ownership of the vision and implement it their way. Thus the following recommendations are intended to stimulate commitment toward working together rather than as a prescription.

Key Success Factors for Long Term Change

The Advisory Committee strongly believes that a new direction is needed to avoid business as usual. Through a process of regional consensus, each locality should act on the key success factors outlined on the next page (Exhibit 15) in order to launch the process of achieving the sustainable land use and transportation goals envisioned in the EPI.

The success factors encapsulate the major issues that must be examined and addressed in order for long term planning to succeed. They include the following topics:

1. Grow only in designated development areas
2. Maintain small towns and villages
3. Define and maintain hard edges
4. Create urban and enhanced suburban communities
5. Invest in supportive infrastructure
6. Preserve rural areas
7. Achieve regional equity
8. Ensure affordability

The following section discusses methods for addressing each success factor.

Agreement on the Future of The Region

To support local strategies for directing growth, the EPI Advisory Committee proposes that local governments establish an agreement that will:

- Define the amount of development each locality is willing to and interested in absorbing;
- Identify the placement of that development;
- Create strategies to phase in supportive infrastructure such as roads, transit services, and water and sewer systems.
- Allow localities to discuss and resolve any circumstances that might affect the agreement.

Specifics of the agreement are provided in Appendix B.

Framework for Guiding Growth

EPI Advisory Committee member Bruce Appleyard, a Transportation and Land Use Planner for the Southern Environmental Law Center, developed a proposed framework the region could consider to coordinate land use and transportation, included in this report as Appendix C.

<p>1. Grow only in designated development areas</p>	<p>Urban growth should only occur in the development areas designated in each of the region’s local comprehensive plans. The EPI suggests strategic locations for those areas. Rural area development should be limited to recreational, agricultural and forestry uses. Targeting and phasing of development should be carefully monitored; plans should be updated with five to ten-year horizons.</p>
<p>2. Maintain small towns and villages</p>	<p>Small communities are built at a scale that provides a viable, high-quality alternative to urban communities. To ensure this quality of life, localities should designate small town/village areas. Development guidelines for these areas can follow the patterns illustrated in the small town and rural residential community elements of the EPI. Small town / village areas should not exceed 1,500 acres in size, an area slightly larger than the Town of Louisa. Should a locality want to increase the size of a small town / village, then it should be reclassified as a development area in the local comprehensive plan.</p>
<p>3. Define and maintain hard edges</p>	<p>Each designated urban development and small town/village area should have definite boundaries that clearly distinguish urban from rural areas. To the extent possible, the boundaries should follow natural features, such as topography and rivers. The community street network can also help define these boundaries.</p>
<p>4. Create urban and enhanced suburban communities</p>	<p>The act of designating development areas with hard edges by itself will not ensure walkable, interconnected communities. To make such communities real, development in the designated areas should follow the building / open space / street context illustrated by the EPI’s urban and enhanced suburban community elements.</p>
<p>5. Invest in supportive infrastructure</p>	<p>Public infrastructure required by urban development, including transportation, water/sewer, stormwater, open space / recreation and parking, should be targeted to designated development areas. VDOT should support localities in proactively planning and building the connections within the designated development areas, not waiting until areas are under development before building the community street system. In addition, any transportation improvements made in a rural area should be designed to limit access, thereby discouraging inappropriate suburban development. Local comprehensive plans and zoning ordinances should be updated to further restrict development along rural roadways.</p>
<p>6. Preserve rural areas</p>	<p>Protecting rural land adjacent to designated development areas is only part of a comprehensive rural preservation effort. A regional rural conservation strategy is needed that promotes agricultural and forestry industries and protects environmentally sensitive and important lands. Localities should adopt a regional conservation plan that includes a GIS inventory of protected lands and resources.</p>
<p>7. Achieve regional equity</p>	<p>Regional development should balance economic benefits against fiscal burdens fairly for each locality in the region. Localities should work together to negotiate strategies with each other, the Commonwealth, and the private sector to ensure each jurisdiction is economically healthy.</p>
<p>8. Ensure affordability</p>	<p>The diversity of jobs, housing types, and transportation choices in the designated development areas should result in communities that accommodate a variety of income levels. Strategies such as inclusionary zoning, affordable housing programs, and location-efficient mortgages should be explored to ensure the net cost of living is sustainable for all residents.</p>

Exhibit 15 – Key Success Factors

Designated Development / Small Town Areas (Key Success Factors #1, #2 and #3)

Based on strategic importance, such as regional accessibility, and community input, the EPI suggests seven possible locations for designated development areas and ten locations for designated small town / village areas (Exhibit 16). There are a number of strategies for localities to direct urban growth into designated development areas, including density bonuses, rezoning and even down zoning. The strategies are summarized in Appendix A.

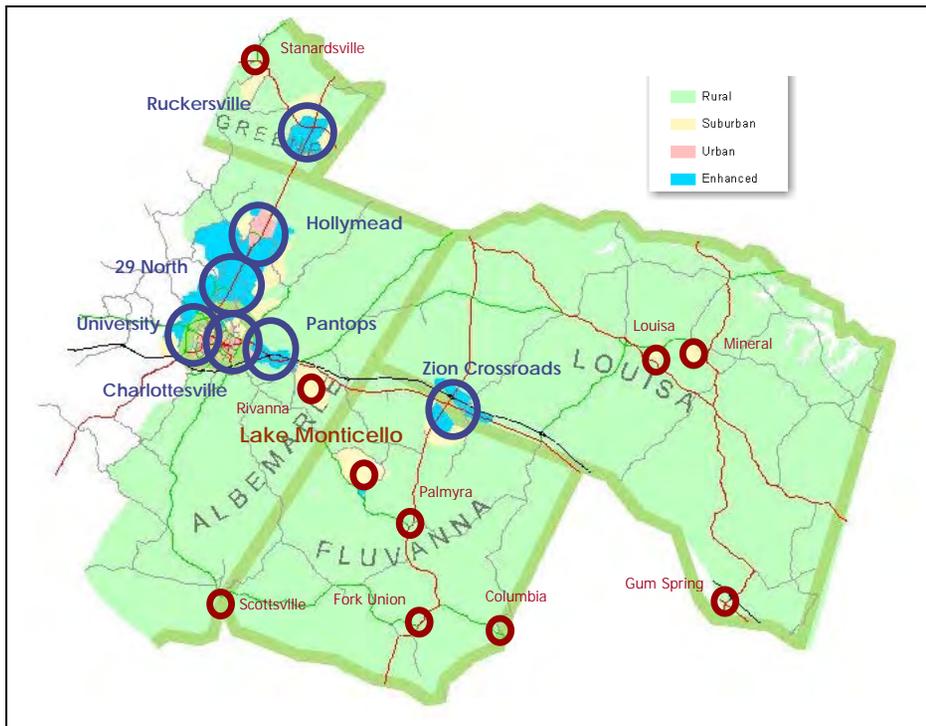


Exhibit 16 – Proposed Designated Development Areas & Small Towns

Urban and Enhanced Suburban Communities (Key Success Factor #4)

The EPI’s community element diagrams and inventories provide a community development vocabulary for the region to use and expand as needed. The layout of streets and open spaces in the element diagrams illustrate expected scales and patterns. The data tables in the community element inventory identify the mix of desired land uses numerically, providing information such as the average percentage of land devoted to each use and typical floor-area ratios. Localities will need to carefully review and understand the inventory information before using the community elements as a context for land development regulations.

The urban and enhanced suburban elements in the vocabulary are recommended for the designated development areas. The Advisory Committee and the public favored these elements because they support a high quality of life in an attractive and efficient manner. They meet the 1998 Sustainability Accords and build on the concepts recommended in Albemarle County’s DISC effort and the Charlottesville Commercial Corridor Study.

As illustrated in Exhibit 6 on page 5, communities are made up of a combination of interconnected community elements. Subarea plans prepared for each of the designated areas can specifically identify how the community elements will interconnect given the specific conditions in the area, such as existing development and environmental features. The subarea planning process in the Albemarle DISC report describes steps localities could follow. The subarea plans can become part of the local comprehensive plans and zoning ordinances can be updated accordingly.

Supportive Infrastructure Investments (Key Success Factor #5)

The provision of infrastructure plays a major role in locating and shaping regional and community development. The location of urban development is influenced by transportation access and the availability of water and sewer service. The proximity and scale of development within urban areas is influenced by the layout of the community street network and open spaces.

Community Infrastructure Investments

One of the most difficult obstacles to overcome in building urban and enhanced suburban communities is building the community street system and other infrastructure elements that link parcels together. This is true for a number of reasons, most notably land development regulations that require on-site infrastructure improvements in order to shift infrastructure costs onto the private sector.

Land development regulations usually focus on the provision of on-site roads, parking, water retention and open space. Unfortunately, all of these “on-site” requirements force buildings away from each other and discourage connectivity, ultimately creating places where the pieces don’t fit together. While the intent of these regulations is to reduce local infrastructure costs the results are inefficient places.

Compounding this problem is the fact that developers have little reason to build streets or other infrastructure beyond their site. In fact, there is a disincentive to build connections because of competition from developers of adjacent sites.

In order to build interconnected communities, localities should become more proactive in assuring “community” as apposed to “on-site” infrastructure. This begins with establishing designated development areas and preparing subarea plans for those areas as noted above. The subarea plans can locate the community street and open space network onto property maps, and identify common parking and water retention areas.

But the subarea plans will not materialize unless there is a way to pay for the infrastructure. The responsibility for making all this happen lies in many hands. VDOT and localities must work

together to create policy changes at state and local levels, as well as new ways of working with the private sector to finance, design and build a sustainable transportation system and other infrastructure elements that support the desired land use plan.

These strategies are not easy to implement, however. The programming of state transportation funds is a complex, sometimes controversial process. At the local level, paying for investments with revenues from property taxes means that existing residents must help support the infrastructure for new residents, and localities may be risking their investment if development doesn’t occur as anticipated.

One way to avoid the timing problem is for localities to issue bonds for the infrastructure. The bonds are then paid by developers and/or through special assessments levied on properties. A way to avoid risk is to stage the infrastructure development, providing only what is needed for active developments. This strategy is rare in Virginia, but not uncommon in other states.

Regardless of the strategies developed, if community infrastructure is to be built properly, localities and VDOT will need to refine local land development regulations and the existing funding system. Making these types of investments will change the way we spend our transportation dollars. But the EPI results indicate we will spend far less in the long term by investing in well-designed community-oriented infrastructure.

Regional Transportation Investments

Important steps the MPO, localities and VDOT can take to plan and program regional transportation investments include the following:

- 1) Target and prioritize areas for growth (for ideas about how to achieve this goal, see proposed Regional Agreement in Appendix B and Framework for Guiding Growth, Appendix C).
- 2) Develop land use and transportation plans that support the creation of quality communities. This puts a priority on multimodal transportation systems that serve planned

development areas, carefully designed to fit with the quality and scale of the communities they serve.

- 3) Implement land use and transportation plans, creating the appropriate incentives, regulations, and funding streams to support development of quality communities.
- 4) Continually evaluate transportation plans and projects in light of the desired land use plan, placing a priority on improving existing systems to accommodate more types of trips before building new roads.

Community Street Network

As noted earlier in this report, a community network exists in the Charlottesville and University of Virginia development areas. To achieve the Town Centers or core scenarios, the network needs to be retrofitted into the US 29 North development area and similarly retrofitted or built from scratch in the others. The locations of the boulevards, main streets, avenues and neighborhood streets, as well as bicycle, pedestrian, and transit networks can be identified in the subarea plans and the MPO Long Range Plan.

Expanding Existing Public Transit: An Immediate Investment

Key factors for effective public transit systems include:

- 1) Appropriate location, design, and mix of communities;
- 2) Pedestrian infrastructure investments to make all transit origins and destinations walkable; and
- 3) Reliable, frequent service.

According to the recently adopted Charlottesville Transit Development Plan, the City's improvements in transit frequency and geographic coverage are paying off; the system is seeing unprecedented growth in ridership since the late 1990's, in contrast to downward trends in many other cities.

The Town Centers and Urban Core scenarios, with the accompanying community street networks, provide the framework for factors 1 and 2. But changes in the way we fund transportation investments must be developed to implement factor 3. Stable, sufficient, and long-term funding must be

provided for transit and pedestrian systems. Reprogramming current road projects, as the City has done in recent years, and developing other public and private programs can achieve this. Businesses can play a role in supporting transit that serves their communities, as can private developers. But in the end, a permanent shift in priorities will need to take place in order to correct a long-standing imbalance between transit and road funding.

Priority Transit: Planning for the Long Term

The EPI assumed existing surface transit would be extended in the Town Center and Urban Core scenarios, building upon the investments the City has already committed to make according to the Charlottesville Transit Development Plan. In addition, the study examined the potential for developing priority transit such as rail or bus rapid transit systems in the long term.

Priority transit vehicles operate in their own right of way to avoid auto congestion and provide competitive travel choices. Priority transit is well suited for corridors with long trips and pedestrian oriented development around stations and stops. Both the US 29 and the I-64 / US 250 corridors are candidates for priority transit if the Town Center or Urban Core scenarios are implemented.

Options include designating or adding relatively low cost roadway lanes whose access is restricted to buses and high occupancy vehicles (such as the Eugene, OR busway pictured below) as well as more expensive rail transit systems.

Travel demand forecasts for the Town Centers and Urban Core scenarios estimate about two million riders per year would use light rail transit along US 29 in the year 2020. The estimated capital and operating cost for light rail is roughly \$26 million per year, assuming all the right of way would have to be purchased. Bus rapid transit along US 29 would attract 1.3 million riders and cost around \$14 million per year, again assuming new right of way was needed.

The cost-per-rider results suggest that either option is feasible and planning for them makes sense, although the facilities might not be built until the latter part of the planning horizon. First steps toward priority transit need to be taken now if the region wants to pursue it in the long term.

Recommended next steps for priority transit include:

- Encouraging transit oriented development along the US 29 and I-64 / US 250 corridors
- Expanding the local bus fleet and routes
- Incorporating a transit envelope (a right of way that can accommodate some sort of priority transit) into the next update of the regional transportation and land use plan

When agreement is reached on designated development areas, the region could initiate the federal New Starts Alternatives Analysis process needed to secure federal funding for priority transit. In order to initiate a New Starts proposal, the region must demonstrate clear progress on achieving its land use goals, provide a plan for priority transit rights of way, and show significant local investments in the existing transit system. The New Starts process would take around ten years to complete should the region and federal government decide the investment is feasible.

Access Management: Improving Traffic Flow and Limiting Inappropriate Development

The community street system should not extend into rural areas, especially between development areas. Access management is appropriate on the major roadways that connect development areas not immediately adjacent to each other, such as the Charlottesville area with Zion Crossroads. Controlled access highways where access is possible only at interchanges, such as I-64 and the US 29 Bypass, are expensive investments. Less expensive access management strategies, such as controlling driveway spacing and minimizing medians could be incorporated on existing highways and into plans for roadways between development areas. For example, access management strategies along the portion of US 29 between Ruckersville and urban Albemarle can help move inter-regional traffic and limit development in rural areas.

Within development areas the community street system will help divert local traffic from major corridors, but it may not result in a seamless connection for regional traffic. Controlled access lanes in the current right of way along the portions of US 29 in the development areas could provide this type of regional



Top:
Busway,
Eugene OR



Right:
Trolley,
Portland
OR

connection. Express buses and high occupancy vehicles could also use these controlled access lanes to provide fast multimodal travel between the development areas. Once the localities in the region agree upon a vision for the shape of the future, a major investment study could be developed to plan coordinated land use/transportation improvements along US 29.

I-64 provides controlled access from Zion Crossroads to Charlottesville. Added lanes to the interstate could be designated as high occupancy / express bus lanes. In addition, US 250 should be transitioned to a controlled access facility, again using access management strategies.

Regional Water and Sewer Investments

The Thomas Jefferson Water Resources Advisory Committee provided a cursory review of the designated development area concept and concluded that, based on existing or planned service, the water supply should be sufficient for all of the development areas with the possible exception of Ruckersville. Furthermore, extrapolating findings from the DISC report, the Committee concluded that the development area concept would have less of an impact on water quality than the Dispersed scenario. A more detailed regional water and sewer study is recommended to confirm the findings of the committee. The committee's findings are included in the EPI Technical Report.

Key Infrastructure Findings

Results from the travel model indicate there are congested streets in every scenario. For example, some eastern streets close to Charlottesville show fewer vehicles in the dispersed scenario, which assumes a bypass around the city, but more traffic comes in from the south, west, and rural eastern areas due to the spreading of low-density residential development. In the Town Centers and Urban Core scenarios, traffic is spread more evenly around the city's entrance corridors, and some is reduced because it is contained in outlying areas. The bottom line: while at least some congestion is likely for any land use pattern, the shorter trips, walkable communities, and transit options in the Town Centers and Core scenarios provide the most effective array of strategies to reduce traffic congestion.

- Boulevards and other community streets should not be any wider than four lanes, with buildings close to the street (no more than 20 feet from the edge of pavement). Sidewalks and bike paths should be provided on both sides and landscaped medians and bulb-outs provided for easy pedestrian crossing.
- A major investment in regional light rail would not be cost-effective immediately, but may be by the year 2050. However, it is important to understand that the land use decisions made today will make or break the potential for any type of rail or priority transit system in the future. If the localities in the region want to be able to choose priority transit in the future they must focus now on creating a land use pattern that could support it.
- In the near term, the region should significantly expand its fixed route transit system and increase the frequency of service.
- Boulevards and other community streets should be transit friendly, with transit vehicles having priority along outside lanes of four-lane roads and at signalized intersections. These lanes could later serve as a resource for priority transit systems.
- Transit service should be provided on each boulevard, with at least 15-minute headways during peak periods and 30-minute headways during off-peak times. Transit along avenues and neighborhood streets should be designed to serve the activities within the development areas.
- When the region agrees upon designated development areas, a multimodal major investment study will be needed for the US 29 corridor from some point north of Ruckersville to the existing Route 29/250 bypass to determine how to effectively accommodate through traffic given the proposed designated development areas and community street system. This would differ from previous studies because the assumptions about land use, access management, transit ridership and pedestrian and bicycle access would be markedly different under a new vision for coordinated transportation and development. It could explore ways to improve the existing corridor through options such as express lanes for through traffic, pedestrian-friendly intersections and

interchanges, dedicated transit access, and strategies to increase regular bicycle trips in the context of the updated land use plans. The MPO 2025 Long Range Plan update could identify the desired outcomes for this type of study.

- The future demand on the US 250/64 corridor, including the US 250 bypass through the City is reduced in the Town Centers and Core scenarios due to two factors: 1) the boulevard system in the eastern and northern parts of the study area disperse traffic throughout the region more efficiently, thus lessening pressure on the US 250 corridor; and 2) the improved balance of housing and jobs in the Zion Crossroads development area reduces the travel demand between that area and Charlottesville, noticeably reducing future traffic volumes on US 250 and I-64 compared to the dispersed scenario. There is some congestion on the US 250 and I-64 corridors where they converge with Route 22/231 at the gap in the Southwest Mountains, but solving it by adding significant new roadway capacity (such as a bypass around the gap or several new lanes within it) would not be cost-effective. It would be better to consider this as a long-term candidate for priority transit.
- New community street connections may be needed between the City and Pantops, but no major roadway development should be needed along the rural section of Route 250, other than possibly widening it to four lanes between Charlottesville and Zion Crossroads as the latter area develops. Transit and demand management strategies should be explored as viable alternatives to road expansion.
- The cost of the proposed US 29 Bypass extension in the dispersed scenario is enough to pay for nearly the entire community street and transit system proposed in the Town Centers and Urban Core scenarios. The total cost of the Town Centers or Urban Core scenario improvements is half that of the dispersed scenario, yet congestion levels are lower. Investing in the community street network, transit, and pedestrian and bicycle systems that support designated development areas can result in significant cost savings, less environmental damage and congestion, and a higher quality of life for the region.

Rural Preservation

(Key Success Factor #6)

Several localities have developed rural preservation inventories, plans and strategies that can serve as a basis for a regional rural preservation plan. A review of the region's current rural preservation strategies and those used by others (summarized in Appendix A) highlight several that are applicable in the region:

- Zoning and subdivision ordinances – Perhaps the most important available rural preservation tool is zoning. Localities have a tremendous amount of latitude to control development through zoning ordinances as long as they can demonstrate that the ordinance is a legitimate exercise of government. Albemarle County's down-zoning of some rural areas in 1980 to protect its water reservoir is an example of what is possible through zoning ordinances.
- Conservation easements – Legal agreements are reached with property owners that limit the type of development on the property and/or enact preservation strategies such as riparian buffers along streams. These easements are currently used in the region; Albemarle's zoning ordinance provides for the establishment of conservation easements through clustering houses in rural preservation districts.
- Purchase of property – Counties purchase property outright and control its use. This is the most expensive strategy, and the most certain.
- Purchase development rights – Localities purchase the development rights of property, not the property, thereby lowering public costs. This strategy is enabled in Virginia but used in only a few areas.
- Tax incentives – A number of counties use tax incentives to encourage landowners not to develop. This strategy is widely used in Virginia, but it is expensive and the effects are temporary compared to other strategies.

Localities in the region must apply these and other tools strategically. The purchase options and conservation easements are needed for land near the designated development areas. Other less expensive methods can be used for land further away.

Land conservation is only one part of an overall rural preservation strategy. A rural conservation plan is needed for the region to identify environmentally sensitive areas and historical and cultural resources. It should also identify the appropriate strategies for conserving land. Furthermore, it should identify design guidelines for the limited development that will take place outside the designated development areas.

Regional Equity and Affordability

(Key Success Factors #7 and #8)

At nearly every meeting, the Advisory Committee and the public raised issues of economic equity and housing affordability for residents. Residents of Fluvanna and Greene Counties are particularly concerned about providing services, especially schools, to new residents without a non-residential tax base. This creates an incentive for these counties to seek industrial and commercial development.

The proposed regional agreement is designed to address these concerns. The agreement will answer several key questions, including:

- How much growth should the region anticipate?
- Has the region allocated enough land to reasonably accommodate this growth in high quality communities?
- What are the fiscal impacts of the desired economic development, both regionally and locally?
- What strategies are being employed to ensure equity and affordability? These can include revenue sharing, location efficient mortgages, inclusionary zoning, and an analysis of the net cost of living in which higher costs for some amenities are offset by lower transportation costs.

Because of the strength of the concerns by the Advisory Committee and the public, the regional agreement, including the economic development / fiscal assessment, should be a high priority for the region, supported by plans such as -

- Rural and Urban (MPO) Year 2025 transportation plans,

- A Rural Preservation Plan that builds on the rural preservation component of the Heritage Vision Plan under development by the Thomas Jefferson Venture,
- An Economic Development agreement that builds on the visions in local and regional plans,
- Subarea Plans for Development Areas, and
- Updates to comprehensive plans, zoning ordinances, and subdivision regulations.

SUMMARY

For 18 months, the Eastern Planning Initiative's Advisory Committee met to review, discuss and agree on a set of principles that set a new course for development in the eastern portion of the Thomas Jefferson Planning District. The Committee's work builds on the 1998 Sustainability Accords adopted by the TJPDC and other initiatives toward a new direction, such as the Albemarle Neighborhood Model, the Charlottesville Commercial Corridor Study, and the Zion Crossroads Design Study.

The vision and key success factors presented by the Committee identify where urban growth could occur in the region over the next fifty years, how communities in the designated growth areas could look, function and "feel," how transportation and infrastructure improvements can be made to support the growth, and the implementation steps necessary to make the principles real.

Recognizing that this is the first phase in a continuing effort to shape the future of the region, the Committee encourages local governments, VDOT, the MPO, the TJPDC, UVA, the private sector and environmental and community groups to actively participate in shaping and playing a role to achieve the vision.

In Closing --

The region must commit to some form of the regional development pattern and community types proposed in the EPI in order to make the community streets and transit recommendations viable.

The EPI results indicate clearly that if an agreement is reached, the region will have many strategies and paths from which it can choose to build toward a sustainable future. If no agreement is reached, a dispersed development pattern is highly likely, major road expansion will be needed, congestion and its attendant problems will worsen severely, transit development will be extremely limited, and the region's quality of life will suffer.

"Wisdom holds that land use and transportation planning go together like a horse and cart, but this is the first planning effort that hitches them together."

- Sally Thomas, Advisory Committee Member, MPO Policy Board Chair & Albemarle County Supervisor

For more information about the Eastern Planning Initiative, contact:

Harrison B. Rue, Executive Director
Thomas Jefferson Planning District Commission
300 East Main Street, P.O. Box 1505
Charlottesville, VA 22902
(434) 979-7310
Email: hrue@tjpdcc.org
www.tjpdcc.org

For a copy of the CorPlan model and a handbook of the EPI process, available to any interested community or group, contact:

Felicia Young
Federal Highway Administration
Transportation and Community and System Preservation Program
400 Seventh Street SW
Washington, DC 20590
(202) 366-1263
Email: felicia.young@fhwa.dot.gov
www.fhwa.dot.gov/tcsp

Appendix A

Summary of Growth Management and Rural Preservation Tools

Tools for growth management and creating "hard edges"

Tool	Purpose	Advantages	Disadvantages	Comments	Examples
1 Urban or Local Growth Boundaries	Place limits on the outward expansion of further growth.	Such limits can help reduce infrastructure costs, shorten distances between new suburban jobs and unemployed city workers, shorten future commuting times, preserve vacant land and open space, and create higher densities.	Growth limits prevent the building of lower-cost new housing units on cheap land. Growth limits can also drive up real estate and home prices inside the boundary, making these areas unaffordable for many lower income residents	To work well, outward growth limits must involve the entire region, not just individual localities acting separately (individual localities acting separately can just spread sprawl farther). Also, state laws must prohibit most new development outside the growth boundary or developers will leapfrog over it.	Portland, Oregon
2 Fiscal Impact Analysis	Compares the operating expenditures and capital outlays for public services required for a proposed development to the revenues that a government is expected to receive as a result of that development.	Can be used in the plan review/rezoning process to plan for new facilities, and can be used in the long-range planning process to test alternative patterns of development (growth scenarios) and to assist in the setting of level of service standards.	Because it is used as a tool to gather information, it is not in itself used to regulate development. Moreover, while this tool can be used as an informational tool in development plan review, it cannot be used to stop or postpone development of land already zoned.	Virginia code allows any locality to incorporate fiscal impact analysis into their planning, zoning, and land use decisions both as a formal model and an informational guidance for decision making.	The high-growth jurisdictions of Loudoun, Prince William, Chesapeake, and Fairfax used fiscal impact studies to test alternative development patterns during their comprehensive plan updates.
3 Level of Service Standards	Specify the public facilities needed for new residential developments in an effort to determine if those facilities are adequate to support a proposed rezoning.	Can help ensure that there are adequate schools, roads, libraries, parks, public transit, water, and sewer systems in the locality, and that new development does not overtax these facilities.	Can only be applied if a rezoning of the property is required for development and cannot be applied, by Virginia law, on land already zoned for development.	Typically set out in a guidance document or comprehensive plan, level of service standards are allowed by Virginia code in any locality.	City of Chesapeake, Prince William County, James City County.
4 Conditional Use Permitting	Assesses and mitigates potential adverse effects of a zoned land use (once land has been zoned for a specific use).	Allows localities to conduct a review on a case by case basis and place specific restrictions on a zoned land use. It can also be applied at the time of development.	A specific Virginia bill, HB 2324, limits the use of the tool in some localities.	Allowed by Virginia code in any locality. However, localities are prohibited from requiring use permits for certain types of single-family subdivisions in districts where such uses are permitted by right.	Fauquier County.
5 Conditional Zoning (Proffers)	Requires property owners to accept certain restrictions and/or make contributions in exchange for a rezoning by the local government. These conditions "run with the land" and subsequent property owners must comply with the conditions as if they were a restrictive easement or covenant.	Can help mitigate the impact of development and win community support for a project. Proffers can be used to improve roads, parks, and recreation areas, and can be used to limit adverse environmental effects and improve the appearance of developments.	Pursuant to Virginia code, the proffers must be related to the rezoning itself; specifically, to the physical development or operation of the property. In other words, the proffer must be directly related to the rezoning of the property itself.	Virginia code enables all localities to accept non-cash and non-mandatory proffers that are reasonable related to a rezoning request. In some Virginia communities, the proffer system has evolved into an extremely complex system of expectations and site-specific negotiations between the locality, the property owner, and the community that is impacted by the development.	

Tools for growth management and creating "hard edges"

Tool	Purpose	Advantages	Disadvantages	Comments	Examples
6 Cash Proffers	A voluntary offer of money, submitted as part of a rezoning application to offset the impact of a particular development.	Cash proffers help to mitigate the impacts of new development by providing a funding source for new roads, schools, and other public facilities required to serve the proposed development. Also, Virginia code does not require localities using a proffer system to develop clear guidelines for proffers.	Only localities defined by Virginia code as "high growth" are able to accept cash proffers (high growth is generally defined as any locality that had a population growth of 10% or more from the most recent decennial census year). In addition, cash proffers are only a supplemental revenue tool to be used in conjunction with the locality's capital improvement program, and cannot be relied upon as guaranteed funding since they are dependent upon the rate of growth.	Because cash proffers can only be applied if a rezoning of the property is required for development, they cannot be applied on land already zoned for development. Because most localities already have large areas of land zoned for suburban development (and therefore not subject to cash proffers), this tool will not substantially finance capital facilities until the long term. In other words, it cannot be relied upon to finance needed capital improvements in a locality.	Prince William County, Loudoun County, and the City of Chesapeake have all connected the proffer system to level of service standards through their comprehensive plans. Cash proffers are also used in Chesterfield County.
7 Land Use and Utility Coordination	In order to better coordinate land use decisions and development in a locality, public water, or public water and sewer, is required for development approval in designated "planned growth areas" in the locality.	Because extensions of water and sewer lines significantly affect the timing and density of development, this tool can help development in a locality occur in an orderly, and desired, pattern adjacent to existing developed areas.	Requires substantial planning, as well as coordination with comprehensive plan. Virginia code allows planning commissions to reject sewer line extensions if they are not in substantial accord with a locality's comprehensive plan.	Under Virginia code, all localities are allowed to make requirements for coordination between development and the provision of public water and sewer.	Both Chesterfield and Hanover Counties have requirements for the provision of public water and sewer for development in planned growth areas.
8 Impact Fees	A charge or assessment imposed against new development in order to generate revenue to fund or recover the costs of public facility requirements necessitated by the development.	Impact fees can help place the infrastructure costs growth onto new developments. Fees can be charged for water and sewer hookup (tap fees) as well as for road improvements.	Impact fees can only be used for capital projects and cannot be used for operations, repair, or maintenance. In addition, impact fees are only a supplemental revenue tool to be used in conjunction with the locality's capital improvement program, and can not be relied upon as guaranteed funding since they are dependent on the rate of growth.	Virginia code enables counties, cities, and towns to charge a fair and reasonable fee for connection to water or sewer systems. No other specific guidance or parameters are specified. Virginia code also authorizes counties with a population of 500,000 or more (Fairfax County) and adjacent localities to enact an impact fee program for roads.	Impact fees for water and sewer (tap fees) are used extensively by all localities with public water and sewer systems. Impact fees for road improvements are not being used in any No. Virginia localities (too cumbersome)
9 Targeted Development Areas	Local governments, using their own criteria, designate specific areas of land for development and growth. Areas are then designated in comprehensive plan and zoning ordinances.	Enables localities to designate growth boundaries dividing urban areas from rural land, create service districts, and phase tired growth boundaries around a developed area for five to twenty years into the future.	Targeted development areas and service districts are created within a framework of a comprehensive plan and are used to guide future development. They do not apply to land already zoned. A comprehensive downzoning is required if the land zoned exceeds the density guidelines of the targeted area.	Virginia code allows any locality to designate areas for various types of public and private development, use, and density.	Faquier, Prince William, and Westmoreland Counties, as well as the City of Virginia Beach. Faquier County first designated service districts in 1967, guiding growth towards more compact development.
10 Transit-Oriented Development Neighborhoods	Neighborhoods are clustered around transit hubs, such as light or heavy railroad stations.	These clustered developments provide for a higher density and a mixture of uses, as well as affording residents multiple means of transportation for work and pleasure (such as automobile, rail, bus, biking, and walking).	Residential development density must be well over 5,000 persons per square mile, and perhaps as high as 10,000, to make heavier transit use feasible. In addition, neighborhood opposition often blocks clustering higher density around transit stops.	The average 1990 density of the 161 largest central cities in the U.S. was 3,924 persons per square mile. Only 32 had densities more than 10,000. In the fringe areas around these same cities, the average 1990 density was 1,840 persons per sq. mile.	

Tools for growth management and creating "hard edges"

Tool	Purpose	Advantages	Disadvantages	Comments	Examples
11 Master Plans for Development Areas	Individual master plans for areas designated by localities as "development areas." Localities can then use the master plans as the basis for use/density ordinance changes, public facility issues, and funding.	Allows for the development of "neo-traditional" neighborhoods, with a mixture of homes, businesses, offices, and civic/cultural functions in a pedestrian-friendly environment. Also, because each development area is planned, the master plans can help contain sprawl and create "hard edges" between developed and rural areas.	Existing zoning and subdivision rules often prevent mixed-use developments, block new multi-family housing, and impede creation of pedestrian-friendly subdivisions. Therefore, the development area master plans must be accompanied by subdivision and zoning ordinance changes to make the new developments possible.	Each development area master plan, when it is completed, should be appended to the locality's comprehensive plan.	Albemarle County: Adoption of neighborhood model and inclusion in comprehensive plan. Anne Arundel County, MD: County divided up into 16 "small areas", with a detailed plan being developed for each area.

Tools for rural development and rural conservation outside of development areas

Tool	Purpose	Advantages	Disadvantages	Comments	Examples
1 Conservation Easements (also Open Space or Scenic Easements)	A legal agreement between a landowner and a land trust/government agency that limits or prohibits the development of a property to protect its conservation value. Easements are recorded as deed restrictions that "run with the land" and are transferred along with the land if the property is sold.	Conservation easements can be used to preserve farmland, watersheds, wildlife habitat, forests, and historic lands. The landowner can also see substantial benefits in the form of reduced real estate and inheritance taxes.	Many people do not understand the flexibility and benefits of conservation easements, and do not know that by placing their land under easement, their property still maintains private ownership, it is not opened up to the public, and that either segments or whole parcels may be placed under easement.	Easements are recorded as deed restrictions, and may be held in perpetuity or for a set number of years.	Widely used in rural areas of Virginia. Primary easement holders in the state include the Virginia Outdoors Foundation (VOF), the VA Department of Historic Resources, Soil and water Conservation Districts, and local organizations such as the Piedmont Environmental Council and the James River Association.
2 Purchase of Development Rights	Allow a local government to purchase development rights that are then dedicated as easements for conservation, open space, or agriculture.	Like conservation easements, purchase of development rights allows localities to protect environmental and scenic lands without actually having to pay for fee simple ownership of the properties.	The program requires a dedicated source of stable revenues, and most local governments simply do not have the funds required for such a program. Counties are further restricted in that they can not incur debt.	Virginia code allows any local government to initiate a purchase of development rights program. However, funding is the dominant limiting factor, especially to counties (which can not incur debt).	The City of Virginia Beach is the only locality in the state to fully adopt and fund a purchase of development rights program. It is an Agricultural Reserve Program, whereby landowners voluntarily nominate their properties for inclusion into the program.
3 Land Use Assessment and Taxation Program	Program uses discounts in property tax assessments to promote and preserve agricultural and forestal land uses, as well as open space.	Besides the benefits of preserving natural resources, protecting water supplies, and protecting scenic vistas and open spaces, the program affords benefits for property owners in the form of reduced property tax assessments.	Many jurisdictions have the personnel to process the applications but lack the resources to verify the information provided by the property owner. As a result, it is often necessary to use the honor system.	Virginia code allows any locality that has adopted a land use plan to provide for use value and taxation (in certain districts).	About half (70) of the 136 counties and cities that are listed in the Commissioners of the Revenue Association of Virginia 1998 Statistical Abstract have parcels in a land use assessment and taxation program.
4 Agricultural and Forest Conservation District Program	A voluntary program in which farmers, foresters, and landowners form a special district to preserve agricultural rural, or forest lands. The property owner still holds title to the land, but the easement restrictions run with the land for a set number of years.	Besides enabling the protection of large tracts of land, this program usually opens discussions between local government, farmers, foresters, and landowners to implement further types of land protection.	Agricultural and forest conservation programs can include limitation on clearing (for non-farming activities). This prohibits government agencies from taking or condemning lands for roads or other purposes.	Virginia code allows any locality to adopt an agricultural and forest conservation district program. Land within a agricultural/forest district is automatically qualified for benefits under the land use assessment and taxation program.	Program is widespread in rural areas of Virginia.
5 Transfer of Development Rights (TDR)	Program whereby areas of a locality most suitable for development are declared receiving zones with increased use densities, leaving intact open farm and forest lands as the sending zones from which the development rights are "sold."	Increased densities in the receiving zones allow for infill development and for clustering new buildings within designated growth centers. As a result, localities can work towards long term goals of containing sprawl and protecting farmland, open space, and scenic areas.	Perhaps the greatest obstacle to implementing a TDR program is community opposition. While people are generally in favor of preserving open space and community character, those who live in a designated growth area, or receiving zone, are often opposed to increased density and development in their neighborhood or community. Therefore, TDR programs can be met with great resistance.	Transfer of Development Rights is not yet an authorized program in Virginia.	Best example is Montgomery County, Maryland, which has protected over 15,000 acres of farmland in 17 years of operation. Acton, Massachusetts is another example of a community that has used TRD's to direct development into appropriate areas.

Tools for rural development and rural conservation outside of development areas

	Tool	Purpose	Advantages	Disadvantages	Comments	Examples
6	Design Guidelines	A set of voluntary or mandatory standards designed to control the function and appearance of urban, suburban, and rural areas. Guidelines can cover everything from streets, sidewalks, plantings, facades, and signs all the way up to stringent guidelines that dictate building design and color.	Design Guidelines can help create a unified look for neighborhoods, historic areas, suburbs, or rural villages, and can ensure that new development harmonizes with the existing character of the area. Design Guidelines can also help increase property values by creating or preserving the special features of an area, a characteristic that is particularly desirable in tourist destinations.	While implementing voluntary guidelines can be fairly simple, creating mandatory guidelines (which have the greatest impact) can be tremendously difficult, and can be met with vehement public opposition and even lawsuits. Residents and businesses often object to being told how their homes/businesses should look, and there is often a fear that improving the appearance of a home or business will result in higher property taxes. Also, many people object to the uniform appearance that stringent guidelines can create.	Mandatory guidelines work best in areas where residents and businesses alike recognize that maintaining a certain look or character is in the best interest of all. As mentioned before, this is especially true of resort areas and tourist destinations.	Nantucket, Massachusetts has perhaps the most strict design guidelines in the nation. The guidelines are mandatory, and like many areas that have design standards, involves an architectural review and approval process for homes, businesses, and civic structures. Other communities that have implemented design guidelines include Alexandria, Virginia, and Fort Collins, Colorado.

Appendix B

Proposed Methodology for Reaching Regional Agreement on the Future of the Region

Agreement on the Future Of The Region

To support local strategies for directing growth, the EPI Advisory Committee proposes the local governments establish an agreement that will:

- Define the amount of development each locality is willing and interested in absorbing;
- Identify the placement of that development;
- Create strategies to phase in supportive infrastructure such as roads, transit services, and water and sewer systems.
- Allow localities to discuss and resolve any circumstances that might affect the agreement.
- The agreement builds upon local comprehensive plans and studies such as the TJPDC Regional Build-Out Analysis. It supports each locality's efforts to target development and infrastructure investments efficiently and cooperatively within the region. Based on the agreement, localities can define growth areas based on the designated development area concept, with assurances that each has enough development to meet its needs. This reduces over-zoning, thereby preserving rural areas.
- The agreement also provides a systematic way for localities to better understand anticipated revenues and costs of growth. Localities can adjust planned acreages and/or agree on revenue or cost sharing strategies to balance the fiscal impacts of growth. The limits on the size of designated development areas provide economic incentives for localities to encourage efficient, urban and enhanced suburban communities.
- Once the agreement is in place, transportation and other regional infrastructure plans can be updated to support the agreement. Efficient use of land will reduce infrastructure costs.

Localities could agree upon the total regional demand within a year of starting the process. The locations and boundaries of the designated development areas and small towns could then be incorporated in locally adopted comprehensive plans and zoning and subdivision ordinances within the following three to five years.

Agreement on the Future of the Region

Proposed Process

- Localities would identify the total regional development demand projected for the upcoming twenty-year period. This could be initiated very simply by adding up the projections from each local plan and zoning ordinance, and adjusting based on state population projections.
- Localities would agree on the total number of acres devoted to the designated development areas. Next they would agree on the location of the development. The cumulative amount of land set aside for these areas by each locality would not exceed the anticipated regional demand.
- The methodology would include an assessment of economic benefits and fiscal impacts for each locality. Revenue- and cost-sharing strategies could be developed to ensure that each locality would maintain its economic vitality and ability to provide local services.
- The final agreement would be approved by all localities.
- Each locality would refine its development area boundaries and characteristics in comprehensive plans and zoning/subdivision ordinances based on the regional agreement. Localities would work together to develop water, transportation, and other infrastructure that supported the agreement.
- The TJPDC would coordinate regular updates of the regional demand projections, using tools such as GIS and the decennial census to track development trends. Localities would update the agreement and local plans accordingly.
- The agreement could also be modified at any time should the localities decide circumstances warrant a modification.

Appendix C

Coordinating Transportation and Land Use Planning: A Framework for Guiding Growth

*Additional Thoughts Provided by
EPI Advisory Committee Member
Bruce Appleyard*

Coordinating Transportation and Land Use Planning:
A Framework for Guiding Growth
Bruce Appleyard

Bruce Appleyard is a Transportation and Land Use Planner for the Southern Environmental Law Center (SELC), a non-profit environmental organization headquartered in Charlottesville, VA. SELC's mission includes protecting the environment and strengthening communities in the Southeast by advocating for more sensible transportation and land use policies and practices. This article draws on his work in this arena.

In Virginia, as in many places in the country, it is high time to meaningfully integrate transportation and land use planning. The current lack of coordination has led to sprawling auto-dependent development, unnecessarily consuming natural and rural lands at an alarming rate. Between 1992-1997, Virginia lost about 350,000 acres to new development, equaling about 190 acres each day¹. Furthermore, the resulting disjointed land use pattern with limited transportation options has led to an explosion of driving. In the Washington DC metro area, between 1982 and 1999, Vehicle Miles Traveled (VMT) grew by 82% while population grew by only 29%.² Even if we had unlimited funds to build new roads, research shows that new roads or additional lanes in growing areas are soon filled with drivers taking advantage of the new capacity by either switching routes, changing from other modes of travel or making longer trips after moving to newly accessible land in the countryside³. Simply put, we can't build our way out of congestion. Without a more intelligent approach, sprawling development threatens the features that make Virginia such an attractive place to live, work and visit.

¹ U.S. Department of Agriculture, *1997 Natural Resources Inventory* (NRI).

² Texas Transportation Institute, *2001 Urban Mobility Report*

³ Fulton, et al, "A Statistical Analysis of Induced Travel Affects in the U.S. Middle Atlantic Region," *Journal of Transportation Statistics*, April 2000(26 years of data from every county in North Carolina, Virginia and Maryland suggest that every 10% increase in lane-miles led to a 3.3% increase in travel; for Virginia, the data showed a 5.1% increase in travel).

To achieve a better, more sustainable approach to development, I will first identify important community oriented principles that new development should follow.

New development should:

- be located within currently developed areas or in targeted growth areas so it can be efficiently served by existing transportation, sewer, and water infrastructure;
- contain a diverse mix of residential and commercial uses assembled to complement and enhance the surrounding community;
- be concentrated to conserve land;
- be located and designed to work in concert with public transit and other alternatives to driving.

Throughout this article, I will refer to these and complementary principles for new development as part of a Community Oriented Zoning and Infrastructure (COZI) Design Strategy.

Achieving this strategy can not only result in a more valuable use of our land and enhancement of existing communities, but it can lessen the need for major future roadway investments by allowing for shorter and fewer automobile trips and alternatives to driving⁴. Elevating our land use planning processes to higher priority so that they can actually be developed in concert with our transportation plans is key. Below is a framework for coordinating two standard and critical planning documents---1) the regionally focused Metropolitan Planning Organization's (MPO) Long Range Transportation Plan (LRTP), and 2) the community oriented local land use plans--- so that a COZI Design Strategy can meaningfully be implemented.

- 1) Target and prioritize areas for growth. Local land use plans should first protect land with environmental, historic and scenic value, as well as farm and forestland. Land use plans then should identify and prioritize targeted growth areas. Scenarios should be created to set goals for phasing development in increments of 5, 10, 15, and

⁴ R. Cervero, R. Ewing, "Travel and the Built Environment: A Synthesis," *Transportation Research Record* 1780, 2001.

20 years, to effectively target and accommodate likely levels of growth. When updating the comprehensive plans every five years, the targeted growth areas should be altered to reflect revised projections both at a regional level and the level of the individual localities involved. If a growth area is too large to effectively consolidate growth, it should be reduced. If on the other hand, the growth area is unrealistically small, it should be expanded, but at a measured rate.

Those developing the MPO's long-range transportation plan need to work with the localities to plan for these targeted growth areas, making sure that transportation projects contained in the LRTP support the goal of focusing development.

2) Develop land use and transportation plans that support a COZI Design Strategy

a) Localities should undertake the following steps as they develop comprehensive land use and transportation plans for the targeted growth areas, identified in step 1. These plans should outline the creation of a neighborhood plan comprised of quality components that are reasonably compact, mixed-use and facilitate access via transit, walking, biking, and combining several destinations into fewer automobile trips. The steps include:

- a) designing a multimodal (transit, pedestrian, bicycle, as well as automobile) local transportation network that serves the land use plan;
- b) placing a high priority on serving targeted growth areas with transit;
- c) placing a high priority on improving the pedestrian and bicycle networks that serve targeted growth areas. Keep in mind that these networks can be independent of the street network;
- d) using traffic calming and flexible road design to reduce the adverse impacts of traffic on communities and the environment;

- e) consider linking the local transportation network to adjacent networks, using existing streets before building new ones whenever possible; These points are elaborated on in the Evaluating Road Projects section below..

In order to properly guide development, before additional roads are built a comprehensive land use development plan needs to be in place. Therefore, targeted growth areas, land use plans and access management plans are required prior to implementation of a COZI Design Strategy..

3) Implementation of a COZI Design Strategy

Those working on the MPO's LRTP Plan should work with those responsible for land use planning in the constituent localities and the various stakeholders to facilitate the implementation of a COZI Design Strategy by:

- a) developing the zoning and subdivision ordinances necessary to facilitate a COZI Design Strategy;
- b) work with the developers to implement the rezonings in accordance with a COZI Design Strategy; and
- c) Employ a diverse portfolio of financing strategies to construct the infrastructure (transportation, sewer, etc.) needed to serve and promote the development of a COZI land use and transportation plan. Consider using public as well private funding sources, including federal and state infrastructure funds wherever possible.

Evaluating Road Projects

Instead of relying on outdated approaches to growth, the framework presented in this article underscores the importance of meshing creative land use alternatives through zoning with transportation planning. However, even when implementing a COZI Design Strategy, issues will arise regarding the need to expand roadway capacity. Local and regional bodies are encouraged to follow the sequence below in order to create a project or series of projects that will facilitate new development while supporting a COZI approach.

As noted above, priority should be placed on improving the networks, infrastructure and service of automobile alternatives (transit service, biking/walking infrastructure and networks) and additional roads should be considered only as a last resort. Road proposals are appropriate only after land use, conservation, and access management plans are implemented following rezoning as parameterized by a COZI Design Strategy. If a road project cannot be avoided, the following steps can help guide the process:

- a) improve the multimodal performance of existing roads without adding auto lanes by adding sidewalks, bike lanes, better crosswalks, etc.; If auto congestion is identified as a priority problem, options like access management strategies, better signal coordination, turn lanes, etc., could be implemented;
- b) give the strategies in a) enough time to work; however, if auto congestion remains as a priority problem, considering further linking existing roads to improve the local street network within a targeted growth area.; if linking neighborhood streets, the use of traffic calming measures should be considered to limit the disruption caused by new traffic flows.
- c) widening roads, building multimodal overpasses, or grade separated interchanges should be considered only after all of the foregoing alternatives have been considered and found inadequate; the construction of significant new roads should be viewed strictly as a last resort; if a road is built, it should link into a greater network; if the road extends outside the targeted growth area, access management and conservation easements should be established in those places before moving ahead with the road project.
- d) confirm that environmental and community impact studies are properly executed before making final judgments on road projects.

Conclusions

As put forward in this framework, the importance of targeted growth areas, rezoning provisions that support a COZI Design Strategy, and access management plans cannot be emphasized enough. By following this framework unnecessary road projects can be avoided while promoting communities that benefit from coordinated land use and transportation planning. This favorable outcome relies on the cooperation of the various stakeholders at the community-, region- and state-levels, whereby the stakeholders follow a community-level focus while maintaining a regional perspective.