Part 121-3: WHAT ISSUES DO WE NEED TO BE CONCERNED ABOUT IN GETTING THERE?

In the previous part we set forth a vision – where we would like to be in 2025 – with goals to measure our progress along the way, policies to guide us, and a Future Land Use Map. To achieve this vision, we must anticipate issues that will challenge us and develop strategies to meet them. This requires understanding how elements of the planning process are interrelated and how land use policy is fundamental to it. What follows is a discussion of those issues in a format that replicates the established, interrelated, intergovernmental planning process in Rhode Island: the local comprehensive plan.

3-1 Land Use

This Plan favors concentrating future development and most land use activities in the already developed and serviced, mostly urban areas, and conserving the natural resources and rural character of non-urban areas. However, existing conditions present profound challenges to that goal:

- Rhode Island has approximately 450,000 privately owned parcels, and property owners have the right to develop those parcels at any time for use permitted by existing zoning.

- Nearly two-thirds of Rhode Island has no public water and sewer service and, decades ago, public health authorities established a two-acre minimum lot size for single-family houses dependent on private wells and ISDS systems. This is the primary public policy rationale for the large-lot zoning that currently applies to approximately 60 percent of the state's land.
- Rhode Island's property tax situation, particularly the municipalities' dependence on property tax to fund local education, presents a number of problems: it has motivated the flight of the middle class from the core cities, and puts great pressure on rural towns to develop a larger commercial and industrial tax base. Moreover, it leads to community resistance to increasing the amount of affordable family housing.

- Current state and municipal regulations may not allow the degree of density of development this Plan recommends. Building height, water and wastewater appear to be particular constraints.

- The vast majority of urban areas already contain considerable development, and some of the structures and districts have deteriorated over the years and need considerable renovation. There are some good infill possibilities, however, calling for a general policy of preservation, restoration, infill, redevelopment, contextual design, and incorporating more greenspace and public amenities.

The successful development of urban areas and conservation of non-urban areas are intertwined, as Grow Smart Rhode Island has documented in their report, *The*

Costs of Suburban Sprawl and Urban Decay in Rhode Island. According to Grow Smart, "Rhode Island can solve its suburban sprawl problem only if it solves its urban decay problem." ((10:17))

The suburban sprawl pattern of development of low-density, large-lot and scattered building consumes an unnecessarily large amount of natural resources and requires redundant capital investments in public facilities and infrastructure. The fragmented nature of sprawl makes organization into well-functioning centers, neighborhoods and districts extremely difficult. In as small a state as Rhode Island, it is wasteful in the extreme, but this is where we are headed if we continue to develop in a way consistent with current practice (see Figure 121-01(1)).

The cost of sprawl is borne by all Rhode Islanders. Grow Smart estimates that staying on this course over the next 20 years "will cost taxpayers almost $1.5 billion, a figure close to the total annual state budget." ((10)) Sprawl greatly increases public costs of all kinds, including new roads and utilities (public water and sewer, gas, telephone, etc.) to new developments, and introduces inefficiencies in serving a widely scattered public with such basic services as school bus transportation, public transit, police, fire, and ambulance services, and home health care.

There are societal costs as well. Both segregation and isolation of Rhode Islanders are aggravated by sprawl because it often leads to communities of uniform land uses – mostly single family houses of the same type and for the same income bracket. Sprawl requires that households have mobility in order to access community facilities and shopping. Sprawl isolates those who are not mobile, particularly the elderly and children, from community institutional centers, and everything from after-school programs to senior centers. Recent studies have linked sprawl with health problems related to inactivity.

Two Land Use Approaches Are Needed: Urban and Rural

Mindful of Grow Smart's conclusion that sprawl and urban decay must be addressed together, this Plan calls for Rhode Island to pursue two significantly different but compatible land use strategies. Directing land development in the urban areas is the more complicated of the two but offers exciting possibilities for guiding and controlling future land use. The intention is to revive urban centers as attractive, well-functioning places to live and work, inasmuch as they are intended to contain perhaps 90 percent of the state's residences and most of the intensive land uses.

The implementation strategies (Part Five) of this Plan follow the urban/rural approach. Scenarios are reviewed that call for changes to public sector land management activities and fiscal policy, mindful that the *status quo* presents considerable constraints and challenges. They can be summarized as follows:

In non-urban (i.e., rural and suburban) Rhode Island, we lack practical plans for alternatives to sprawl development. Among the constraints are:

- Difficulty in coordinating town-wide and regional open space preservation efforts given the many state, regional, local, and nonprofit entities involved.

- Pressures to increase the property tax base and to keep down the cost of local education being important in land use decisions.

- Lack of infrastructure to support density/intensity in centers and neighborhoods.

- Lack of diversity (in typology and mixed of uses) in existing and planned building stock.

- Need for permanent protection for priority natural areas.

- Danger of loss of agricultural lands as well as loss of overall rural, open space character and unfragmented forest reserves.

- Segregation, homogeneity and isolation of land uses and population.

The disincentives for redevelopment in existing urban areas are considerable. Among the constraints are:

- Redevelopment being generally more expensive and complicated than greenfield development, with assembly of parcels from different owners and remediation of conditions such as industrial contamination, and deteriorating structures and utilities likely being necessary.

- Decayed urban neighborhoods seen as unattractive and unsafe; initial reinvestment difficult to market, though there exist large areas of underutilized commercial and industrial property that do present important opportunities.

- Aging building stock, expensive to bring up to current standards and building codes.

- Perceptions of troubled urban school systems, which discourage investment in urban areas by middle class families.

- Poor and needy populations that are economically isolated, and stores and workplaces in their neighborhoods that have been abandoned as well.

- Gentrification adding pressures to the poor and needy as neighborhoods improve.

- Lack of focused redevelopment planning for most of the underutilized commercial and industrial districts as well as for commercial highway strips in urban areas.

- Lack of suitable sites for some new and desirable uses, such as high-density residential and 4-6-story commercial and industrial buildings.

- Minimal investment in public greenspace and minimal attention to urban rivers resulting in degradation of water quality.

- Lack of required landscaping and buffer requirements for streetscapes and for screening parking and unsightly areas, and between different types of uses.

- Height restrictions prohibiting uses taller than 35 ft. in much of the urban area.

- Deteriorating public infrastructure and the lack of public sewer service in approximately half the urban areas.

In order to properly match land development with the capacity of land and water resources and to protect ground and surface water quality and quantity and aquatic habitat, decisions concerning future development should always take into account several important issues:

Limiting amount of impervious surface
Adequacy of stormwater management and conservation practices
Adequacy of wetland and riparian buffers
Wastewater system design and capacity
Water system design and capacity
Adequacy of water supply sources

These issues are equally important for development within the urban services boundary and outside the urban services boundary. For communities within the urban services boundary, addressing these issues will promote groundwater recharge and water quality improvement. For communities outside the urban services boundary, consideration of these issues should guide towns in their evaluation of land and water capacity as they determine appropriate levels and intensity of development for different areas.

It is beyond the scope of this plan to comprehensively identify and recommend means to address all of the salient issues that should be considered as we encourage greater density of development. Therefore, a broad based stakeholder group should be formed to thoroughly assess the primary issues that must be addressed to accommodate greater densities and compact mixed-use development without negatively impacting the environment or the carrying capacity of supporting infrastructure.

3-2 Housing

Shelter is a basic human need, and it is a public responsibility to encourage and guide development of a housing supply that meets this need for the entire population. In today's market, many poor, working class, and even middle class Rhode Islanders are faced with paying more for housing than they are reasonably able to afford. We must strive to address the quantity, quality, variety, accessibility, and affordability of our housing stock. This is called for in the *State Housing Plan,* and land use policies have significant implications in this regard.

Rhode Island's supply of housing is out of balance with housing demand. The Office of Federal Housing Enterprise Oversight has reported the change in home prices in Rhode Island continues to be one of the highest in the nation. While this trend has been most pronounced within the last five years, the figures remain staggering when viewed over the long term.

Table 121-03 (1)
PERCENT CHANGE IN RHODE ISLAND HOUSING PRICES THROUGH Q2 2005

Period	% Change	U.S. Rank
1 year	16.72	10
5 years	100.70	3
25 years	469.61	2

Source: Office of Federal Housing Enterprise Oversight (2005)

While these figures may seem like good news for homeowners, the opposite is true for those entering the market. Since 1984, per capita income in Rhode Island has increased by 260 per cent compared to housing price increases of almost 470 percent. The gap between housing prices and incomes may account for the fact that Rhode Island ranks 47th nationally in homeownership.

The present situation of extraordinary pressure and imbalance in housing comes from a combination of factors. Regarding supply:

- 80 percent of Rhode Island's residentially planned land that has not yet been developed is planned for low-density development (less than one unit per acre).

- Less than five percent of Rhode Island's residentially planned land that has not yet been developed is planned for high density housing development (one quarter acre or less per unit).

- Loss of significant numbers of apartments over the past 20 years as a result of demolition of some public housing complexes and multi-family houses within older urban areas as well as conversion of units to condominiums.

- Loss of significant amounts of agricultural land and the affordable housing that occupied that acreage.

- Local zoning limits the areas provided for other-than-single-family residences. Multi-family use is often not allowed "by right."

- Building caps and moratoria and locally imposed impact fees have been enacted to limit development and to control associated costs and increases in the property tax. Recent building permit activity has been the lowest in decades, with Rhode Island recording the lowest percentage increase in the nation in 2002-2003.

- Housing production has largely been chasing the high end of the market as there is little incentive for developers to build anything other than high price/high profit luxury homes.

Demand factors include:

- Modest population growth, with considerable in-migration from other states.

- Growing retirement and seasonal communities.

- Rising immigrant populations in the core cities.

- Decreasing household size, resulting in a disproportionate increase in housing demand compared to population growth.

- The lowest mortgage interest rates in over 40 years, broadening demand and allowing sellers to raise prices.

- Significant price differentials between the Metro Boston and Rhode Island housing markets, bringing increasing numbers of Massachusetts consumers into Rhode Island, adding to the price competition for housing.

- College students and working class families becoming direct competitors for housing units in mostly older neighborhoods.

Rhode Island has nearly 85,000 students enrolled in post-secondary education ((36)), which exerts considerable pressure on housing availability.

Local Regulations Discourage Higher Development Densities

Clearly a significant limiting factor in the supply of affordable housing is local land management regulation. The mismatch between the carrying capacity of local

sites and the regulated allowable density is the most obvious issue. As housing development has shifted towards outlying suburban and rural areas our residences have come to be built at much lower densities than the patterns found in traditional neighborhoods of Rhode Island's cities and in the village centers of rural and suburban towns. The norm of recent residential growth has become single-family units on individual lots, and lot sizes have become larger and larger over time as development has spread into communities desiring to retain a rural character. While in the past our neighborhoods and villages of single units on small lots, duplexes, walk-up apartments, and triple deckers may have housed residents at a net density of 25-40 dwelling units per acre, the norm in modern residential development in outlying areas is to require lots of one or more acres for each new single family home. Somewhere along the line, our paradigm shifted from putting **multiple dwellings on each acre** *to* requiring **multiple acres for each dwelling**. While done for a number of laudable reasons, the stark reality is that large-lot requirements are a significant driving force behind the dramatic increase in land consumption in the residential sector as documented in Part 1, and in the escalating cost of housing.

To help address its housing needs, and to develop in the compact, efficient pattern recommended in this plan, Rhode Island and its communities need to find a means to accommodate housing at higher densities within defined areas that they identify as suitable (or which can be made suitable) for such development. We must find ways to replicate some of the best examples of our past development patterns – villages and neighborhoods that add to Rhode Island's charm and distinctiveness--places like Providence's Smith Hill and Elmwood, historic Bristol and Newport, and Woonsocket's Constitution Hill, to name just a few.

Examples of these types of higher density development and others that have recently added to the local landscape are provided in Table 121-03(2). These include many affordable housing developments as highlighted by the Housing Network of Rhode Island.

The public aversion to density is, in part, inspired by past examples of mediocre developments. Standards requiring high quality design and construction in new development can be instrumental in gaining public acceptance of increased density as attested to by the examples cited. Design treatments allow denser development to fit in with its surroundings and compliment prevalent architectural styles. The public must be assured that as new forms of denser development are proposed, that community officials will have in place, affordable design standards and criteria that assure developments that contribute to the character of the community.

As demonstrated in the alternatives scenario analyses (see Part Four), there exists significant acreage within the urban services boundary that can support higher

Table 121-03(2)

Examples of Higher Density Residential Development in Rhode Island

Compact Single Family Detached 10-12 units per acre				Two and Three Family Units 8-16 units per acre			
	Planned Development Wickford Point Gilbane Construction Company North Kingstown	Single Family Rehabilitation/Infill Smith Hill Community Development Corporation, Providence			Multi-Family Apartments Stop Wasting Abandoned Property (SWAP) Providence		
Mixed Use Residential-Commercial 40+ units per acre				**Multifamily Walkup Flats and Apartments 16-50 units per acre**			
	Mixed Use, Family Apartments Elmwood Neighborhood Revitalization II Rehab and New Construction Providence	Multi-family Apartments New Construction Planned Center Grandville at South County Commons South Kingstown			Multi-Family Rehabilitation The Governor Omni Development Corporation Providence		
Multifamily Elevator Apartments 50-200 units per acre				**Historic and Adaptive Reuse 20+ units per acre**			
	Mill Building Reuse Multi-family /Assisted Living Senior Apartments Franklin Court East Bay Community Development Corporation Bristol	New Construction Multi-family 903 Condominiums Providence			Historic Rehabilitation Harbor House Elderly Apartments Church Community Housing Corporation Newport	Historic Rehabilitation State Street Rental/Condominiums East Bay Community Development Corporation Bristol	

Sources: Housing Network of RI & RI Statewide Planning Program staff photos

development densities. In fact, these analyses are likely to underestimate the resource as they are limited to land classified as "undeveloped," while recent trends have tended toward redevelopment of existing buildings – an activity now primed by historic preservation tax credits.

One example is the reuse of former mill buildings, which typically offer large amounts of floor area, multiple stories and central locations. Mills seem ideally suited for affordable housing and should also be considered for commercial, light industrial, or mixed use (e.g., artists' lofts with gallery and studio space). Unfortunately, there is pressure on these properties, too, to be converted to high-end apartments or condominiums.

The Governor's Growth Planning Council has proclaimed the redevelopment of vacant and abandoned properties "Rhode Island's number one smart-growth opportunity." ((8:4)) While much of the state's old building stock – housing in particular – needs to be upgraded, the advantages of convenient location, established infrastructure, and proximity to community amenities are strong incentives to do so. Public water and sewer allow for more density, and multiple units on a single lot may be a significant private or public investment opportunity.

At the same time, this group recognized that inspite of these infill opportunities there will remains pressure to develop our rural landscape. The growth centers concept put forward by the Council offers an opportunity to support more compact growth within designated rural centers that often lack the infrastructure to sustain the type of density found within the urban services boundary. Moreover, there are often unique environmental constraints that must be fully assessed and mitigated to support any significant increase in development density. The consideration of these factors, combined with good site characteristics and a community's desire to promote village development, provides the potential for a mix of uses and housing densities that could be considerably greater than what typical rural, low density zoning would otherwise achieve. If coupled with open space preservation, we can attain a model for rural development that fulfills the vision of compact centers surrounded by agriculture, open space, and very low density development. A sampling of some of these potential centers and the issues that must be addressed are presented in Table 121-03(3).

A New Legislative Framework for Affordable Housing Production

The 2004 amendments to the state's Low and Moderate Income (LMI) Housing Act base a solution to the problem of affordable housing on a planning response that, in many respects, attempts to address the constraints on supply. Among the specific planning aspects of the legislation are requirements that:

- Amendments to local comprehensive plans, where necessary, include an Affordable Housing Plan that identifies specific, quantified strategies to achieve the LMI Housing Act's goal of having *at least 10 percent of every community's housing units subsidized and affordable to low- and moderate-income households.*

- The State Planning Council adopt a *Strategic Housing Plan* with guidelines for higher density development, including inclusionary zoning and mixed-use development, as an element of the State Guide Plan.

- A Geographic Information System (GIS) dataset of areas of the state suitable for higher density development be developed.

Table 121-03(3) Examples of Traditional Suburban and Rural Centers in Rhode Island

Town Green, Brown Street
Wickford Village, North Kingstown
RISPP Photo

Main Street Shannock Village, Charlestown/Richmond
Graphic courtesy of RIDEM

Main Street, Hope Valley Village, Hopkinton
Graphic courtesy of RIDEM

Planning for Environmentally Sound Centers…

This figure illustrates three traditional centers in suburban and rural Rhode Island communities. Centers are conceptually shown on the Future Land Use Map (Figure 121-02(1)) as a means to accommodate higher density development, concentrate growth, and minimize future sprawl.

Concentrating development in centers offers many land use benefits, but must be based upon community and site planning that carefully matches the type and intensity of use with the capability of the area to accommodate growth.

Among many planning considerations, the following *environmental* factors must be given careful attention in planning for new or expanded centers, particularly in areas lacking public services:

- **Water Supply** – *quantity, quality, operation and maintenance of new public systems, out of basin transfer, water withdrawal impacts to surface waters and wetlands*
- **Water Quality** – *Waste water impacts to ground and surface water, storm water runoff, watershed impervious cover, existing water quality conditions*
- **Wastewater Treatment** – *applicable systems and limitations, operation and maintenance requirements, wastewater management districts*
- **Hazardous Materials** - *Prohibition of specific uses and good management practices for handling and storage for permitted uses, including hazardous materials used by homeowners*
- **Habitat** – *impacts upon aquatic and terrestrial habitats*
- **Site Suitability** – *Soils, wetlands, habitat, watershed location, groundwater impacts, agriculture, forest fragmentation*

Communities have responded with plans that include strategies that will increase the allowable density of different types of housing. In many cases, affordable housing will be accommodated in locally designated growth centers that are reflected on the Future Land Use Map. These plans and the land suitability analysis that is a component of the Map respond to many of the requirements of the legislation, and form the foundation for the *Strategic Housing Plan* as a new element of the State Guide Plan. The State Planning Council is scheduled to adopt the *Strategic Housing Plan* and development guidelines in June 2006.

How This Land Use Plan Supports State Housing Plans

As noted earlier, the *State Housing Plan* calls for us to address the quantity, quality, variety, accessibility and affordability of our housing stock. The *Strategic Housing Plan* will provide similar, though more targeted objectives that are grounded in specific and detailed development guidelines. The future land use vision described in this Plan addresses the goals of the former and establishes the foundation for the latter in the following ways.

By promoting residential development within the urban services boundary and growth centers, this Plan capitalizes on existing facilities and services, which allows for higher density, improved accessibility and greater variety. Density can equate to both increased quantity and affordability, while the services and facilities add to the quality of both the housing stock and the environment. The Plan and the Future Land Use Map are predicated upon a detailed land use analysis that can identify areas and establish general guidelines suitable for higher density development. The achievement of the Plan's vision will rest, in part, on implementation of a state investment policy that provides the incentives necessary to reach these targeted levels of growth.

Will this be sufficient to address Rhode Island's housing needs? At the very least, the Plan should stimulate state and local officials to re-examine the fundamental assumptions underpinning local zoning and land management in light of the state's pressing housing needs. However, they also must address the underlying problem that precipitated the land management supply barriers in the first place – local reliance on the property tax.

3-3 Economic Development

Economic development in Rhode Island is the story of the "new economy" replacing the old. It's research in our universities going commercial. It's artists' lofts bringing new life to old mill buildings. It's tourism and cultural activities in older cities that have suddenly become the places to be. It's taking advantage of our proximity to the Boston metropolitan area, our strategic location between Boston and New York, and the network of roads, railroads, seaports, and airports that link us to the rest of the country and the world. All the potential this suggests is enabled, or can be severely constrained, by land use decisions. Is Rhode Island's future one of community and opportunities for

collaboration that feed the new economy, or scatter and isolation? Our answer will affect how well we capitalize on what we already have, and what we can become.

This Plan articulates a vision for a Rhode Island characterized by "dense centers of varying scales, both traditional and new… [for] housing, commerce and social interaction." This is a model supportive of easier communication and cross-cultural exchanges, a variety of housing and lifestyle options, and the rediscovery and reuse of resources that for decades have suffered from disinvestment and neglect. Granting the greatest accessibility to daily activities to the greatest number of people, this model provides a friendly climate for entrepreneurs. Here they can interact freely with their peers, "pitch" their ideas, and make the new and creative economy grow.

Containing sprawl and establishing options to implement this model may well involve a major redrafting of our land use regulations on density, community design, and what is generally called *aesthetics.* However, the benefit will not be merely aesthetic; it will contribute to Rhode Island's sense of place and *quality* of place. The R.I. Economic Policy Council talks about "a collective responsibility" on the part of all of us to maintain the state's "rich mix of authentic places." The Policy Council has posited quality of place as Rhode Island's strong suit in the new economy, "a world where companies and the talent that drives them can locate anywhere." ((21:1))

Developing and maintaining high quality places is crucial to Rhode Island's economic future. They are as much a part of the business climate as tax incentives for research and development or good labor-management relations. In concert with sound transportation policies, they move people better, move goods better, and most importantly move ideas better, enabling the connections necessary in the new economy. Pride in our quality of place compels build-out to occur at an appropriate scale, and keeps us mindful of dwindling resources.

Land use practices directly affect energy use. The high cost of energy in Rhode Island is a strong disincentive to economic development. The model of "dense centers of varying scales" introduces efficiencies that can reduce energy use and lower energy bills. Methods of generating and distributing alternative and renewable energy can be tested and implemented more easily under economies of scale. Gasoline is conserved if more people can get to work or run errands without having to drive their cars. Mass transit is made more feasible by concentrating the number of customers in a service area, moving more people per unit of energy.

While renewable energy can pay for itself over the course of several years as it replaces expensive fossil fuels, conservation measures possible in walkable cities, towns and villages can help contain energy costs immediately. Because energy bills have bedeviled homeowners and companies in the Northeast for years, this will send a message to people and businesses looking to relocate in Rhode Island that we are bringing a longstanding problem under control.

Energy concerns, special places and networking opportunities aside, it is clear that density is essential for vital, sustainable communities. For centuries Rhode Island cities and towns have been hubs of economic activity, and a rich history of commerce and industry has resulted. Since the 1980s especially, Rhode Islanders have come to acknowledge the great potential that still exists in our urban centers. Downtown commercial buildings and former mill complexes are now being revitalized for a host of

new uses – residences, retail centers, artists' lofts, office spaces, business incubators, and light manufacturing facilities.

Rehabilitating and Reusing Underutilized Buildings

While it is good to see derelict properties rehabilitated and reused, planners should strive for a balance of uses – particularly when public assistance in the form of tax credits is involved. Conversions to fashionable residences should include worker-affordable housing. Former factories and mills should be considered for new commercial, industrial or mixed uses. Rezoning such properties exclusively for high-end residential use will miss the opportunity to use them, as they were in the past, to meet the broader needs of the community.

Traditional multi-story mills may no longer be ideal sites for heavy manufacturing because of new production methods, surrounding residential uses, or poor circulation through their neighborhoods. However, they should not be discounted as possible locations for offices, startup businesses or research facilities. In many of Rhode Island's older central cities, these buildings dominate the inventory of industrial property. Some, such as those in as Pawtucket's arts district, are now housing new industries and cultural activities that could herald an inner-city renaissance. Would this happen if they were all converted to residences?

Having former industrial buildings or industrial-zoned parcels increasingly converted to residential use puts a premium on *all* industrial space. Vacancies in industrial parks are rare; a recent report in the *Providence Business News* has the figure "in the single digits, even the low single digits." ((3:12)) Quonset Davisville and the East Providence waterfront are redevelopment success stories rapidly unfolding, but there remains a dearth of "pad-ready" sites suitable for large operations. Some companies have been forced to leave the state to find suitable space, even though their roots are in Rhode Island.

The Future Land Use Map recognizes the importance of using existing infrastructure in land use decisions and capitalizing on density. Some guidance is also necessary to identify large sites suitable for industrial development – existing and new, in the cities and in the suburbs – and reserve them as a valuable economic development resource. This is the subject of another State Guide Plan element, the *Industrial Land Use Plan.*

The Shoreline Region

The power of place is nowhere more evident than in Rhode Island's shoreline region. Many Rhode Islanders have strong emotional connections to communities and attractions along the state's coast, special places that have been important parts of their lives. Tourists from out of state are drawn every year to the area. Many of the fabled "cottages" of Newport of the late 19th and early 20th centuries were built by the rich and famous of New York. Block Island is called "the Bermuda of the North." Little Compton has the charm of old Cape Cod without the traffic.

Rhode Island's shoreline is remarkably diverse, including critical natural habitat, public and private beaches, summer colonies, historic villages, seaside estates, marinas and piers. But it also is a working shoreline, with Quonset and Davisville, oil tank farms,

shipyards, naval installations, and major commercial fishing ports. Whether involved in maritime commerce, tourism, recreation, energy supply, military activities, or maintaining an ecosystem, coastal areas are an essential part of the history and future of Rhode Island.

Land development pressures in coastal areas have been steadily increasing for decades. Coastal communities must determine how best to protect the most fragile and valuable natural resources along their shores, avoid encroachment on working ports, provide generous opportunities for public access and recreation, and direct development away from areas subject to erosion and flooding from gale-force winds and storm surge.

Land use controls are particularly important in the shoreline region. Strategies for resolving conflicts between competing uses must be in place. Local officials must recognize that new structures, poorly sited, may be extremely vulnerable to severe weather. Open space landward of sensitive features should be protected as a buffer to storm damage and erosion. Hazard mitigation plans should be developed to deal with potential problems before they become emergencies.

Transportation and Economic Development

The Interstate highway system and its interchanges created a series of new sites with excellent potential for commercial and industrial development – large tracts of undeveloped land with easy access to high volumes of traffic. This continues to be an attraction to this type of development. While much of this land has been identified in municipal plans as future commercial and industrial sites, the implications of such development need to be carefully evaluated at both the state and local level.

The same holds true for large stretches of road frontage along major state and local highways and at their interchanges that are designated on Future Land Use Maps for highway commercial/industrial or mixed-use development.

In the past 50 years, this substantial undeveloped acreage has encouraged much of Rhode Island's commercial and industrial activity to move from the urban centers to the inner-ring suburbs, to be near, or nearer, the Interstate highways and airports. Large commercial and industrial enterprises are certainly drawn to them because so many goods move nowadays by truck.

The availability and apparent attractiveness of these sites portends future development further from the state's existing centers, infrastructure, and concentrations of employable population. This may suggest a conflict with the development model mentioned elsewhere in this Plan; on the other hand, it is likely that some accommodation will be necessary to be able to provide new industrial sites for large operations that would be forced to move out of state otherwise, simply because there is not adequate space for them in existing urban or suburban centers. The central tenet of the *Industrial Land Use Plan,* "match the plant to the land," should be applied in these situations. Matching the plant to the land means considering the needs of the operation and the sites that are available. This takes into account the production and distribution process (whether for goods or services), the building footprint, and the number of employees anticipated. The rule becomes, where possible, use what already exists. Where necessary, build new and extend the infrastructure, but do not do so cavalierly.

Always work at the appropriate scale, and at the appropriate site. The appropriate site may be undeveloped acreage along a transportation corridor.

Sensible Land Use Policies Support Economic Development

In sum, this Plan supports sound economic development policies, and does so in a variety of ways. It recognizes the importance of transportation, to "move people better" and "move goods better," strategies the Economic Policy Council recommends. ((21)) It promotes reuse of what in many cases is an underutilized resource, existing urban and serviced areas, while not ruling out new development along important transportation corridors. It emphasizes the role played by Rhode Island's quality of place in making this a desirable tourist destination and place to live and work. And it seeks to optimize the use of working waterfronts such as Quonset Davisville and Galilee, building these facilities out to an appropriate scale respectful of other uses of Narragansett Bay.

3-4 Natural and Cultural Resources

The conservation and protection of natural resources has a direct effect upon the land use pattern in the state. Natural resources are a defining component of community character but also cross jurisdictional boundaries, and some are in jeopardy because of land use pressures and practices.

Agricultural Lands

Agriculture is a greater-than-$100-million annual business in Rhode Island. Farms are an important component of the state's landscape, local community character, and biodiversity. Spiraling land costs and competing uses are driving conversion of farmland to other types of development.

Urban and suburban areas encroach on agricultural lands throughout the state, creating the pressure to convert farmland to non-farm and urban uses. Additionally, land taxation, labor and fuel costs, weather and other factors create constant challenges to farmers to keep their operations viable. State and federal efforts to support retention of farms include purchase of development rights to farmland, taxing farmland at reduced rates, and assisting farmers in developing new products and market opportunities and solving environmental concerns.

The Future Land Use Map identifies areas of active farms on prime agricultural soils. These areas are recommended for continuation as farms in the future and are shown as a committed use to be continued on the Map.

Natural Habitats and Forests

Rhode Island sustains a wide range of plant and animal life for its small size. As urbanization continues, the state's ecosystems will see a decline in the spatial extent and connectivity of natural habitat. Moreover, as cleared areas, roads, buildings, and other man-made environments surround forest patches, they will become more isolated and fragmented.

This hurts not only plants and animals, but people as well. Forests are believed to have a significant role in reducing greenhouse gases and enhancing air quality. In the forest, carbon is stored as biomass in vegetation. One potential mechanism to offset carbon emissions is by increasing carbon sequestration in forests. State Guide Plan 156, the *Urban and Community Forest Plan,* has policies to stabilize overall forest cover at or near the present level, and gradually repair the forest canopies of urbanized areas to the level recommended for proper ecological functioning.

Forests, like agricultural lands, are under increasing pressures to become developed. The *Rhode Island Forest Resources Management Plan*, State Guide Plan 161, says that management for traditional wood-based forest products is difficult in Rhode Island because of small parcel size. The most valuable type of forest for commercial lumber production in the state is the white pine forest. Ironically, the soils where white pines grow are also the most valuable for residential subdivisions; the soil qualities that allow the white pines to grow is also ideal for on-site septic system drainage.

One example of how human use is encroaching on forestlands is the Pawcatuck Borderlands, presently the largest unfragmented forest in the urbanized Northeast corridor between Boston and Washington, D.C. Traffic is escalating on local roads and highways in the areas, preventing wildlife from migrating between habitats. Finite water resources are being consumed, impacting both the quality and quantity of water in local watersheds. While nearly 40 percent of the Borderlands are already protected in Connecticut (as the Pachaug State Forest) and Rhode Island (as the Arcadia Management Area), the remaining land's rural character is under pressure from development.

The Future Land Use Map considered “forestlands (greater than 300 acres)” as a key resource. Generally, areas of forestlands are recommended for low-intensity development, conservation and/or reserve within the Conservancy category on the Map.

Coastal Resources and Narragansett Bay

Narragansett Bay is recognized as a nationally significant estuary and is one of the most densely populated estuary systems in the United States. It is the state’s most dominant and important natural resource. Its economic development role within the broader “shoreline region” has already been discussed. Urbanization, particularly along barrier beaches and coastal ponds has caused considerable modification of the coastline and perhaps a significant threat to the state’s coastal resources.

The quality of water in the Bay has been degraded by point source discharges, combined storm water overflows, silt and runoff from paved surfaces. Its floodplain has been altered and/or encroached upon. Access is often cut off by development.

Narragansett Bay is host to multiple uses. The state’s largest urban waterfront, roughly 24 miles of Bay shoreline bordering the cities of Cranston, East Providence, Providence and Pawtucket, is within the urban services boundary delimited by the Future Land Use Map and will be a focus of future growth. For example, East Providence has created a special Waterfront District that the Governor’s Growth Planning Council has designated a growth center. The R.I. Coastal Resources Management Council (CRMC) is preparing the *Metro Bay Special Area Management*

Plan to cope with the issues this may present, with an eye to provide a functional framework for future environmentally and economically sensitive redevelopment of the waterfront in the four cities.

Development in coastal areas must balance the need and desirability of a coastal location with the inherent hazards of shoreline erosion and exposure to periodic flooding and storm surges. Climatic change and sea level rise introduce the potential for more frequent and/or severe storm events, adding to the threat to improperly sited or constructed coastal area structures. Land use measures to address coastal hazards include special structural design and construction standards, setbacks and buffer areas, limits on shoreline modifications, restrictions on rebuilding after storm damage, and acquisition of vulnerable areas for conservation uses.

Wetlands

Rhode Island has many valuable wetlands and wetland systems in all parts of the state. Urbanization and transportation projects, particularly along major river systems, have caused considerable modification of our wetlands and continue to threaten them. The forested swamps of Providence, Kent and Washington counties face the greatest potential impacts from continued population shifts and associated development. Protective buffers notwithstanding, the estuarine habitat of the state will remain under constant pressure from increasing development of surrounding uplands and tributary watersheds.

The restoration of degraded wetlands has become an important goal for Rhode Island. State Guide Plan Element 155, *A Greener Path: Greenspace and Greenways for Rhode Island's Future*, called for restoring 100 acres of degraded wetlands per year.

In the Land Suitability Analysis outlined in Part 121-4, wetlands were identified as a natural resource of state significance. Wetlands were one of the eight key natural resources layers used in assigning initial land intensity potential classifications for the Future Land Use Map. Wetlands are recommended for conservation in the future and are shown as a Conservancy Use on the Map.

Surface Water and Groundwater

Surface water resources are crucial not only for people as drinking water and for recreation, but also for other forms of life in various ecological communities. Many species of food and game fish and other wildlife depend upon streams for breeding, maturing, watering and feeding areas. Clean water in surface water bodies contributes to the overall health of our environment.

State Guide Plan 162, the *Rhode Island Rivers and Policy Classification Plan,* addresses this aspect of water resources. It endeavors to integrate water quality planning with land use planning and with planning for activities such as recreation and habitat preservation. The Plan is intended to provide clear, integrated, affirmative guidance for the management and the protection of Rhode Island's water resources at the state, local, and especially the watershed level. Local watershed associations are encouraged to develop watershed management plans with a multi-objective management approach.

Although groundwater is directly related to surface water, it is an important resource in its own right. The two major uses in Rhode Island for groundwater are drinking water and irrigation. This is not to say that groundwater is immune from contamination. Once polluted, groundwater may not again be safe for drinking water use for many years, if at all.

In the Land Suitability Analysis presented in Part 121-4, water resources are identified as a natural resource of state significance. Water resources are four of the eight key natural resources layers. The Future Land Use Map recommends that most of the areas designated as drinking water sources and other fragile water resource areas be limited to low intensity development, conservation and or reserve within its Conservancy category. Generally, Rhode Island is thought to have widely available groundwater resources, but detailed information on the future quantity of these supplies is still under development by the Water Resources Board.

Cultural Resources

Rhode Island has a remarkable legacy of sites and buildings of historic, architectural, or archeological importance. In fact, we may have the greatest concentration of these resources in the country. ((30)) More than 12,500 properties are listed on the National Register of Historic Places, having local, state, or national significance.

Rhode Island's cultural resources include historic houses and districts, buildings of architectural significance, landscapes reminiscent of the colonial era, historical sites, and archeological resources. Our cultural heritage is preserved in the tribal areas of the Narragansett Indian Tribe, in the settlement patterns of our many mill villages, and by mill buildings that were the birthplace of the Industrial Revolution. These resources create a rich context of community life. They give Rhode Island its own distinctive regional and ethnic character. Cultural resources play an important role in making Rhode Island a special place to live, work, and visit. Many of our state and local parks containing historic features and historic areas are among our favorite places to visit.

Fortunately, Rhode Island has shown a strong interest in identifying and preserving its historic and cultural heritage. Cultural resources have been well documented by the Rhode Island Historic Preservation and Heritage Commission (HPHC) in local historic surveys and in studies of individual sites and structures. Historic cemeteries have been inventoried and marked. Many state- and municipally-owned properties are historic, associated with the most important persons and events of our past public life. They are also architecturally important, beautiful landmarks in prime locations, and true centerpieces in the life of our state and communities. Some of the most significant historic buildings and sites in Rhode Island are owned and maintained by historic societies, churches, and other not-for-profit and preservation groups. However, the vast majority are privately owned and maintained.

Restoration and maintenance of the historic building stock is an enormous challenge. Funding for protection, conservation, curation, and interpretation remains a patchwork at best, with many sources and a far greater need than supply. The incentives provided by tax act credits for commercial properties have been the single most effective means of restoring our historic buildings. However, restoration can be a

daunting endeavor, especially considering the wear and tear many of our wooden historic structures have experienced. Still, the character of so many of our "special places" depends upon our continuing with this work.

Rhode Island has many outstanding examples of restoration and re-use of historic mill buildings undertaken in conjunction with brownfield remediation projects. Mill-built housing and working-class neighborhoods of historic three-deckers have increasingly been restored under publicly directed affordable housing programs using the historic tax credits. The State Building Code was amended in 2002 to address specialized issues of renovation within historic commercial structures.

In terms of land use, perhaps the most significant threat to the preservation of cultural resources is development in areas that are not protected by historic district zoning. The greatest risk involves new construction that is incompatible with its setting in terms of design, scale, site plan, or building materials, and which does not respect the historic network, view corridors, and vistas of the state.

By integrating a sense of the importance of our cultural heritage and "sense of place" into land use planning, the state and its municipalities can make a strong statement about how they will guide land use in the next 20 years. Ideally, preservation and development will exist in a harmonious relationship that will allow the state to grow and prosper. Retaining a balance between respect for the past and with the needs of the future will ensure sound management of Rhode Island's cultural resources.

3-5 Services and Facilities

Infrastructure plays an important role in defining a community and shaping development, but much of it is below ground and unseen. Our water and sewer systems are aging as they are some of the oldest systems in the country. Replacement of water lines to ensure quality service, upgrades of sanitary systems to eliminate inflow and infiltration of stormwater, and improved stormwater management districts are all needed. Upgrades in sewer treatment and replacement of poorly functioning on-site septic systems have been the most important factors in accomplishing water quality improvements for water resources throughout the state. More improvements to wastewater treatment facilities (WWTF) are needed to meet increasingly stringent discharge limits. State and local governments will be required to continue and even increase expenditure for infrastructure improvements to meet existing and future needs. Creative community and development design that works in harmony with natural systems must also play an important role. The State Guide Plan's Urban and Community Forest element recommends "maximum reliance on the environmental benefits [including runoff control] provided by trees as a means to reduce future service costs of development", and offers a number of strategies towards this objective.

The urban service boundary on the Future Land Use Map (see Part Two) reflects the areas where our water and sewers service areas exist and where they are anticipated to grow in the next 20 years. It is within this boundary that the stage for development is proposed that will capitalize on current infrastructure investments.

Rhode Island's wastewater needs are reflective of the rest of the nation. Costs must be borne for facilities already used to convey, store, treat, recycle and reclaim wastewater. Rhode Island's current need for wastewater improvements to the existing systems, as expressed in priorities on the State Revolving Loan Fund list, tops $767 million.

A greater reduction of future water and sewer infrastructure costs could be achieved under implementation of the Future Land Use Map. Increased density of land use reduces collector capital costs; however, development that is too dense can have the opposite effect. Development at very high density needs larger, more expensive pipes to service the development.

The best locations for redevelopment and new growth should be underutilized urban areas within the urban service boundary on the Future Land Use Map. Strategic design based on the Map will be likely to lead to the lowest future infrastructure costs because improvements will be concentrated within or adjacent to existing areas of service.

Water Infrastructure / Supply

The increasing demand for water, coupled with an approaching limited availability, declining precipitation and declining water quality, has made the planning and management of water resources a priority to land use planners. It is uncertain if we can sustain the current land use trends with a sufficient quantity and quality of water. For example, much of the state's recent development has taken place in areas that lack water supply infrastructure. State Guide Plan Elements 721 through 724 provide a policy framework for water resource planning to ensure that there will be a water supply adequate to support existing uses and future growth.

It is conservatively assumed that the per capita water demand will remain close to 2000 levels until 2025. Therefore, it seems likely that the future demands will have to be met either by developing additional water supplies or through increased efficiency in water use, or a combination of both. Cost-effective projects such as water reclamation and reuse can augment local water resources and reduce demands on existing supplies. The continuing development of conservation technologies will contribute to the dependability of the state's water supply.

In the past, problems of water supply could be solved by digging another well or by building another reservoir. While these solutions are still applicable in certain situations, they no longer offer long-term remedies in and of themselves. The high public cost of developing and maintaining public water systems, the potential for adverse environmental impact of new reservoirs, and contamination of both reservoir and groundwater supplies are among the issues of concern.

Water quantity and quality issues will have to be examined within future water supply management plans and local comprehensive plans. Rhode Island is part of a new century of water management that features an ethic of efficient water use and balancing land uses that are able to sustain the region's economy, culture, and environment. The Water Resources Board is in the process of completing a comprehensive statewide inventory of surface water and groundwater resources currently existing, used, or available to support future uses in nine watersheds. The

agency is conducting specialized modeling activities in several others. These studies will provide important data to be compared to the findings and recommendations of the *Water Supply Plan for Rhode Island,* State Guide Plan Element 722. Water Supply System Management Plans and municipal comprehensive plan updates should reflect the water availability data from each watershed to ensure that water supply development plans and planned land use and development are coordinated so that they are sustainable within the limitations of the watershed. Demonstrations of water availability will be required for new development in concert with meeting existing needs in all areas of the state.

Wastewater Infrastructure

Currently, approximately 69 percent of the state's population is served by a wastewater collection service, and the remainder are served by an on-site septic system. A total of 12 towns still have no sewer collection service. The sewered area covers about 25 percent of the land area of the state – an amount relatively unchanged since 1989. However, the R.I. Department of Environmental Management (DEM) has indicated that the use of on-site systems has become an increasing trend since then. There are at present about 157,000 on-site septic systems in the state.

Sewer service, like water service, extends concentrically from the urban core, and service districts are contiguous to already built-up areas. In most of these areas the systems are combined with stormwater drainage. These sewer service areas are wholly within the urban service boundary on the Future Land Use Map.

Otherwise, wastewater is handled by on-site septic systems. State Guide Plan Element 731, the *Rhode Island Nonpoint Source Pollution Management Plan*, identified several water bodies in the state that are showing signs of pollution due to nonpoint sources of total and fecal coliform bacteria. The DEM is considering requiring innovative/alternative technology designs for replacements of on-site systems within these critical areas to address septic pollution. Use of these technologies may be important for those areas outside of the urban service boundary.

The provision or accommodation of infrastructure is one of the most important functions carried on by any government with the participation of the private sector. The quality of life that we enjoy in our state will be a result of how we manage this growth by managing our infrastructure now and in the years to come. It is becoming increasingly important that we carefully evaluate the costs and benefits of new development that will place a high demand on existing wastewater treatment and public water supply systems.

3-6 Open Space and Recreation

The term "open space" is unfortunately vague. Does it refer to land that has been protected, or land that just hasn't been developed – yet? Focus groups conducted by Public Opinion Strategies in 2004 found that the public perceived open space "as empty land, not near them, and did not necessarily see how they benefited from it or could use it. 'Urban open space' was perceived as a bench between skyscrapers, or an abandoned lot."

The Rhode Island Comprehensive Planning and Land Use Act defines open space as:

> Any parcel or area of land or water set aside for public or private use or enjoyment or for the use and enjoyment of owners and occupants of land adjoining or neighboring such open space; provided that the area may be improved with only those buildings, structures, streets, and off-street parking, and other improvements that are designed to be incidental to the natural openness of the land.

By this definition, open space may be either permanently protected or subject to conversion (e.g., private golf courses, land enrolled in the Farm, Forest, and Open Space Program, etc.). Both in preceding chapters and in subsequent chapters, we use the term "greenspace" to distinguish those lands that are permanently protected from development.

In this plan, "recreation" space refers to open space that has been dedicated to recreational purposes. Land committed to recreation may require development for "active" recreation, which requires constructed facilities such as sports fields, playgrounds, golf courses, swimming pools and tennis courts. A second type of recreational use, "passive" recreation, involves existing natural resources and can be engaged in at sites that are undeveloped or minimally developed. Examples include hiking, horseback riding, cross-country skiing, swimming at beaches, fishing, canoeing, and bicycling.

Open space can be for non-recreational uses, too. Farmland is generally referred to as open space. Land surrounding public drinking water supplies such as the Scituate Reservoir is protected from development, but even passive recreation is prohibited.

Another category of open space is land owned by private conservation groups, such as the Audubon Society of Rhode Island and the Nature Conservancy. While much of these conservation areas are available for passive recreation, some lands are reserved for wildlife and habitat preservation and are closed to the public. Even these "restricted" open spaces provide public benefits, such as wetland and habitat preservation, scenic views and a rural landscape. Furthermore, they require few municipal services, are not expensive to maintain, and are primarily funded by non-governmental sources.

The Desire and Need

There is a clear consensus among Rhode Islanders that some land should be permanently preserved in a natural state, some land should reserved for agriculture, and that some land should be dedicated to recreation. This consensus is evidenced by the fact that voters have overwhelmingly approved every open space and recreational development bond issue placed on a ballot since the State's Green Acres Program was first developed in the 1970s.

A Greener Path…Greenspace and Greenways for Rhode Island's Future (1994) called for one-third of the state's land area to be greenspace by 2020. Greenspace would include linear greenways consisting of bikeways, trails, river corridors, and more.

It called for greenspace to be located in every community and it set an objective that no Rhode Islander would live more than 15 minutes from a greenway.

Ocean State Outdoors: Rhode Island's Comprehensive Outdoor Recreation Plan, (2003) not only reinforced the goals of *A Greener Path,* but reported that three surveys – one of 1,400 Rhode Island households, one of State park and beach patrons, and one of state and municipal recreation managers – found agreement with the statement that "significant needs continue for land and facilities to accommodate public demands for outdoor recreation and protection of natural resources." ((30))

Issues of concern

During the period 1970 to 1995, land was developed at rate nine times faster than population growth. Once land has been developed, it almost never is returned to a natural condition. Approximately 205,000 acres of land in the state are developed. Approximately 77,000 more acres are protected greenspace. An additional 90,000 acres are regulated wetlands. That leaves over 360,000 undeveloped acres available for some future committed use. As the state seeks to realize its vision of our future, state and local governments must consider several questions in setting and implementing objectives and policies that specifically relate to open space and recreation:

- How much land overall should be open space?
- How much land should be permanently protected greenspace?
- Is there a proper mix of public, private, and non-profit open space?
- What is the most effective and efficient mix of open space controls (e.g., public ownership, easements, regulatory controls, conservation design development, etc.)?
- How much and what types of open space should be dedicated to conservation?
- How much and what types of open space should be preserved for agriculture and silviculture?
- How much open space should be dedicated to recreation and what types of recreation?
- Where should open space and recreational facilities be located throughout the state?
- As we strive to increase density in urban areas, do some of these areas warrant special consideration? If so, what are they?

The analysis that went into developing the Future Land Use Map attempted to address some of these questions by excluding "protected" lands from the analysis and identifying the following as constraints to development: rare species habitats; agricultural lands; surface water; ground water; drinking water surface supply watersheds; and major forests. The Future Land Use Map indicates existing protected open space and major parks, wetlands, and prime active farmland as committed uses that should continue in the future.

If this Plan's recommendations are followed, 63 percent or more of the state's landscape would remain as open, undeveloped land in 2025. Defining a goal for what portion of its land the state should *ultimately* conserve as greenspace, while beyond the

scope of this Plan, is fundamental. As mentioned above, the *Greenspace and Greenways* element of the State Guide Plan recommended (in 1994) that one-third of the state's landscape be reserved as greenspace by 2020. The Greenspace and Greenways element is appropriate for setting greenspace policies and objectives, and as that element is updated in the future, its goal should be revisited within the context of the new information provided and objectives set forth in this Plan.

Land needs for active outdoor recreation are based on projected demands, facility design criteria, and adequacy of service standards promulgated in another element of the State Guide Plan, *Ocean State Outdoors: The State Comprehensive Outdoor Recreation Plan.* That element should also be used as a companion document to this Plan to guide the state in providing a variety of recreational opportunities to our residents that range from small urban playgrounds to large tracts of undeveloped forests.

3-7 Transportation

Existing urban places and locations that are suitable for development need quality transportation services, but without sacrificing open space and pristine rural areas. To preserve the beauty of Rhode Island – i.e., our sense of place – for future generations, state and local officials need to manage land development and establish standards for roads, sidewalks, shared-use paths and transit facilities that are responsive to safety, travel demand, capacity, environmental, and aesthetic concerns.

Transportation 2025, the Long Range Surface Transportation Element of the State Guide Plan, addresses these and related concerns with goals and policies for integrating land use and transportation decisions and developing and maintaining transportation infrastructure designed to meet the state's travel needs.

As reflected in Transportation 2025, land use decisions must support transportation system objectives. In other words, the nature, character, and location of development allowed by communities must be related to the level of transportation infrastructure available and planned. The links of both to economic development have already been discussed. An orientation to transit, bicycle, and pedestrian needs in the siting and design of new development not only contributes to the concept of vital, workable cities and towns, but can support more transportation-specific goals: reducing vehicle trips, making transit service more viable, and improving safety. In doing this, the state's transportation planning process must continue to reflect regional considerations and local plans.

The network of freeways, roads, sidewalks, trails, and waterways that has evolved over the centuries has left us with a vast range and variety of land uses that are not always the most efficient. As technology advanced and wealth increased, personal automobiles and the freeways built to connect cities have left us with a suburban landscape many describe as sprawl. Many urban and intercity transit options have been lost. This Plan recognizes that land and transportation resources are finite resources, both of which should be optimized to ensure as many options as possible for our diverse population, plus coordinated and smart growth.

Large new developments outside the urban services boundary not only require costly utility extensions, but almost always overburden existing roads because usually cars are the only transportation option. Concentrating growth within the urban services boundary and in rural centers, on the other hand, affords a better chance of achieving the customer density that can support improved transit service and reduce vehicle trips. This strategy, commonly referred to as Transit Oriented Development (TOD), is seen in the extension of commuter rail south of Providence to Warwick and Wickford, and eventually perhaps as far south as Kingston and Westerly. The purpose is to establish nodes within walking distance of residential areas, employment centers and convenience retail.

Mitigating Congestion

Without TOD and similar strategies, new development will only add more vehicles to already congested roadways. To maintain capacity and functionality of these urban roadways, a fix-it-first policy is necessary to maintain riding surfaces, signal coordination, and safe bicycle and pedestrian access. However, we can't "build our way out" of congestion without threatening the fabric and character of neighborhoods and villages. The transportation infrastructure is essentially built-out, and we should instead having a policy of maintaining and better managing what already exists in order to get optimum performance.

Traffic congestion is an important issue. In fact, it is the most pervasive transportation issue as it affects Rhode Islanders on a daily basis. Land use impacts not only the level of congestion but also where congestion occurs. As we sprawl out into the countryside we bring with it more traffic on roadways that were not designed to handle the load. While the lane-miles of roadways have essentially remained the same over the last 30 years, population, the numbers of licensed drivers, housing units and vehicles, and commuting distance all continue to increase. In short, demand continues to rise, but the supply remains static. People lead busy lives and maintain hectic schedules of work, shopping, recreation, medical, civic, and social activities. More and more of these trips are driving trips, rather than transit or non-motorized.

In order to manage congestion, we need to reduce demand and make our roadways function better. One way to reduce demand is by diverting to other modes, including walking, bicycling, and transit (includes bus, train, and ferry). There are many land use and design strategies that help to accomplish this, including TOD.

The Problem of "Over-development"

In recent years, big box retail and office park developments, while providing tax and employment benefits, have exacerbated congestion. These developments typically funnel high volumes of cars to a principal arterial, requiring new traffic signals and overburdening the roadway. Strip development (fast food restaurants, gas stations, banks, etc.) also continues with its clutter of signage and excessive curb cuts, creating an unsafe environment for motorists and pedestrians. Local zoning ordinances that dictate an excessive number of parking spaces have led to an overwhelming amount of pavement devoted to single-purpose parking, oftentimes only to support the busiest holiday shopping season. This increase in nonporous surface area in turn leads to other problems, such as nonpoint source pollution and urban flooding from storm runoff.

While over-developed commercial strips are problematic along some of the state's arterial highways, within the urban services boundary such corridors may offer future opportunities for redevelopment as mixed-use environs that better integrate transport and land use. Where services are present, introduction of higher density residential use and supporting facilities and uses through redevelopment could offer a number of benefits. Planning, at both the corridor and community levels, will be needed to optimize the inherent accessibility and infrastructure potentials of such areas while not worsening congestion.

The environs of limited access highway interchanges represent another critical area for which integrated land use and transportation planning is essential to ensure optimum future use and reuse. Within the urban services boundary, where site characteristics are favorable and supporting infrastructure is available, such areas offer opportunities for concentrations of high intensity uses. Outside the urban services boundary, such areas may be suitable for designation as rural centers, if resource concerns can be addressed and appropriate services provided. In rural areas, the objectives for interchange areas must also include retaining the character and distinctiveness of the rural environs. In all cases, highway interchange areas must be considered scare resources that are too important to be left to *ad hoc* land use decision-making. Special area planning, involving state, regional, and local interests, and integrating transportation and land use concerns, should be undertaken for highway interchange areas that have significant development or redevelopment potential. These areas should be identified through the corridor planning process.

Addressing Bicycle and Pedestrian Safety

Many roadways are without any pedestrian and bicycle facilities, and those that do provide bike lanes, shoulders and/or sidewalks are not perceived to be safe for a pedestrian or cyclist due to the high speed and close proximity of vehicular traffic. This is also a serious dilemma for transit users who walk to their stops. Through better design of reconstructed and resurfaced roadways, and with more thought given to the needs of non-motorized traffic, we can provide an environment more conducive to walking and bicycling. Communities should also consider traffic calming, restoring two-way traffic flow to one-way arterials (while retaining areas for bicyclists and pedestrians), reducing curb radii, and maintaining crosswalks and signals.

Another disincentive to walking and bicycling is the lack of connectivity. Cul-de-sac type developments were favored over grid street patterns to provide safety and privacy for residents, but an unintended consequence of this design has been isolation. This has forced people into their cars to make circuitous trips when in fact the school or store may be otherwise close enough to walk. A return to the traditional street grid pattern would help to diffuse rather than channel traffic, and improve connections. . The State's Physical Alteration Permit (PAP) process could also enhance sidewalk connectivity along State highways via stipulations for short connections to be provided by developers seeking permits.

Corridor Planning

Corridor planning is emerging as a holistic approach that combines land use and transportation. It allows planners to look beyond their own municipal borders and combine strategies into workable, regional solutions implemented along an entire corridor. New development and revised zoning codes are recognized as having "upstream" and "downstream" impacts. At a minimum, corridor planning is a process that contributes to a general awareness of what is going on in neighboring municipalities, and perhaps even to coordinated planning, with obvious long-term benefits along the corridor.

The Rhode Island Statewide Planning Program, in cooperation with the RI Department of Transportation (RIDOT) and the RI Public Transit Authority (RIPTA), sponsored the Travel Corridor Planning Initiative in 2003. This planning concept emerged in Rhode Island in Transportation 2020 (2001 Update), the State's long range surface transportation plan as an effort to connect land use and transportation planning as well as mitigate traffic congestion. The objectives of this initiative were to define major travel corridors in the state (all modes of travel were included), identify major corridor planning issues, and formulate a vision for each corridor. This study included detailed mapping of the project areas, development of corridor profiles, a series of workshops for local planning officials in each corridor, followed by a series of public workshops.

The vision statements that were developed are the result of a public process with input from professional staff. They were not adopted as policies of the state, but they were used: to formulate objectives, policies, and strategies in the 2004 update of the long range transportation plan. The vision statements should also be used as a platform for more detailed individual corridor studies; to prioritize projects for the Transportation Improvement Program; and to assist communities in making local land use decisions and identifying growth centers.

Some common themes emerged when workshop participants were asked to rank the importance of various transportation and land use issues. In the most densely developed corridors, transit and traffic congestion were the primary concerns. Similarly, in the corridors that contain some fairly rural areas and are under pressure for development, land use and community character were selected as the most important issues. The corridors that had the greatest diversity of land, containing urban as well as rural areas, had mixed results. Additionally, some issues emerged that were beyond the scope of the Travel Corridor Planning Initiative, including local property tax and state surplus property along highway rights of way.

Access Management

Access management refers to better control of where vehicles enter and exit the roadway. The more access points there are, the more the capacity of the roadway is reduced, and the less safe it becomes. Therefore, access management techniques can improve the functionality (i.e., how efficiently traffic moves) and safety of the roadway. These will be most effective on collectors and arterials. This entails vigilance and creativity at the local level, and perhaps revision of zoning and subdivision regulations.

Some access management techniques for commercial areas include combined driveways, service roads, interconnected parking lots, and reduced curb cuts.

Context-sensitive Solutions

Building roads and other transport facilities has never been an easy job. Designers and engineers have always been challenged with the need to develop facilities that meet travel demands, promote safety, and minimally impact upon the environment and their surroundings. Increasingly, they have been called upon to develop solutions that consider not just the highways and motor vehicles that travel upon them, but that also integrate multiple users (pedestrians, bicyclists), and respond to the desires of the larger community that the highway traverses and services. While strict adherence to design standards offers assurances in terms of capacity and safety, uniform standards are of less help in responding to other aspects desired by communities and residents.

Paradoxically, some of the solutions requested in the past by communities (new, bigger roads, bypasses, etc.) are now seen as possible detriments. Moving the greatest volume of cars at the fastest speed is not necessarily the goal of most roadway projects. In fact, slowing traffic and narrowing lanes may move fewer cars, but may be the best solution overall if it also helps bring a struggling downtown back to life. On the other hand, some projects rebuffed in the past by communities are now being reconsidered in the light of increasing congestion. Much depends on the situation, and on how creatively the design responds to the problems. Design details that preserve (or echo) local historic features, use landscaping creatively, and reflect a human scale can enhance the attractiveness of transportation infrastructure and help enlist community and public support for needed facilities.

Designers and the community at large must work through an iterative and interactive design process that balances meeting transportation needs with community objectives such as lessening noise, enhancing landscaping and aesthetics, and reducing speeds and other impacts, to arrive at a design solution that works for all. While known recently as “context sensitive design”, the principle is really just well- balanced transportation planning and design that uniquely fits a solution to the type of problem to be addressed, the characteristics of the surrounding area, and local support.