Transportation and land use are intimately linked. The expansion of a highway typically spurs housing, employment growth and land development in the communities that the highway will serve. Likewise, an increase in population or employment in a sparsely settled area can overwhelm the existing road system and require major new infrastructure investments. The prospect of less expensive land is usually a factor in development projects. However, a range of other costs often offsets the cost savings in rural land purchase. These include the cost to extend or expand roads and utilities to the site, additional traffic to the new site, lack of access for members of the community without automobiles, loss of open space, and increased air pollution as more people need to make more vehicle trips to access goods and services. The resulting development pattern has commonly become referred to as sprawl. **Sprawl can be defined as the inflation, over time, in the amount of land area consumed per unit of human activity, and in the degree of dispersal between such land areas.**

While many definitions of sprawl have been used in recent years, perhaps the simplest definition relates to the inefficient way such development consumes land. We are consuming land at a greater rate than previous generations, and not just because population is growing faster. Between 1953 and 1974, 0.75 acres of land were developed in Rockingham County for each person added to the population. Between 1974 and 1982, this rate of land consumption more than doubled to 1.59 acres per capita. This shift is due to a combination of factors including market trends, zoning, and natural constraints on remaining undeveloped land. The dispersed land use pattern it creates is reflected in a comparison of population growth to traffic volume in the region. From 1982 to 1997 population in Seacoast New Hampshire grew by about 38%, while traffic volume in the region grew by 169% - a factor of more than 4 to 1.

Many areas of the country have developed innovative approaches to integrating transportation and land use planning to address these problems. In the last decade these approaches have been grouped under the moniker of "Smart Growth." In recent years the Office of Energy and Planning, Regional Planning Agencies, and some New Hampshire communities have begun advocating and experimenting with measures such as access management, mixed use and multi-density development, street connectivity standards, integrated bicycle and pedestrian facilities, context sensitive design, and other techniques that improve the link between transportation and land use planning. The following chapter discusses current practices in integrating land use and transportation planning in the state, new approaches that are beginning to take hold, and MPO and regional planning policies supporting more integrated planning.

---

2 RPC & SRPC traffic count data Transportation & Land Use 10:2
Plan Goals Directly Addressed By This Chapter

This chapter directly addresses Goals 1, 5, and 6 of this plan. Goal 1 seeks to improve access and mobility for people through provision of transportation options. Land use policies should encourage development that supports a range of transportation options, including transit, bicycling, and walking. This can not only reduce traffic congestion, but also increase access for citizens without access to private automobiles. Smart Growth Principles address Goal 5 to the extent that they emphasize protection of cultural and historic resources, while consuming less land area, thus supporting protection of key natural areas and cultural resources. Finally, integrated planning facilitates multimodal access to new retail and other development, supporting economic vitality as provided for in Goal 4.

A. Current Linkage of Land Use and Transportation Planning in NH

The classic example of poor integration of land use and transportation planning is strip development along state highways, resulting in congestion, safety problems, and eventual need for expensive capacity improvements on the road. This is the scenario of the "Transportation Land Use Cycle". In this cycle a well-traveled road with excess capacity attracts additional land development (often retail or commercial development in need of high visibility and access). This results in additional traffic generation and the erosion of highway capacity and function. Eventually the congestion becomes severe enough that a further expansion of the roadway is prompted, and the cycle begins again.

Another example is the location of public schools, post offices, or courthouses built at the outskirts of town where they are inaccessible by foot and difficult to access by bicycle or transit. A third is policies that discourage housing near job centers, leading to heavy commuter traffic between bedroom communities and job centers, as seen daily on the Little Bay Bridges.

To the extent that they are able, local planning boards consider transportation issues in reviewing land use permit applications. However, local zoning regulations are often not well designed to address the transportation-land use connection.

Barriers to Integrated Planning - Local Zoning

Problems such as the three described above are the result of a number of factors. The first of these is local land use regulations that prohibit mixed-use development. This separation of land uses came about largely in the 1940s-50s with the spread of the automobile. It is a departure from the traditional New England village, where houses were spaced close together, and in close proximity to businesses where residents needed to go for goods and services.
Lack of Communication
Another factor is the disconnect between local and NHDOT driveway permitting policies. Historically, NHDOT and municipalities have not communicated effectively in reviewing applications for driveway permits on state highways. Towns often do not comment on NHDOT driveway permit applications forwarded to them by the Department. Consequently, permits are often granted without adequate consideration of the impacts of additional traffic generation and turning movements on road capacity and safety. The state, MPOs, and local governments are now working on Memorandum of Understandings (MOU) to improve communication on driveway permitting and related access management issues now being signed by the NHDOT and each municipality.

Lack of Local Expertise
Beyond improving communication with NHDOT, another key issue of local planning boards is in making the link between site plan applications and broader growth implications including traffic impacts. Smaller planning boards may lack experience in evaluating traffic impacts of development projects. Providing this technical expertise through a combination of written materials, training workshops, and direct technical assistance is an appropriate role for the regional planning commissions.

Taxation & the Jobs/Housing Imbalance
Finally, the region’s housing imbalance is linked in part to New Hampshire’s reliance on property taxes to support schools and other public services. Towns seek to attract commercial development, because it is perceived as preferable to residential development in contributing more to the tax base. Housing, particularly moderately priced housing, generally contributes less to the tax base than the cost of schooling the children that live in the houses. This creates a disincentive for residential development. High land values in Eastern Rockingham County vs. much of Strafford County also contribute to the jobs/housing imbalance.

Regional Planning Efforts to Improve Integration
During the mid 2000’s, the Strafford Planning Commission updated its Future Land Use chapter of the Regional Master Plan. This was done as part of an overall effort by SRPC to incorporate sustainable development principles into regional planning policies. The new chapter sets out a series of principles for future land development in the region that seek to address the problems just described. While not all are explicitly transportation related, all have implications for transportation planning, and encourage development that can be more readily served by multiple modes of transportation. Ultimately, this will offer residents greater choices in how they get where they need to go, and how they live their lives. The following basic principles set forth in the Regional Master Plan area supported by the Strafford MPO:
1. Guide growth into areas with existing infrastructure (including roads) and away from undeveloped areas, and make adequate public investment in infrastructure to support additional growth.

2. Encourage settlement patterns that employ mixed use, compact design and reduce the rate of land consumption for new development.

3. Favor the reuse of land and buildings for redevelopment over the development of vacant undeveloped land.

4. Create large contiguous areas of open space, farmland, river corridors and critical environmental areas, and establish connections between these areas.

5. Ensure an adequate and affordable housing supply to meet the needs of the region’s workforce, young families and the elderly.

6. Foster downtowns, village centers and neighborhoods that preserve historic buildings and community character and promote good design.

7. Encourage settlement patterns that can be efficiently served by multiple nodes of transportation, including pedestrians and bicycles.

B. Progress Since Adoption of 1999-2020 Long Range Plan

The principles outlined above draw on a number of planning studies carried out around the state in recent years analyzing the disconnect between transportation and land use planning. These include the following:

- **Route 16 Corridor Protection Study, RPC and Herr and James Associates, Planning Consultants.** This project used a series of case studies to examine the Land Use/Transportation "Dynamic" in the NH Route 16 corridor, with a goal of developing a protection plan for the highway that balanced its role as transportation corridor and economic engine for the region. The study concluded that sprawling development patterns accelerate traffic congestion, and that we cannot build our way out of congestion through continuous roadway expansion. Rather, the key lies in changing land use policy. The study defined three future land use principles for Route 16:

  1) Encourage compact "nodal" development in defined areas that can be well served by the transportation system;
  2) Discourage major new development along state highways between nodes through limiting commercial zoning districts; and
  3) Manage access to highways for new and existing development.

- **Managing Growth in New Hampshire: Changes & Challenges, New Hampshire Office of Energy and State Planning.** This project assessed how growth trends are affecting land development patterns in NH, and ways in which state and local policies and investments induce sprawl. It analyzed a range of statewide growth indicators, municipal case studies, and approaches used by other states to address problems associated with sprawl.
development. The report offered a series of recommendations to strengthen the ability of state and local governments and regional organizations to cope with the challenges of future growth. Among these were updating state planning statutes to give local governments greater flexibility in planning and zoning; improving and strengthening the role of regional planning agencies; expanding multimodal transportation options; and coordinating regional land use planning with state transportation programs.

- **Regional Approaches and Local Choices to Advance Sustainable Development in Seacoast NH, RPC and SRPC.** This EPA Sustainable Development Challenge Grant project developed a toolbox of innovative land use controls and best development practices used in communities in New Hampshire and elsewhere in the country. The toolbox addresses both land development policies and transportation facilities and investments. Innovative land use policies include mixed use (residential and commercial) zoning; multi-density zoning to allow more compact development in appropriate locations; balancing levels commercial and residential development to encourage job centers near housing; transferable development rights; infill development; and architectural design standards for commercial development. Transportation policies include street standards that provide for street trees, sidewalks, bike lanes, and traffic calming measures such as narrow lane striping. Parking lot standards address safe facilities for bicycling, walking, and transit use; internal connectivity between adjacent lots; and locating parking at the rear or side of buildings. The transportation tools also include local transportation demand management programs.

  Model code language is drawn primarily from towns around the state and region. The toolbox is also means of providing guidance to planning boards on evaluating traffic impact studies and negotiating with developers.

- **Model Memorandum of Understanding (MOU) on Access Management between NHDOT, MPOs, and Municipalities.** The MOU provides model language for agreements between municipalities and NHDOT to collaborate on development and implementation of local access management standards and site and parcel level access management plans. The MOU provides for communication between DOT and towns in the review or driveway permit applications on state highways. Once signed by towns and the NHDOT, these memoranda will be effective tools in addressing access management issues identified in corridor studies.

- **Context Sensitive Solutions Training.** Strafford MPO staff attended training for Context Sensitive Solutions, which is the collaborative, interdisciplinary approach stressing transportation design that fits physical settings and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. Additional benefits include more cost effective roadway design, efficient land use, preservation of cultural and environmental resources, and more livable communities.

These studies and policy initiatives have done much to raise awareness at the state and local level of the need to better integrate transportation and land use planning; and to provide innovative tools for municipalities to achieve that integration. Much work remains to be done to improve regional cooperation, encourage adoption of innovative land use policies at the local level, provide technical assistance to communities, and improve multimodal transportation options throughout the region.

C. MPO Objectives & Policies Related to Land Use & Transportation

The following policy recommendations related to the need to better link transportation and land use planning. They are keyed to relevant objectives identified in Chapter Two.

Objective 1.7 Advocate municipal ordinances and public facility investments that discourage vehicle dependent development.

- Support adoption by member communities of innovative land use and transportation design policies identified in the Regional Master Plan. These policies are described on pages 10-4 and 10-5.
- Balance regional needs and local concerns in the development of local land use policies.

Objective 10.3 Ensure the protection of wetlands and other environmental resources in the design of new transportation facilities, with appropriate mitigation for unavoidable impacts.

- Promote adoption of local open space plans and other tools to ensure protection of land with high habitat, watershed protection, and scenic value.

Objective 10.4 Ensure the preservation and enhancement of cultural, historic, and recreational resources in the development of transportation projects with appropriate mitigation for unavoidable impacts.

- Promote establishment and use of scenic byways and other transportation projects in the region that enhance access to natural and cultural resources.
Promote update of local cultural resource inventories and broader inclusion of cultural resources in land protection efforts.

Objective 10.9 Advocate that aesthetic and scenic values are considered in road design and adjacent land development to maintain a sense of place and scale.

- Work with local and NHDOT engineers early in the design process to ensure that road projects minimize impacts on adjacent natural and cultural resources.

Objective 5.1 Support the coordination of land use and transportation planning to ensure that existing and future industrial, commercial, service centers and housing concentrations are adequately connected by the region's transportation system; and appropriately located to preserve the quality of life in surrounding areas.

- Promote development of adequate and affordable housing supply to meet the needs of the region’s workforce, young families and the elderly; and ensure a regional balance of commercial and residential development.

- Promote development of bicycle and pedestrian facilities and transit services to connect residential, employment, and community centers.

- Include training sessions on traffic impact analysis and other aspects of the transportation land use connection in future planning commission municipal board training series.

Objective 6.3 Encourage standards, ordinances, projects and plans that aim to maintain roadway safety and traffic carrying capacity of roadways by improving the design of access to businesses and residential developments.

- Promote adoption of Memoranda of Understanding for Coordinating Highway Access Management between member communities and the NH Department of Transportation.

- Provide technical assistance to member communities in master planning to assess impacts of different land uses on transportation system; in development of local access management plans; and in the evaluation of traffic impacts of development proposals.
D. Conclusion

Promoting integration of land use and transportation planning at the regional level is no easy task, especially in New Hampshire where local control is a cherished tradition. However, an awareness of the consequences of not making this link is growing in the region, as residents encounter more traffic congestion, high costs for new transportation infrastructure, loss of open space and valued natural and cultural resources, and lack of transportation options for anybody without a car. The Strafford MPO (and SRPC) has taken a leading role in raising this awareness. In the coming years the MPO can play a key role in moving the region and member communities from awareness to effective action by promoting local adoption of innovative land use practices such as those described above; regional collaboration on access management and related growth issues; and development of transportation alternatives.