CTAP- Linking Land Use and Transportation

December 23 ,2008

Outline

- What is CTAP
- Overall Goal
- New Planning Paradigms
- Population Growth and Trends
- Impacts of Sprawl
- Tools for linking Land Use and Transportation

CTAP: The Community Technical Assistance Program

- NHDOT is committed to this five year program to support a region of 26 towns and cities that are in the area influenced by the reconstruction of I-93.
- Provide technical assistance on sound land-use planning practices.
- Address growth management issues in the region.

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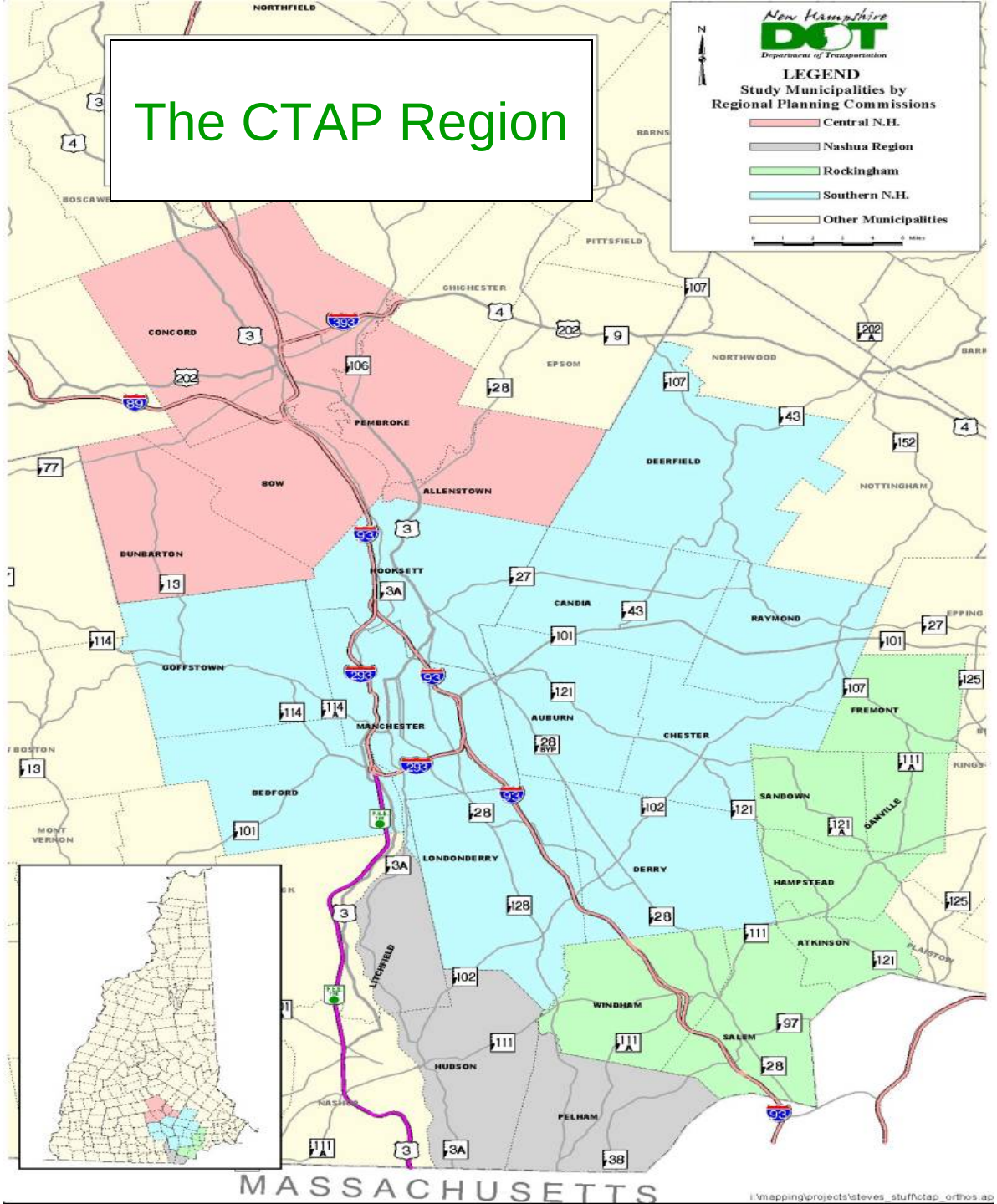
The CTAP Region



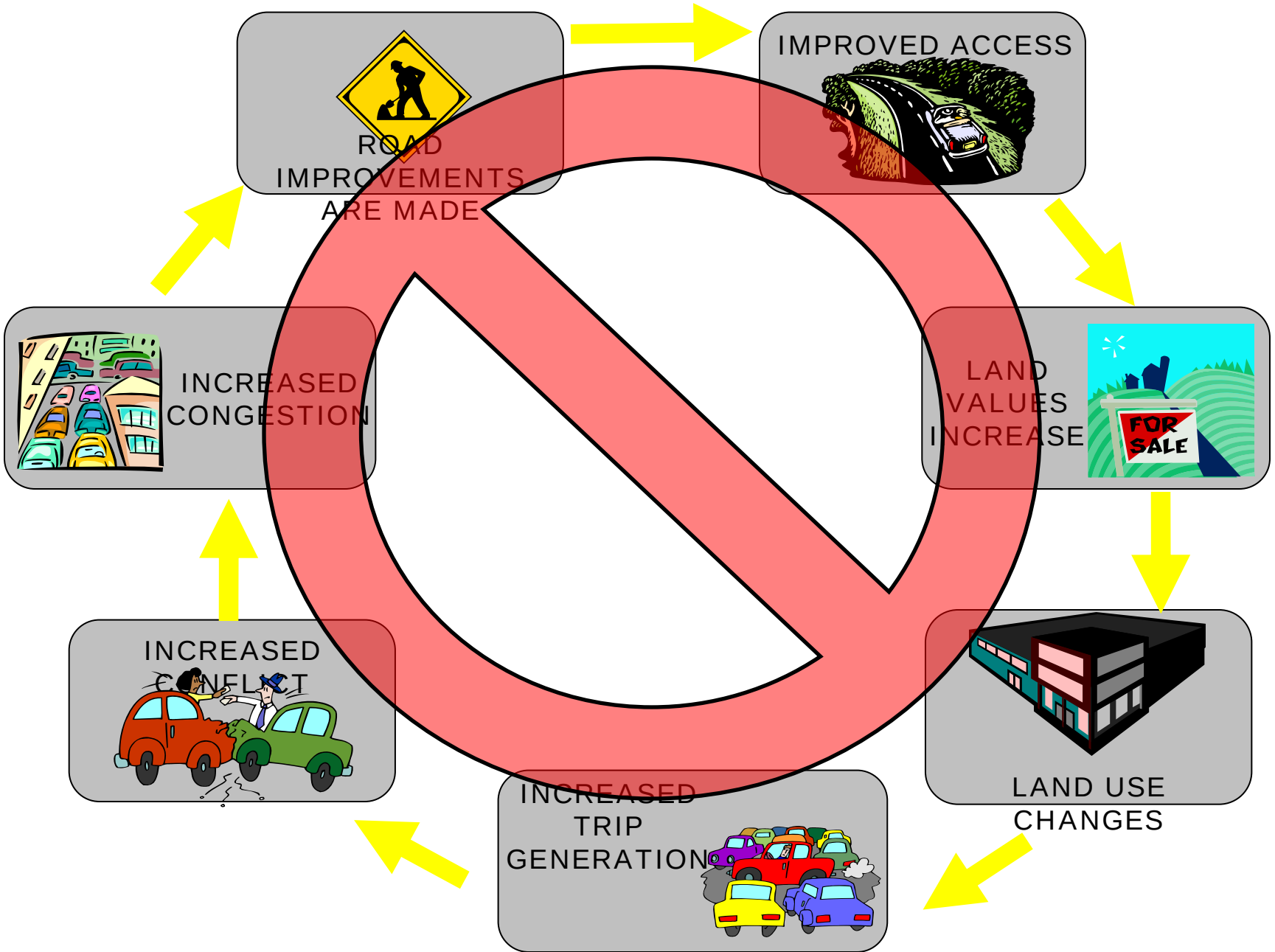
Connecting Land-Use and Transportation Program

- Improve the integration of land-use and transportation planning for the purpose of:
  - Reducing the need for highway expansion
  - Reducing auto dependency
  - Improving effectiveness of alternative modes of travel
  - Maintaining the quality of our communities

Overall Goal

- Develop and implement land use and transportation strategies that will prevent sprawl, preserve the capacity and safety of our existing and future roadways, and promote smart growth.
- Improve integration of land use and transportation planning in an effort to reduce the need for highway expansion, auto dependency, improve effectiveness of alternative modes of travel, and help maintain the quality of our communities.

Land-Use/Transportation Cycle of the Past



New Planning Paradigms

- Concentrate development to conserve land, and to maximize use/efficiency of infrastructure.
- Prevent or limit development in areas with high conservation value, and link those areas in regional networks.
- Promote infill and redevelopment opportunities through brownfields and Transit Oriented Development (TOD).

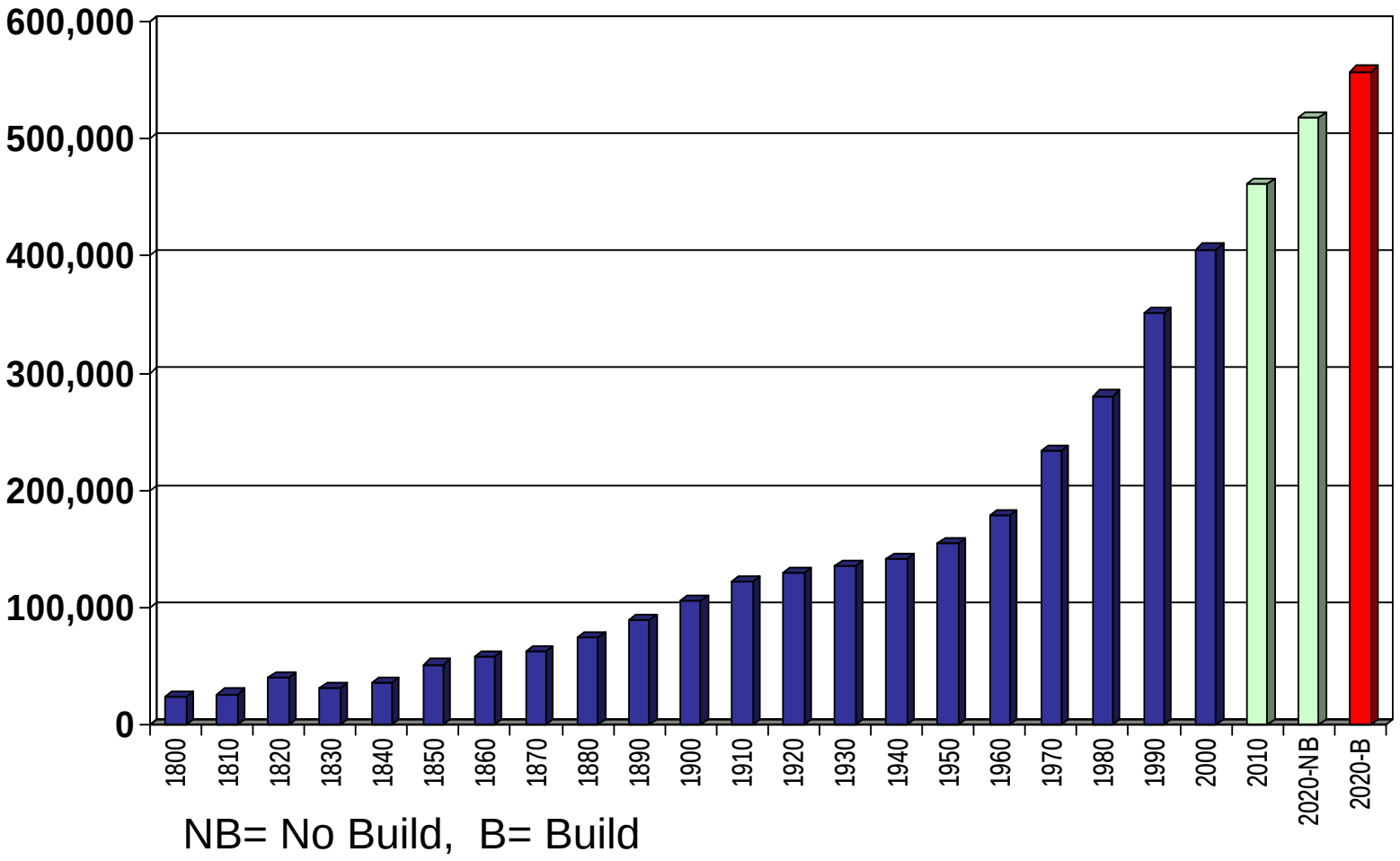
Key Planning Principals

- Utilize low impact development techniques and green building design.
- Preserve historic buildings and other cultural and community assets.
- Build “complete streets” that can be efficiently served by pedestrians, bicyclists, transit and other alternative modes.
- Discourage auto dependency; encourage a more balanced multimodal transportation system.

Key Planning Principals (con't)

- Manage access and establish curb cut specifications through MOA with District Engineer's office and corridor plans.
- Require "traffic smart" design.
- Encourage nodal development; discourage highway strip development.
- Allow mixed-use developments and plan for a balanced, supportable mix of land uses.

Population Growth in CTAP Communities



NB= No Build, B= Build

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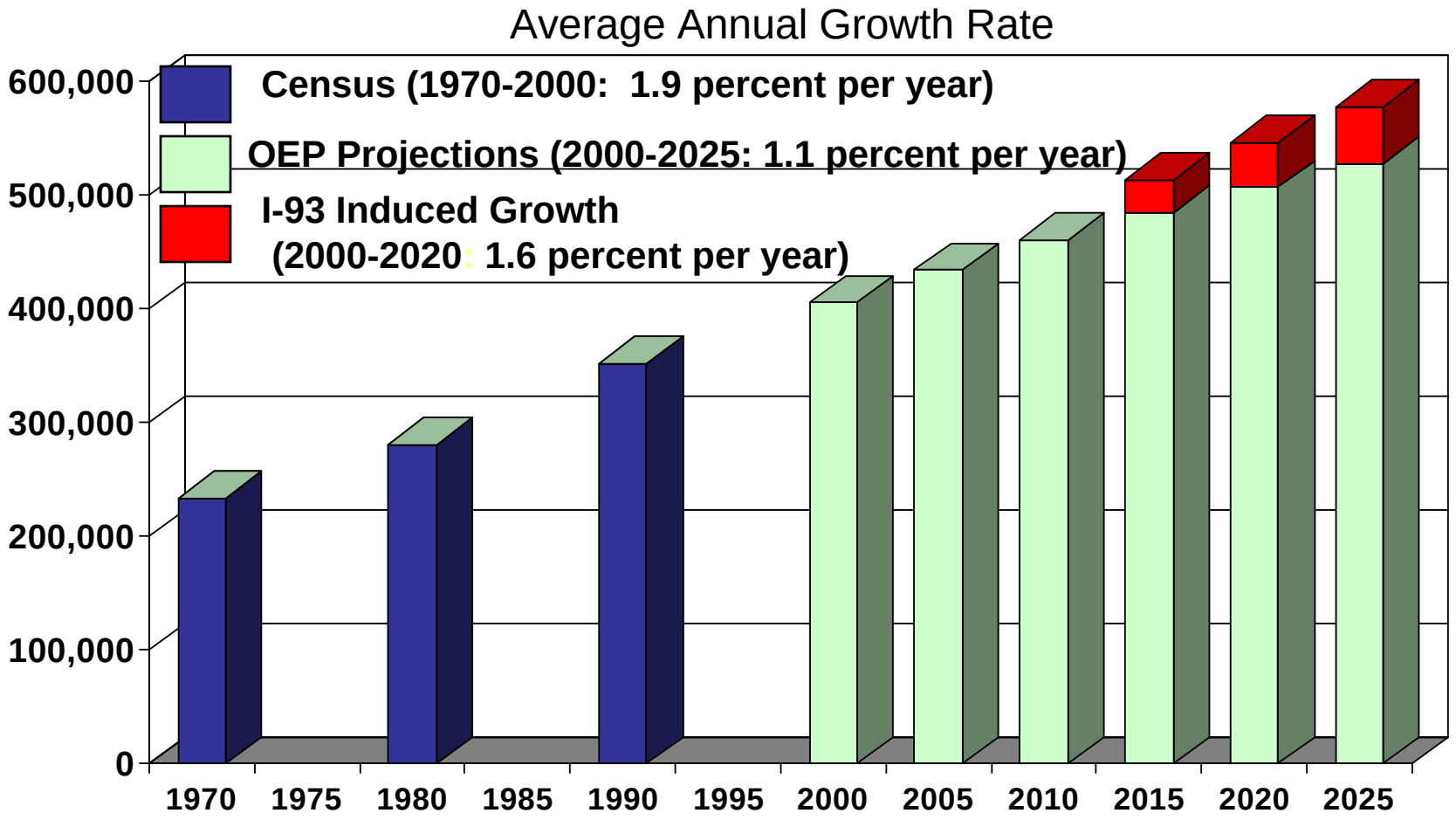
Population Trends



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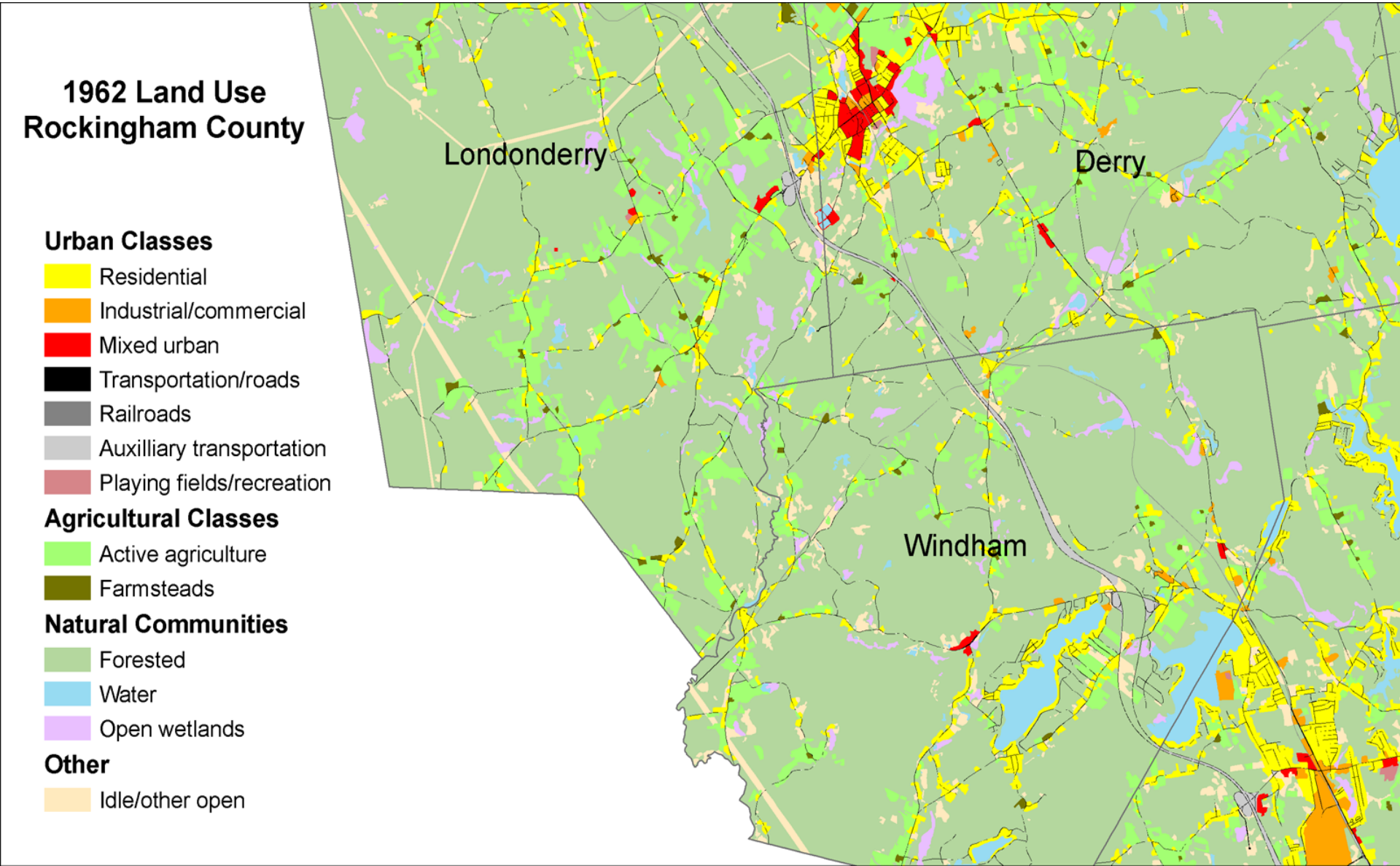
Community Growth



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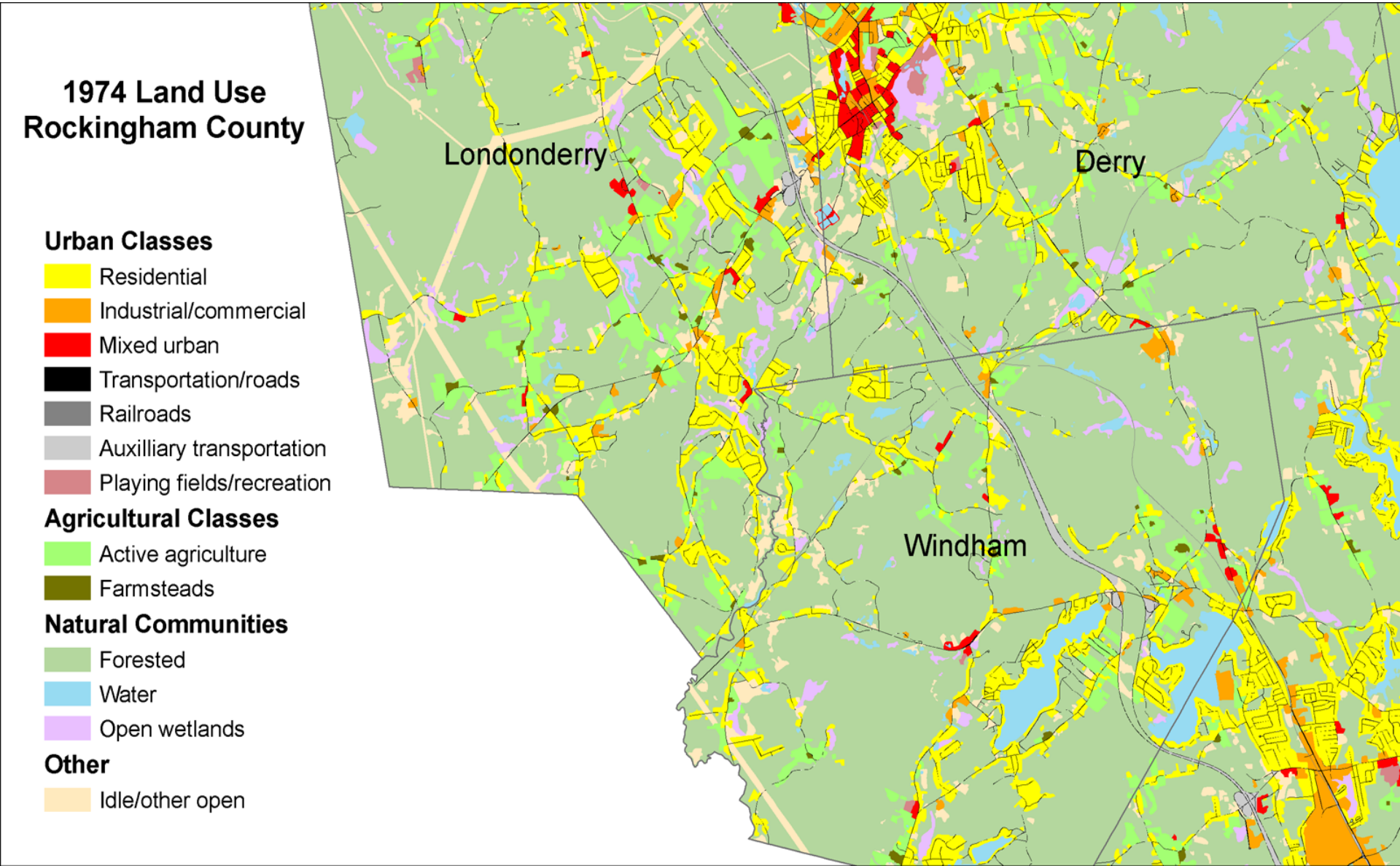

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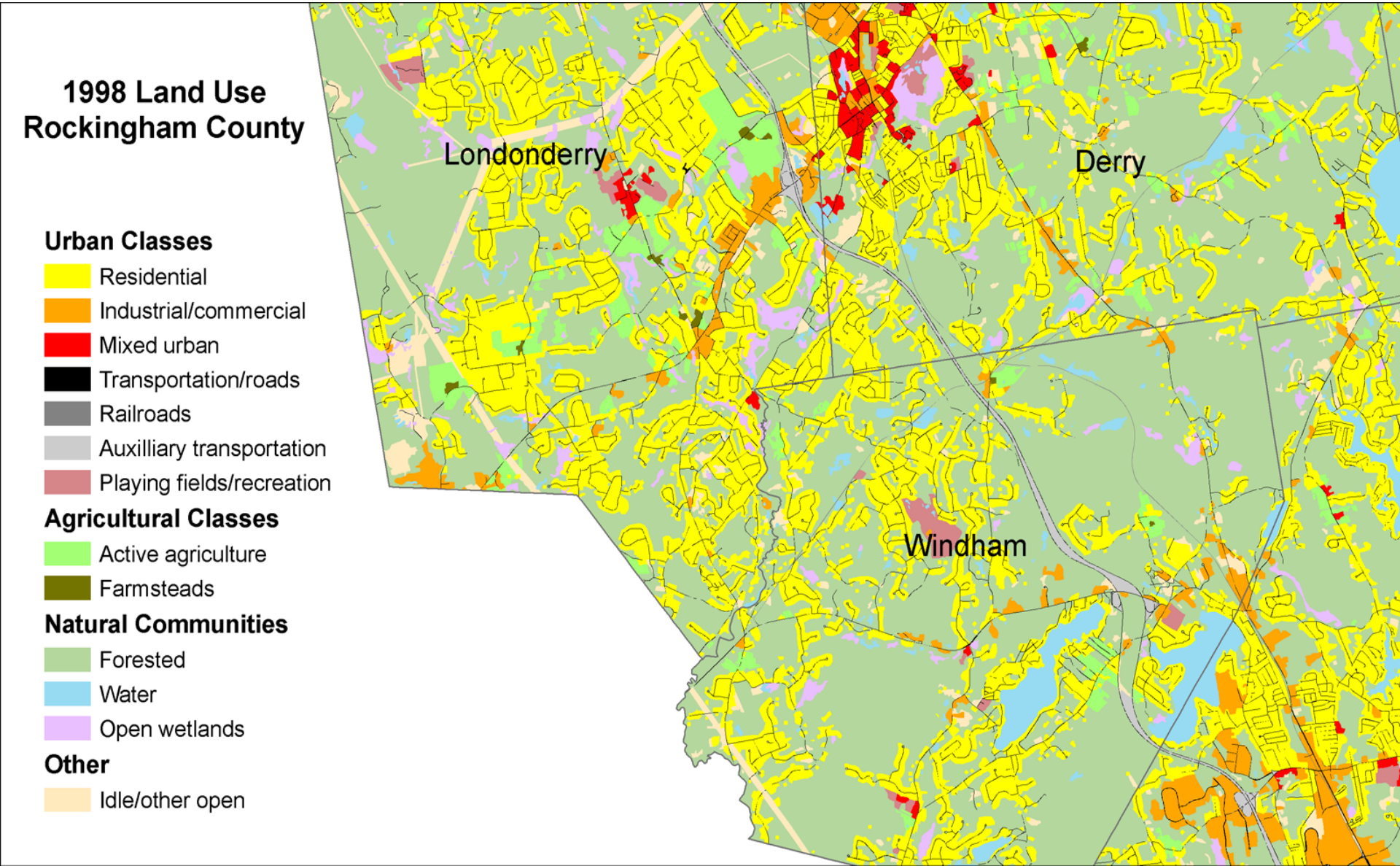
Community Growth



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Sprawl

- "Sprawl" is an inefficient pattern of land use which consumes open space and degrades the environment, increases the municipal costs of service, is automobile dependent, and erodes our New Hampshire traditional community character.

Impacts of Sprawl

- Increase in automobile dependency, fuel consumption, and air pollution;
- Increased commuting times and costs;
- Reduced opportunity for public transportation services;
- Increase in health problems in children and adults due to sedentary lifestyle.

Implications of Existing Growth Patterns

- Loss of farmland
- Land fragmentation
- High land consumption
- Loss of wildlife habitat
- Large road and utility infrastructure needs per household
- High maintenance costs
- Increased tax burdens
- Poorly defined/present town centers
- Erosion of social capital
- Lack of local street connectivity

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Land Use and Transportation Tools

Land Use and Transportation Tools

Low Impact Development →
Complete Streets →
Transit Oriented Development (TOD) →
Access Management →
Context Sensitive Solutions →
Traffic Smart Design →

Alternative Geometric Roadway Design Standards

- The intent of these standards are to promote the creation of low-impact residential neighborhoods with enhanced “livability” for residents.
- Alternative minimum standards are applied to low volume residential streets recognizing the need for safe and efficient travel, but also the creation of aesthetically pleasing residential and pedestrian environments.

Alternative Geometric Design Standards- Low Impact Development (LID)

- LID site design is a multi-step process that involves identifying important natural features, placing buildings and roadways in areas less sensitive to disturbance, and designing a stormwater management system that creates a relationship between development and natural hydrology.

Alternative Geometric Design Standards- Example Standards

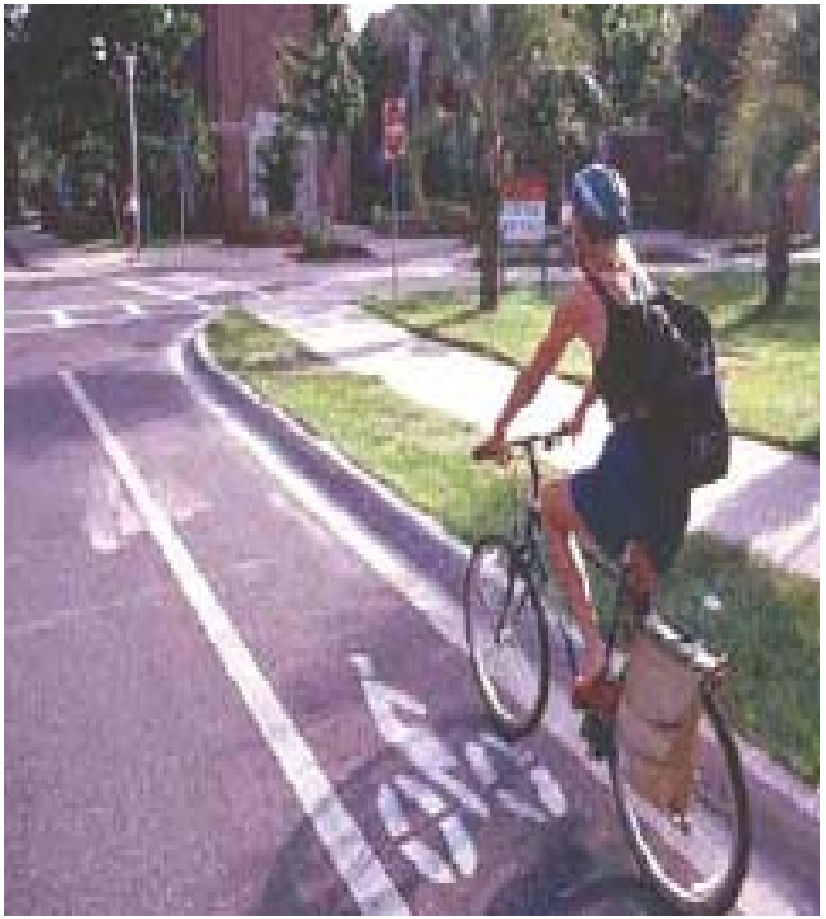
	ADT (vpd)		
	1-50 vpd	51-150 vpd	151-400 vpd
Design speed:	20 mph	25 mph	30 mph
Min. right-of-way width:	50’	50’	50’
Min. angle of intersection:	75 degrees	75 degrees	90 degrees
Min. tangent length at intersections & between successive horiz. curves:	N/A	N/A	100’
Min. street grade:	1 %	1%	1%
Max. street grade:	8%	8%	8%
Max grade within 50-feet of intersection:	3%	3%	3%
Min. K-values for vert. curves:			
Sag:	17	26	37
Crest:	7	12	19
Min. intersection sight dist.:	225’	280’	335’
Min. pavement & shoulder width (Uncurbed):	18’/2’	20’/2’	22’/2’
Min. pavement width (Curbed):	20’	22’	24’
Min. sidewalk width:	N/A	4’ (1-side)	4’ (2-sides)

Source SNHPC

Alternative Geometric Design Standards- Low Impact Street Design

Pedestrian Level of Service

- LOS is an overall measure of walking conditions on a route, path, or facility.
- Linked directly to factors that affect mobility, comfort, and safety, reflecting pedestrians' perceptions of the degree to which the facility is 'pedestrian friendly'.



Pedestrian Level of Service

LEVEL OF SERVICE A

Average Pedestrian Area Occupancy: 13 sq ft/ person or more
Average Inter-Person Spacing: 4 ft, or more
Description: Standing and free circulation through the queuing area is possible without disturbing others within the queue.

LEVEL OF SERVICE B

Average Pedestrian Area Occupancy: 10 to 13 sq ft/person
Average Inter-Person Spacing: 3.5 to 4.0 ft
Description: Standing and partially restricted circulation to avoid disturbing others within the queue is possible.

Source: Walk San Francisco

Pedestrian Level of Service

LEVEL OF SERVICE C

Average Pedestrian Area Occupancy: 7 to 10 sq ft / person
Average Inter-Person Spacing: 3.0 to 3.5 ft
Description: Standing and restricted circulation through the queuing area by disturbing others within the queue is possible; this density is within the range of personal comfort.

LEVEL OF SERVICE D

Average Pedestrian Area Occupancy: 3 to 7 sq ft/ person
Average Inter-Person Spacing: 2 to 3 ft
Description: Standing without touching is possible; circulation is severely restricted within the queue and forward movement is only possible as a group; long term waiting at this density is discomforting.

Source: Walk San Francisco

Pedestrian Level of Service

LEVEL OF SERVICE E

Average Pedestrian Area Occupancy: 2 to 3 sq ft/ person
Average Inter-Person Spacing: 2 ft or less
Description: Standing in physical contact with others is unavoidable; circulation within the queue is not possible; queuing at this density can only be sustained for a short period without serious discomfort.

LEVEL OF SERVICE F

Average Pedestrian Area Occupancy: 2sq ft/person or less
Average Inter-Person Spacing: Close contact with persons
Description: Virtually all persons within the queue are standing in direct physical contact with those surrounding them; this density is extremely discomforting; no movement is possible within the queue; the potential for panic exists in large crowds at this density.

Source: Walk San Francisco

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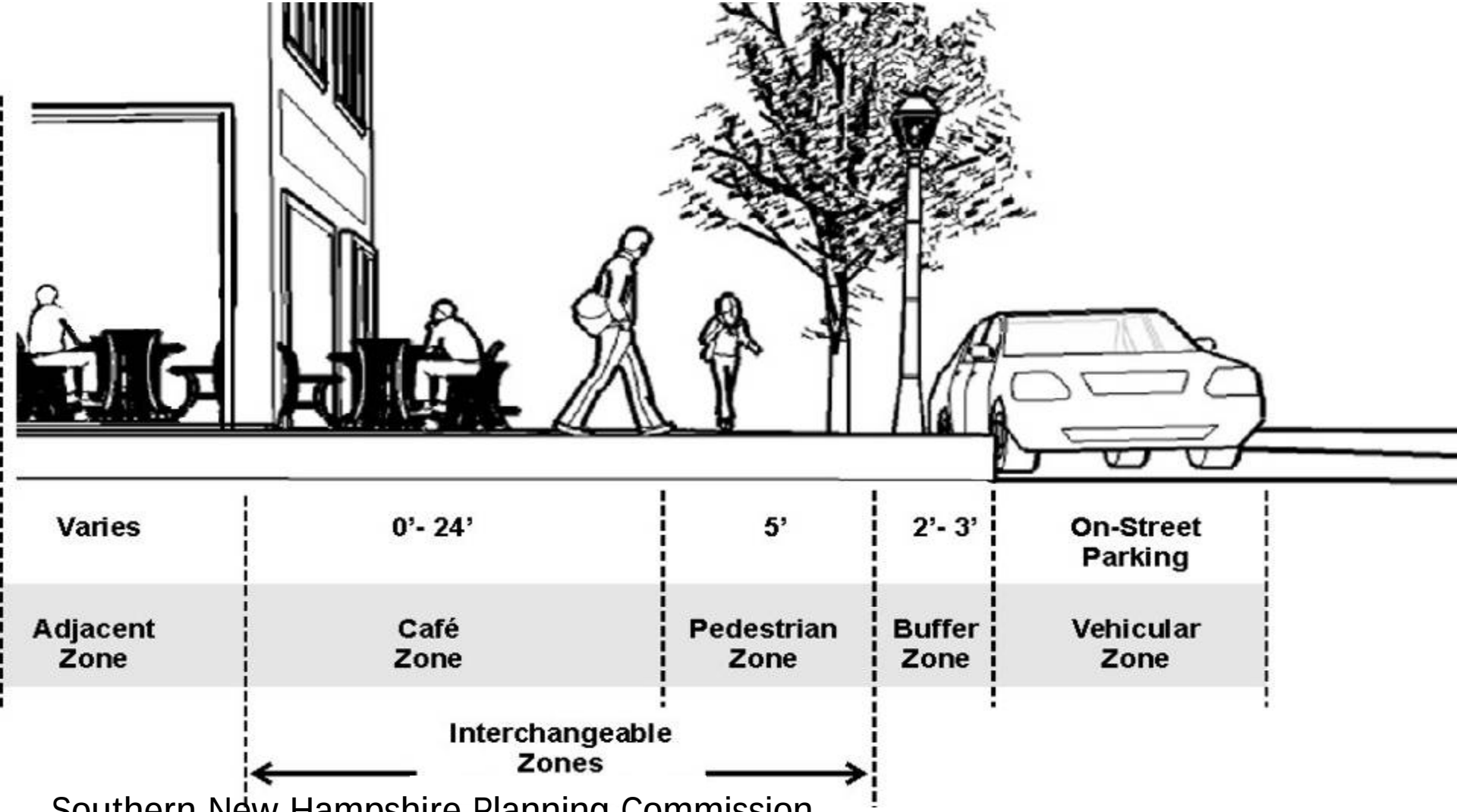
Sidewalk Zones



Traffic Calming

- Traffic calming involves changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and/or cut-through volumes, in the interest of street safety, livability, and other public purposes.

Source: ITE

Traffic Calming Goals

- Encourage safe vehicle speeds,
- Reducing collision frequency and severity,
- Reducing the need for police enforcement,
- Increasing access for all modes of transportation,
- Reducing cut-through motor vehicle traffic

Traffic Calming Goals (con't)

- Incorporate the preferences and requirements of the people using the area,
- Creating safe and attractive streets,
- Helping to reduce negative effects of motor vehicles on the environment, and
- Promoting alternative modes of transportation.

Rye, NH

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Complete Streets

- Represents a paradigm shift in traditional road construction philosophy. Instead of a project-by-project struggle to accommodate bicycle- and pedestrian-friendly practices, complete streets policies require all road construction and improvement projects to begin by evaluating how the right-of-way serves all who use it.
- Ensures that the entire right of way is routinely designed and operated to enable safe access for all users.

Source: APA

Elements of a Good Complete Street Policy

- Specifies that ‘all users’ include pedestrians, bicyclists of all ages, transit vehicles, and motorists.
- Aims to create a comprehensive, integrated, connected network.

Elements of a Good Complete Streets Policy (con't)

- Recognizes the need for flexibility: that all streets and users are different and they need to be balanced,
- Adoptable by all agencies and municipal departments,
- Establishes performance standards with measurable outcomes.

Complete Streets Elements

- Speeds are reduced to be more compatible with pedestrians and bicyclists.
- Sidewalks, if missing, are installed.
- Street parking maintained or installed, which helps discourage speeding.
- Pedestrian crossings are enhanced with ladder-style crosswalk markings, signal modifications such as leading pedestrian interval or countdown timer, etc.

source: Complete the Streets

Access Management

- The goal is to limit the number and control the spacing of access points (ideally before development occurs), thus reducing the number of conflict points a user may encounter.
- The result is a roadway that functions more safely and efficiently for its useful life, and a more attractive corridor.

Access Management- Issues- Strip Development

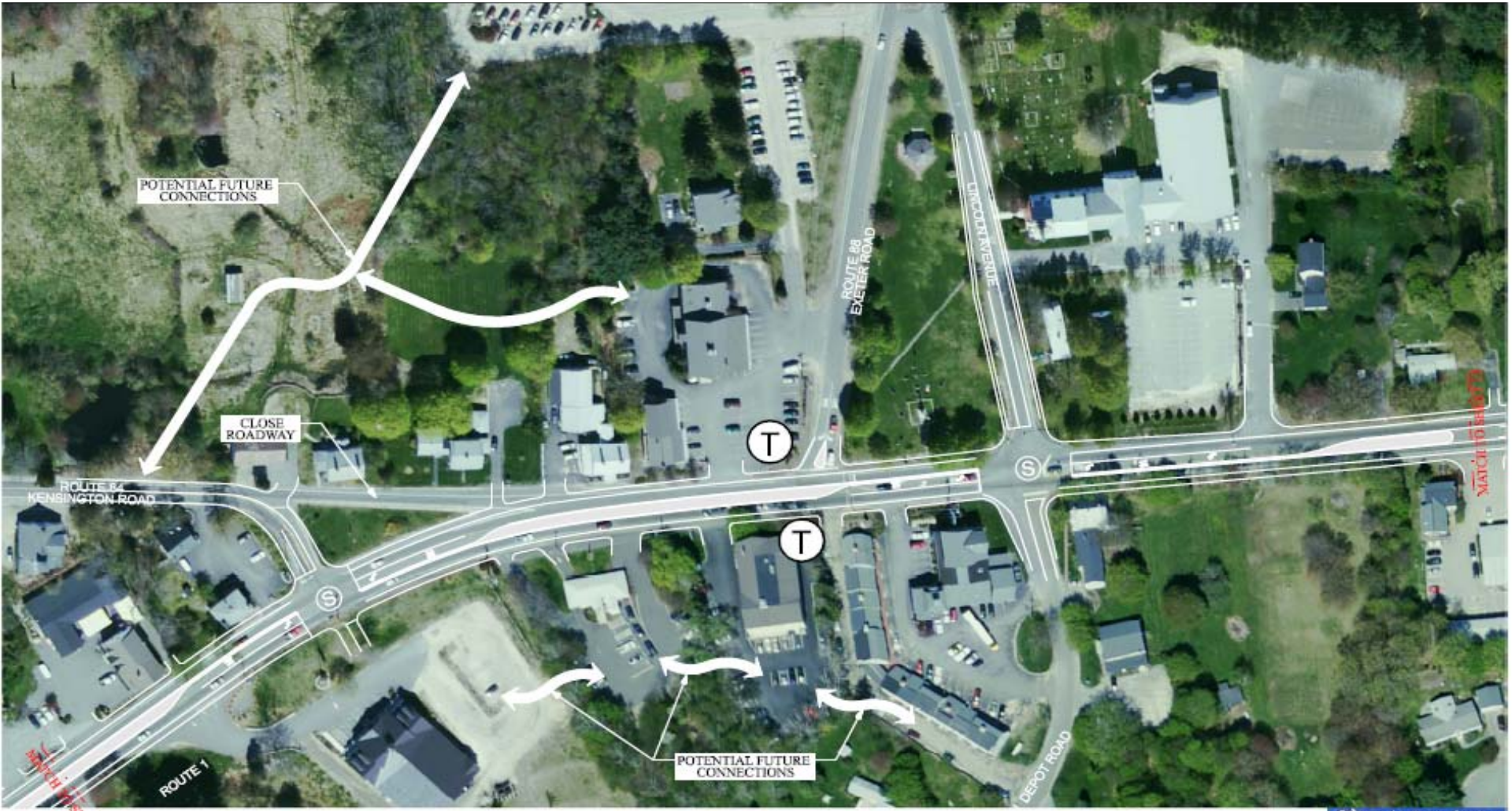
- Access management seeks to limit and consolidate access along major roadways, while promoting a supporting street system and unified access and circulation systems for development.

NH 28 (South Willow Street) Access Management Phase I Plan

Access Management (con't)

- Effective access management can:
  - Increase highway capacity 25-30 percent
  - Reduce the total number of vehicle trips
  - Minimize traffic delays and congestion
  - Reduce travel and delay times by 40-60 percent
  - Decrease energy consumption by 35-50 percent
  - Reduce vehicle emissions by reducing acceleration, deceleration, and stops
  - Encouraging compact development patterns

US 1- Hampton Falls Access Management



Access Management- Local Examples

- **Town of Bedford-** zoning ordinance requires a minimum separation of 120 feet between curbs.
- **Town of Hooksett-** US Route 3 Performance Zoning District Ordinance- shared driveways, development of frontage or service roads.
- **Allenstown-** Intersection of US Route 3 and Granite Street- reducing number of curb cuts, improve flow onto Granite Street, improve parking.

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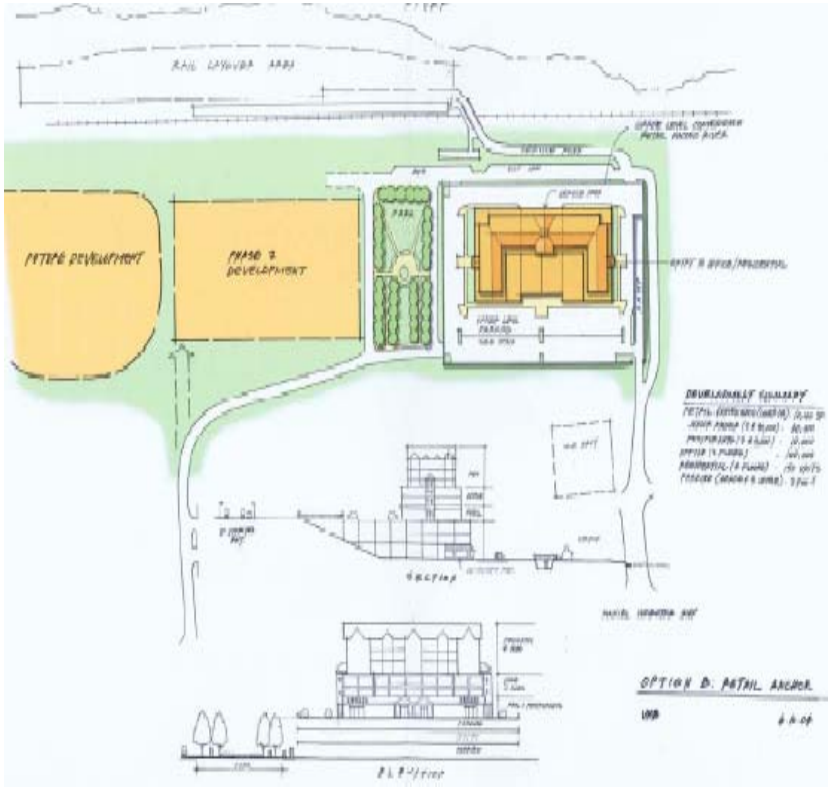
Access Management-Pedestrian Safety

Southern New Hampshire Planning Commission

Transit-Oriented Development (TOD)

- TOD results from deliberate planning and code provisions drafted to produce a mix of uses in close proximity to transit that facilitates access to transit.
- TOD involves new construction or redevelopment of one or more buildings whose design and orientation facilitates transit use.

Transit-Oriented Development- Examples in New Hampshire



- **Nashua Transit Overlay District – MBTA Lowell commuter rail extension.**
- **Mixed-uses, including commercial/retail space, office space, and residential condominiums.**
- **Financed by Tax Increment Financing and developed by private investors.**

Sample TOD design for Nashua station.

Transit-Oriented Development- Examples in Massachusetts

- **Davis Square – MBTA public/private partnership.**
- **Canton – new housing developments within a five minute walk to commuter rail.**
- **Massachusetts – funding to support housing in commercial areas within a quarter mile of a transit station.**

Stores opening to street side plaza in Davis Square

Transit-Oriented Development- Benefits

- Greater mobility with ease of moving around,
- Increased transit ridership,
- Reduced traffic congestion and driving,
- Reduced incentive to sprawl, increased incentive for compact development,
- Enhanced ability to maintain economic competitiveness.

Source: Urban Land Institute

Traffic Smart Design

- Allow appropriate mixed land uses to reduce the need for, or shorten, auto trips
- Pedestrian, bicycle and transit-friendly design at the site level
- Trip-generation performance standards
- Parking standards

Traffic Smart Design (con't)

- Require building, site design, and landscaping that supports community character
- Encourage development in and around existing village and town centers, or, around already developed intersections and interchanges
  - Use development incentives for town centers such as density bonuses, flexible lot dimensions etc.
  - Establish public facilities investments to promote centers
- Discourage development along the highway between nodes
  - Preserve integrity of non-commercial uses
  - Resist pressure to extend commercial zones along the highway

Context Sensitive Solutions

- A collaborative, interdisciplinary approach that involves all stakeholders in developing transportation facilities that fit its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility.

Source: NHDOT

Context Sensitive Solutions (con't)

- Benefits
  - CSS conserves environmental and community resources, facilitates and streamlines the process of NEPA compliance
  - CSS saves time and money by gaining consensus early eliminating obstacles down the line
  - CSS builds support from the public and from the regulators
  - CSS helps prioritize and allocate scarce transportation funds in a cost-effective way, at a time when needs far exceed resources

Context Sensitive Solutions- Case Studies

- **Bow-Concord-** section of interstate 93 (from the I-89/I-93 interchange to the I-93/I-393 interchange)- improvements to meet the varied transportation and safety demands of interstate highway users, balance demands against the interests of the Capital Region communities in their unique identities and visions.
- **Pelham-** improvements in the area of Pelham Town Center- intersections improvements to make the town safer and more welcoming to drivers, pedestrians, and bicyclists.

Pelham CSS- Existing Condition

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Pelham CSS- Alternative A

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Pelham CSS- Alternative

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Bow-Concord- Exit 14 Existing

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Bow-Concord- Exit 14 Proposed

Four strategies you can use to benefit your community:

1. Concentrate new development in town centers, and discourage development between centers,
2. Encourage mixed-uses
3. Encourage alternative transportation
4. Promote access management

Summary

- **Key Recommendations**
  - Promote redevelopment opportunities,
  - Concentrate development to conserve land, and to maximize use/efficiency of infrastructure,
  - Utilize low impact development techniques,
  - Discourage auto dependency,
  - Establish curb cut specifications to manage access,
  - Encourage nodal development,
  - Implement traffic calming techniques,
  - “Complete the Streets”,
  - Promote mixed-use development around transit centers