A Roadmap to Understanding Transportation in Your Community

Prepared by the Nashua Regional Planning Commission

iTRaC Program

Updated August 2007

Front Cover Photos (left-right): (top) bikepedimages.org/Dan Burden, world.nycsubway.org/Jason DeCesare; (bottom) NRPC staff, City of Nashua; (middle) bikepedimages.org/Dan Burden

Introduction

The Nashua Region has long been recognized as an excellent place to live, work, and recreate. An important component of this is the livable nature of the region's many diverse communities and downtowns. As the Nashua Region continues to grow, we must take a multi-disciplinary approach to preserve and enhance our neighborhoods and downtowns for future generations to enjoy. Understanding the reciprocal relationship between the way we develop our land and the impact that development has on transportation and our streets is a critical first step towards ensuring a bright future. The decisions we make in developing new neighborhoods, redeveloping downtowns, or expanding our economic base have a direct and tangible impact on our transportation system and the livability, vitality, and character of the Nashua Region.

This guide provides a broad overview of several important transportation topics, including traffic studies, road standards, and public transportation, as well as the relationship between our land use patterns and transportation needs. It is part of a comprehensive approach intended to help planners, elected officials, and residents better understand local traffic impacts and identify possible transportation planning strategies that will have a positive impact on the region. Links to addition information on these and many more topics are available at our website, **www.nashuarpc.org/itrac**.

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Understanding Traffic Studies

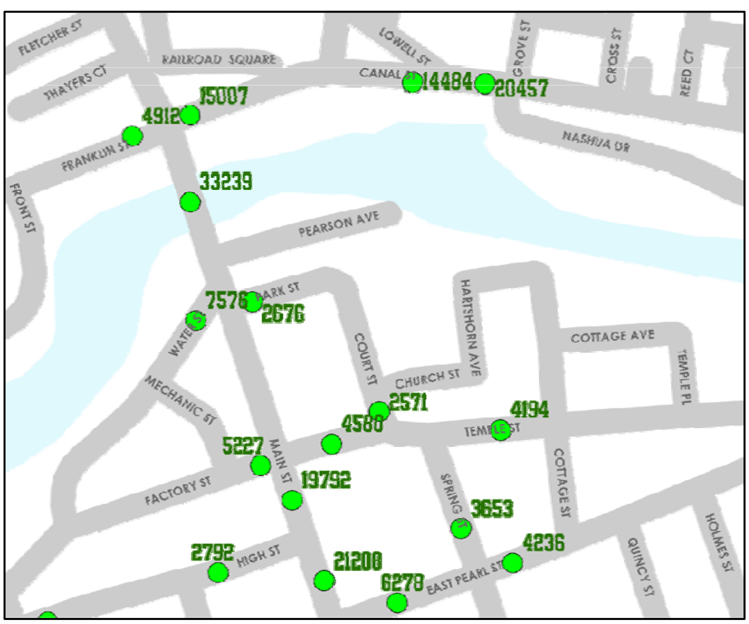
Traffic studies provide insight on potential traffic implications associated with development projects. A thorough traffic study typically includes a project description, existing traffic conditions, future conditions, traffic operations analysis, and traffic mitigation. The traffic study should also review transit, bicycle, and pedestrian issues, as well as internal circulation, to ensure that traffic queues do not hinder site ingress and egress. Terminology typically included in traffic studies is identified below.

Anatomy of a Traffic Study

- **Existing conditions** include data on existing roadways, intersections, traffic volumes, peak hour traffic volumes, turning movement counts, and accident data.
- **Future conditions** contain planned roadway improvements, anticipated traffic growth, build and no build traffic volumes, trip distribution for the proposed site, and vehicle trip generation.
- **Traffic operation analysis** should incorporate an intersection capacity analysis that will generate existing and future level of service (LOS) data for each intersection in the study area. LOS should include movement-specific delay for each intersection in the study area.
- **Traffic mitigation** should address off-site traffic impacts of the project as well as access into and out of the site.

Average Daily Traffic / Volume (ADT)

ADT is the average number of vehicles that travel on a road during a 24-hour period. To calculate ADT, planners divide the total traffic volume during a given time period in whole days (24-hour periods) by the number of days in that time period. This enables traffic planners to prioritize projects by comparing traffic counts to determine relative need.



Average Daily Total (ADT) Traffic Counts

Level of Service

Level of Service (LOS) is a measure by which transportation planners estimate the quality of operations at specific transportation facilities such as roads, lanes, intersections, and intersection approaches during the "peak hour "of traffic. LOS characterizes the operating conditions on the facility in terms of speed, travel time, freedom to maneuver, traffic interruptions, comfort and convenience. LOS ranges from A (least congested) to F (most congested). The distinction between levels-of-service A through F are subjective.

A ~ free flow (traffic flows at or above speed limit and motorists have complete mobility between lanes)

B ~ reasonably free flow (slightly more congested, with some impingement of maneuverability)

C ~ stable flow (more congested than B, ability to pass or change lanes is not always assures, posted speed is maintained)

D ~ approaching unstable flow (speeds somewhat reduces, motorists hemmed in by other vehicles)

E ~ unstable flow (flow becomes irregular, speed varies widely & rarely reaches speed limit, consistent with over capacity)

F ~ forced or broken flow (constant traffic jam)

Source: "A Policy on Geometric Design of Highways and Streets," AASHTO

Level of Service at 3 intersections within the city of Nashua

Intersection Delay

Intersection level-of-service analysis for signalized and non-signalized intersections is closely associated with intersection delay. Transportation planners use various inputs to determine how long motorists have to wait before they can move through an intersection, which determines the level-of-service for that intersection. The following table shows the delay and associated level-of-service for signalized and non-signalized intersections.

Table 2. Level of Service Criteria ~ Signalized & Non-Signalized Intersections

Level of Service	Control Delay per Vehicle (sec./veh.) Signalized Intersections	Control Delay per Vehicle (sec./veh.) Non-Signalized Intersections
A	≤ 10	0 – 10
B	> 10-20	10 – 15
C	> 20-35	15 – 25
D	> 35-55	25 – 35
E	> 55-80	35 – 50
F	> 80	> 50

Source: "Highway Capacity Manual 2000," TRB

Capacity

Capacity expresses the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point during a given time period under prevailing roadway and traffic conditions. Capacity for various types of roads is typically expressed in vehicles per day (VPD). Example: the capacity of a rural, two-lane, access-controlled highway with no median is estimated by traffic engineers to be 17,400 VPD.

Highway capacity analysis is used in transportation planning studies to assess the adequacy of existing highway networks to service current traffic or to estimate a time in the future when traffic growth may overtake the capacity of a highway. If it is estimated that the segment of road from the above example will be greater than 17,400 VPD in the future it means the roadway will be over capacity.

Volume to Capacity

The Volume-to-Capacity ratio (V/C) measures the level of congestion on a roadway by dividing the volume (VPD) of traffic (existing or future) by the capacity of the roadway. Example: if the volume of traffic on the roadway were 10,000 VPD, then the V/C ratio for that segment would be 10,000/17,400 = .57.

The V/C ratio makes it possible to estimate the relative level of congestion on a segment of roadway. Traffic engineers have developed the following categories:

V/C ratio > 1 = **Severe congestion**

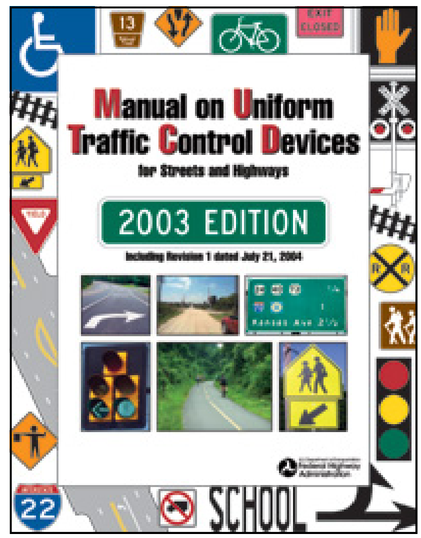
V/C ratio 0.75 to 1.0 = **Heavy congestion**

V/C ratio 0.5 to 0.74 = **Moderate congestion**

V/C ratio < 0.5 = **Low or no congestion**.

Traffic Control Devices

Traffic control devices are signs, signals, and pavement markings used for regulating, warning, or guiding traffic. Traffic control devices are placed by authority of a public body or official having jurisdiction to regulate, warn or guide traffic. Over the last 50+ years the automobile has become the travel mode choice for the majority of Americans. In that time, the Federal Highway Administration recognized the need to develop a uniform standard for traffic control devices. The Manual on Uniform Traffic Control Devices (MUTCD) is a document issued by the Federal Highway Administration (FHWA) to specify the standards by which traffic signs, road markings, and traffic signals are designed, installed, and used. Equally as important is the responsibility of state and local officials to develop procedures for the effective implementation of traffic control devices.



MUTCD

The Federal Highway Administration (FHWA) developed the Manual on Uniform Traffic Control Devices (MUTCD), which specifies the standards that traffic control devices such as traffic signs, road markings, and traffic signals are designed, installed, and used. These specifications include the shapes, colors, and fonts that all traffic control devices must conform to. Private construction firms and state agencies use the manual to ensure that the traffic control devices they use conform to the national standard.

Signage

Traffic signs are a type of traffic control device installed along a traveled way to provide regulatory and directional information to the traveler as well as warn of potential hazards. They should be placed only where supported by data and engineering studies. Unwarranted signs may distract travelers from more important traffic control devices.

The MUTCD states that signs should meet five basic requirements to be effective:

1. Fulfill a need
2. Command attention
3. Convey a clear, simple meaning
4. Command respect from road users
5. Give adequate time for proper response

Traffic sign graphics: US Dept. of Transportation Federal Highway Administration

Traffic Signals

When two roads intersect a traffic signal is sometimes necessary to control traffic and prevent collisions between motor vehicles, pedestrians, and bicyclists. Traffic signals can be programmed to process traffic through one intersection or simultaneously through several intersections. While traffic signals may improve the safety and functionality of a specific intersection, they may also impact traffic flow beyond the limits of the intersection. Therefore it is important to fully study the traffic pattern and complete a *Signal Warrant Analysis* before installing a signal.

Right Turn on Red

Depending on the municipality, traffic may turn right after stopping at a red provided it yields to pedestrians and other vehicles. In some cases a right turn on red may be forbidden because of circumstances at a specific intersection. This would be indicated by a "no turn on red" sign.

Signal Warrant Analysis

Traffic signals have a profound effect on traffic flow by assigning the right-of-way to the various traffic movements. Properly located and operated control signals increase the traffic-handling capacity of an intersection, provide safe pedestrian crossing, and reduce the frequency of certain types of accidents.

The Federal Highway Administration developed 8 warrants that define minimum conditions under which traffic signal installations may be justified. The MUTCD states that the satisfaction of a warrant in itself does not justify the installation of a signal. Warrant guidelines must be supplemented by investigating the effects of specific site conditions and the application of good engineering judgment. The decision to install a traffic signal should improve the overall safety and/or operation of an intersection and should be considered only when deemed necessary by careful traffic analysis and after less restrictive solutions have been attempted.

Synchronization of Traffic Signals

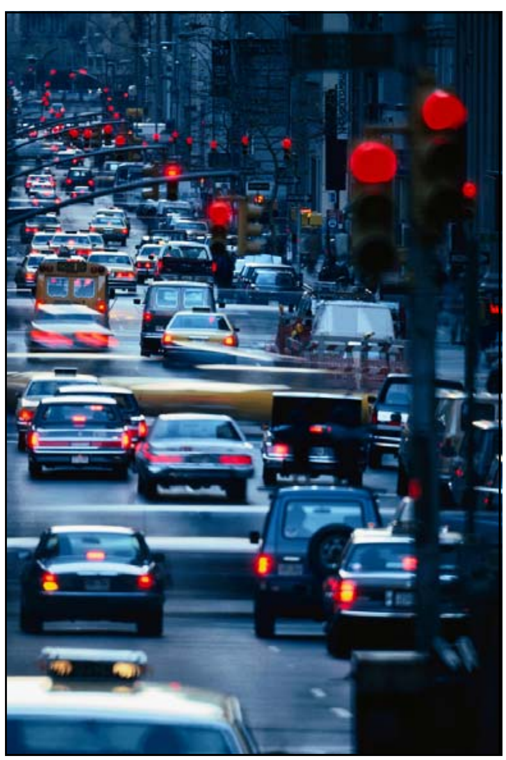
Traffic signals must be programmed regarding when to change phases. They can also be coordinated so that the phase changes occur in relationship with nearby signals. The three basic signal phases are based on one of three systems; pre-timed, semi-actuated, and fully-actuated.

Pre-timed Signal: runs a set timing plan independent of the existing traffic. It is also capable of running different cycle lengths depending on the time of day. In this scenario each phase of the signal lasts for a specific duration before the next phase occurs. This pattern repeats itself regardless of traffic.

Semi-actuated Signal: includes a magnetic loop installed on the minor road that detects when traffic is present. This detection switches the green phase to the minor road to allow traffic to clear.

Fully-actuated Signal: includes mechanisms installed on both the major and minor roads that detect the volume of traffic present. Based on the amount of traffic, the signal provides enough time to accommodate all of the vehicles.

It is also possible to coordinate traffic signals so that drivers encounter long strings of green lights. These "coordinated" systems are controlled from a master controller and are set up so lights "cascade" in sequence. In modern coordinated systems it is possible for drivers to go many miles without encountering a red light. Sometimes the phase of the traffic signal is based on the time of day and the day of the week, or for special circumstances (such as a major event causing unusual demand at an intersection).



Roads

Roads form the backbone of the transportation system in the United States. With the development of the Interstate System in the 1950's the focus of mobility shifted to the automobile. The result is a hierarchy of roadway classifications that form an integrated network for automobile travel. The design of roads has been focused almost exclusively on automobile usage, with pedestrian and bicycle travel an after thought. This section provides background information on road classifications and design elements such as pavement markings for use in transportation planning and decision making.

Roadway Hierarchy

- Interstate Highways ~ are at the top of the hierarchy. They are limited access, provide largely uninterrupted travel over long distances and are designed for high speeds. Example: Everett Turnpike.
- Arterial Roads ~ are the next level of roadways. They serve to move large volumes of traffic through a town or to connect one section of town with another section. Example: NH 101A
- Collector Roads ~ act to feed traffic to or from local roads and arterials. Collector roads provide direct access to abutting properties and distribute it to or from arterials. Traffic using a collector is usually going to or coming from somewhere nearby. Example: Henri Burke Highway
- Local Roads ~ provide for internal movement within residential areas and for direct access to abutting property. Example: Dublin Avenue

Standard Road Widths

The following table of standard roadway widths is from *A Policy on Geometric Design of Highways and Streets 2001*; AASHTO.

	Minimum width of traveled way (ft) for specific design volume (vpd = vehicles per day)			
Design Speed (mph)	**Under 400 vpd**	**400-1500 vpd**	**1501-2000 vpd**	**2000+ vpd**
20	18	20	22	24
25	18	20	22	24
30	18	20	22	24
40	18	20	22	24
45	20	22	22	24
50	20	22	22	24
55	22	22	24	24
60	22	22	24	24
Width of Graded Shoulder on Each Side of Road (ft)				
All Speeds	2	5	6	8

Roads continued...

Local Examples of Roadway Hierarchy

Urban Roads

Rural Roads

Highway

Example: Everett Turnpike
Average Daily Traffic (ADT): 126,336 (year 2004)

Arterial Road

Urban Example: NH 101A, west of Somerset Parkway, Nashua
Urban ADT: 45,985 (year 2002)

Rural Example: NH Rt. 122, Amherst/Hollis
Rural ADT: 9,973 (year 2005)

Collector Road

Urban Example: Manchester St, Nashua
Urban ADT: (year 2004)

Rural Example: Albuquerque Ave, Litchfield
Rural ADT: 3,339 (year 2004)

Local Road

Urban Example: East Stark St, Nashua
Urban ADT: 1,074 (year 2006)

Rural Example: Wheeler Road, Hollis
Rural ADT: 780 (year 2000)

Photos: NRPC staff

85% Rule for Speed Limits

Most states including New Hampshire have a basic speed law which recognizes that driving conditions and speeds may vary widely from time to time. No posted speed limit can adequately serve all driving conditions. Motorists must constantly adjust their driving behavior to fit the conditions they meet. Speed limits encourage consistent travel speeds, fostering safety for the traveling public by reducing the speed differentials between motor vehicles.

According to the Federal Highway Administration, all States and most local agencies use the 85th percentile rule to determine speed limits. This reflects the speed that 85% of vehicles naturally travel at or below in free-flowing traffic. However, it is fairly common to reduce the speed limit based on a subjective consideration of additional factors, such as roadway and roadside conditions.

Dublin Avenue, Nashua

Henri Burque Highway

Everett Turnpike

When setting speed limits, engineers also consider other factors such as:

- Roadway characteristics
- Shoulder condition
- Grade, alignment, and sight distance
- Roadside development and lighting
- Parking practices
- Pedestrian and bicycle activity
- Collision rates and traffic volume trends
- Right lane & entering traffic conflicts

Photos : NRPC Staff

Roundabouts

Traffic circles, otherwise known as rotaries, were a popular engineering design through the 1940's in the US. They were often located at major intersections where a number of high speed roadways converged. During the 1950's such intersections decreased in popularity for a number of reasons including safety concerns. Circular intersections were redeveloped by the British into roundabouts and have become popular throughout Europe and Australia. The US began implementing a reengineered and much smaller roundabout during the 1990's. Today they are widely used throughout the country, especially in Colorado, Washington, Maryland, and Utah.

Roundabouts

Roundabouts are located where a number of streets converge and are designed to increase safety and traffic flow. They are circular intersections where traffic enters and travels in an counter-clockwise direction. Entering traffic must travel around a sharp curve and yield to on-coming vehicles. As the diameter of a roundabout is relatively small, cars must maintain a slow speed while traveling in the circle. Truck aprons, generally designed in a different material, such as brick are located adjacent to the center island and intended only for use by trucks when extra turning radius is required.

Traffic Circles & Rotaries

Traffic circles and rotaries are large circular intersections often located at the confluence of numerous high speed roadways. They allow traffic to enter and travel at high speeds around a large center median. Some traffic circles give the right of way to entering traffic, forcing the traffic in the circle to yield or stop.

Roundabouts vs. Traffic Circles & Rotaries

Roundabouts

- Generally constructed after 1990.
- Small diameter generally 100'-200' wide.
- Curved entrances reduce speeds.
- Traffic must yield to enter the circle.
- Reduction in intersection accidents.

Traffic Circles & Rotaries

- Generally constructed before 1950.
- Large diameters generally 200' – 400' wide.
- Straight entrances enable higher speeds.
- Traveling traffic must yield to entering traffic.
- Can experience congestion with high traffic volumes.

Safety

Roundabouts are found to improve safety compared with traditional signalized intersections. A 2001 Insurance Institute for Highway Safety study found that roundabouts led to an 80% decrease in injury accidents and a 40% decrease in overall accidents. Many types of crashes are eliminated as all traffic travels in the same direction. Accidents occurring at roundabouts are generally between low speed vehicles, reducing the severity.

Photos (left-right): Dan Burden; Glatting, Jackson, Kercher, Anglin, Inc.; and Walkable Communities; Boston.com

Bicycle & Pedestrian

Sound planning should include policies that support alternative modes of transportation, including bicycle & pedestrian uses. While additional work is required to create transportation routes that allow bicyclists, pedestrians, and motorists to travel safely together, the benefits outweigh the costs. Communities that provide for bicyclists and pedestrians experience higher levels of public health, decreased traffic congestion, strong economies, and a better quality of life.

Crosswalks

Marked crosswalks indicate optimal or preferred locations for pedestrians to cross and help designate right-of way for motorists to yield to pedestrian. A crosswalk may be marked with special paint, plastic tape, and other materials. Crosswalks are often installed at signalized intersections and other pedestrian locations. A raised pedestrian crosswalk is a speed table with a flat portion the width of a crosswalk (10 to 15 feet) on top of the raised section. Raised crosswalks reduce vehicle speed and encourage motorists to yield to pedestrians.

Pavement Markings

Motorists, pedestrians, and bicyclists benefit from pavement markings that clearly define travel lanes, crosswalks, shoulder, and other roadway characteristics. When a travel corridor is well defined with the proper pavement markings, the users of that corridor have a clear understanding of what their responsibilities are.

Bicycle Lanes

Bicycle lanes are established with appropriate pavement markings and signing to improve conditions for bicyclists on the streets. Bike lanes are intended to delineate the right of way assigned to bicyclists and motorists and to provide for more predictable movements by each. Bike lane widths vary by road. Motor vehicles are not allowed to drive, park or stand in a bike lane, but right turning vehicles can enter the lane at intersections to complete their turn.

ADA Compliant Design

The Americans with Disabilities Act (ADA) was passed to ensure that all people, including those with disabilities, have equal access to transportation. While improvements for persons with disabilities were mandated by the Federal Government to ensure access and mobility for physically challenged pedestrians, most these improvements benefit all pedestrians. New or altered facilities must provide access for all pedestrians and must include curb ramps that meet ADA requirements. Other barriers that should be identified include poles and signs in the middle of the sidewalk, steeply sloped driveways, and interruptions such as broken or missing sidewalk sections. While all streets should be upgraded to be accessible, public agencies should set priorities for high-use areas, such as commercial districts, schools, parks, transit facilities, etc. and retrofit as rapidly as possible. (Pedestrian Facilities Users Guide: Providing Safety and Mobility FHWA-RD-01-102).

Pedestrian Signals

Concurrent pedestrian signals allow motorists to turn across pedestrian paths after yielding to pedestrians. Exclusive pedestrian signals stop traffic in all directions while pedestrians cross.

Land Use & Transportation

As the population of Southern New Hampshire continues to increase, greater demands will be placed upon the existing infrastructure and roadway system. This requires maintaining a delicate balance between constructing new infrastructure and changing existing behavior patterns. The expansion of existing roads or the creation of new roadways often improves traffic conditions in the short term, however, it may result in increased traffic over time, as commuters who took alternate routes will now take advantage of a widened or improved roadway. Improved and newly developed roads also often attract new development, increasing traffic and congestion yet again. The good news is there are methods to address and potentially improve this situation.

Nodal Development

Nodal development is generally found in more suburban/urban locations and provides a mix of residential, commercial, and service opportunities in a compact walkable area. Nodes are often located at existing intersections or community centers. The land between the nodes remains relatively rural with limited commercial sites and access points.

One of the key benefits is reducing overall automobile trips by providing bicycle and pedestrian amenities such as sidewalks, visible crosswalks, streetscape improvements, and street furniture. Nodal development can also enhance community character and a sense of place by minimizing the spread of generic sprawl. Safety is also improved by concentrating access points within the nodes and limiting them along major corridors to minimize potential conflict points.

The Maplewood Development in Nashua is an excellent example of Nodal Development, providing residents with the opportunity to walk or bike to a variety of uses, including a preschool, dry cleaner, and restaurants.

Bike lane photo (opposite page): Dan Burden; Glatting, Jackson, Kercher, Anglin, Inc.; and Walkable Communities

All other photos: NRPC Staff

Access Management

Access management is the practice of coordinating the location, number, spacing and design of access points to minimize the traffic capacity of a roadway. Uncoordinated growth along some of the region's major travel corridors has resulted in strip development and a proliferation of access points. In most instances, each individual development along the corridor has its own access driveway. Numerous access points along the corridor create conflicts between turning and through traffic which causes delays and accidents.

Benefits

- improved overall roadway safety
- reduced number of vehicle trips
- decreased interruptions in traffic flow
- minimal traffic delays and congestion
- maintained roadway capacity
- avoided costly highway projects
- improved air quality
- compact development patterns
- enhanced access to adjacent land uses

Village Plan Alternative

The VPA is very similar to Nodal Development and is a planning tool that addresses economic, environmental, and social concerns by promoting the smart growth principles of compact, mixed-use development; preserving the working landscape; and protecting environmental resources.

The Village Plan Alternative implements the specific provisions of RSA 674:21.VI (a) to allow for the creation of new villages with mixed-use development scaled to NH's smaller populations and lower densities. The following graphic is an example of how buildings should relate to the scale and design of surrounding buildings and the environment.

Graphics (top-bottom): Federal Highway Administration, Rockingham Planning Commission

Transit Oriented Development

Transit Oriented Development creates mixed-use, dense, walkable communities that encourage citizens to live, work, and shop near transit and decrease their dependence on cars.

Key Components

- Walkable layout with pedestrians as the highest priority
- Inclusive design for non-motorized transportation (ex. bikes, rollerblades)
- Public transit station as prominent feature of town center
- Mixed use development within close proximity to town center
- Collector support transit systems, including trolley, streetcars, light rail, buses
- Reduced & managed parking within close proximity to town center

Benefits

- Reduced need for driving and burning of fossil fuels
- Higher quality of life, better places to live, work, play
- Greater mobility & increased transportation options
- Reduced traffic congestion
- Improved public health by promoting walking, better air quality

Communities within the Nashua Region vary in their access to public transportation opportunities. Even if your community does not have an established public transportation system you can still incorporate several of the Transit Oriented Development design components to create a vibrant, pedestrian friendly community.

In MA, the Green Line MBTA T station in Newton Center anchors a vibrant downtown retail district. An old station building now serves as a coffee shop.

Making it Happen ~ characteristics that support transit oriented development

- Supportive market conditions—station areas must have development potential
- Commitment to transit—state & local officials must demonstrate clear, long term commitment to high quality transit service and local policies must support & encourage transit use
- Strong & respected local leadership—must come from both the public & private sector
- Supportive public policies & tools—regulatory & incentive based strategies must direct development into transit corridors or encourage redevelopment that generates pedestrian activity. Policies can include station area plans; higher density, mixed use zoning; design standards/guidelines; public investment policies; and incentives

(Source: MA Smart Growth toolkit)

Photos (top-bottom): MA Smart Growth toolkit

Public Transportation

Public Transportation is a general term to describe the various modes available to the public, including bus, rail, trolley and van service. Public transportation can be successfully operated in both rural and urban settings, however, high density areas have a large potential ridership pool and can operate a high level of service. Public transportation is often desired and successfully implemented in areas with a high population density, where parking is scarce and costly, and congestion is significant.

SAFETEA-LU

The Safe Accountable, Flexible, Efficient, Transportation Equity Act was signed into law in 2005 by President Bush. SAFETEA_LU authorizes the Federal surface transportation programs for highways, highway safety, and transit from 2005-2009.

MBTA Commuter Rail, Boston

Intermodal/Multi-Modal

Affecting two or more different methods of transportation.

Commuter Rail Car

Generally pulled or pushed by a locomotive, but can also be self propelled by an electric source.

Light Rail Car

Streetcars or trolley cars, typically travel on shared roadways and are operated by electricity on overhead or catenary wires.

Light rail in Charlotte, NC

Heavy Rail Car

Operates on electricity and via a 3rd rail on an exclusive right of way.

Carpool/Vanpool/Rideshare

Viable options for commuting that reduce single occupancy vehicle trips by sharing a ride with 1 or more people. Carpools are shared trips with at least 2 people traveling to the same destination. Vanpool have between 10-15 people, pick up passengers from a central location near riders' homes, and generally travel to the same destination. Vanpool drivers often receive a free trip. Many worksites offer premier parking and guaranteed rides home in emergencies.

Park & Ride Lot, Nashua

Reverse Commuting

Commuters who travel against the main flow of traffic during peak travel times.

High Occupancy Vehicle (HOV)

This symbol is often used to on highways to restrict travel to cars with at least two people. HOV lanes are often less congested and encourage riders to carpool or vanpool in order to take advantage of them. In major metropolitan areas it is not unusual for HOV and express lanes to change direction depending on the time of day to accommodate the most traffic.

Photos (top-bottom): Wikipedia, Wikipedia, NRPC staff

Express Service
Provides faster service by limiting number of stops during peak hours. Often offered between outlying suburban stops and downtown locations.

MBTA Bus Rapid Transit (Silver Line), Boston

Bus Rapid Transit
High speed bus service that provides limited stops and often operates on designated guideways, but can also operate on high occupancy vehicles lanes, freeways, and typical roads.

Fixed Route Service
Service provided to a fixed number of destinations at regularly scheduled times. Example: a bus picks up passengers at the library, every half hour, 9am-5pm, Monday-Friday

Nashua Transit Demand Response Vehicle

Demand Response Service
Service is not provided on a regularly scheduled basis. Riders contact the transit call center to schedule a specific trip. Trips to similar origins and destinations are then grouped together to increase overall efficiency.

Ride Guide/Time Table
Provides information on regularly scheduled transportation services provided by the transit agency, often in the form of brochures. Nashua Transit System prints the current schedules in a newspaper format each quarter. Timetables are typically available on buses, at the transit center, and key locations such as City Hall.

Nashua Transit Center

Transit Center
The hub where all buses begin and end service. In Nashua, the transit center is located between Elm Street and Main Street .

Bus Shelter
A small building typically enclosed on three sides where passengers can wait for bus service. Timetable info is typically provided on a display .

Bus Pullouts
A large curb cut or paved area adjacent to the roadway where a bus can safely pull out of moving traffic to discharge and pick up passengers.

Boardings & Alightings
Refers to the number of passengers getting on (boardings) or getting off (alightings) transit vehicles. Transit agencies count boardings and alightings annually to determine the frequency of usage at specific stops.

Photos (top-bottom): Wikipedia, Nashua Transit, NRPC staff

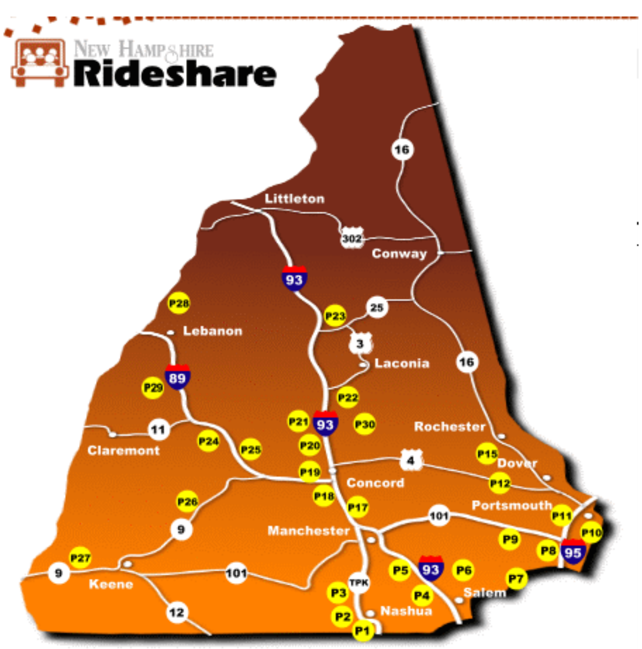
Public Transportation Opportunities in the Nashua Region

Nashua Transit System

- Offers fixed route bus service in Nashua & on demand service for elderly & disabled citizens
- The Nashua Transit Center is located at 30 Elm St. in Nashua. Tickets can be purchased there for CityBus service as well as Vermont Transit and Peter Pan Bus Lines
- For more information visit www.nashuarpc.org/citybus

Boston Express

- Offers bus service to and from Nashua, Boston's South Station, & Logan Airport
- In Nashua, bus stops are located at the Park & Ride (Exit 8) and the Welcome Center (Exit 6)
- For more information visit www.bostonexpressbus.com or call 603-521-6000



NH Rideshare

- In the Nashua Region there are 3 Park & Ride Lots along the Everett Turnpike at Exits 5, 7, & 8
- The Rideshare program is a free commuter matching service that provides commuters with information and assistance to promote alternatives to the single occupancy vehicle, including carpools, vanpools, busses, and trains.
- For more information visit www.nh.gov/dot/nhrideshare