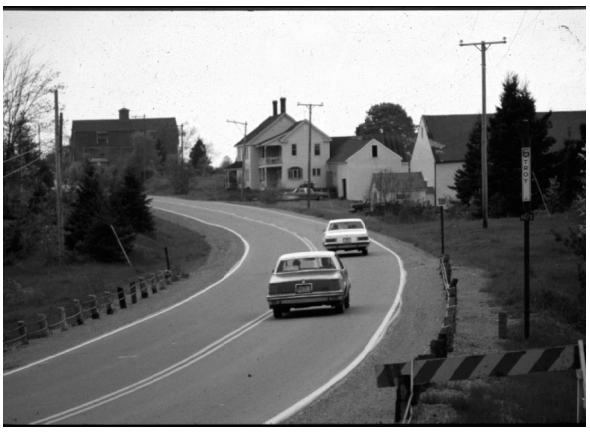
HEALTHY HIGHWAYS

GROWTH MANAGEMENT TECHNIQUES FOR PRESERVING HIGHWAY CAPACITY



Inside . . .

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February, 2001

What are Healthy Highways?

Throughout Maine, cities and towns are facing up to the seemingly-endless need for new and improved highways, in response to traffic growth and congestion. They realize that improving or widening a road, or building a bypass, is only a temporary solution, because traffic is just a symptom.

Management of the transportation system is not just a "state problem." The problem originates with the land use patterns which help to create that traffic. Demand for the highway system drives the need for improvements; demand is generated by development, which is an issue of local control. Patterns of land use, and patterns of transportation are just two sides of the same coin.

In the contest for the greatest discovery in human history, "fire" and "the wheel" are the leading candidates. While fire proved a useful tool for preserving food and clearing farmland, wheels (technically the wheel-and-axle combination) enabled farmers to bring their goods to a central location for exchange, leading to the creation of villages, cities, and larger farms. For long-distance travel, the maritime highways reigned. Most of Maine's early European settlement was no further from a navigable river than the range of a horse-drawn cart.

It wasn't until we learned to combine the powers of fire and the wheel that things really got moving. First the railroads, then the automobile, have enabled us to spread out more and more. As the car has become an essential tool of modern life, patterns of development evolve in response. Over time, patterns we have come to call "sprawl," or "strip development," have emerged.

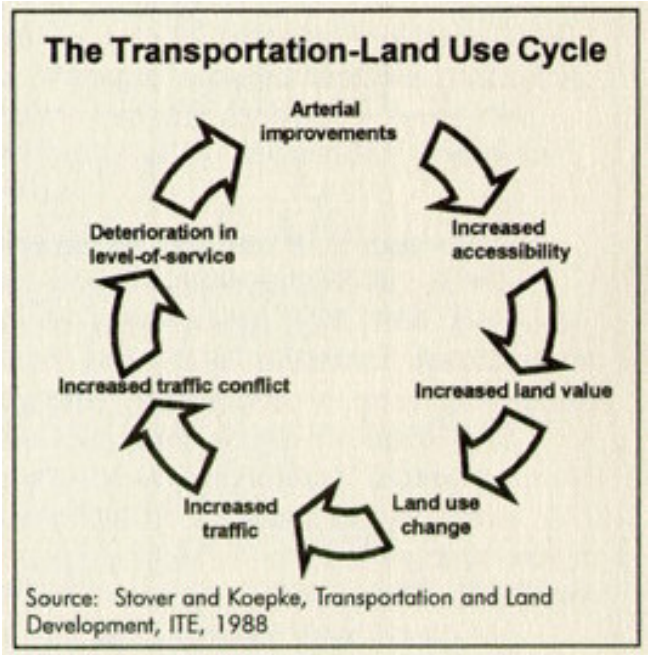
A "Healthy Highway" is one on which we get from place to place in comfort and safety. Once sprawl begins to infect a highway, we see the symptoms: traffic congestion, elevated accident rates, and increased maintenance costs. In the past, our "cure" for a sick highway has been to kill the patient and start over. This bulletin is a prescription for remedies that will cure the sick highway, or inoculate against the "sprawl disease" at the outset.

Local government has the power to manage patterns of development, enough to reduce the strain on our highway system. This bulletin offers techniques found to be effective as you go throughthe three stages of the regulatory process: *Planning for Healthy Highways* provides tools to can
allow you to develop a vision and a plan to manage the interaction of development and roads. *Regulation for Healthy Highways* demonstrates how to develop rules and regulations to meet your needs. *Permitting for Healthy Highways* offers some insight on how plans and policies should be applied on a case-by-case basis. This bulletin also contains a set of definitions, for those pesky acronyms and engineering terms, and a bibliography, for those who wish to learn more about specific tools.

Planning for Healthy

The Transportation-Connection

How strong is the connection between land use and highways, and what can we do to manage it? Every community should be asking this question during its planning process. Understanding how these two community assets interact is the basis for planning new solutions.



The figure at right illustrates how transportation and land use interact under natural conditions. A new or improved road adds development potential to abutting properties, in turn leading to more intensive use of the property and the road, ultimately creating the need for further improvements. If a community chooses not to accept this cycle, it must analyze and plan for a new one.

The first step in analysis of the

Highways

Land Use

transportation and land use connection is to find a common denominator. A well-suited one is the volume of traffic. Nearly every form of development will generate a predictable level of traffic. In fact, the Institute of Transportation Engineers (ITE) has collected and analyzed traffic patterns from development across thecountry and published the results in a volume called *Trip Generation*. This reference predicts the number of vehicle trips you can expect to see from any given land use. For example, the average suburban home generates 10 vehicle trips per day and the average store generates 39.8 trips for every 1,000 square feet of floor space.

Every vehicle trip has two endpoints -- an

origin and a destination. The need for the trip and the length of that trip are determined by the distance between the endpoints. In a typical suburban community, 74 percent of all trips begin or end at home. Forty-six percent of all trips begin or end at work, and another 13 percent at a store. (Source: *Transportation Planning Handbook.* See road filled to its physical capacity is not one you want to be stuck on. Most roads begin to feel crowded at closer to 40 percent of capacity. Secondly, capacity is a function of time as well as volume – trips "per day" or "per hour" is the usual standard. Highways invariably reach their peak usage for only a short period of time each day (usually the "afternoon rush") long before they reach their daily capacity.

Your transportation-land use plan must judge how much development can be efficiently served by the roads that run through a given geographic area. In its simplest form, you may be able to calculate the traffic generated by a potential land use, and compare it to the road's capacity.

For example, a 100 acre commercial site, 10 percent covered by retail stores, could generate over 17,000 trips per day, exceeding the capacity of most two-lane highways. If you have such a parcel served by only one road, plan for a widening. Further, since traffic volume is also a function of distance between endpoints, planning commercial and residential uses closer together benefits the road system by generating shorter trips. This is a good argument for allowing a commercial/residential mix in traditional villages and urban cores, or neighborhood convenience stores at suburban crossroads.

The community must strike a balance between the apparent trade-offs of development and highway congestion. Enacting a growth cap in hopes of limiting traffic may not be the best answer. Consider how you can manage development while promoting fewer, shorter vehicle trips. A plan that has as its goal reducing highway impacts, may benefit from one or more of the following planning techniques:

1) For residential areas, re-examine space and bulk standards – How large are the lots in your residential growth area? The standard in many small towns is two acres. But a two-acre lot means that houses will be spaced enough apart, so that every trip is a car trip. Smaller lots lead to shorter trips, some even by foot or bike. Street frontage requirements have the same effect. Putting a premium on street frontage virtually forces strip development instead of infill. Reducing frontage requirements, or setting a *maximum* instead of a minimum, may reduce road maintenance costs and lead to more developer-built roads. Be judicious, however. This strategy will lead to more growth, so donot apply it in your rural areas.

2) For commercial areas, change the rules – Are your new retail stores nothing more than "a big box in a sea of asphalt?" Could it be your own development standards that are to blame? Rules for building setback, building coverage (usually expressed as "percent of lot covered by building"), and off-street parking often result in development not only "boxy" but costly in terms of highway use. Meanwhile, the downtown blocks that we have rediscovered violate every rule in the book. If the big boxes follow the rules, maybe we need new rules. Setting maximum setbacks, for example, may force stores close enough to the road and each other that people can circulate by foot rather than car. Shared parking, shared driveways, sidewalks, and similar improvements may reduce congestion, development costs, and impervious surface all at the same time.

3) Use linear thinking – Is your land use map a collage of blocks and blobs? Ascribing future development patterns to back lots and undeveloped land is like abstract art, often failing to hold the attention of citizen policy-makers. Why not shift the focus to a highway corridor? Instantly, you have a solid concept to grasp. People who are bored by maps of soil types and lot lines will jump at the chance to redesign their local highway. Draw a transect (a ground-level view of development along

Bibliography)

the highway) and debate how far down the road the commercial district should extend, how much open space should remain, where access management is needed, where intersections should be upgraded. Do this for every road, then fit them together -- "connect the dots" – for your town wide plan.

4) Encourage developments and districts of mixed use – A well-intentioned, but perhaps obsolete, element of zoning is the practice of segregating land uses. Separating the home, the store, and the workplace works well enough when we have roads enough to travel between the three. be tempered, though, by neighborhood or environmental values, and should not be used to justify all forms of development throughout the town.

5) Move towards a balance of jobs and homes – How would traffic levels be affected if everyone lived and worked in the same town? In Maine, less than half of us do. Service center towns are also employment centers, while bedroom suburbs have Allowing – even encouraging – them to merge together reduces the demand for roads. Many businesses nowadays can occupy space without ill effects on their neighbors, and we need not arbitrarily set them apart. In urban areas, we can and should be encouraging mixed use multi-story buildings. "Mini-commerce" -- neighborhood-scale stores or services – within residential districts will have the added benefit of promoting neighborhood identity. In small towns, a mixed use village is preferable to zoning a stretch of adjoining highway for development. This approach must

little in the way ofemployment. To reduce commuting distances and encourage walking, biking and other alternatives, service centers need to focus less on attracting business and more on promoting themselves as a good place to live. Bedroom communities don't need to encourage housing; They need job growth. Looking for a rule of thumb? If you plan for 1.25 jobs for every household, you will be about on average for Maine.

Planning for Healthy Highways

Planning Public Facilities

Regulation of the private sector is not the only prescription for healthy highways. Public facilities can have as great or greater impact on traffic flows. By their establishment and location, public facilities influence our travel decisions. Consider some of the following elements in your public facility planning:

Sidewalks, especially new ones, are not a high priority in many towns. Local planning board routinely waive sidewalk requirements. Large frontage and lot size standards in local ordinances mean that building new sidewalks is not cost-effective. Rather than a blanket mandate, consider a policy of requiring sidewalks only in high-density development, or as a tradeoff for frontage or setback reductions, or along high-traffic corridors. What's good for private investment is also good for public works. Ensure that sidewalks are part of any local or state highway reconstruction projects in village, downtown and growth areas.

Carpooling to work reduces traffic and saves time and money. In 1990, according to the Census, 14 percent of the workforce carpooled. Park-and-ride lots along the Turnpike are usually filled to capacity. Little knots of two or three cars parked on workdays at country intersections signal that, even in rural areas, ride-sharing is practiced. Why the continued interest? On a ten mile commute, a local resident can save over $1,500 a year! Determine the demand, and build or designate official lots. Budget for lighting and winter maintenance, to allay liability fears. If land or cost is an issue, find a church, grange, or other institution who may be willing to trade weekday use for parking lot lights, or a fresh coat of tar.

(Photo courtesy Androscoggin Valley Council of Governments)

Site public buildings in the population centers. Such areas include schools, town offices, and places that residents

Sometimes, the need for a sidewalk is apparent . .

visit often. They should be located close to each other and as many residents as possible. Moving to

the edge of town may save a few thousand in land costs, but will cancel that saving with the added

cost of the extra parking spaces necessary to accommodate residents who would otherwise have walked

Encourage more road-building. “What? What’s this doing in here? I thought we were trying to cut back on road needs! ” Okay, add the mod

if ier “instead of development along existing roads.” Municipalities can develop a larger vision of t

their transportation network, connecting existing roads, or providing for future connections. A tool

seldom-used in Maine is called “Official Mapping.”

The local government lays out a plan for the ultim

ate development of its road network, and all build ers must locate their roads in compliance with the

Consider Public Transit. Some form of public transportation may be appropriate for your town. Most bus systems in Maine are not self-sustaining. Mass transit only pays for itself in heavily-urbanized areas: studies across the country have shown that housing density must reach 17 units per acre and commercial Floor Area Ratios (see *definitions*) 2.0 to sustain a transit system. Nevertheless, several towns in Maine are experimenting with creative ways to link housing,job centers, and transit on a micro-scale.

Connect your modes. A “mode” is the means by which you travel. Bicycle, rail, and bus are modes, as well as automobile. A

nd shoe leather. The bullets above address some of the modes, individually. But don't forget to conn

ect them up. Bike storage should be available on local businesses, at the park-and-ride lot, and strateg

ideally placed around the downtown; sidewalks as well as parking lots should connect with transit stops

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Regulation for Healthy Highways

Access Management

Not this . . .

Planning for development has no effect until it is implemented. Though some planning strategies are non-regulatory, the most effective means in the short term requires development review or zoning. Regulation of access to the highway is the single best way for communities to protect the public's investment in the road system.

We measure highways by their degree of mobility. Roads move goods and people from one location to another, and our yardstick is how quickly it does so. Of course, the most popular roads will

draw development, demanding access. Herein lies the dynamic of transportation management: maximum mobility and unlimited access cannot co-exist. A road such as the Maine Turnpike provides maximum mobility, but no access except at limited locations. A typical urban commercial strip provides access to every abutting property, but it's not your first choice for a fast and stress-free trip. Unlimited access means reduced mobility, and improving mobility means restricting access.

"Access" is measured by the design and location of driveway entrances, as well as their frequency. Too much access can cause problems beyond mobility. The MDOT reports that the 1998 total of 2,754 driveway related crashes cost those involved $106 million. Ensuring safety in these situations means reducing the speed limit. Reducing the speed limit on one mile of roadway from 55 mph to 45 mph would cost drivers6,000 hours of lost time, and $80,000 in economiccosts each year (MDOT estimates).

Under Maine law (23 MRSA, sec. 704.3), MDOT regulates access on rural arterials (see *sidebar)*. On non-arterials, MDOT Entrance Permits evaluate only safety and drainage factors(23 MRSA, sec. 704.2). Cities and towns who wish to exercise local control must make their own access management rules. A local zoning or development review ordinance is the preferred mechanism for these standards, though a stand-alone ordinance is used by some towns. Several good publications with model language for access management are available. MDOT's *Access Management: Improving the Efficiency of Maine Arterials* and Northwest Regional Planning Commission's (Vermont) *Access Management Guidebook* are excellent resources (see *bibliography)*

Some communities have chosen to use arbitrary rules to limit driveways: one per lot of record, or one per so many feet of road frontage. This technique has its pros and cons, and each town should examine the possible impact of such a regulation within their growth areas. Mandatory separation distances could have the effect of pushing development farther apart; it could contribute to sprawl and, in growth districts, to inefficient land use. The best time to consider this technique is when you are under high growth pressures; You are then likely to have the opportunity to require shared access points or service roads. Arbitrary limits will occasionally create some strange results; so make

The State's Role in Access Management

The Maine DOT has, for many years, regulated new entrances onto State and State Aid Highways. But their only directive was to "promote and protect the safety of the traveling public." (23 M.R.S.A. sec.704) This practice often led to confusion and inaction among local officials contemplating their own access management program. More importantly, it failed to preserve the quality and capacity of the highway system overall.

This led the legislature, in 2000, to enact a much more comprehensive form of entrance regulation. The object of the new regulation, in addition to protecting safety, is to maintain drainage and, on arterial roads, to "maintain existing posted speeds." (23 M.R.S.A. sec,704(3)) Implemented by rule, the law establishes three permitting standards:

1) On Arterials, DOT limits the "number, spacing, design, location, and construction."

2) On Unsafe Arterials (defined in the law), DOT will require developers to "avoid, minimize, or mitigate" deterioration of safety or speed reductions.

3) On other state/state aid roads, the DOT will focus only on safety and drainage impacts.

Does this mean that municipalities don't have to care any more about access management?

The law both authorizes and encourages municipalities to adopt their own rules for access management. There are two instances in particular where a community would want to do this: 1) In urban compact areas, where the DOT regulation will not extend; and 2) where a collector road is of sufficient importance to the town to merit preservation of speeds. For consistency purposes, any local regulation should apply townwide, and any overlap can be dealt with by the stricter regulation taking precedence.

sure the ordinance has fallback or waiver provisions.

In developing access management standards, you are bound to run into engineering and technical terms you don't recognize. The table and figure on the following page demonstrate some of the regulatory terms and options you should consider when drafting access standards.

Term	Usage	Effect
Sight Distance	Requires that a driver entering a road be able to see and be seen by moving vehicles in time to slow or stop.	Eliminates "blind driveways" and access points on curves and hills.
Driveway separation	Requires a minimum distance between neighboring driveways based on driveway volume.	Allows vehicles to enter and exit without interfering with traffic using the neighboring driveway.
Corner Clearance	Requires minimum distance between driveway and street intersection, based on intersection controls and driveway volume.	Allows vehicles to enter and exit driveway without queuing into or obstructing traffic moving through intersection.
Alternate Access (corner lot access)	When a development borders two or more streets, driveways are required to access less congested one.	Shifts traffic off of primary roads and into controlled intersections.
Turning Radius	Sets the minimum radius of the curb or pavement edge linking the street to the driveway.	Controls the speed at which cars can move onto and out of the driveway.
Deceleration/ Acceleration Lane	Requires the developer to widen or restripe the street adjacent to the access point.	Allows cars to change speeds for the driveway without impeding through traffic.
Throat Length	Requires a length of driveway (based on volume) sufficient to permit a queue of exiting vehicles without obstructing the flow of entering vehicles.	Allows cars entering the development to move off the street quickly and safely.
Shared Access	Requires neighboring uses to share a single access point, usually at the property line.	Reduces total number of conflict points

Street and Site Design

While access management goes a long way towards improving transportation efficiency, there are other aspects of your regulatory authority that may have an impact as well. In particular, the design of streets and parking lots can either help or hurt your traffic problem. Parking lots – a required element of commercial and high-density residential development – by their design and orientation can have an impact on public safety:

Off-street parking is necessary to avoid on-street parking conflicts. References are available on parking demand for various land uses (*see bibliography)*, with enough information to allow you to set minimum requirements right in your ordinance. "More" is not better for parking, though. "More than enough" parking spaces can drive up developmen t costs and result in useless expanse of pavement.

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Efficient circulation patterns help to avoid backups into the street. The larger the parking lot, the longer the throat should be. The throat is the length of driveway which is not affected by cars turning off or pulling out of parking spaces. Needless to say, no portion of the parking lot should empty directly onto the street.

Navigating a commercial strip is hard enough without distractions. A low buffer between parking areas and the street should be mandatory. This buffer -- usually less than three feet high -- permits vehicles to move around in the parking lot without their headlights, dust, or movement distracting motorists on the street. The buffer can be a

Limit Street Co

ACCESS TERMINOLOGY

MAIN STREET

CORNER CLEARANCE

SEPARATION DISTANCE

decorative feature, consisting of a berm, shrubs, or stone wall. You can require street trees at intervals, if that is part of your streetscape vision. Buffer requirements can be relaxed if the parking lot is well-separated from the street by distance, or, better yet, behind the building.

Most people do all their errands by car, because there are no easy alternatives. All low ance for alternate modes of access should be bu

ilt into a sited design. Sidewalks on the street sh ould be extended to the front door of any new deve

lopment. Bike racks and safe accessways should be encouraged, as part of a larger plan for bicycle

access. If the area has bus service, and the development is a shopping center or major employer, a b

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these “amenities.”

Some towns have provided incentives, such as reduced parking requirements, in ex

change for sidewalks and bike racks.

Have you ever been slowed by a car pulling out of a driveway, just to drive a couple hundred feet to the

next one down? Interconnecting roads, also known as “pass-throughs,” allow drivers access to adjoini

ng business sswithout ever clogging up the street.

The hard part here, is timing. Unless you are luc

key enough to have several properties develop simultaneously, the first developer will resist devotion

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or pavement on his neighbor's property. Require the employ where the business are reasonably related

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n Many subdivisions and larger commercial developments build roads of their own. Whether or not these roads remain private or become public, local regulations should have strong standards for design and construction. Considerations include:

At the point of intersection with existing streets, design should ensure safe turning movements and minimal impact on existing traffic flow. If there is potential for significant traffic, an analysis of the intersection needs to demonstrate what type of traffic controls are warranted. The developer must pay the cost of controls or other improvements to the public street.

Street widths should be ample but not excessive, adjusted for expected volumes and travel speeds. Narrower streets tend to slow travel speeds, but extra width may be necessary if on-street parking will be allowed. Residential subdivision streets need only 18 to 20 feet of pavement width.

Sidewalks improve the attractiveness of the neighbo

rhood, while reducing traffic. But they need only be required where there is already a “pedestrian e

environment.”

Sidewalks are best required, 1) if the subdivision adjoins a street with existing sidewalk

alks, 2) if the proposed residential density is for urban units per acre or higher; or 3) within designat

ed growth areas. Sidewalks do not have to follow road alignments. Walkways can connect adjoining cul

-de-sacs, or form a short cut between the development and stores, schools, and other destinations.

Permitting for Healthy Highways

When the Application Comes In

Perhaps you have already completed your planning and your regulatory framework. You are not out of the woods yet. The third stage is to ensure that your vision is realized in practice, in the review of permit applications. Developers have a strong interest in building their project as quickly and economically as possible. This often puts them on a collision course with the town's interests. It's not always easy for local reviewing authorities to stand up to developers, nor is it always necessary. We would do well to remember that development is not just the problem; it can also be the solution.

Don't be afraid to say NO, or at least threaten to. Some developers think that local review is just a bump in the road. Because they are used to towns that waive or ignore standards routinely, developers may not believe you are serious about your standards until you make it clear that their permit is not "in the bag."

You have the authority to require the developer to make public improvements. You should not feel constrained by the property boundaries when seeking to soften the impacts of a project. If there are traffic impacts which can be neutralized with a deceleration lane, or a traffic signal, it is your duty to assign thecosts to the developer, not the taxpayers. You can do this, legally, if you pay attention to two rules: First, if you are requiring improvements to a state road, the MDOT must concur. You cannot require a traffic light, for instance, unless it meets the state's thresholds. Second, you must have what the courts call a "rational nexus," or direct connection between the problem and the improvement you require. You cannot require a bike path, for instance, if the problem is storm water.

Be progressive. Your ordinance, like most others, probably has engineering standards written into law in order to achieve a desired result. But what if the developer has a better idea? This is not all that uncommon, particularly since engineering practice and technology is evolving faster than you can amend your ordinance. Occasionally, developers will come up with a new technique or material that will save them money and still meet your standards. This is what waivers are for!

Don't accept the "standard design" as gospel. Rapidly-developing communities will sooner or later encounter the phenomenon known as the "standard design." This practice is well-established amongfranchise developers such as Rite-Aid or McDonalds. It is a site plan designed by engineers in some far-off corporate headquarters and offered as part of the franchise package. An applicant may claim that these stores "must have" the standard design, but that does not mean "you have" to approve it. In fact, the standard design is sometimes overkill, and you might find yourself in the unusual position of arguing for smaller parking lots! More often, standard design will miss the mark on things such as lot coverage, facade appearance, or snow storage areas, and in the traffic area, insufficient throat length, and, especially, no provision for pedestrians or bicyclists.

Require a traffic study if you have doubts. Your ordinance should contain a clause permitting the municipality to retain consultants for a "peer review" of technical elements, such as storm water, historic assets, or traffic impacts. In some cases, the traffic study will be triggered by a certain projected volume of traffic. At a minimum, peer review should be in place whenever the applicants do their own study, or whenever changes to the existing public road are proposed.

A Glossary of Transportation Terms:

Following is a list of commonly-used transportation terms and abbreviations:

Highway Terms:

Functional Classification: The federal government classifies highways according to the role they play in functions of mobility and access.

An ARTERIAL HIGHWAY is one that is designed to provide a high degree of mobility between urban centers. Arterials are further broken down into Interstate, Principal, and Minor. Because they serve higher volumes of traffic, arterials are generally designed with straighter alignment, wider shoulders, and other features appropriate for long distance travel.

A COLLECTOR HIGHWAY serves an intermediate function, collecting and connecting local traffic to the arterial system. Most of the State-numbered highways in Maine are collectors. In rural areas, collectors are further classified “major” and “minor.”

LOCAL ROADS are intended primarily for access to abutting land uses and not for mobility.

Designation: Maine state law imposes another set of definitions on the road system, this time formaintenance and funding purposes:

STATE HIGHWAYS a

r e t h e s y s t e m o f m a j o r h i g h w a y s t h r o u g h t h e s t a t e

that serve through traffic. They are usually, but not always, arterials. Except in urban compact ar

ease, they are maintained by the state.

STATE-AID HIGHWAYS serve as collector and feeder routes from

local roads and town-to-town. They are usually classified as collector roads. Winter maintenance is

done by towns, summer maintenance by the state.

TOWN WAYS are local access roads, maintained entir

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Traffic Terms:

Average Annual Daily Traffic (AADT): The average number of vehicles that pass by a given point on a road during a 24-hour period. Traffic volumes and estimates of road use are usually expressed in AADT, though traffic planners must take into account seasonal fluctuations and traffic peaks. PEAK HOUR traffic is the number of vehicles passing a point during the busiest hour of the day (usually the afternoon rush). Peak Hour traffic is more commonly the measure used for traffic impacts of development.

Level of Service (LOS): An indicator of the traffic-carrying capability of the highway. The LOS is based on the ratio between the actual volume of vehicles and the design capacity of the intersection or road segment. The LOS scale runs from "A to F", with "A" being least congested and B, C, D, E, and F denoting increasing levels of congestion. A regulatory standard is likely to say that "any new development will not reduce the road below LOS D at peak hour." This means that developments which threaten to create unacceptable congestion must take measures to lessen the impact.

Trip Generation: The volume of traffic generated by a land use, generally determined by the size of the building and type of use. For the purpose of development review, trip generation is predicted, based on prior experience. For example, a 10,000 sq.ft. retail store will generate 398 trips per day, at 39.8 per 1,000 sq.ft. A vehicle entering and leaving is counted as two trips. The trip generation is added into existing traffic counts to arrive at a predicted Level of Service. *Trip Generation* (see Bibliography) is the source most often used, though other sources are available.

Vehicle Miles Traveled (VMT): A measure of total use of the road system, calculated by multiplying the number of trips by their average length. Development sprawl is considered a contributor to higher VMTs, because the average trip lengths increase.

Other Terms:

Floor Area Ratio (FAR): A ratio of the total floor area of a building to the size of the lot it sits on. This is the alternate (and preferred) standard to "lot coverage" in urbanized areas, which are more likely to have multi-story buildings. A building covering 25 percent of a lot yields a FAR of 0.25 if it's a one-story building, or 0.50 if it's two stories. In densely-developed areas, FAR's are commonly multiples of the lot size rather than fractions.

High Occupancy Vehicle (HOV): A vehicle that

carries more than one person. Carpools, vanpools, and busses are all HOVs. HOVs are popular with traffic planners because they aggregate many trips into one, reducing overall VMT.

Bibliography

There are many resources available to provide further assistance. Maine's regional councils provide information and hands-on technical assistance to communities with transportation and land use issues. The State Planning Office, Community Planning and Investment Program, can provide information on growth management and sprawl, and the Department of Transportation, Bureau of Planning, Research and Community Services can assist with transportation planning questions.

Also of use are numerous publications and websites of both general and specific nature, including:

Access Management Guidebook, Humstone and Campoli, available from Northwest Regional Planning Commission, St. Albans, VT
Access Management: Improving the Efficiency of Maine Arterials, Maine Department of Transportation, 1994
At Road's End: Transportation and Land Use Choices for Communities, by Daniel Carlson. Island Press, 1995
Cyburbia. An internet-based clearinghouse for planning information on the web: www.cyburbia.org.
Parking Generation, Second Edition, Institute of Transportation Engineers. Prentice Hall, 1997.
Planning Commissioner's Journal. A quarterly publication. Contact P.O. Box 4295, Burlington, Vermont. PCJ also maintains a resource website: www.plannersweb.com.
Public Streets for Public Use, by Anne Vernez Moudon. Columbia University Press, 1987.
Take Back Your Streets: How to Protect Communities from Asphalt and Traffic, Conservation Law Foundation, 1995
The Geography of Nowhere, by James Howard Kunstler. Simon and Schuster, 1993
The Transportation/Land Use Connection, American Planning Association, PAS Report #448, 1994
Transportation and Land Use Innovations, Reid Ewing. APA Planners Press, 1997
Transportation Planning Handbook, Institute of Transportation Engineers. Prentice-Hall, 1992
Traveling Smart Handbook, Natural Resources Council of Maine, undated
Trip Generation, 6th Edition, Institute of Transportation Engineers, 1997.