

Chapter 4: LAND USE AND ACCESS MANAGEMENT

Role of Land Use and Access Management in Managing the Transportation System

Towns' land use and development regulations influence the need for, and ultimate performance of, the transportation system in a number of different ways. Over the long term, the intensity and mix of uses allowed by town zoning regulations can influence the demand for travel and help to establish areas that are better suited for service by transit. Development regulations can shape how buildings are oriented on a parcel and aspects of their design in ways that make accessing them by walking, biking or bus more convenient.

Zoning

Zoning is a powerful tool available to jurisdictions to address the where and what of development, usually based on more general mapping in the Comprehensive Plan. Much of the study area is zoned via conventional zoning districts that are mapped with defined boundaries. Figure 4-13 (page 4-13) shows these districts in a generalized way, combining the specific zoning districts of each municipality into broader categories to produce an overall picture of the study area's future land use potential.

Within each of the districts mapped, the codes specify lists of which uses are permitted "as of right" (i.e. without any special review or discretionary permission) and which require special approvals in the form of Special Exceptions or Conditional Uses or Special Permits. Standards for setbacks (i.e. distances from the parcel boundaries to structures), building heights and other features of building bulk are

specified. Any deviations from these standards are subject to requests for Variances. These kinds of straightforward zoning districts are known as Euclidean districts. Several other kinds of districts are available, however, which give municipalities more discretion and flexibility in obtaining the desired outcomes.

Overlay Districts are districts that have standards tuned to specific locations and are added to or overlay the existing regulations. A good example of an overlay district that is very relevant to this study is Sanford's Corridor Overlay District. Such a district can be used to regulate access, landscaping, signage and setbacks along a specified corridor to achieve stated purposes.

Incentive zoning is a tool that provides development bonuses, such as greater flexibility or increased development allowances (i.e., density), in return for some other consideration. For example, incentive zoning might reduce parking requirements for developments located near existing transit services or those that construct certain public amenities. It is important that the benefits offset the implications of the allowances, and that goals of the incentive zoning be clearly articulated.

Short of regulatory change on this scale, local municipalities can modify their zoning regulations by updating the **Permitted Use lists** so that they are consistent with the recommendations of this study, or convert less compatible Permitted Uses into Special Exceptions or Conditional Uses so that they are subject to more rigorous review.

The reason for this emphasis on zoning is evident from looking at the zoning map (Figure 4-13). The concentrations of commercial and industrial zoning are along Routes 111 and 109. While it is logical that such uses would be located along arterial routes, since they provide direct access and higher visibility, the large amount of such zoning and the wide range of uses it allows raises concerns about the relationship of the highways to the future intensity of the abutting land uses. The more intensive residential zoning districts are also found along these two corridors. For these reasons, this section provides a number of recommendations aimed at both moderating this land use pattern and mitigating its impacts to the abutting highways.

While it is true that the current commercial and industrial markets are slow and this potential land use pattern is not likely to be realized anytime soon, it is still appropriate to think long term here to protect the future capacity of the roadways in place. Coordinated and proactive planning for land use, access and roadways can avert the complications and costs of retrofitting after the fact.

It is important to note that zoning must be consistent with and based on the Comprehensive Plan of a municipality. As appropriate, changes to zoning should be preceded by supporting changes to the Comprehensive Plans that provide the policy rationale for the changes proposed. Any recommendations on the timing of development (for example that development of a certain scale or at a certain location be allowed or initiated only when adequate road capacity exists off-site at given intersections) depend on analysis and language in the Comprehensive Plan if they are to survive legal challenge. Zoning codes and maps address location and use and type of development but not timing, sequencing and relationships to infrastructure. These must be addressed by the Comprehensive Plan.

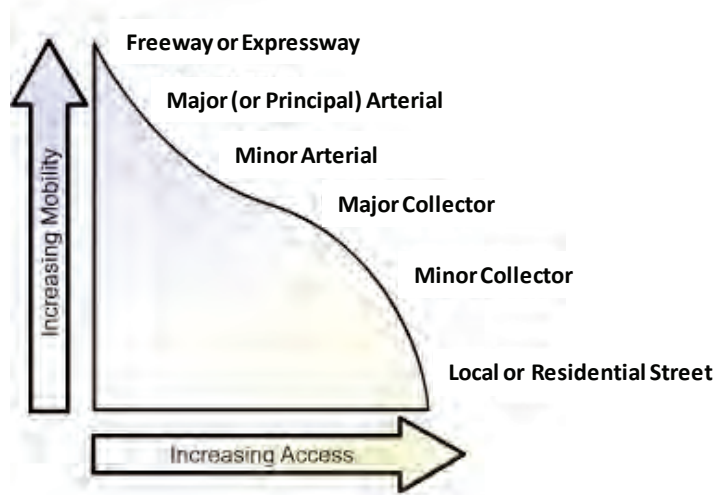
Access Management

Highways are principal transportation routes that accommodate many different types of trips, including longer distance trips between distant towns and cities. Because they are the primary travel corridors for regional auto and truck travel, highways are typically designed to prioritize the fast movement of through traffic.

Except for Interstate Highways, the Maine Turnpike, and other fully access-controlled routes, highways also provide access to abutting parcels. The frequency, location and configuration of access points (i.e., driveways or entrance roads) influence many aspects of a highway's performance and character. Generally, the balance between mobility and degree of access provided is inverse; increased frequency of access leads to decreased mobility. Roads and highways are therefore typically classified based on their intended functions, with arterials emphasizing mobility and local streets emphasizing access (Figure 4-1). Within the CYCCS study area, the major regional highways (Routes 1, 4, 109, 111, 202) are classified as Principal or Minor Arterials.

Each location where vehicles turn on or off of the highway can disrupt traffic flow and increase the potential for crashes. Locations where left turns are allowed across a two-way highway are particularly disruptive, resulting in seven potential points of conflict between turning and through traffic, compared to only two for right-turn only situations (Figure 4-2). The Federal Highway Administration (FHWA) found that at a typical driveway or minor intersection, 72% of crashes involve left turns (Figure 4-3).





Source: Adapted from FHWA Office of Operations
Figure 4-1: Balance of mobility and access emphasis for various classifications of roadways.

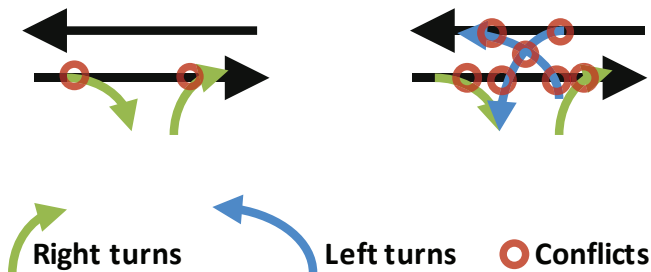
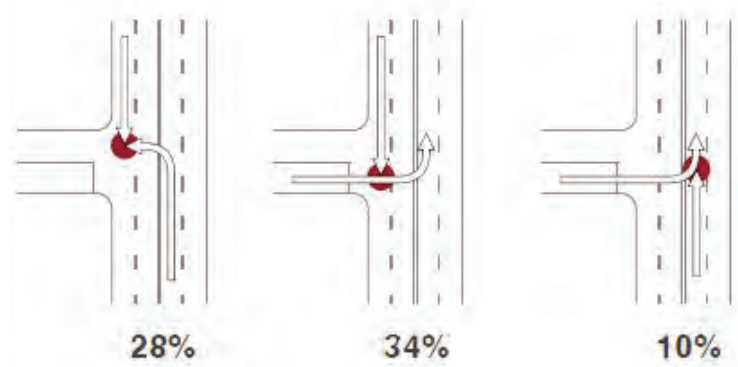


Figure 4-2: Potential conflicts at right-turn only intersections compared to intersections where left-turns are allowed



Source: FHWA Office of Safety
Figure 4-3: Share of intersection crashes involving left turns

Typically, frequent access points in more densely developed areas can both worsen congestion and increase crash frequencies. In less developed areas where posted speed limits are high, occasional turning vehicles can be unexpected, which can result in severe crashes.

Access management techniques govern how access to abutting parcels is provided. They can include both highway design aspects and development standards that, ideally, work together to maintain the efficient and safe operation of streets and highways. This is especially important for regionally significant highways, as a lack of access management over time will lead to increased congestion and more frequent crashes. Management of how access is provided can address these safety and congestion issues, and also help communities preserve rural or historic character where appropriate.

A concern sometimes expressed by businesses is that access management approaches might decrease the ability of customers to access their business. A well designed access management program



implements consistent access approaches through a corridor and ensures that all uses have reasonable access provisions can help allay these fears. In fact, a lack of access management over time is likely to discourage business patronage if a corridor degrades to a point where potential customers view it as too congested or dangerous.

While the MaineDOT administers an access management program outside of a municipality's urban compact area, ultimate responsibility and authority for the implementation of land use and access management in Maine lies primarily with the municipalities. This section identifies a menu of land use and access management techniques that may be appropriate for consideration by municipalities along the major highways in the study area. These techniques could also be applied to other roadways that the towns deem important for mobility.

Land Use and Access Management Techniques

This chapter describes techniques that towns in the CYCCS study area could consider as means to direct future growth in ways that will reduce demand on the transportation system, support its efficient operation, and improve the viability of all travel choices. These are among the techniques that are often described as "Smart growth" approaches to land use planning.

The applicability of techniques is not universal, but appropriate contexts for their use are described. MaineDOT's *Sensible*

*Transportation Handbook*⁹ is a good reference source for solutions to transportation/land use challenges.

The approaches are organized by the primary objective they address, as described in the following sections.

Approaches that reduce the number of vehicle trips generated along highways

This set of techniques looks at approaches for reducing or limiting the growth in vehicle trips entering the highway specifically by managing the intensity and/or type of new development for parcels that abut the highway corridor. They are most appropriate in rural, less developed areas or other locations where highways function predominately in the role of high-speed, high-capacity routes (rather than balancing access and mobility needs), particularly where future intensification of development is allowed by local plans and zoning. In these locations, managing future development along the highway corridor can help maintain the efficient and safe operation of the highway, and can further help to preserve the rural characteristics of the corridor where desired.

Limit intensity of development abutting highways

Stretches of undeveloped land along highways create the potential for strip development and the attendant turning movements. Zoning the land along the highway for low-density residential development (e.g., one dwelling unit per 5-acre lot), agricultural, and other less intensive uses can help limit the growth of development along the highway and limit the introduction of driveways.

⁹ <http://www.maine.gov/mdot/planning-documents/stpa/sensibleTransportationHandbook.html>



LAND USE AND ACCESS MANAGEMENT

Objectives and Approaches

Reduce the number of vehicle trips generated along highways.

- Limit intensity of development abutting highways.
- Transfer development rights.
- Limit the use of land fronting highways to those that generate low levels of peak-hour traffic volumes.
- Incorporate site features that support ridesharing and transit use.

Encourage access from roads other than the highway.

- Require access from streets other than the abutting highway.
- Require wider frontages on highways than on other roadways.

Improve street interconnectivity and local traffic circulation.

- Include future connections on Official Map or Major Thoroughfare Plan.
- Use rear lot access drives and/or backage roads.
- Encourage interconnected parking lots on adjacent parcels.
- Require off-highway frontage for new subdivision lots.
- Extend subdivision streets to abutting parcels.

Manage the frequency and operation of access points.

- Encourage shared access for abutting lots.
- Minimize the number of driveways per parcel on highway frontage.
- Promote right turn only driveways.
- Require access plans for large developments.

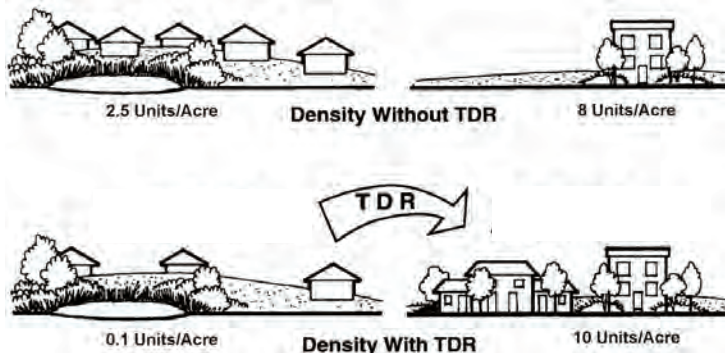
Such actions are best accompanied by identification of locations elsewhere in the community where denser growth can be better accommodated. Figure 4-13 shows generalized zoning in the study area. To truly preserve access throughout a highway, it will be important to ensure that the communities along the roadway have similar visions for the corridor and have minimized potential zoning conflicts between the communities.

Transfer of development rights

Transfer of development rights (TDR) is a mechanism by which development allowed by current zoning in one area may instead be transferred or “added” to what could be developed at another location identified by the community as better suited for development. In consideration for this transfer of rights, the original land must remain undeveloped. Often, a density bonus is included that allows development to occur more intensely on another property than would otherwise be allowed. For example, if a parcel was zoned to allow 10 units, the municipality could allow 12 units to be transferred to another parcel elsewhere in the community.

TDR is a relatively sophisticated approach that requires initial planning and ongoing administration, but may be appropriate for locations where, for instance, a community wishes to discourage development along an undeveloped rural highway and encourage it in the town center. TDR is a useful conservation tool in rural areas because it enables landowners with valuable farmland (and other natural and cultural resources) to be financially compensated for choosing not to develop some or all of their lands. These landowners are given an option under municipal zoning to legally cede the right to development their land in exchange for the ability to sell these rights to another landowner or a real estate developer for use at another location more

suitable for development—often, with new or special uses, and greater intensity and/or density. A TDR program can be voluntary (typically with incentives such as increases in permitted density on the receiving land—e.g., “density bonuses”) or mandatory. There are over 150 such programs across the United States, including the Land for Maine’s Future program.



Source: Michigan Department of Environmental Quality

Figure 4-4: Transfer of development rights

Limit the use of land fronting highways to those that generate low levels of peak hour traffic volumes

Certain types of uses generate high volumes of peak hour traffic (e.g., schools and drive-through restaurants). Limiting uses on parcels abutting the highway to those that generate less traffic can reduce the number of turning movements that need to be accommodated by the highway. This can be accomplished by allowing only uses that generate lower volumes of peak hour traffic, limiting the allowed density or intensity of allowed uses and establishing standards for maximum peak hour trip generation per acre or land parcel.

Incorporate site features that support ridesharing and transit use

Encouraging people to use alternative means of transportation other than single-occupant automobiles can reduce the number of trips generated by new development. These can include techniques such as providing preferential parking for van poolers and carpoolers, incorporating site design requirements that result in convenient and comfortable pedestrian, bicycle and transit access or participation in regional travel demand management (TDM) programs. These techniques are discussed in more detail in Chapter 5 of this report.



Source: City of Cambridge, MA

Figure 4-5: Covered bicycle parking

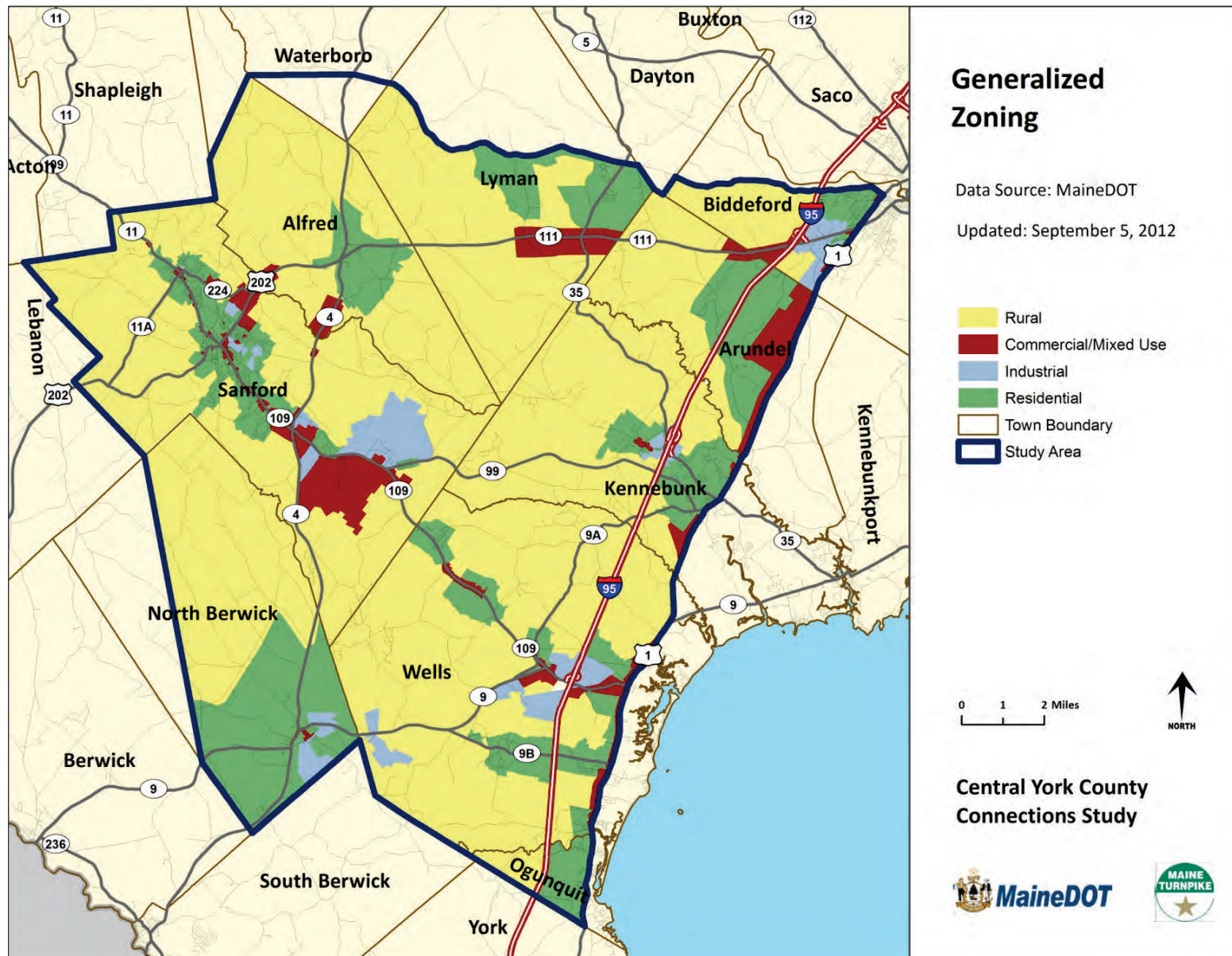


Figure 4-6: Generalized Zoning

Approaches that encourage access from roads other than the highway

The impact of new development along a highway is in part related to how trips generated by that development access the highway. The following approaches suggest ways to manage new trips by requiring access be provided from other streets. Require access from streets other than the abutting highway

Development requirements established in subdivision and site plan regulations can stipulate that access be provided from side streets or other accessible collector streets when a parcel has access frontage to both a highway and another street. Regulations can be applied when a lot is subdivided or as part of site review requirements for development. Figure 4-6 shows an example of parcel access from streets other than the primary highway.

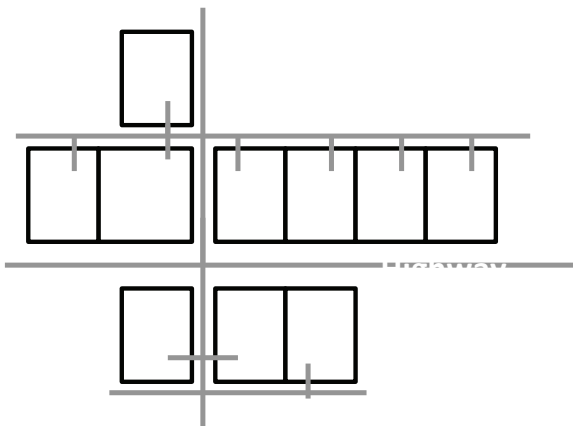


Figure 4-7: Example of access from streets other than the abutting highway

Require wider frontages on highways than on other roadways

A less direct means of encouraging access from streets other than a highway is to establish wider frontage requirements for lots that front highways than those that front other streets. For example, zoning or subdivision regulations could require 250 or 300 feet of highway frontage, but only 100 or 125 feet on a street other than a highway. As shown in Figure 4-7, this limits the frequency of access drives to the primary highway.

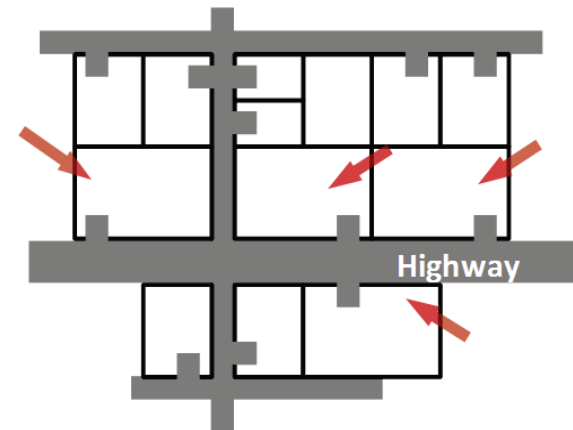


Figure 4-8: Example of wider frontages required on the abutting highway

Approaches to improve street interconnectivity and local traffic circulation

Several methods to improve local traffic circulation and increase interconnectivity can be applied during the development process to divert local traffic away from primary highways. These methods can also help ensure that the street system develops sufficiently to accommodate growth.

Include future connections on Official Map or Major Thoroughfare Plan

An Official Map or Major Thoroughfare Plan is an official document that identifies the location of future roads. These future roads are needed to increase the capacity of the road network, provide for local traffic circulation or provide appropriate coordinated access to developable land. Typically, a community's Comprehensive Plan identifies areas where future roads are needed to accommodate future traffic. The Official Map or Major Thoroughfare Plan then identifies the potential location and functional classification for the new roads. Often general corridors are identified, rather than specific rights-of-way, to provide for flexibility in the actual layout and design of the roadway.

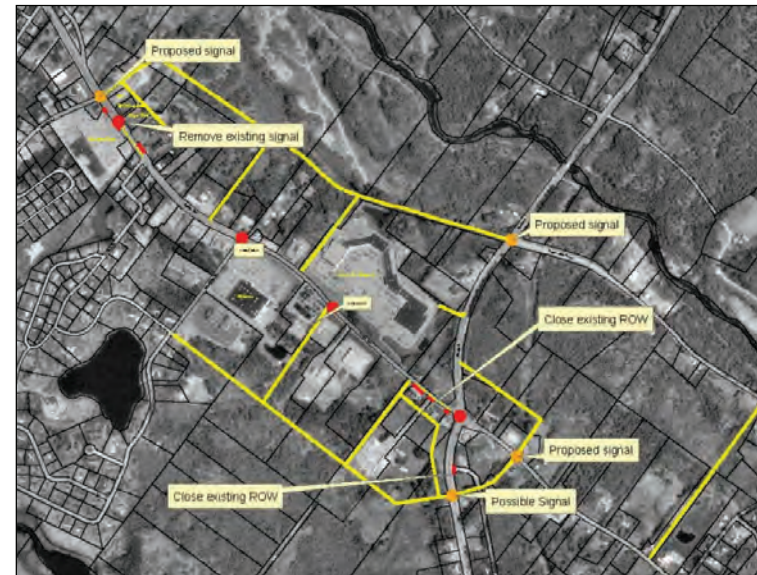


Figure 4-9: Sanford's comprehensive plan includes identification of future major corridors

An Official Map typically designates the design standards for the future roads. However, these standards may be placed in the subdivision regulations. The community's development regulations then require that access to properties be accomplished in a manner that reflects the Official Map, including the reservation or dedication of the corridor for future road construction or the construction of the road segment by individual subdivisions or developments subject to site plan review.

The Official Map or Major Thoroughfare Plan establishes a comprehensive approach to developing interconnected street networks to accommodate new traffic resulting from development. This approach requires the community invest in up-front planning to identify where new roads will be needed and engage in ongoing efforts to coordinate and ensure implementation as development occurs. In most areas, some preliminary work to identify and minimize the impacts to resources such as wetlands is necessary as well.

The Official Map or Major Thoroughfare Plan approach relies on segments of the right-of-way being protected and/or the road constructed on a piece-by-piece basis as individual parcels are developed. Therefore, to be successful the technique needs to be applied in those situations where there are a reasonable number of individual parcels and an expectation that development will occur within a reasonable period so that the individual segments or pieces can be connected to create the new road.

Within the CYCCS study area, there may be areas where the construction of a new road(s) could facilitate desired development while preserving capacity on major highways. Application of an Official Map or Major Thoroughfare Plan could be a powerful means of establishing, protecting and building these roads.

Encourage interconnected parking lots on adjacent parcels

Development regulations can require complementary uses along a highway to have interconnected parking lots. This can reduce the amount of traffic traveling on the highway because patrons can move from business to business (or multi-unit residential complex to business) without having to use the fronting highway.

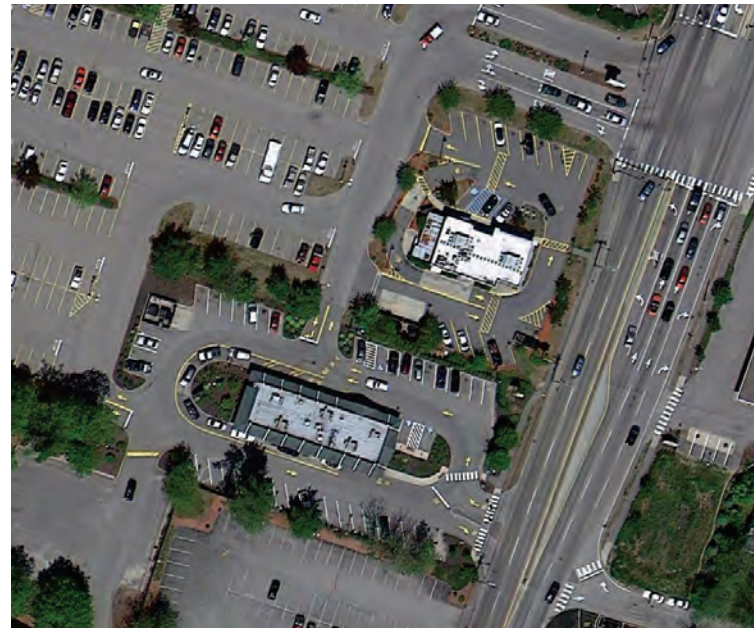


Figure 4-10: Interconnected parking lots in Saco, Maine

Use rear lot or mid-lot access drives and/or backage roads

Rear or mid-lot (for very deep lots) access drives and backage roads accommodate entering and exiting traffic at the back of parcels that front highways and direct this traffic to side streets or major intersections that provide access to the fronting highway.

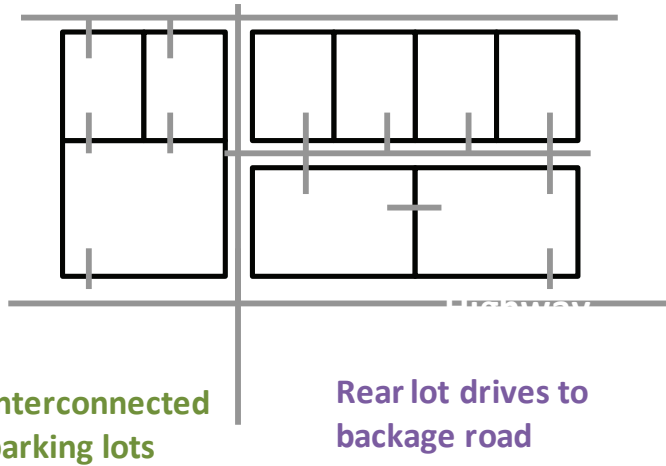


Figure 4-11: Example of interconnected parking lots and rear lot access

Require off-highway frontage for new subdivision lots

Subdivision regulations can specify that parcels created during the subdivision process have frontage on roads (existing or newly constructed) other than an adjacent highway corridor. For example, developments over a certain number of lots may be required to provide a public road.

Extend subdivision streets to abutting parcels

Subdivisions are often developed with dead end streets or cul-de-sacs. This limits interconnectivity of the street system over time. Development regulations can require that provisions be made for extending the street right-of-way to the boundary of the subdivision to allow for the future extension of the street into adjacent parcels. Similarly, provisions can be added to require connections to streets in adjacent parcels that have previously been extended to the subdivision boundary. Over time, this approach will result in an interconnected street network that reduces trips on the highway and a network that has more coordinated access points.

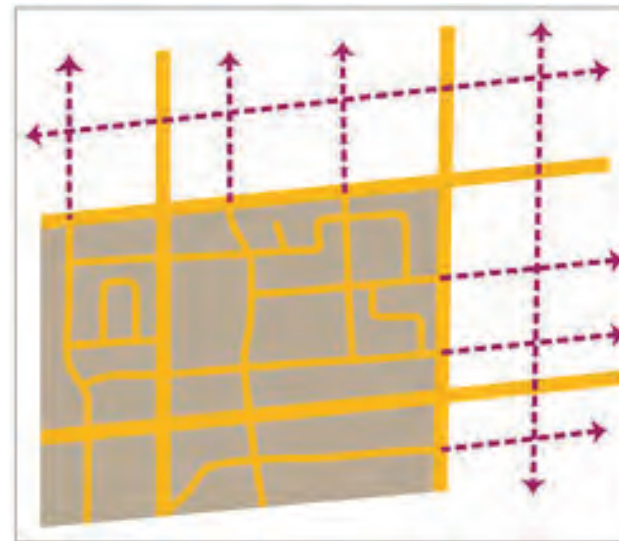


Figure 4-12: Example of extending subdivision streets

Approaches that manage the frequency and operation of Access Points

These approaches focus on regulations pertaining to access points (e.g., driveways) from parcels abutting highways.

Encourage shared access for abutting lots

Where feasible, requiring or offering development incentives for establishing a shared driveway or private access road for abutting lots can reduce the number of access points required. Shared driveways require an easement to establish access rights for all parcels.

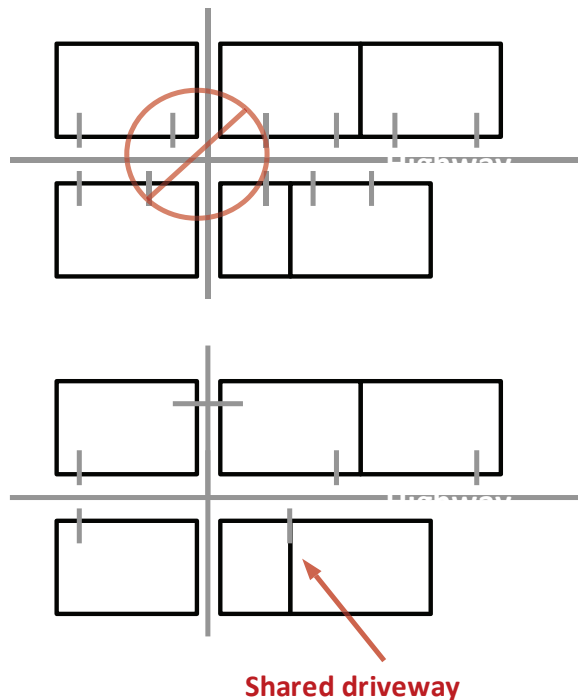


Figure 4-13: Example of shared access driveways
Minimize the number of driveways per parcel on highway frontage

Subdivision and site plan regulations can specify the number and spacing of driveways or new streets allowed per parcel. Many regulations tie the maximum number of driveways to the length of frontage along the highway (for example, not more than one curb cut for every 500 feet of frontage). These requirements typically also establish a minimum distance from a new driveway to an existing driveway or intersection. Minimum stopping distances for various posted speed limits can also be used to manage the frequency of driveways and entering side streets.

MaineDOT has rules for spacing between driveways that apply to Mobility Corridors and Retrograde arterials, as well as other highways regulated under the MaineDOT Access Management Program.¹⁰ Minimum driveway spacing standards are summarized in Table 4-1.

Table 4-1: MaineDOT Minimum Driveway Spacing Standards

Posted Speed (mph)	Driveway Separation (feet)
25 or less	N/A
30	N/A
35	N/A
40	175
45	265
50	350
55 or more	525

Source: MaineDOT. Highway Driveway and Entrance Rules: Part A. p. 6.

¹⁰ Mobility Corridors and Retrograde Arterials in the CYCSS study area include Route 4, Route 9, Route 11, Route 109, Route 111, and Route 202.



Promote right turn only driveways

Left turns are typically more disruptive to traffic flow and inherently involve greater safety risks than right turns due to conflicts with opposing traffic. Restricting new driveways to right turns only (often termed “right in – right out”) does not necessarily reduce the number of driveways, but instead reduces or eliminates left turns. This approach must be coordinated with the design of the highway to allow vehicles to reverse direction through left turn lanes, jug handles, or driving around the block to access uses on the far side of the highway. A physical barrier to prevent left turns such as a raised center median is also often constructed.

Require access plans for large developments

In cases where a subdivision or large commercial development will occur in phases, development regulations stipulating approval of an access plan for the full, ultimate build out of the site can help ensure that access is provided in a coordinated manner. Alternatively, setting standards for how many units or square feet can be built with only one entrance point can serve a similar purpose.

Application of Access Management Strategies

This section identifies the potential applicability of the land use and access management strategies to three corridors:

- Route 111/202 in Biddeford, Lyman, Alfred and Sanford
- Route 109 in Sanford and Wells
- Route 4/202 in Alfred and Sanford

These corridors were selected because they are the primary travel corridors connecting central York County to the Maine Turnpike and

Route 1 along the coast, and as such are the primary focus of the study. Segments are numbered consecutively along the entirety of each of the three corridors as defined above.

The suitability of specific access management strategies is dependent upon existing development patterns, zoning, each town’s current access management provisions and level of regulatory sophistication, and the likelihood that the town will adopt and be able to administer the strategy. Generalized zoning for the study area is shown in Figure 4-13, with more specific zoning designations mapped in subsequent figures.

The applicability of strategies is described on a segment-by-segment basis. Some strategies have widespread potential for applicability, and could be considered by any of the towns:

- Require access plans for large developments
- Extend subdivision streets to abutting parcels
- Incorporate site features that support ridesharing and transit use
- Encourage shared access for abutting lots
- Require the interconnection of parking lots on adjacent parcels

Developing an Official Map or Major Thoroughfare Plan is another strategy that is applied community-wide, and is therefore not evaluated on a segment-by-segment basis. Rather, this powerful strategy is considered to be an overarching policy decision that needs to be tied to long range local planning, and could be considered for implementation by any of the towns.

Town-Specific Recommendations

The potential applicability of strategies is summarized in a series of matrices, organized by town and corridor segment (Tables 4-2 through 4-6). The first step in developing the matrices was to review each town's access management, land use and zoning regulations to determine which strategies are already being used. These are indicated in the matrices by a C (for Current). The matrices show two levels of action – Standard (S) and Enhanced (E). A blank cell means that the strategy is not applicable in the corridor.

The Standard strategies provide a basic or moderate level of access management. They generally include requirements that are frequently incorporated in subdivision ordinances and similar guidance documents, or can be achieved through minor adjustments in current land use and zoning requirements. In some cases, strategies that encourage certain actions but do not mandate them are given the Standard designation. As a general rule, municipalities should compare their codes to encourage cross-jurisdictional uniformity.

The Enhanced strategies are typically more complicated or difficult to implement. They provide higher levels of access management and typically greater effectiveness if implemented successfully. In a few cases, the same strategy is designated as Standard in one town and Enhanced in another. This is because of the differences in the relative sophistication of towns' existing land use and access management requirements. In a town with limited access management requirements in place, the adoption of a particular strategy may be a

major change (thus the Enhanced designation), while in another town with extensive access management requirements already in place, adoption of a particular strategy may be a relatively minor change (thus the Standard designation).

The designations in the matrices are not intended to be requirements; rather they should be seen as a guide for maintaining the efficiency and safety of travel in the Route 111/202, Route 109, and Route 4/202 corridors. Each town should evaluate its zoning and access management provisions against the matrices to identify methods to preserve efficiency in the corridors. For example, a town that does not currently require the interconnection of parking lots should review its site plan review ordinance and consider adding such a provision. In many cases, sample language is available in the Southern Maine Planning and Development Commission Model Subdivision Ordinance.¹¹ However, the town should review the model language to ensure that it is appropriate to the actual situations in the town, and if not, revise the model language accordingly.

The three corridors have been divided into 27 road segments: 14 segments along the Route 111 corridor, 6 road segments along the Route 109 Corridor, and 7 road segments along Route 202/4. Maps of the corridors and the segments are presented by town. The maps indicate the level of development in the corridor. Red indicates that the area is mostly developed. Blue indicates that the segment is moderately developed. Black indicates that the segment is lightly

¹¹

http://smrpc.org/images/Municipal_Reg_Planning/Model_Subdivision_Regulations_2006.pdf



developed. The maps also show the zoning designations, which vary by town.

Alfred

Intensive development of much of the Route 4/202 and Route 111/202 corridors outside of the village area is limited by the large frontage requirements in both rural residential and commercial zones. The commercial zones along both Route 202 and Route 4 adjacent to the Sanford line allow a wide range of nonresidential activity that creates the potential for large volumes of peak hour traffic and/or turning movements.

Table 4-2 summarizes those measures with potential applicability in Alfred. These measures include:

- In the Commercial District, the Town could consider revising the allowed uses to limit retail, office, and service uses to those that have limited peak hour trip generation.
- In the Commercial District, the Town could consider requiring new uses to have their vehicular access from streets other than Route 111/202 and Route 4/202 where that is feasible.
- The Town could consider requiring new lots that front on Route 111/202 and Route 4/202 that are not part of a subdivision to use shared access where feasible and to remove/revise ordinance provisions that prohibit shared or common driveways along the property line.
- The Town could consider a transfer of development rights (TDR) program for parcels along Route 111/202 in western Alfred (Segments 11 and 12 in Figure 4-14), as well as those along Route 4/202 in the Critical Rural zone (Segment 1 in Figure 4-15), that locates new development in areas nearer

the town center such as the Village and Village Growth Districts.

Figures 4-14 and 4-15 show corridor segments and adjacent zoning districts, which are:

- Center Village District
- Commercial District
- Critical Rural
- Resource Protection District
- Rural Residential District
- Village District

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Table 4-2: Alfred – Land Use and Access Management Applicability Matrix

Road Segment #:	Route 111/202				Routes 4/202				Notes
	9	10	11	12	1	2	3	4	
Reduce the number of vehicle trips generated along highways									
Limit intensity of development abutting highways	S	—	E	S	S	—	—	S	Segments 2, 3, and 10 are located in zoning districts where limiting the intensity of highway development would be difficult because development is already relatively intense for the area.
Transfer development rights	—	—	S	E	—	—	—	—	Transfer of development rights is appropriate for residential and commercial zones in rural areas away from the town center that are lightly developed.
Limit the use of land fronting highways to those that generate low levels of peak hour traffic volumes	—	—	—	S	—	S	—	S	This is an appropriate technique for roadway segments that are moderately developed.
Incorporate site features that support ridesharing and transit use	—	—	—	—	—	—	—	—	Alfred currently lacks public transit service.
Encourage access from roads other than the highway									
Require access from streets other than the abutting highway	S	S	S	S	S	S	—	S	Segment 3 and the adjacent Center Village district have alternate local street access.
Require wider frontages on highways than on other roadways	C	—	C	—	C	C	—	C	Wider frontages would not be appropriate for segments located in a traditional town center.
Improve street interconnectivity and local traffic circulation									
Require the construction of rear lot access drives and/or backage roads	—	—	—	E	—	—	—	E	This technique is generally appropriate for areas zoned commercial.
Encourage interconnected parking lots on adjacent parcels	—	—	—	S	—	S	—	S	This technique is generally appropriate for areas zoned commercial or zones where commercial uses are allowed.
Require off-highway frontage for new subdivision lots or a limited number of highway lots	C/S	C	C/S	C/S	C/S	C/S	C	C/S	This technique applies to all segments.
Extend subdivision streets to abutting parcels	S	—	S	S	S	S	—	S	Subdivisions are not applicable to segments in the Center Village district.

C= Current, S=Standard, E=Enhanced, — =Not Applicable



Road Segment #:	Route 111/202				Routes 4/202				Notes
	9	10	11	12	1	2	3	4	
Manage the frequency and operation of access points									
Encourage shared access for abutting lots	S	S	S	S	S	S	—	S	Shared access would not apply to the already built up Center Village district.
Minimize the number of driveways per parcel on highway frontage	C	C	C	C	—	—	—	—	This technique is most appropriate for the more heavily used Route 111 corridor.
Promote right turn only driveways	S	S	S	S	S	S	—	S	Right turn only driveways are generally not an appropriate technique for traditional town centers.
Require access plans for large developments	S	—	S	S	—	S	—	S	Large developments are not encouraged or allowed in zoning districts adjacent to segments 1, 3, and 10.

C= Current, S=Standard, E=Enhanced, — =Not Applicable

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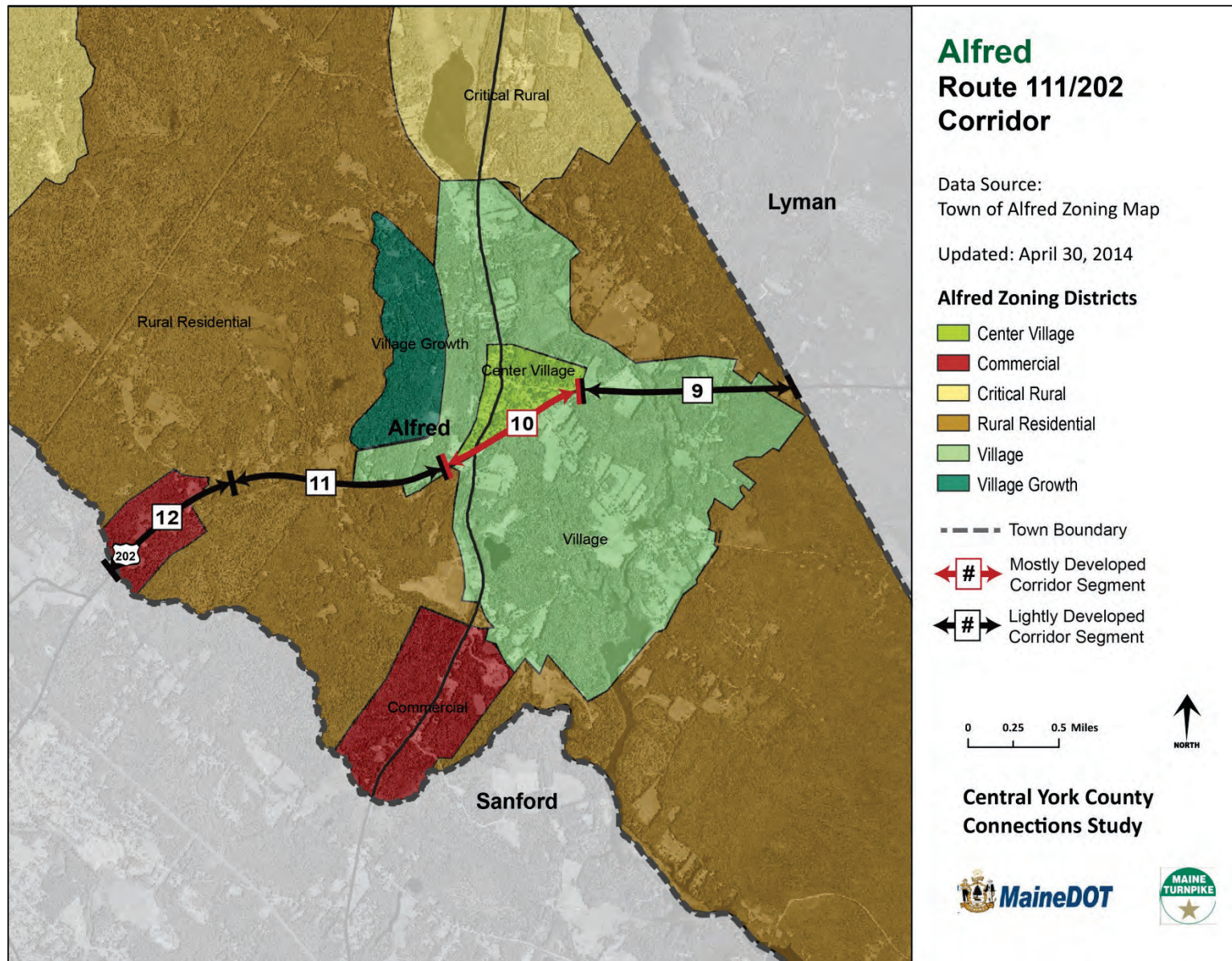


Figure 4-14: Alfred Route 111/202 Corridor Segments



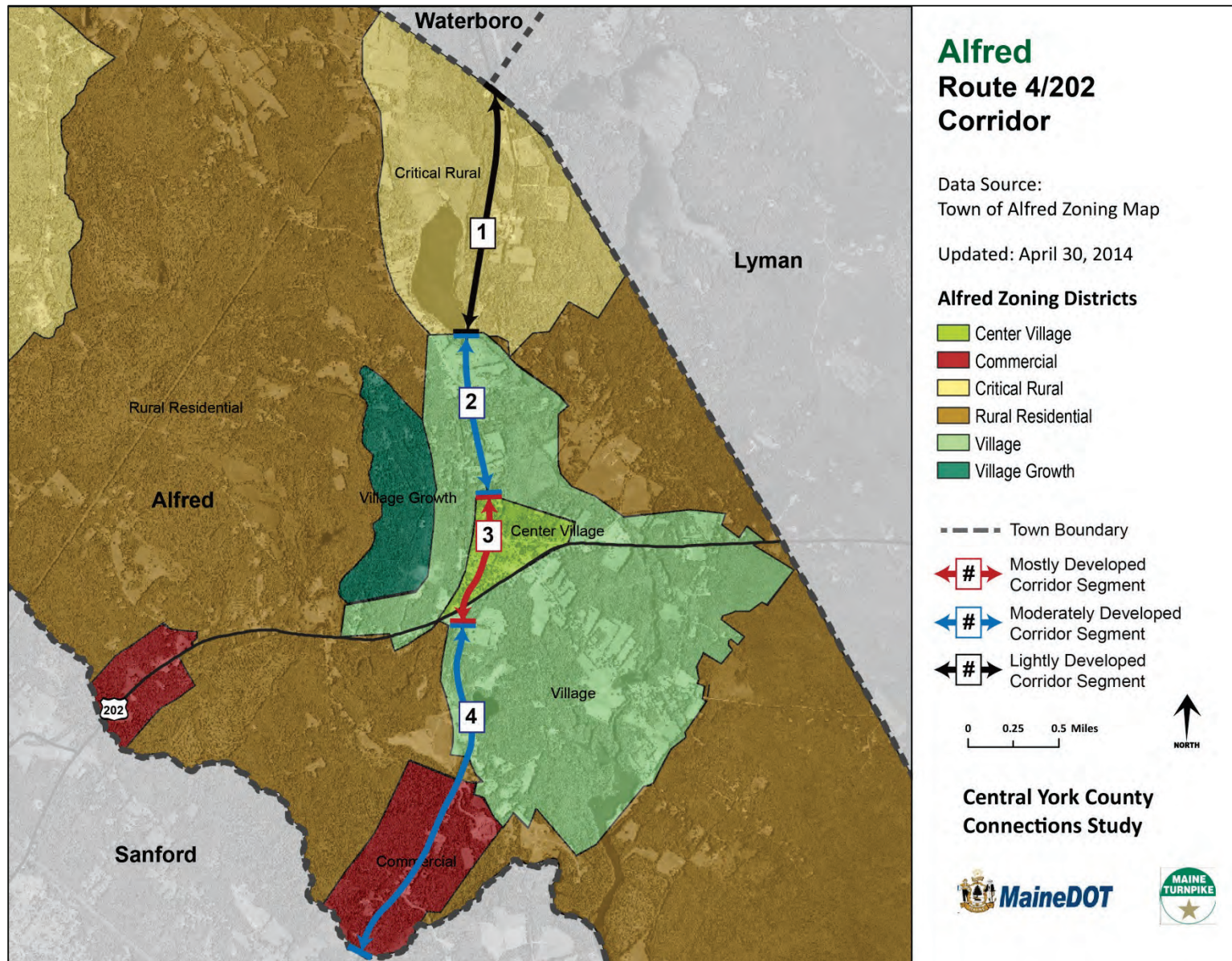


Figure 4-15: Alfred Route 4/202 Corridor Segments

Arundel

Most of the Route 111 corridor through Arundel is zoned Rural R-4. This district has large frontage requirements for lots along Route 111 (250-foot minimum). In addition, the Town requires lots in a subdivision to have the required frontage on an internal street rather than on an arterial. This provides a substantial amount of access control in most of the Arundel portion of the corridor. The portion of the corridor from the Biddeford line westerly through the New Road/Old Alfred Road intersection is zoned CCN. The CCN allows a wide range of non-residential uses and has few access controls.

Table 4-3 summarizes those measures that could have applicability in Arundel. These include:

- In the CCN District, the Town could consider revising the allowed uses to limit retail, office, and service uses to those that have limited peak hour trip generation.
- In the CCN District, the Town could consider requiring new uses to have their vehicular access from streets other than Route 111 where that is feasible.
- The Town could consider requiring new lots that front on Route 111 that are not part of a subdivision to use shared access where feasible and to remove/revise ordinance provisions that prohibit shared or common driveways along the property line.

Figure 4-16 shows Route 111 corridor segments and adjacent zoning districts, which are:

- BI: Business/Office Park/Industrial District
- CCN: Community Commercial North District
- CCS: Community Commercial South District
- HC: Highway Commercial District
- NRC: Natural Resource Conservation District
- R-1: Urban Residential District
- R-2: Suburban Residential District
- R-4: Rural Conservation District

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Table 4-3: Arundel – Land Use and Access Management Applicability Matrix

Road Segment #:	Route 111		Notes
	3	4	
Reduce the number of vehicle trips generated along highways			
Limit intensity of development abutting highways	—	—	Limiting the intensity of development along Route 111 is not being sought by the town.
Transfer development rights	E	E	TDR is an appropriate technique for both segments.
Limit the use of land fronting highways to those that generate low levels of peak hour traffic volumes	E	—	Only land in the Community Commercial North zone (CCN) would likely generate enough traffic to warrant use of this technique.
Incorporate site features that support ridesharing and transit use	S	—	Development that supports ridesharing and transit use is not likely in the R-4 Rural Conservation District.
Encourage access from roads other than the highway			
Require access from streets other than the abutting highway	S	S	Appropriate for both segments.
Require wider frontages on highways than on other roadways	C/S	C/S	Appropriate for both segments.
Improve street interconnectivity and local traffic circulation			
Require the construction of rear lot access drives and/or backage roads	E	—	Only appropriate for segments where land is zoned for more intensive development (CCN).
Encourage interconnected parking lots on adjacent parcels	S	—	Only appropriate for segments where land is zoned for more intensive development (CCN).
Require off-highway frontage for new subdivision lots or a limited number of highway lots	S	S	Appropriate for both segments.
Extend subdivision streets to abutting parcels	S	S	Appropriate for both segments.
Manage the frequency and operation of access points			
Encourage shared access for abutting lots	S	S	Appropriate for both segments.
Minimize the number of driveways per parcel on highway frontage	C	C	Appropriate for both segments.
Promote right turn only driveways	S	S	Appropriate for both segments.
Require access plans for large developments	—	S	Only applicable for segments where land is zoned for more intensive development (CCN).

C= Current, S=Standard, E=Enhanced, — =Not Applicable



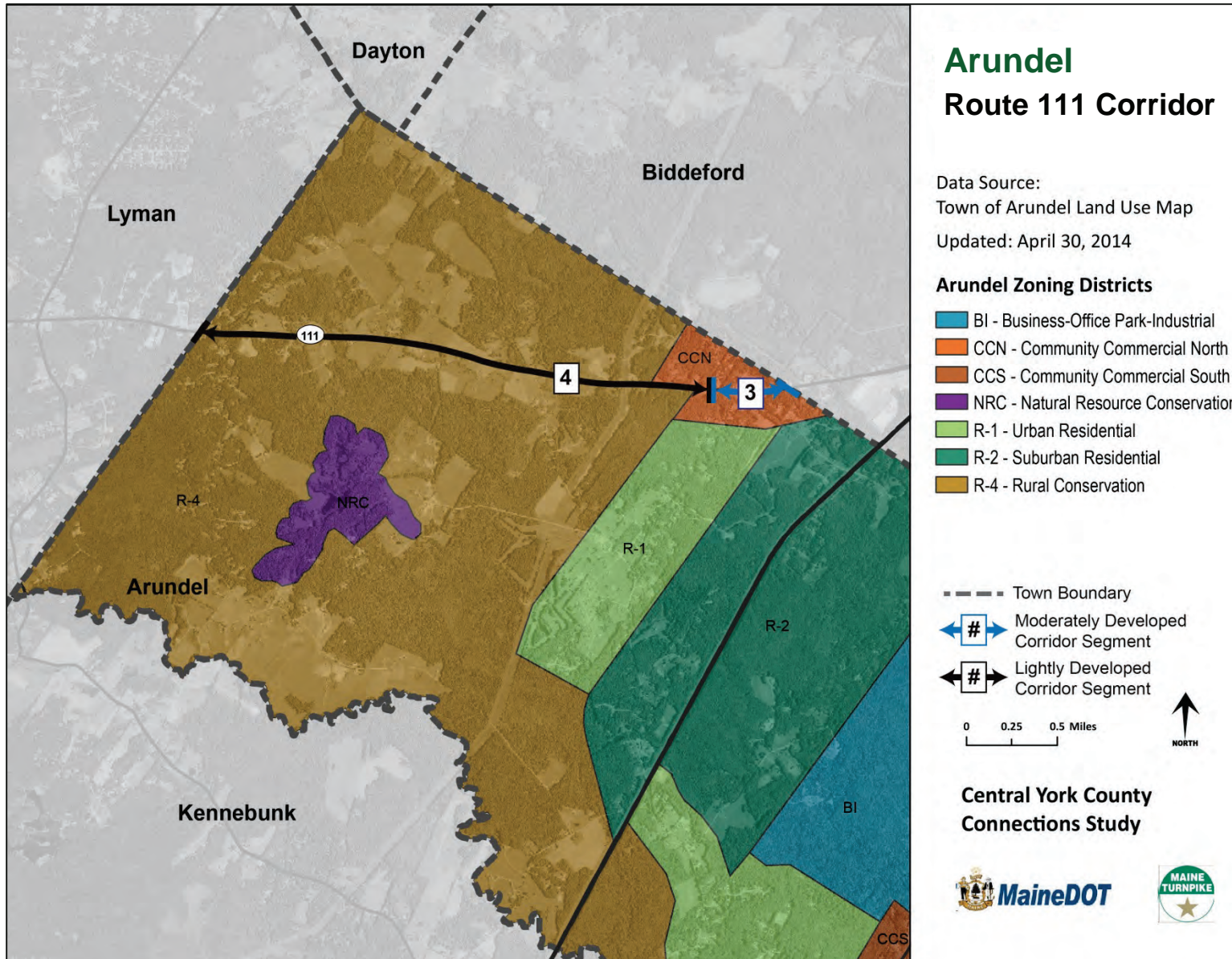


Figure 4-16: Arundel Route 111 Corridor Segments



Biddeford

The City of Biddeford has access management provisions and development review procedures in place that address the Route 111/202 corridor. Table 4-4 summarizes those measures that could have applicability in Biddeford. These include:

- In the portion of the corridor west of the Shops at Biddeford Crossing development (Segment 1 on Figure 4-17), the City could consider limiting the establishment of new uses that generate large volumes of peak hour traffic to control peak hour traffic volume and turning movements.
- The City could consider requiring new commercial uses along the corridor to have their access from an existing street or common access to avoid new curb cuts on Route 111.
- The City could also consider requiring the development of backage roads to allow access to and from multiple commercial sites to be concentrated at an existing street or common access road.

Figure 4-17 shows Route 111 corridor segments and nearby zoning districts in Biddeford, which are:

- B1: General Business
- B2: Highway Business
- CR: Coastal Residential
- I1: General Industrial
- I2: Airport Industrial
- I3: Commercial Industrial
- LRF: Limited Rural Farm
- M: Medical
- MSRD1: Commercial Core
- MSRD2: Residential Conservation
- MSRD3: High Density/Mixed Use
- OR: Office Residential
- R1A: Single Family Residential
- R2: Multi-Family
- R3: Mixed Residential
- RF: Rural Farm
- SR1: Suburban Residential

Table 4-4: Biddeford – Land Use and Access Management Applicability Matrix

Road Segment #:	Route 111		Notes
	1	2	
Reduce the number of vehicle trips generated along highways			
Limit intensity of development abutting highways	—	—	Limiting the intensity of development abutting highways would not be applicable in the B2 Highway Business zoning district.
Transfer development rights	—	—	TDR is not applicable, since the area is already zoned for higher intensity Highway Business uses.
Limit the use of land fronting highways to those that generate low levels of peak hour traffic volumes	—	E	Segment 2 is farther from I-95 and more lightly developed than Segment 1, so uses that generate less peak hour traffic would be appropriate there.
Incorporate site features that support ridesharing and transit use	S	S	Appropriate for both segments.
Encourage access from roads other than the highway			
Require access from streets other than the abutting highway	—	E	Land along Segment 1 is already developed (Shops at Biddeford) and future side streets in the area are unlikely in the near future.
Require wider frontages on highways than on other roadways	—	—	Frontages along Segments 1 and 2 are already wider (or zoned to be wider) than average for Biddeford.
Improve street interconnectivity and local traffic circulation			
Require the construction of rear lot access drives and/or backage roads	—	E	Land along Segment 1 is already developed (Shops at Biddeford). Retrofitting the Shops at Biddeford with backage roads is possible but unlikely in the near future.
Encourage interconnected parking lots on adjacent parcels	S	S	Appropriate for both segments.
Require off-highway frontage for new subdivision lots or a limited number of highway lots	—	—	Off-highway frontage would not apply in an area zoned B2 Highway Business.
Extend subdivision streets to abutting parcels	—	—	Subdivisions do not apply to the B2 Highway Business zone.
Manage the frequency and operation of access points			
Encourage shared access for abutting lots	—	—	Development along Segment 1 already has shared access (Shops at Biddeford). Development along Segment 2 has a mix of low-density residential and commercial uses not intense or close together enough for shared access.
Minimize the number of driveways per parcel on highway frontage	—	S	The number of driveways along Segment 1 has already been minimized.
Promote right turn only driveways	S	S	Appropriate for both segments.
Require access plans for large developments	S	S	Appropriate for both segments.

C= Current, S=Standard, E=Enhanced, — =Not Applicable



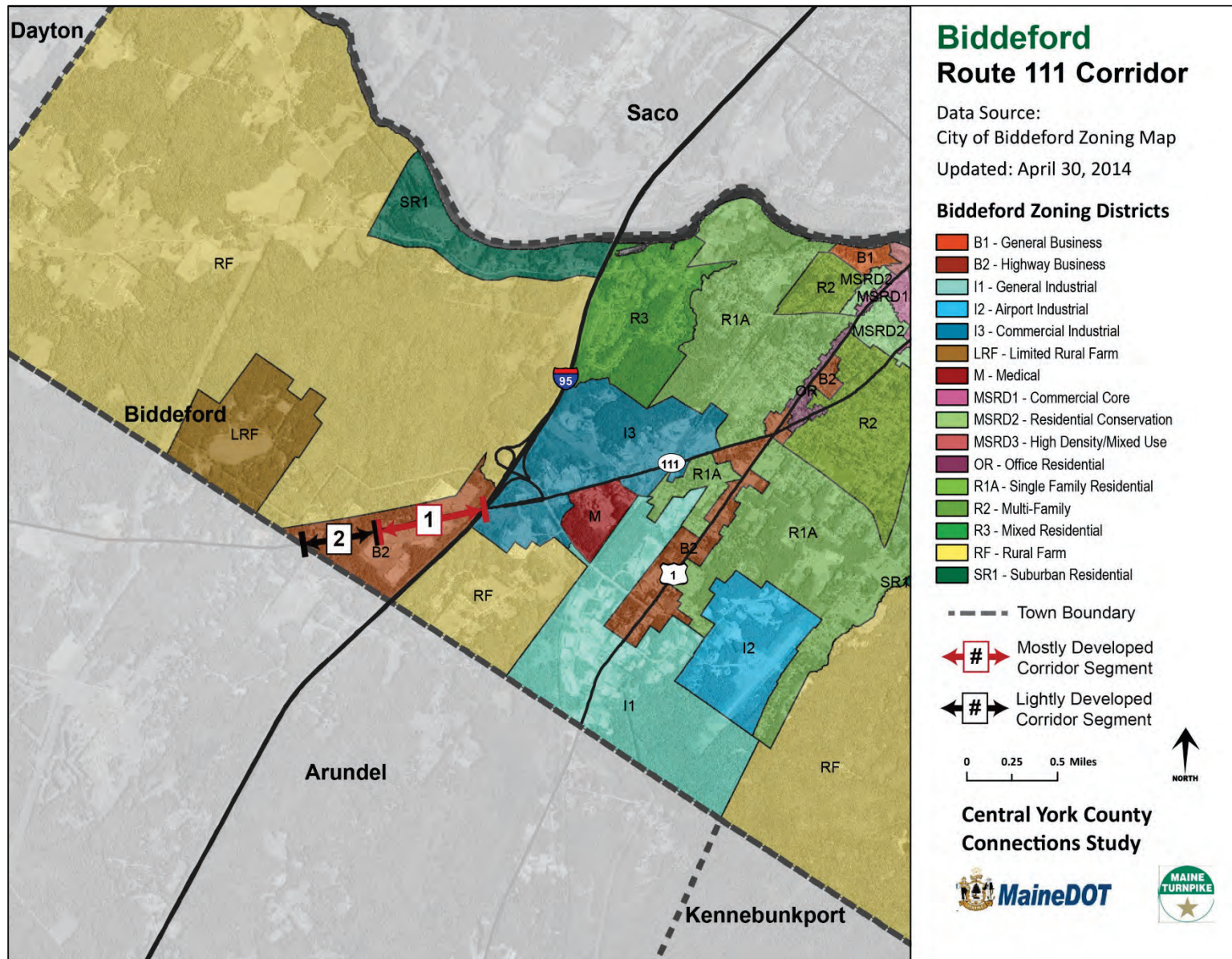


Figure 4-17: Biddeford Route 111 Corridor Segments



Lyman

The Town's large frontage requirement (minimum of 300') for lots along Route 111 minimizes the potential for the creation of new lots. However, a substantial portion of the corridor allows a wide range of non-residential uses that creates the potential for large volumes of peak hour traffic and/or turning movements. Table 4-5 summarizes those measures that could have applicability in Lyman, including:

- In the General Purpose District that covers the western portion of the Route 111 corridor, the Town could consider revising the allowed uses to limit retail, and service uses to those that have limited peak-hour trip generation. This may translate into uses that generate fewer than five trip ends per 1,000 square feet of gross floor area during either the AM or PM peak (estimated per the Institute of Traffic Engineers Trip Generation Manual). This would allow small specialty retail, offices, some services, used car sales, etc. but prohibit the high trip generators like fast food, banks with drive-thrus, convenience stores, as well as other uses like office and business parks.
- The Town could reconsider the creation of the Commercial District. While this district was intended to allow limited commercial development with access controls, it is not clear that it will achieve that purpose.
- If the Commercial District is retained unchanged, the Town could revisit its earlier attempt to implement the backage road with revised standards (e.g. a 400' distance from Route 111 rather than the longer distance previously proposed). If this is not achievable, then allowing commercial uses but adopting regulations that ensure a high level of access management (including pre-planning for access points, shared/common access, interconnected parking lots, etc.) is recommended.

Figure 4-18 shows Route 111 corridor segments and nearby zoning districts in Lyman, which are:

- Commercial District
- General Purpose District
- Residential District
- Shoreland District

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Table 4-5: Lyman – Land Use and Access Management Applicability Matrix

Road Segment #:	Route 111				Notes
	5	6	7	8	
Reduce the number of vehicle trips generated along highways					
Limit intensity of development abutting highways	—	—	—	—	Limiting the intensity of development abutting highways is not specified for the General Purpose and Commercial zoning districts.
Transfer development rights	S	S	E	E	TDR is appropriate for zones all segments given the generally open and rural character of the town.
Limit the use of land fronting highways to those that generate low levels of peak hour traffic volumes	S	S	S	S	Appropriate for all segments.
Incorporate site features that support ridesharing and transit use	S	—	S	—	Segment 6 is already developed, while Segment 8 will likely continue to have land uses that are too low in density to support ridesharing or transit as currently zoned.
Encourage access from roads other than the highway					
Require access from streets other than the abutting highway	S	S	S	S	Appropriate for all segments.
Require wider frontages on highways than on other roadways	—	—	—	—	Segment 6 is developed. Segments 5 and 7 have existing low intensity commercial uses where larger minimum frontages would not yield a worthwhile traffic benefit (already 200 feet for the Commercial zone). The General Purpose zoning district along Segment 8 already has largest minimum frontage in the Town of Lyman Zoning Ordinance (375 feet).
Improve street interconnectivity and local traffic circulation					
Require the construction of rear lot access drives and/or backage roads	—	E	—	—	Rear lot backage roads would only be beneficial where intensive commercial development is anticipated or planned.
Encourage interconnected parking lots on adjacent parcels	S	—	S	—	Segment 6 is already developed, while Segment 8 in the General Purpose district is unlikely to attract levels of commercial development that would warrant interconnected parking lots for access management.
Require off-highway frontage for new subdivision lots or a limited number of highway lots	S	—	S	S	Segment 6 is already developed.
Extend subdivision streets to abutting parcels	S	S	S	S	Appropriate for all segments.



Road Segment #:	Route 111				Notes
	5	6	7	8	
Manage the frequency and operation of access points					
Encourage shared access for abutting lots	S	S	S	S	Appropriate for all segments.
Minimize the number of driveways per parcel on highway frontage	S	—	S	—	Not appropriate for Segments 6 and 8 because of existing development and low intensity of development on Segment 8, respectively.
Promote right turn only driveways	S	S	S	S	Appropriate for all segments.
Require access plans for large developments	S	—	S	S	Segment 6 is already developed.

C= Current, S=Standard, E=Enhanced, — = Not Applicable



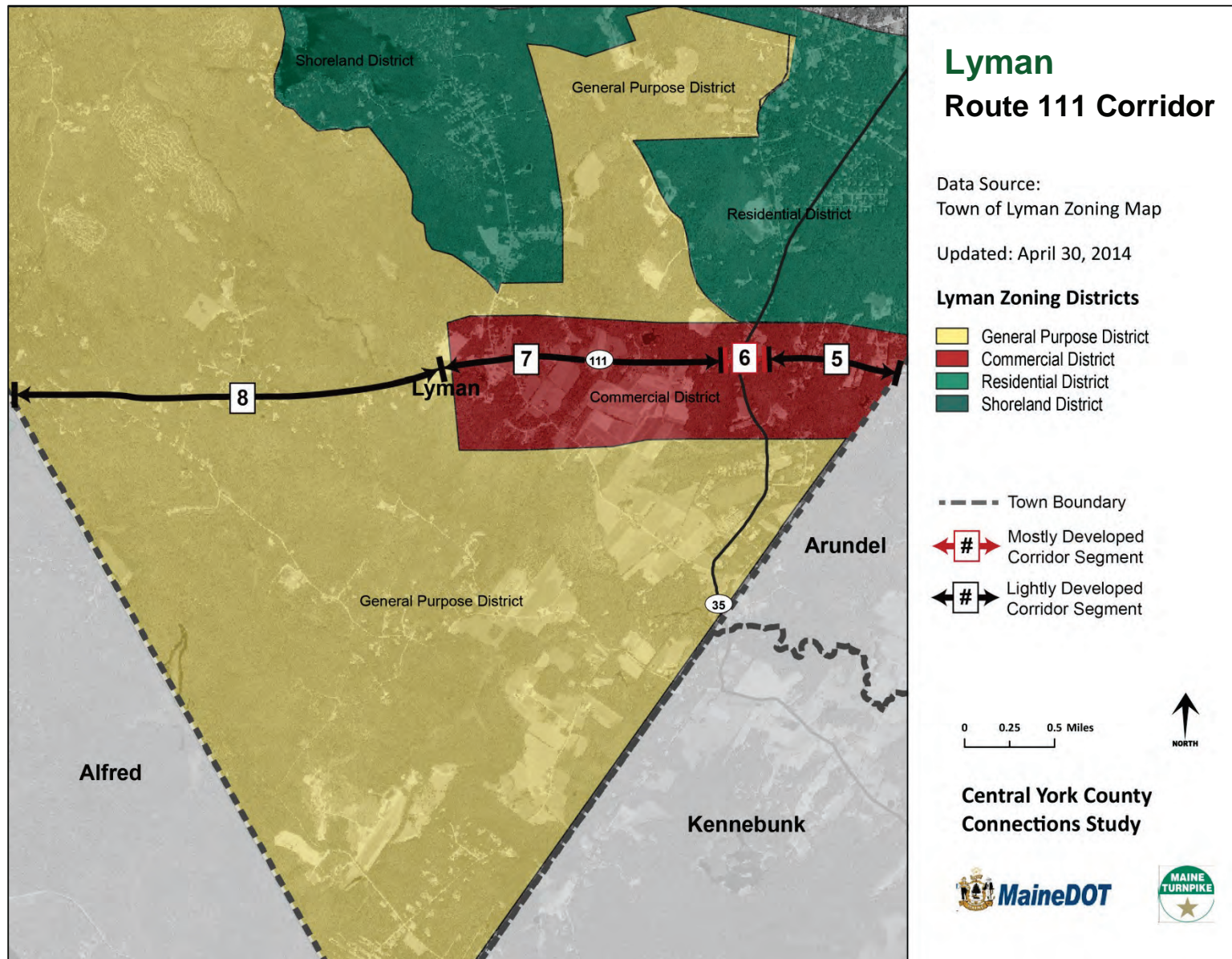


Figure 4-18: Lyman Route 111 Corridor Segments

Sanford

Sanford has a wide range of access management approaches in place and is actively using them to manage the impact of new development/redevelopment on the various arterial corridors. This includes requiring access from backage roads or means other than the abutting highway, implementation of a future thoroughfare plan concept, and shared driveway provisions.

The downtown area exhibits typical town center development patterns and access is already fairly well established. Redevelopment activity may create the opportunity to improve access provisions on a case by case basis, however. This analysis focused on the outlying segments which are currently less intensely developed. Table 4-6 summarizes those measures that could have applicability in Sanford. Considerations specific to Sanford include:

- Requirement of features in larger site developments to encourage or simplify use of ridesharing, bus, walking or transit are particularly applicable given the higher intensity of development in Sanford and access to transit services.
- Requiring extension of subdivision streets and interconnection of parcels could help further develop the street grid.
- On busy segments of highway, particularly those with more than one-lane in each direction or near major intersections, restricting turning movements to right-turn only could be considered.

Figures 4-19 through 4-21 show Route 111, Route 109 and Route 202/4 corridor segments and nearby Sanford zoning districts, which are:

- AD: Airport Development
- CC: Commercial Center
- CZ: Contract Zone
- DB: Downtown Business
- GR: General Residential
- IB: Industry and Business
- IR: Industrial Reuse
- OR: Office Residential
- ORBP: Office, Research and Business Park
- RD: Residential Development
- RMU: Rural Mixed Use
- RR: Rural Residential
- SB: Suburban Business
- SFR: Single Family Residential
- UB: Urban Business



Table 4-6: Sanford – Land Use and Access Management Applicability Matrix

Road Segment #:	Route 202		Routes 4			Route 109				Notes
	13	14	5	6	7	1	2	3	4	
Reduce the number of vehicle trips generated along highways										
Limit intensity of development abutting highways	—	—	E	S	E	S	S	S	E	Land along Segments 13 and 14 is zoned for high intensity development.
Transfer development rights	—	—	S	—	S	—	—	—	S	TDR is not appropriate for Segments 13 and 14 because land there is fairly close to the city center and zoned for commercial and office/research/business uses; segment 6 is already moderately developed; segments 1, 2, and 3 are zoned for commercial, business, industrial, and airport uses.
Limit the use of land fronting highways to those that generate low levels of peak hour traffic volumes	E	—	E	—	E	—	—	—	E	Land along segments 1, 2, 3, 6, and 14 is already zoned for higher intensity uses.
Incorporate site features that support ridesharing and transit use	S	S	S	S	S	S	S	S	S	Appropriate for all segments.
Encourage access from roads other than the highway										
Require access from streets other than the abutting highway	C/S	C/S	C/S	C	C/S	C	C	C	C/S	Appropriate for all segments.
Require wider frontages on highways than on other roadways	—	—	—	—	—	—	—	—	—	Wider frontages on highways would not be appropriate due to current zoning and small parcels with diverse land ownership along the segments.
Improve street interconnectivity and local traffic circulation										
Require the construction of rear lot access drives and/or backage roads	E	E	E/C	E/C	E/C	E/C	E/C	E/C	E	Appropriate for all segments.
Encourage interconnected parking lots on adjacent parcels	S	S	S	C/S	S	C	C/S	C/S	S	Appropriate for all segments.
Require off-highway frontage for new subdivision lots or a limited number of highway lots	C	C	C	C	C	C	C	C	C	Appropriate for all segments.
Extend subdivision streets to abutting parcels	S	S	S	S	S	S	S	S	S	Appropriate for all segments.



Road Segment #:	Route 202		Routes 4			Route 109				Notes
	13	14	5	6	7	1	2	3	4	
Manage the frequency and operation of access points										
Encourage shared access for abutting lots	S	S	C/S	C	C/S	C	C	C	S	Appropriate for all segments.
Minimize the number of driveways per parcel on highway frontage	C/S	C/S	C/S	—	C/S	—	—	—	—	Segment 6 is moderately developed with a diversity of land ownership; Segments 1, 2, 3, and 4 would not be appropriate for minimizing the number of driveways because of current zoning and small parcels with diverse ownership.
Promote right turn only driveways	S	S	S	S	S	S	S	S	S	Appropriate for all segments.
Require access plans for large developments	S	S	S	S	S	S	S	S	S	Appropriate for all segments.

C= Current, S=Standard, E=Enhanced, — =Not Applicable

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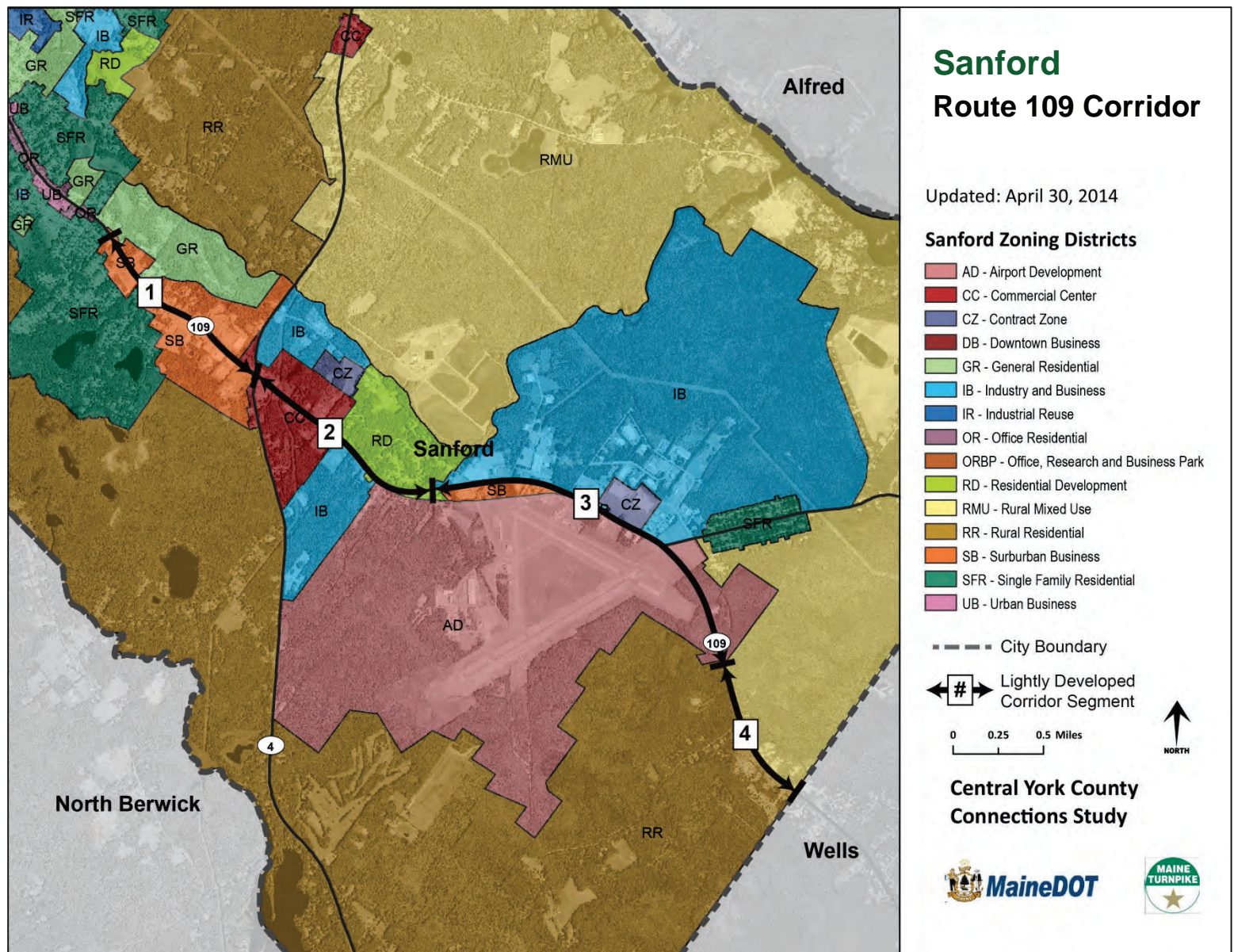


Figure 4-19: Sanford Route 109 Corridor Segments

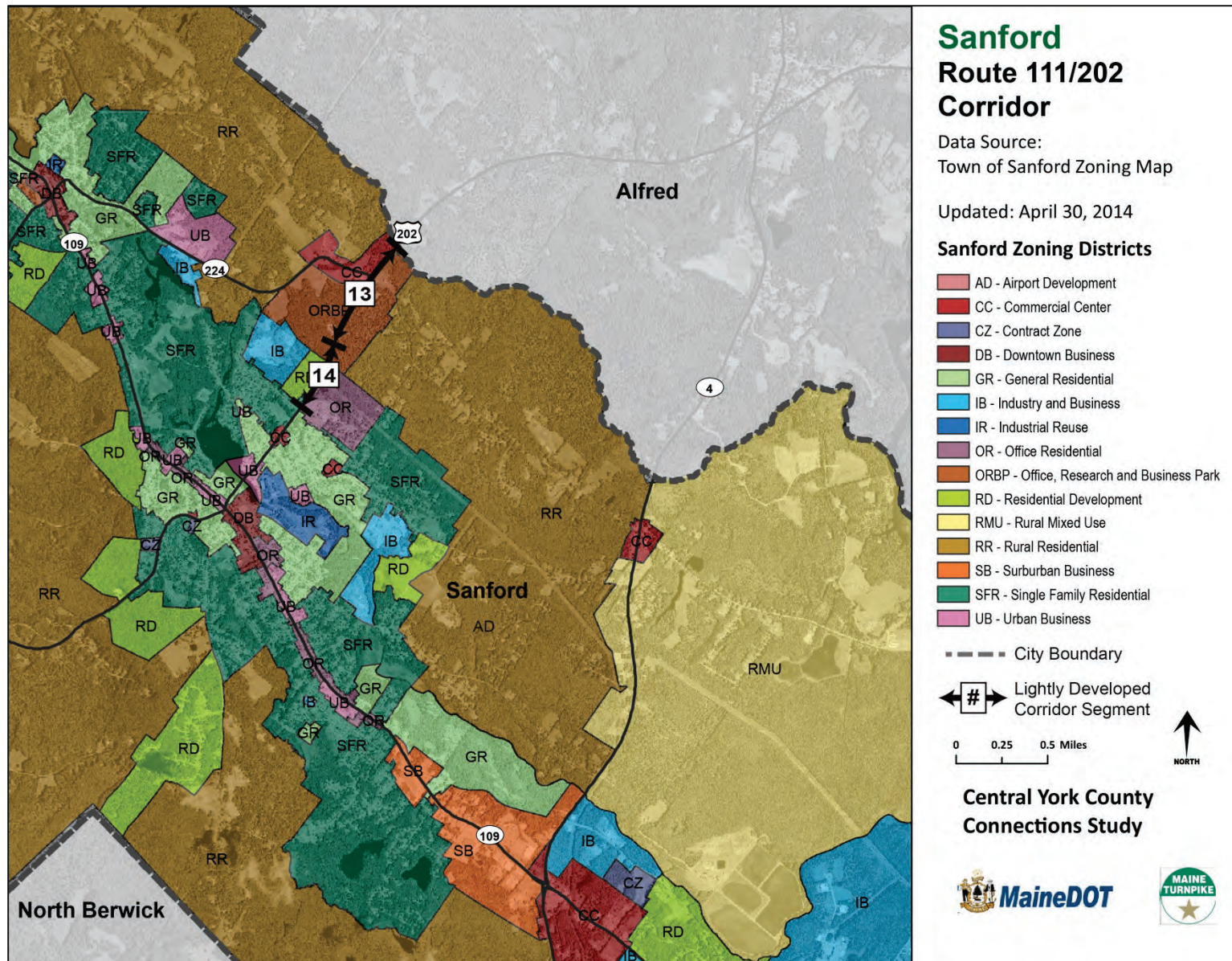


Figure 4-20: Sanford Route 202 Corridor Segments



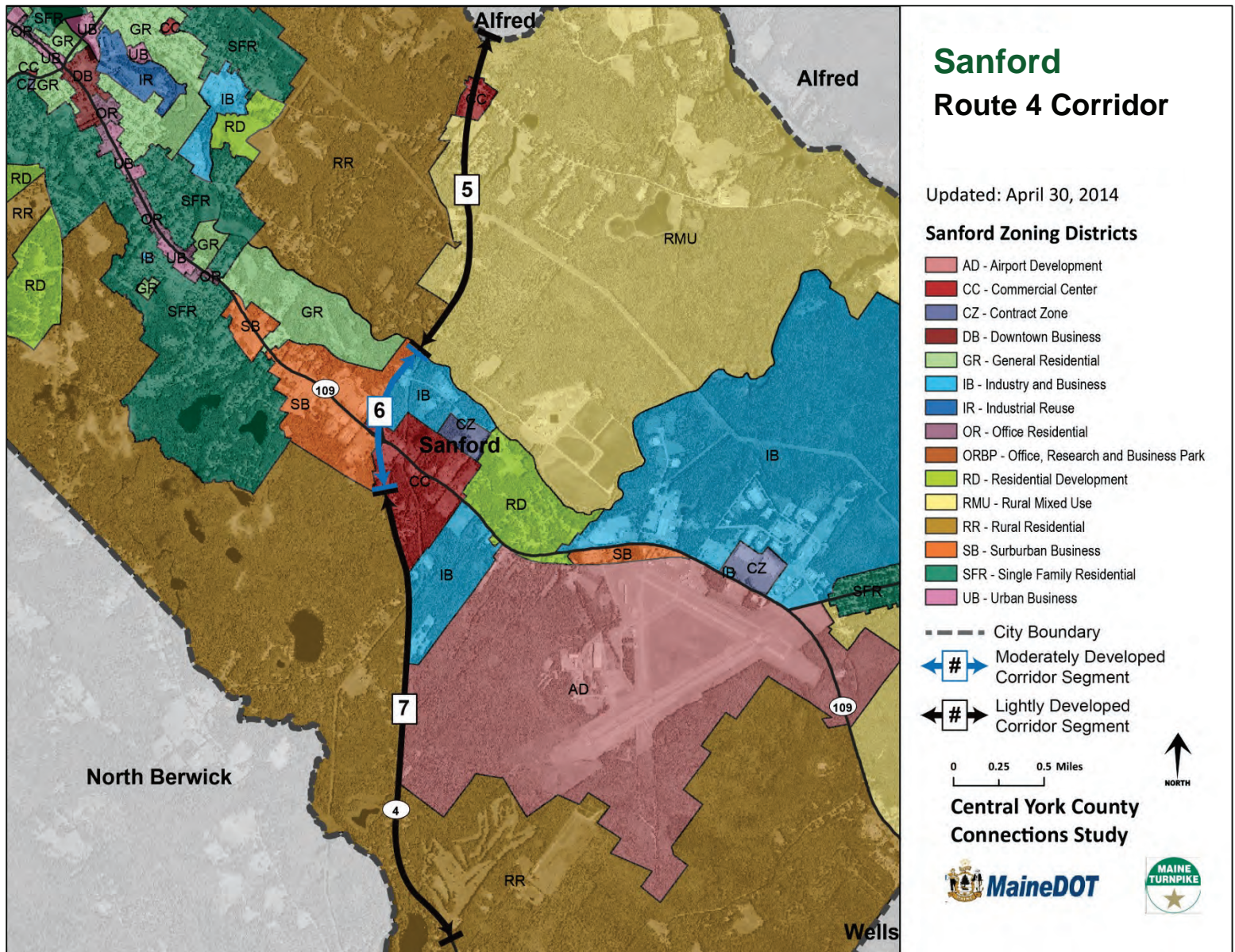


Figure 4-21: Sanford Route 202/4 Corridor Segments

Wells

The Town of Wells has a number of access management and land use techniques in place. Table 4-7 summarizes those measures that could have applicability in Wells. Pertinent to these recommendations are the following observations:

- A portion of the Route 109 Corridor is zoned Rural. This district allows convenience stores and modest-scale restaurants both of which have the potential for generating significant amounts of peak hour turning movements. The Town should consider reviewing the appropriateness of these uses on lots that have their vehicular access on Route 109.
- Other portions of the Route 109 corridor are zoned RA. The RA District currently allows lots fronting on Route 109 with a minimum of 125' of frontage. While there are currently limited areas with development potential that are zoned RA, the Town could consider increasing the lot frontage requirement for lots that front on Route 109 to be at least twice what is required on interior streets.
- In the Residential-Commercial District (RC), non-residential uses are generally limited to a maximum of 5,000 square feet of floor area. To minimize the traffic impact of additional development, the Town could consider revising the allowed uses to limit retail, office, and service uses to those that have limited peak hour trip generation.
- In addition, the Town could consider limiting lots in the Residential-Commercial District (RC) to one curb cut (or one two-way entrance) unless the lot has significant frontage (more than 400'). MaineDOT Access Management rules state that except for forestry management and farming activities,

lots on Mobility Corridors (including Route 109 in Wells) will be limited to one two-way or two one-way entrances, unless a waiver is granted. Two-way entrances are recommended for the Residential-Commercial District in order to minimize the number of driveway crossings by pedestrians and bicyclists in the neighborhood.

- The Town currently has a provision for the interconnection of streets in subdivisions but this does not apply in rural areas. The Town could consider applying this requirement to rural subdivisions along the Route 109 corridor.

Figure 4-22 shows Route 109 corridor segments and nearby zoning districts in Wells, which are:

- AP: Aquifer Protection District
- GB: General Business District
- LI: Light Industrial District
- QM: Quarry Manufacturing District
- R: Rural
- RA: Residential A District
- RC: Residential Commercial District
- RP: Resource Protection
- TC: Transportation Center



Table 4-7: Wells – Land Use and Access Management Applicability Matrix

Road Segment #:	Route 109		Notes
	5	6	
Reduce the number of vehicle trips generated along highways			
Limit intensity of development abutting highways	E	S	Appropriate for both segments.
Transfer development rights	S	S	Appropriate for both segments.
Limit the use of land fronting highways to those that generate low levels of peak hour traffic volumes	S	S	Appropriate for both segments.
Incorporate site features that support ridesharing and transit use	S	S	Appropriate for both segments.
Encourage access from roads other than the highway			
Require access from streets other than the abutting highway	S	S	Appropriate for all segments.
Require wider frontages on highways than on other roadways	S	—	Segment 6 is already moderately developed.
Improve street interconnectivity and local traffic circulation			
Require the construction of rear lot access drives and/or backage roads	E	E	Appropriate for both segments.
Encourage interconnected parking lots on adjacent parcels	S	S	Appropriate for both segments.
Require off-highway frontage for new subdivision lots or a limited number of highway lots	C	—	Segment 6 is already moderately developed.
Extend subdivision streets to abutting parcels	S	S	Appropriate for both segments.
Manage the frequency and operation of access points			
Encourage shared access for abutting lots	—	—	Shared access between lots would not apply since Segment 6 is already moderately developed and Segment 5 is zoned for lower intensity rural and residential uses that would not benefit from shared access.
Minimize the number of driveways per parcel on highway frontage	S	S	Appropriate for both segments.
Promote right turn only driveways	S	S	Appropriate for both segments.
Require access plans for large developments	S	S	Appropriate for both segments.

C= Current, S=Standard, E=Enhanced, — = Not Applicable



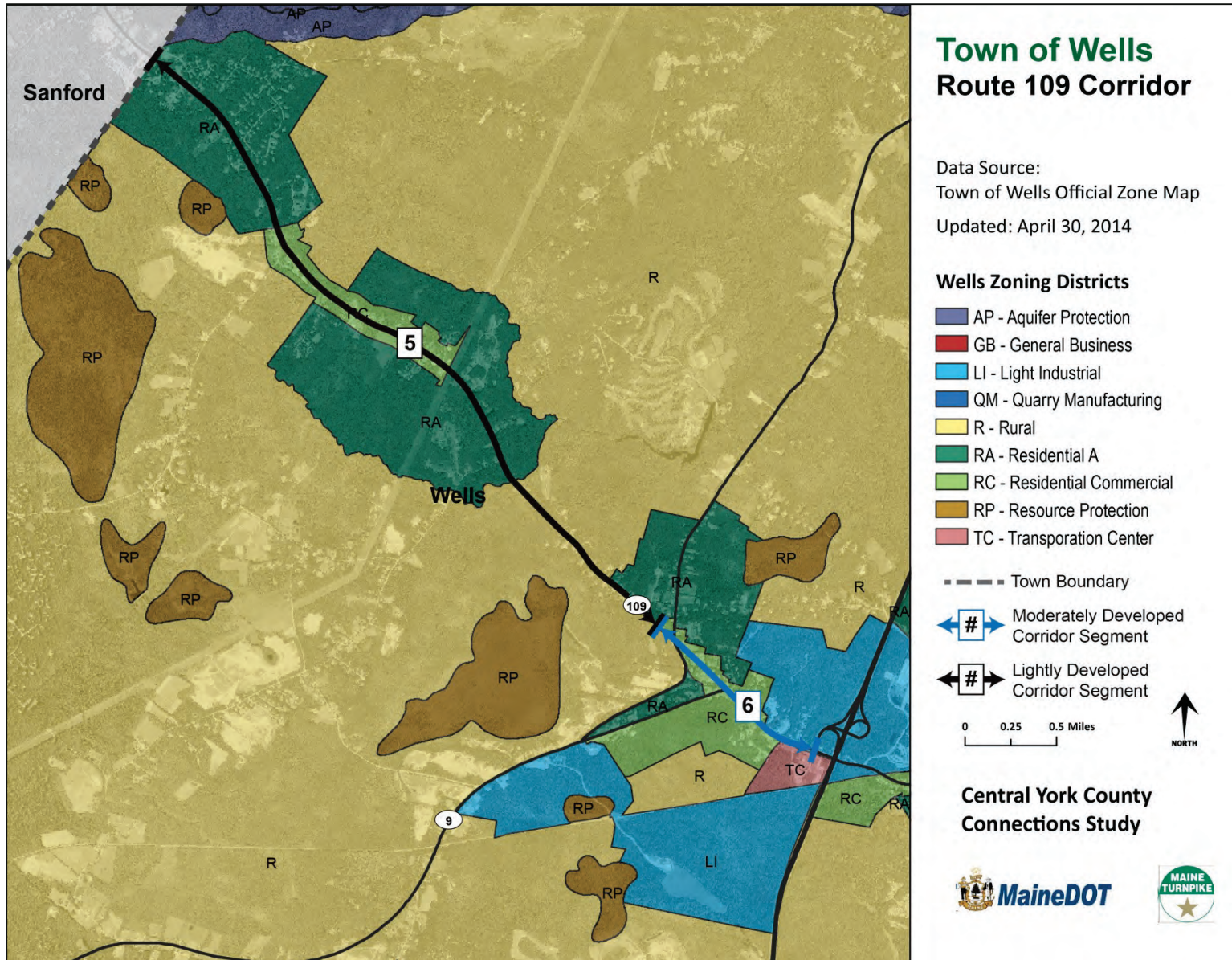


Figure 4-22: Wells Route 109 Corridor Segments

