Small Town Traffic Congestion

Policies for Alleviating Traffic Congestion in Downtown Hanover and Norwich

PRS Policy Brief 0708-12
April 27, 2007

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This report was written by undergraduate students at Dartmouth College under the direction of professors in the Rockefeller Center. We are also thankful for the services received from the Student Center for Research, Writing, and Information Technology (RWiT) at Dartmouth College. Support for the policy research shop is provided by the Ford Foundation.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

While rural areas might not be known for their traffic, congestion is a significant problem in the downtown districts of many small New England towns. The towns of Norwich, VT and Hanover, NH have had to deal with traffic congestion in their downtowns. In Hanover, downtown congestion appears to have stabilized, and traffic levels have actually decreased in the last few years as gas prices have increased. In Norwich, on the other hand, the problem seems to be getting worse with a projected increase in traffic of 40 percent.

The nature of the traffic problem is not exactly the same between the two towns, but there are several policy options that can be used in either town to alleviate downtown congestion. These include:

- Charge more for parking
- Build alternative roads around downtown areas
- Improve public transportation
- Build more residential apartments within walking distance to downtowns
- Synchronize traffic lights

1. TRAFFIC IN DOWNTOWN HANOVER

1.1 Traffic

Overall traffic in downtown Hanover has declined by 5.16 percent between 2003 and 2005.[1] The decline is most likely due to the rise in the price of gasoline which has discouraged commuters from driving to work.[2]

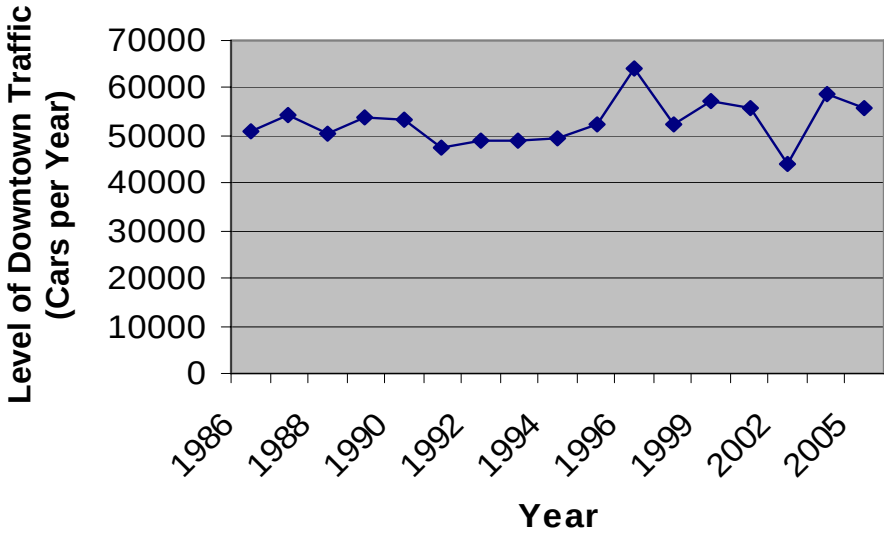

Figure 1. Level of downtown traffic in Hanover, NH between 1986 and 2005

However, many downtown intersections remain congested. The Main Street/Wheelock Street, Wheelock Street/West Street, and NH Route 120/Buck Road intersections all received a Level of Service Designation (LOS) of E; this is the second worst grade, and indicates a mean stopped delay of 35.1 to 50.0 seconds per vehicle in signalized intersections or 55.1 to 80.0 seconds in un-signalized intersections. The Lebanon Street/Park Street intersection was rated LOS D, which indicates a mean stopped delay of 55.1 to 80.0 seconds per vehicle.[3]

Much of the downtown traffic consists of commuters who cut across downtown from I-91 or Lyme Road to reach Dartmouth-Hitchcock Medical Center (DHMC) or Centerra Business Park.[4] In addition, many commute to Hanover to shop and work. Increased development downtown could cause an increase in these commuters.

Table 1. Data from the peak hour turning volumes and traffic sound locations largely mirror each other with little change in traffic. The Intersection Level of Service (LOS) data was assessed using a scale of A to E. A represents the least congested and E the most congested. The maps below show all AM and PM LOS data for 2005.

Intersection	AM	PM
Etna Road/Trescott Road	B	B
Greensboro Road/Etna Road	B	B
Hanover Center Road/Rennie Road	A	A
Main Street/Lebanon Street	C	C
Main Street/South Street	B	B
Main Street/Wheelock Street	E	D
Maple Street/South Street	A	A
NH Route 120/Buck Road	B	E
NH Route 120/Greensboro Road	B	B
Park Street/Lebanon Street	D	D
Park Street/Lyme Road	C	C
Park Street/Wheelock Street	B	B
Wheelock Street/West Street	C	E

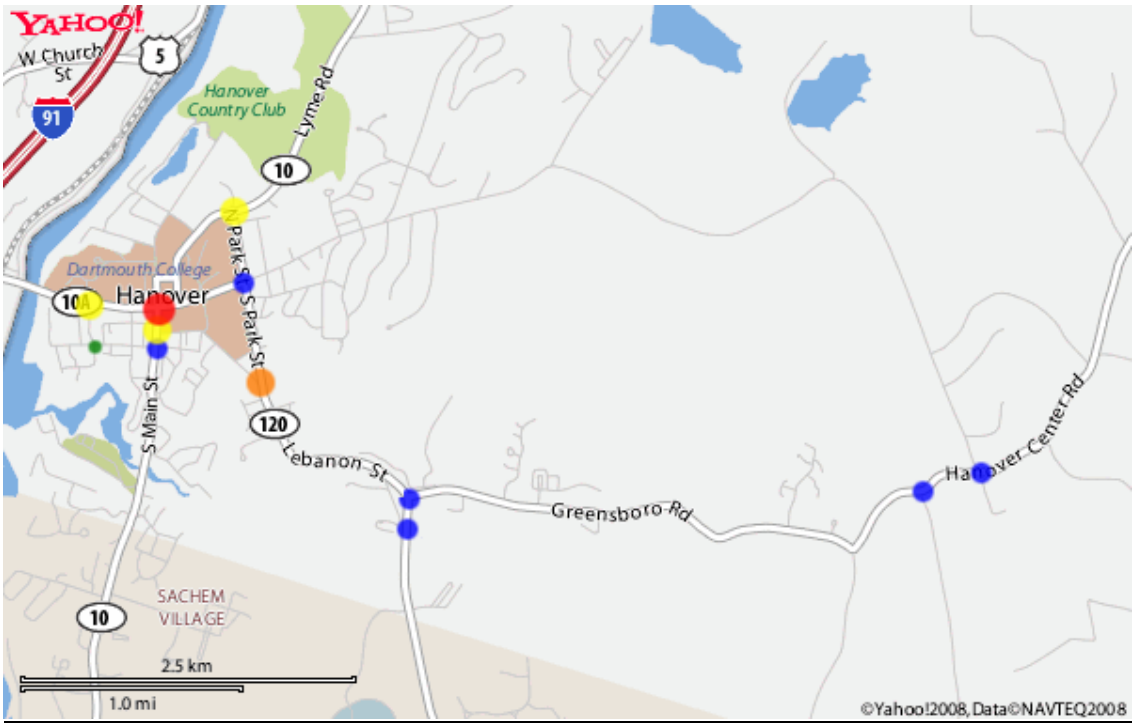

Figure 2. The 2005 Level of Service (LOS) data for Hanover roads during the AM. A=green, B=blue, C=yellow, D=orange and E=Red. Most congested intersections are Park Street/Lebanon Street and Main Street/Wheelock Street. Least congested are Hanover Center Road/Rennie Road and Maple Street/South Street.

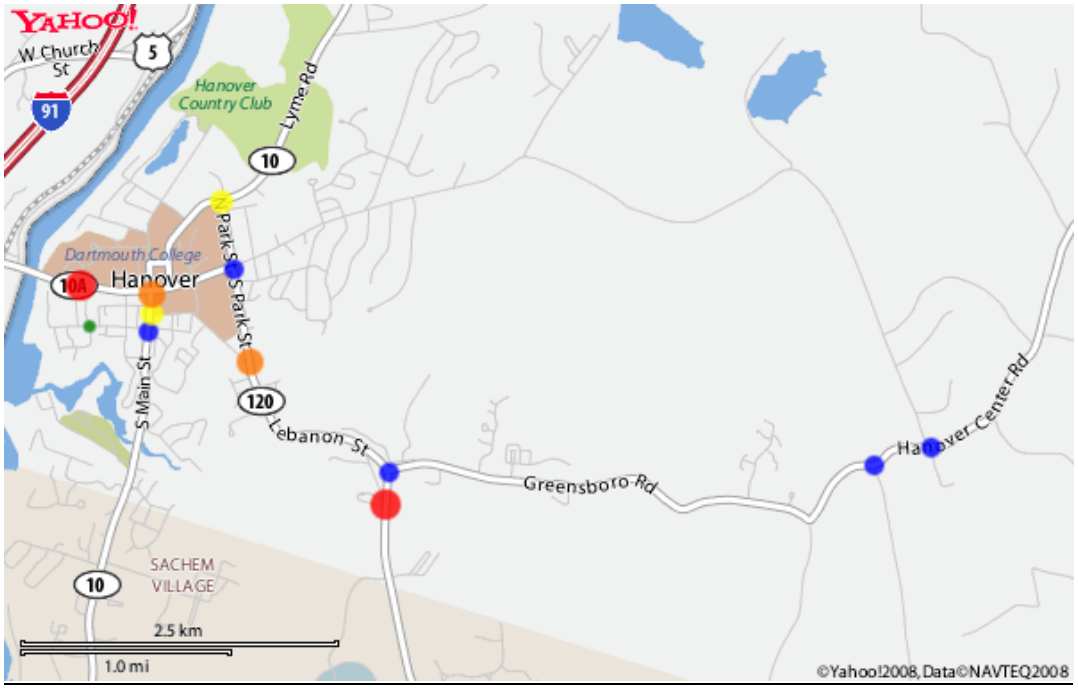

Figure 3. The 2005 Level of Service (LOS) data for Hanover roads during the PM. A=green, B=blue, C=yellow, D=orange and E=Red. Most congested intersections are NH Route 120/Buck Road, Main Street/Wheelock Street, and Park Street/Lebanon Street. Least congested roads are Hanover Center Road/Rennie Road and Maple Street/South Street.

1.2 Public Transportation

Hanover has a well developed public transportation system. The Upper Valley's Advanced Transit bus service has a total ridership of approximately 700,000 per year and is free for all passengers. The service is funded by a combination of federal, state and local government funds. Advanced Transit has five fixed routes bringing in commuters from as far away as Norwich and White River Junction. In addition, two shuttle services ferry passengers around Dartmouth campus and the DHMC. Overall, the use of fixed routes has increased by 48.88% from 2003 to 2007.[5] In addition, the Upper Valley has Rideshare, a matching carpool service that allows multiple commuters to use one car.

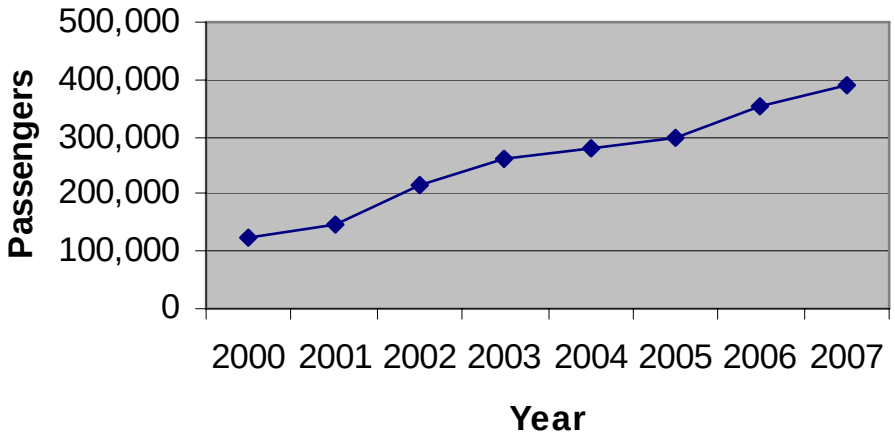

Figure 4. Use of Advanced Transit fixed use lines

2. TRAFFIC CONGESTION IN LOCAL VERMONT COMMUNITIES

Dealing with the movement of people and goods in downtown and village areas continues to be a major challenge for most Vermont communities, including Norwich. As with Hanover, there are downtown intersections that remain congested.

According to the recent Environmental Impact Statement (EIS),[6] there is a projected 40 percent increase in traffic around the "Five Corners Area," which is one of the main roadways used by Norwich citizens. The recent Norwich committee on transportation has stressed that the village does not want traffic to come through Five Corners, especially large trucks. Lucy Gibson, the head of traffic planning, reports a 40 percent traffic increase in the Norwich area in the past two years, especially near the four lanes on all intersection roads. According to the last report from the Norwich Traffic committee, the long-range goal is to move traffic out of the village of Norwich. An alternative is needed to get traffic and trucks out of the village (i.e., to promote or allow local traffic only).

Gibson is part of the Transportation Initiative Committee. Over the past decade, the Transportation Initiative Committee in Norwich has worked together with local officials, regional planning commissions, and the state to relieve traffic congestion, increase transportation options, and improve conditions for pedestrians in downtown Norwich through a wide range of projects. To reduce some of the traffic, it was agreed by the Norwich transportation committee that a viable alternative to Route 2A is needed.[7]

The alternative would be able to move some of the traffic out of the problem areas, but part of the trouble is the impact of this new road near Three Rivers. Students at this school, where 2006 enrollment was nearly 3,800, would have to commute to the new consolidated campus on New London Turnpike. Norwich safety committee chairman Mark Bettencourt said he hoped increased, tougher enforcement of the existing laws

would curb some problems in regard to speeding on the route. His committee is also looking into a carpooling program iniative.

3. POLICY OPTIONS

3.1 Increase Parking Fees

Increasing parking fees would make it more expensive to park downtown, encouraging shoppers and commuters to use public transportation or to carpool. However, it is unclear whether changing the price of parking meters would affect traffic congestion. In 2000, the town of Hanover doubled the price of its parking meters from 25 cents to 50 cents for sixty minutes and saw no decrease of downtown traffic.[8]

There have been some impacts from increasing parking fees in other states, however. One study shows that parking subsidies are an important determinant of commute mode choice. The models in that study predicted that in a large downtown area, between 25 and 34 percent fewer cars would be driven to work if commuters had to pay to park instead of parking for free. The study also suggested that the effect of subsidies on other types of trips should be assessed.[9]

In another study from Seattle Washington, "...evidence clearly suggests tight supplies and higher prices are associated with greater use of transit and ridesharing." Also interesting is that although parking supply is recognized as a contributing factor, it does not appear to be a major determinant of economic development, particularly where the business climate is favorable.[10]

3.2 Change Traffic Light System

The town could synchronize the timing of its downtown traffic lights or have a policeman direct traffic. Synchronized lighting would allow cars to travel at a constant speed through the downtown, reducing the time spent waiting between traffic lights. Alternatively, a traffic officer could direct traffic more efficiently by providing real time analysis of the traffic situation, ensuring no lane becomes too congested while another is free of cars.

In Hanover, the major Wheelock/Main Street traffic light would need to be replaced in order to synchronize it with the other two main street traffic lights. To implement enforcement by a traffic officer, the police force would have to hire additional personnel.[11] The average salary for a police recruit in New Hampshire is $37,000.[12]

In Ann Arbor, Michigan there have been similar traffic changes coordinated by the Downtown Development Authority (DDA). The changes include: replacing signs that confuse drivers, making some of the State Street Area's one-way, and reworking traffic lights to minimize car-pedestrian incidents and slow through-traffic. There were also suggestions to have a policeman direct traffic. Since the program's implementation last year, it takes drivers 5-30 seconds less to drive the length of each street.[13]

3.3 Encourage Mixed-Use Development

Towns can encourage commuters to walk to work by building high-density residential buildings downtown. Building residential units increases the number of commuters within walking distance of their work and should therefore increase pedestrianism.

In Hanover, most residents of the main downtown development walk into Hanover because their homes are actually closer to the downtown than the parking lots.[14] Hanover has already amended zoning rules downtown (D-1 and D-2 zoning districts) to encourage – and in some cases require – mixed-use development. The south side of the South Street development has already been built following these new regulations.[15]

In Chittenden County, Vermont, communities such as South Burlington have been creating their own unique and successful network of shared-use recreation paths and walking trails to divert car use. These efforts to improve travel for bicyclists and pedestrians have become a comprehensive regional bicycle and pedestrian plan coordinated by the Chittenden County Metropolitan Planning Organization. These new transportation programs in Chittenden County currently have monetary help (approximately $45,000) from nonprofit organizations such as Local Motion. The initiative has expanded to include connections through the Island Line trail linkage to Grand Isle County.[16] Some results are:

- Since the implementation of the program in Chittenden County, 900 residents have registered bikes and use the bike trails rather than their car. Almost all towns in Chittenden County now have bike or walking trails.
- The Plan establishes a policy for multiple methods to get around and benchmarks for expenditures.
- South Burlington started the initiative in 1989 with a small citizen group and a 1-block long path. The city now has an officially recognized Recreation Path Committee and 16 miles of pathways – the most of any town in Vermont**.** The city also works with the communities of Shelburne and Charlotte. The impacts of these path and trail networks include health benefits from biking or walking. The city has reduced traffic levels during the busy commuting hours (M-F 5-7pm) more than any other town in Vermont.

3.4 Increase Public Transportation

Other policy options include decreasing the cost of public transportation and/or increasing the level of service to encourage commuters to use public transportation. In rural areas such as the Upper Valley, bus services would most likely be the most cost-effective method of transportation. A cheap and extensive bus service would significantly reduce the number of commuters who drive to work, improving both the environment and downtown congestion.

The Rhode Island Public Transit Authority has had success in similar endeavors. According to the most recent report released by the Rhode Island Public Interest Research Group, Public Transit Authority in 2006 saved one million gallons of oil, avoided 4,874 metric tons of global warming emissions, and saved rush-hour commuters in the greater Providence area 976,000 hours spent in traffic.

In New Hampshire, the New Hampshire Department of Transportation (NHDOT) has implemented a statewide "RideShare" initiative through their new public service announcement campaign, widely distributed leaflets/pamphlets, and press coverage. NHDOT has also started an information service to promote carpooling and use of public transit. This should increase knowledge about Rideshare by over 61% in the local population.

NHDOT works with employers, motorists, and groups such as local Transportation Management Associations (TMAs), to encourage and provide logistical support for carpooling and the use of public transit. Local communities should combine their efforts with NHDOT as they continue to expand their services. Possible projects for both Hanover and NHDOT improvement include expanding RideShare staff and greater outreach efforts.[17]

In Hanover, there is a demand for an expansion of Advanced Transit's bus services. Advanced Transit is funded by a combination of federal, state and local government funds and is free to riders. Advanced Transit could increase capacity along the Brown Route and Blue Route Morning Express Run or shift the Blue Road so that it covers Mount Support Road. In addition, Advance Transit could create a new bus line coming up from I-89. Expanding Advanced Transit would be expensive, with an additional route costing approximately $100,000 a year. An expansion would also require cooperation with the various towns served by Advance Transit.[18]

3.5 Build More Roads

Another option would be to build more connector roads bypassing downtown districts. This option would not reduce the number of commuters who drive to work, but it would reduce downtown congestion by decreasing the number of cars that need to drive through downtown to reach their destination.

In Hanover, the construction of a bridge and exit off of I-91 to the south of exit 13 could significantly reduce congestion. The new exit and route would allow commuters from I-91 to reach DHMC and Centerra without going through downtown Hanover. The bridge would significantly reduce traffic congestion, but it would be very expensive. It would also be an interstate bridge, which means it would require approval and cooperation from the Federal government, New Hampshire, Vermont, the Town of Lebanon, the Town of Norwich, and the Town of Hanover. Another option is to build a road from Route 10, north of downtown Hanover, to Route 20 near the Lebanon border. This option would allow commuters from northern Hanover and Lyme to bypass the downtown on the way

to DHMC. The negatives of this option are that it would be expensive and could encourage more people to commute by car.[19]

4. CONCLUSION

There is no simple answer to downtown congestion in rural towns. Each town faces a wide array of problems and a wide array of solutions. Both Hanover and Norwich could opt for the most extreme solution and build more connector roads around the downtown. This option is the most direct and could maximally reduce congestion, but it is also the most expensive and would need to overcome many regulatory hurdles. The towns could also focus on more incremental reforms such as hiring traffic officers, encouraging downtown residential developments, or improving public transportation. The exact effects of these policy options on downtown congestion are less certain, but they could help alleviate traffic in Norwich and Hanover in the short term for a reasonable cost.

REFERENCES

[1] Ned Connell. *Hanover Traffic Survey Report*. Transportation Systems Planning, 2005.
[2] Interview with Jonathan Edwards, Director of Hanover Planning and Zoning Department.
[3]Connell, Ned. *Hanover Traffic Survey Report*. Transportation Systems Planning, 2005.
[4] Interview with Jonathan Edwards, Director of Hanover Planning and Zoning Department.
[5] *Parking and Public Transportation*. Advanced Transit. Hanover: Advanced Transit, 2008.
[6] *Organization and Local Government Comments*. Vermont Policy Report, October 2004. Available at: http://www.circeis.org/documents/study_documents/050525_Scoping_Memorandum/Appendix%20D/All/Appendix_D_Scoping_Comments.pdf.
[7] Norman Marshall and Lucy Gibson. *Report on the Environmental Impact Statement and Traffic Control*. http://www.clf.org/uploadedFiles/CLF/Programs/Smart_Growth/Fight_Sprawl/The_Circ/Appendix%20A%20-%20Circ%20DEIS%20review-11-19-07.pdf Accessed: April 13, 2008.
[8] Interview with Paul O'Neill, Parking Supervisor.
[9] Richard W. Wilson. Regional Science and Urban Economics. Vol.22. 1992: 144-145
[10] K.T.Analytics. "Local Zoning Codes and Parking Supply", p.1-2. Seattle, Washington. Dec. 6-7, 1990. - *Local Zoning Codes and Parking Supply*, Association for Commuter Transportation. Seattle, Washington. Dec. 6-7, 1990, 7-8.
[11] Interview with Nicholas Giaconne, Police Chief of Hanover.
[12] "*Average Salary of Police Recruit*" Available at: http://www.indeed.com/salary?q1=traffic+policeman&l1=New+Hampshire+State+Police%2C+NH Accessed: April 15, 2008.
[13] *Ann Arbor Traffic Current Projects Available at:* http://www.a2dda.org/current_projects Accessed: April 13, 2008.
[14] Interview with Jonathan Edwards.
[15] Interview with Jonathan Edwards.
[16] CCMPO Traffic Count Data Available at: http://www.ccmpo.org/data/counts.html Accessed: April 16, 2008.
[17] NHDES. *The Climate Change Challenge. Available at:* http://www.des.state.nh.us/ard/climatechange/challenge.pdf Accessed: April 16, 2008.
[18] Interview with Van Chestnut, Executive Director of Advanced Transit.
[19] Interview with Jonathan Edwards.