

Executive Summary

The Chittenden County Metropolitan Planning Organization (CCMPO) has recognized the need to incorporate freight transportation planning into its regional transportation planning process. To achieve this goal, the Regional Freight Study was initiated by CCMPO in the fall of 1999. This study encompassed many different but complementary components that have been completed and integrated to form a comprehensive freight study. This effort was undertaken in coordination with the Statewide Freight Study conducted by the Vermont Agency of Transportation (VAOT). This project represents the first integrated freight initiative for the CCMPO. It provides the foundation and framework for the development of an ongoing freight transportation plan by describing the overall freight system and defining recommendations for future freight initiatives.

The goals of this study included:

- Develop a better understanding of the freight transportation system in Chittenden County;
- Acknowledge and address public concerns regarding specific freight movement practices;
- Provide data that can be used to preserve and improve the transportation system;
- Expand the tools available for freight planning efforts; and
- Begin to identify and prioritize future investments in the freight transportation system.

■ Background of Freight Transportation

Over the last decade, public sector transportation planning agencies have begun to recognize the importance of incorporating freight-specific planning initiatives into existing practices. Prior to this, freight transportation planning was a relatively low priority for the public sector. This was due to a combination of factors, including the dominance of the freight sector by private operators, which made public intervention more complicated. In addition, the limited planning resources that were available were targeted towards major passenger transportation initiatives.

This situation began to change due to the emphasis placed on multimodal planning in the Intermodal Surface Transportation Efficiency Act (ISTEA), enacted in 1991, which encouraged states and MPOs to consider freight movements in their transportation planning processes. The subsequent Transportation Equity Act for the 21st Century (TEA-21), enacted in 1998, reinforced this movement towards more comprehensive freight and passenger initiatives. The increasing economic competitiveness among states and regions within the U.S. and the globalization of the economy have further increased the importance of a region's freight transportation infrastructure. The deregulation of freight

transportation has dramatically changed business practices and created new competitive opportunities across modes. The ever-changing nature of business practices, with an emphasis on reliable, just-in-time delivery (JIT), places a premium on the efficient operation of the freight transportation system. It also increases the burden on that infrastructure, as the inventory that used to be stockpiled in warehouses is increasingly stockpiled in freight vehicles of one kind or another in transit.

The deregulation of the trucking industry, the continued decline of the railroad industry, and the shift of the Northeast economy from manufacturing to services have all combined to dramatically increase truck traffic on the region's roadways. The North American railroads have undertaken many initiatives to improve service to compete with each other and the trucking industry for freight traffic. This has included development and deployment of new technologies, such as double-stack cars, and container- and trailer-on-flatcar (COFC/TOFC) services. These new technologies provide increased economies of scale, faster service, and multimodal coordination. However, the technologies themselves required expensive modifications to the existing infrastructure.

There also has been a continuing emphasis on consolidation among the Class I railroads, including the mergers of Burlington Northern and Santa Fe, the Union Pacific and Southern Pacific, and the split of Conrail between CSX and Norfolk Southern. Each of these mergers was undertaken to make the resulting railroads more competitive in the movement of freight. However, each example resulted in periods of far worse service, which had national and international ramifications. To some degree, these service failures are still being mediated. In fact, the most recent merger attempt by the Burlington Northern Santa Fe and Canadian National railroads was rejected by the Surface Transportation Board (STB).

Many of these railroad trends are exacerbated in the Northeast, including Chittenden County and Vermont, because of the lack of investments in upgrading rail infrastructure and the limited access of competing railroads. As a result, this region faces a situation in which truck volumes are increasing as truck lengths and weights have been growing. This contributes to traffic congestion in a variety of ways. Areas experiencing significant highway traffic growth, such as Chittenden County, are working to accommodate increased traffic on a fixed infrastructure. And areas where the physical infrastructure is constrained, such as rural roadways and small town centers where large trucks have difficulty negotiating tight roadway geometries, are working to identify projects that will accommodate larger vehicles. In addition, trucks are seen as having major environmental and quality of life impacts. As a result, there are pressures at the local and state levels to limit truck operations.

Globalization of the economy also has changed the transportation and service requirements of shippers and receivers. Manufacturers can serve markets globally, but this requires a greater reliance on and greater efficiencies in the transportation system. Given the proximity of Chittenden County to the U.S./Canadian border, the liberalization of trade with Canada brought about by the U.S.-Canada trade pact and subsequently by the North American Free Trade Agreement (NAFTA), has significant implications for the movement of freight into and through Chittenden County.

Increased reliance on the Internet, e-business and subsequently e-commerce have also impacted freight transportation. Many new Internet-based businesses have set up capa-

bilities to sell products on-line to a global market. This new and expanded use of technology places new demands on the transportation infrastructure.

■ Findings, Conclusions, and Recommendations

The findings and conclusions are organized around five areas. These areas consist of the economy, the transportation infrastructure, freight flows, intermodal transportation, and institutional issues.

Economy

The Chittenden County economic trends are favorable compared to national and regional trends. Unemployment rates have continued to decline over the last decade, following the national trend. In addition, unemployment rates in Chittenden County are lower than both the Vermont and U.S. averages. These declines in unemployment rates occurred while Chittenden County's population grew by almost 10 percent between 1990 and 1999, which is about the same as the U.S., and faster than Vermont and the Northeast. The population is expected to continue growing by 69 percent by 2035.

Manufacturing employment in Chittenden County as a percent of total employment has continued to decline but is higher than Vermont and the U.S. as a whole. And although Chittenden County's average wage is lower than the New England average, it is almost \$5,000 higher than Vermont's average wage. Based on these trends, Chittenden County is well positioned to maintain its position as a positive contributor to Vermont, and the regional, national, and international economy.

Transportation Infrastructure

The transportation infrastructure in Chittenden County has met the needs of the businesses based here, but not without creating some inefficiencies, additional costs to shippers and receivers, and restricted modal selection.

The highway infrastructure in Chittenden County is the most critical component of the overall transportation infrastructure. Trucks carry more than 90 percent of all freight by weight. Recent growth in the population and employment in the county has created a congested highway system. This is further complicated by what many consider to be an incomplete highway system. Specifically, the circumferential highway and the southern connector projects have never been completed. These two example projects would provide limited access highways in key corridors in Chittenden County. Other examples of problem areas include access to the airport and congestion in the Tafts Corner area. Chittenden County is also impacted by the highway infrastructure in the rest of Vermont. For example, I-89, U.S. 7, VT 22A, and U.S. 2 represent key North/South and East/West highways providing access to and from Chittenden County.

The expanded truck network defined by the Legislature in 2000 improved the system by designating a statewide truck network on which vehicles with overall lengths less than 72 feet (including 53-foot tractor trailer combinations) can travel without permits. The only exception is the segment of U.S. 4 through Woodstock where a permit is required. Major successes for the business community included the elimination of permits for specific vehicles on the designated network and the opening of key highway segments, such as U.S. 4, to larger trucks. Another key issue for truck movements is the variations in local road postings. To access some areas a trucking company must acquire multiple permits, which can be an extremely time consuming and costly activity.

Chittenden County is served by two railroads, the Vermont Railway and the New England Central Railroad. These railroads connect Chittenden County with the surrounding region and North America. However, the rail system in Chittenden County and in Vermont has weight and clearance limits that impact its ability to function effectively in the regional, national, and North American rail system. The maximum weight limit for almost all of the Vermont system is 263,000 pounds per car, which is below the typical Class 1 operations of 286,000 pounds or above. This creates operational problems for interline traffic destined for or moving through Chittenden County and Vermont from other railroads. In addition, there are no routes in the state that are double-stack cleared, with the exception of the short segment of track operated by the St. Lawrence and Atlantic in northeastern Vermont. There are no operational TOFC/COFC terminals in Chittenden County or Vermont, however, there are through train moves currently carrying trailers and containers on flat car. A double-stack cleared route could create a niche market for Vermont railroads, and increased weight limits could facilitate an increase in existing carload traffic.

Another factor impacting rail service in Chittenden County is the reduced number of direct rail sidings and the limited number of transload facilities. The railroads downsized their systems over the years in response to reduced traffic. In a time of limited capital, these sidings cannot realistically be put back. As a result, there is a demand today for a greater number of transload facilities for the transfer of bulk commodities between truck and rail. This is a market still served by the short lines in Vermont and represents an area the CCMPO and VAOT should consider in future investment decisions. These factors should be addressed and considered with any future work on the re-location of the Vermont Railway's Burlington yard.

The airport system in Chittenden County consists of Burlington International Airport. A limited amount of freight is moved into and out of Chittenden County by air. It represents 0.1 percent of the county's total by weight and more than 96 percent of the air cargo tonnage in Vermont. Burlington International Airport serves as a critical link in the overnight parcel and mail network as courier companies must transport their goods by air to ensure next day service. Some parts of the state do not have next day courier service as a result of no air service. Federal Express is looking to expand its operation in Burlington. Future use of the air service in Chittenden County will continue to be for niche markets like overnight service and some limited use by high-tech companies and companies shipping light, perishable products.

The water system in Chittenden County consists of ferry service across Lake Champlain. There are multiple locations where truck can access this service, although not all facilities

accommodate trucks. This service exists to address the geographic barrier created by Lake Champlain. It provides carriers with the opportunity to take more direct routes for some corridors, although some industry representatives reported the service was cost prohibitive for trucks. The other component of the water system that needs to be recognized is the location of major ports in proximity to Chittenden County shippers and receivers. There are several ports that provide the county's shippers and receivers with service, including Montreal, Quebec, Halifax, Boston, and New York/New Jersey. Freight movements to/from each of these facilities involves a dray move by truck. West Coast ports can be accessed via intermodal rail for Pacific markets. This port infrastructure consists of multiple competing facilities and provides Chittenden County with good access to international markets.

Freight Flows

In 1997 there were about 5.8 million tons of freight moving into, out of, and within Chittenden County. About 91 percent of this tonnage moved by truck. Rail consisted of about six percent. These two modes basically carry the freight into, out of, and within the county. While the county-level data does not provide an estimate of through moves, for Vermont as a whole, such movements are the single largest type of movement, representing 35 percent of all tons moved. This is characterized by moves to/from Quebec, New Hampshire, and Massachusetts. These origin/destination patterns suggest that much of this through traffic travels on I-89, moving through Chittenden County. Also, Chittenden County receives significantly more freight than it ships (4.0 versus 1.5 million tons annually). Within Vermont, Chittenden County is both the largest receiver and shipper of freight.

Intermodal Rail Transportation

The intermodal analysis completed for this study and the Vermont Statewide Freight Study was originally intended to explicitly explore the potential for developing traditional truck/rail terminals to serve TOFC/COFC markets. The data collected early in the project suggested that the effort should also address other truck/rail transfer services, such as transload facilities for the transfer of bulk commodities between truck and rail. This was an important component because, as described above, many direct rail sidings have been eliminated over the years resulting in the need for additional transload facilities. In addition, this could potentially represent a shorter-term improvement opportunity.

The existing TOFC/COFC service operating in Vermont consists of through trains, as there is no intermodal ramp located in Vermont. The Vermont Railway tested an intermodal service several years ago, but was unable to make it profitable. This is due to two key variables. First, Vermont does not have a single base load shipper. For any intermodal ramp, there needs to be a single customer providing the majority of loads required to make the service profitable. Second, Vermont is surrounded by several large, successful intermodal ramps that can be accessed with a relatively short dray by Vermont shippers/receivers. Therefore, any terminal based in Vermont will need to compete with these

established facilities. It is unlikely that a new ramp will be able to attract enough freight from the existing sites to be efficient.

The existing transload service operating in Vermont consists of a network of terminals and yards operated by the railroads serving Vermont. The service has grown in importance as the rail system has been consolidated over the years, resulting in the elimination of rail spurs and direct rail sidings. This service is heavily marketed by the railroads today. Transload facilities provide shippers/receivers with access to rail transportation and storage capacities that otherwise would be unavailable. This enables a local business to purchase a rail car load of product at a lower price per unit, and provides opportunities for several shippers/receivers to consolidate their freight to take advantage of the economies offered by rail. This translates into lower costs and reduced dependence on trucks.

Institutional Issues

Chittenden County is a region characterized by beautiful landscapes, quaint old towns and villages, and a quality of life that attracts many. This environment is not conducive for the development of large industrial operations or large trucks moving on substandard highways through small villages. However, in order for residents to earn a living and serve the tourism industry, it is necessary to have an adequate transportation system. These conflicting goals have been the center of conflicts between the public and private industry. CCMPO, along with VAOT and the Legislature has been left to mediate these conflicts and work to create a system that addresses the concerns of both groups. The practices of retention and attraction of businesses in and to Chittenden County are impacted by the desire throughout the state to maintain the quality of life while working to create a strong base of employment opportunities.

This Regional Freight Study is an important first step. It provides data and analyses that explain what is moving, how much is moving, why it is moving the way it is, and what can be done to facilitate future movements. The 2000 truck network created by the Legislature has already addressed some of industry's concerns. The key issues in Chittenden County focus around completion of the circumferential highway and the southern connector, as well as roadway geometries and congestion at sites such as Tafts Corner. Truck routes in general in the greater Burlington area are also of a concern to trucking companies and the citizens.

Recommendations and Next Steps

A series of recommendations and next steps have been developed to assist CCMPO in improving the freight transportation system in Chittenden County in the coming years. These recommendations and next steps address policy decisions, outreach activities, educational exercises, and development and use of new freight planning and modeling tools. The following recommendations and next steps have not been prioritized.

Recommendations

- **Continue monitoring of the designated truck highway network in Vermont.** The existing truck highway network designated by the Legislature in 2000, is a very positive advancement in the infrastructure, however, this will need to continuously be reviewed to match economic development, as well as citizen's concerns regarding safety, and noise and air pollution. CCMPO should take an active role in monitoring the effectiveness of this network and provide input to any future modifications.
- **Continue emphasizing on key freight highway corridors in Chittenden County.** The issue of north/south routes on the western border of Vermont, as well as east/west highways in northern Vermont continue to be significant factors for efficient freight transportation into and out of Chittenden County. The CCMPO should continue to work towards a viable solution for these corridors, to ensure better access to Chittenden County and better access to markets south and east of Chittenden County.
- **Develop freight-specific projects.** Freight-specific projects should be developed, prioritized, and included in the CCMPO's Transportation Improvement Plan (TIP). This is the funding mechanism for transportation projects, so the inclusion of freight-specific projects will be critical for addressing improvements to meet the needs outlined in the report.
- **Use the methodology for prioritizing projects.** The methodology for evaluating freight transportation projects developed as part of this study and the Vermont Statewide Freight Study should be incorporated into the CCMPO's planning activities and existing evaluation tools. This will require buy-in and acceptance from CCMPO staff and other local stakeholders that freight transportation should be considered as a separate goal.
- **Investigate possible modal diversion analyses.** This study outlines the data needs and methodology for conducting modal diversion analyses. This material should be reviewed and CCMPO should consider possible applications of this approach.
- **Develop an outreach program that communicates the findings of this study to the general public to build consensus for freight system improvements.** It is critical to educate the public about the importance of freight transportation in Chittenden County. The goal of this outreach should be to educate the public as well as provide opportunities for comments with the ultimate objective being the building of consensus regarding freight planning initiatives and project development and implementation.
- **Participate in the prepare an action plan to develop double-stack cleared routes in Vermont, based on required improvements in Chittenden County.** The future of intermodal rail service in Vermont is directly related to the ability of Vermont to provide double-stack capabilities through the state. A critical element of this plan should be coordination with the surrounding states in the development of cleared routes serving the Northeast.

Next Steps

- **Develop action plan for development of an expanded intermodal network.** The CCMPO should work with the VAOT and the two railroads operating in Chittenden County to identify opportunities for improved rail/truck service. This would likely include transload facilities in the short term. Regionally, this would likely include consideration of joint efforts with surrounding states and provinces regarding TOFC/COFC terminals. This is an important action for Chittenden County because it has the largest single market in Vermont. Questions to be addressed would be things like what can improvements to weight and clearance limits to Vermont's rail system do for the regional intermodal opportunities.
- **Incorporate the recommendations developed as part of other recent and ongoing studies.** The CCMPO and VAOT are undertaking or have recently undertaken studies that impact freight flows in Vermont. For example, CCMPO is in the process of conducting studies to evaluate access to the airport, and the development of a more elaborate land use analysis tool. It also is working on the circumferential highway project and a commuter rail service. Each of these initiatives will impact the flow of freight directly or indirectly in Chittenden County. In addition, the VAOT is in the process of completing the Vermont Rail Capital Investment Policy Plan and the Long-Range Transportation Plan. The findings of these efforts should be incorporated into the ongoing freight planning activities.
- **Incorporate the Canadian National (Truck) Roadside Survey data.** This data will be incorporated as an addendum to the Vermont Statewide Freight Study. This subsequent analysis should be reviewed to identify any data relevant to Chittenden County.
- **Develop a stakeholders forum for industry representatives to provide input and expertise to freight projects.** Data collected from the industries in Chittenden County were a critical part of this study. An ongoing forum should be developed that provides CCMPO staff with access to the freight industry and vice versa. This should also include involvement of the general public.