

**Williston Road Network Transportation Study, South Burlington, VT  
Chittenden County Regional Planning Commission and City of South Burlington, VT  
June 16, 2014**

**Overview of Study**

South Burlington has future land use objectives associated with their City Center development. This project, Williston Road Network Transportation Study, seeks to understand how the transportation system would need to be modified to meet the land use objectives identified by the City. The study will develop short, medium, and long-term transportation strategies for meeting the City's goals while considering strategies that have been effectively applied in other developing downtowns.

The study will evaluate land use and transportation scenarios for future years 2025 and 2035. Significant known right-of-way, utility, and environmental constraints will be identified with the development of these scenarios; however, no formal screening will be completed at this time. Upon completion of this initial planning study, a more detailed environmental screening process will likely be required.

**Land Use Scenarios**

One land use scenario will include the full City Center Tax Increment Financing (TIF) build-out (2035). South Burlington City staff will direct VHB with land use development assumptions for the project area. This is a form based code area so specific types of land uses are not specified in the zoning. If other land use scenarios are developed, City staff will provide the necessary input.

**Transportation Scenarios**

The pace of development in South Burlington and surrounding areas would traditionally trigger consideration of roadway and intersection widening to accommodate the traffic. However, South Burlington would prefer to consider alternatives to roadway widening. This study will consider the following:

- Construction of a parallel road north of Williston Road. The initial concept for this road is a two lane support street with the potential of development along the road
- Traffic signal improvements
- Intersection improvements
- Additional intersections (i.e. at a minimum between Windjammer & White St ~ 1200 ft. +/-)
- TDM
- Increased transit service
- Increased bicycle and pedestrian usage
- Increased alternative transportation mode infrastructure improvements
- Access management
- Accepting more congestion
- Changes in driving behaviors – next generation driving less?
- Other ideas

The study will include the development of a subarea traffic model, which along with the Chittenden County Regional TransCAD Model, will evaluate and test various roadway and non-roadway transportation strategies.

The evaluation of alternatives will consider levels of service for all users, not just automobiles.

**Primary Study Area**

The primary study area will consist of Williston Road between Dorset Street and Hinesburg Road with a consideration for development of the City Center.

To the north, the study will consider the potential for a new roadway paralleling Williston Road extending from Patchen Road to the west with a new intersection at Dorset Street and Williston Road.

The study will also consider conditions with and without I-89 Exit 12B (new interchange at I-89 and VT116/Hinesburg Road).

The following streets and intersections will be included in the primary study area:

Streets

1. Williston Road from Dorset Street to VT 116 (Hinesburg Road)
2. White Street
3. Consideration for a new street parallel to and north of Williston Road from Patchen Rd to Dorset Street intersection

Intersections:

1. Dorset Street and Williston Road
2. Mary Street and Williston Road
3. White Street and Williston Road
4. VT 116 and Williston Road
5. New northern road (parallel to Williston Road) and Patchen Road
6. New northern road (parallel to Williston Road) and Williston Road/Dorset St

VHB's Scope of Services is separated into the following major tasks:

- Task 1 – Project Management, Coordination
- Task 2 – Data Collection and Mapping Baseline Conditions
- Task 3 – Evaluation of Transportation Strategies

## **Task 1 – Project Management, Coordination, Meetings**

### **Task 1.1 Client Communication and Coordination**

The VHB Project Manager (and others when necessary) will be in regular communication with the CCRPC and City Project Director throughout the study providing updates of the various study tasks, preparing for up-coming meetings, and evaluating and tracking team member actions.

VHB will attend the meetings listed below with the CCRPC and City staff:

1. Kick-Off Meeting
2. Up to two (2) in-person project meetings
3. City Council Meeting
4. Brainstorming Transportation Strategies (see Task 3.5 below)
5. Regular conference calls (minimum frequency of monthly)

VHB will organize, facilitate discussion, document meeting notes, answer questions, and distribute notes and action items to attendees afterward.

### **Task 1.2 Progress Reports**

VHB will prepare monthly progress reports that will accompany submitted invoices. The reports will summarize the study progress by task. Work under this task will include coordination with task leaders, team product, schedule oversight, and cost control.

### **Task 1.3 Project Management**

Work effort under this task pertains to day-to-day oversight of the scope of services and will be handled by VHB's project manager, task leaders, and assisting staff. This includes such tasks as ensuring the direction of the project complies with project tasks, schedule, and budget commitments, coordination with the CCRPC and City on addressing requests from stakeholders, and for addressing requests from the Steering Committee.

## **Task 2 – Data Collection and Mapping Baseline Conditions**

### **Task 2.1 Review Previous Studies**

VHB will compile and review previous traffic studies conducted within and near the study area to establish a base understanding of previously identified issues, deficiencies, and proposed actions. Our objective is to, where possible; build on previous work efforts using available data to the greatest extent possible.

### **Task 2.2 Base Mapping**

VHB will coordinate with GIS staff from the City and CCRPC to obtain available base mapping resources to support the study efforts. This information will be combined with existing resource information, previous studies and GIS information available from other sources. This mapping information will be supplemented by reconnaissance level fieldwork to generally confirm the existing topography and identify possible constraints that may not be readily identifiable from a review of the GIS database.

Available geospatial information will be assembled and organized as an ArcGIS Geodatabase, which will form the basis for the project base map. We expect the following information will be incorporated into the Geodatabase:

- Existing high resolution aerial photography;
- Two foot contour intervals
- Wetlands Inventory/Hydric Soils;
- Properties on State and/or National Register of Historic Places;
- Federal Emergency Management Agency (FEMA) Digital Flood Insurance Rate Maps showing floodway and floodplain boundaries;
- Tax map data showing approximate property lines and right-of-ways (if available electronically);
- Aquifers/Surface Waters/Streams/Surficial Geology;
- Wildlife habitats;
- Land Cover Data;
- Conservation Land;
- Wells/ Public Water Supplies/ Water Quality;
- Hazardous Waste Sites

This study will not attempt to formally delineate environmental constraints or field verify the above information at this time as these tasks will be more appropriate for later phases of the project's planning and design.

### **Task 2.3 Land Use Planning**

The City will provide direction for all potential land use changes to be incorporated into the study as well as known development proposals and local transportation improvement plans that could affect future travel and mobility.

The Project Team will take the City's direction for the build-out analysis for assumptions with undeveloped or under-utilized parcels within the study area as well as for a build-out of the City Center area. This task will be conducted under close consultation with, and guidance from the City's Planning, and Zoning Department to identify the parcels to be analyzed and to assure all assumptions and methodologies are consistent with the City's goals for future development and land use patterns.

### **Task 2.4 Field Reconnaissance**

VHB will conduct a comprehensive field reconnaissance to observe traffic flow patterns, traffic operational issues, pedestrian and bicycle activity, multimodal facilities (bus stops, bike lanes and paths, etc.), traffic control, physical roadway characteristics, and on-street parking. The physical roadway inventory will, among other features, document roadway cross sections and approximate lane widths.

**Task 2.5 Crash Research**

VHB will review the most recent VTrans High Crash Location Report and will compile and summarize crash data for study area roadways and intersections. Factors affecting bicycle and pedestrian safety will be emphasized.

**Task 2.6 Transit**

VHB will compile, review, and summarize relevant bus route maps and schedules including the location of bus stops and transit centers. VHB will also note any planned modifications to transit operations within the study area.

**Task 2.7 Traffic Signal Timing Plans**

VHB will obtain traffic signal timing plans for study area signalized intersections from the City of South Burlington. The timing plans will be reviewed and the timing and phasing identified on the plans will be field checked as part of the field inventory to confirm that the actual field settings are consistent.

**Task 2.8 Transportation Demand Management (TDM)**

VHB will obtain and review currently available TDM programs that influence travel within the study area.

**Task 2.9 Traffic Data Collection**

VHB will compile available daily automatic traffic recorder counts and weekday AM (7:00 – 9:00) and PM (4:00 – 6:00) peak period turning movement counts from recent studies and/or from the CCRPC for study area roadways. Where recent counts (within 3 years) are not available, the CCRPC will conduct and provide to VHB any needed supplemental counts.

**Task 3 – Evaluation of Transportation Strategies**

**Task 3.1 Base Traffic Volume Network**

Upon review and compilation of available traffic volume count data from recent studies, and /or the files of the CCRPC and VTrans, and any new traffic volume counts conducted by the CCRPC specifically for this study, VHB will develop base year weekday AM and weekday PM peak hour traffic volume networks for the study area intersections. The peak hour traffic volumes will be adjusted to reflect an appropriate analysis condition.

**Task 3.2 Develop Evaluation Criteria**

VHB will work with the CCRPC and City staff in developing an integrated multimodal approach to the analysis and evaluation of the study area roadways. The evaluation criteria, which will be based on the procedures described in the 2010 Highway Capacity Manual, will consider separate operating levels of service (LOS) from the points of view of automobile drivers, transit passengers, bicyclists, and pedestrians. Operating LOS for automobiles will consider such standard parameters as delay and queuing. Transit LOS will consider factors that influence the passengers' experience such as walking to a bus stop, waiting for a bus, and riding on the bus. The bicycle LOS will consider the bicyclist's comfort and perceived exposure to traffic including the amount of separation from traffic, the cross-street width,

and motorized traffic volumes. Pedestrian LOS will consider such factors as pedestrian volumes, sidewalk presence and width, the presence and availability of crosswalks, as well as motorized traffic volumes and speeds.

### **Task 3.3 Base Year Operational Analyses**

VHB will conduct an operational analysis for study area intersections for the AM and PM peak hour conditions using the established integrated multimodal evaluation criteria. LOS and other operating parameters will be summarized for automobiles, transit passengers, bicyclists, and pedestrians.

### **Task 3.4 Develop Traffic Model**

VHB will use the Chittenden County Regional TransCAD Model to help develop 2025 No Action and 2035 No Action weekday AM and weekday PM peak hour traffic volume networks. The model will also be used to evaluate and test different roadway and non-roadway transportation strategies. VHB will review the existing land use and network assumptions in the regional model within the study area to confirm that the employment assumptions and household assumptions are accurate. The structure of the current regional model will be reviewed to determine if TAZs in the study area can be disaggregated to better account for trip loading in the study area.

VHB will use available traffic counts to check and adjust the model's calibration in the study area as well as the area east to Exit 12 (Route 2A), north to Route 2 and the Airport as well as west to Interstate I-89 and Interstate 189. Special attention will be paid to Williston Road between Dorset Street and Route 116; however, the model's calibration along I-89 between Exit 12 and 14 as well as Kennedy Drive and Williston Road east of Route 116 will be reviewed.

The model's land use allocation calculates future land use forecasts within the TAZs. VHB will review this land use allocation to determine if it is consistent with the current land use plans in the study area. VHB will override the forecasted land use numbers where appropriate. If model TAZs are disaggregated in the existing conditions model, the future TAZs will be disaggregate in the same manner.

In order to understand the operations of the study intersections, a sub-area TransCAD model will be created. This model's TAZ structure will be further disaggregated to appropriately account for driveway locations. The smaller TAZs will also enable the model to be used to analyze a new parallel road to the north. The initial origin and destination patterns will first be extracted from the regional model and will then be adjusted based on turn movement counts at the study area intersections and the disaggregated TAZ assumptions. Origin-Destination Matrix Estimation (ODME) in TransCAD will be used to create existing AM and PM peak hour trip tables that better represent the trip patterns in the study area. The future trip tables from regional model will be used with the final existing sub-area vehicle trip tables to develop future conditions. The sub-area model will then be used to create existing peak hour conditions, future conditions, as well as test study scenarios. The regional model will still be used to understand the regional traffic patterns, which will then be incorporated into the sub-area model.

Where possible, the regional model, as well as the local area model, will be used to create the evaluation criteria developed for the study. It will not be possible to test some of potential strategies with the model; however, VHB will adjust the trip tables (person, vehicle and transit) based on the strategies and then use the trip tables in the regional and local model to determine how the strategies effect the operation of the transportation system. For example, if a substantial TDM program is introduced, VHB will reduced specific trips between certain TAZs and then reload the network to see how it changes operation.

The vehicle demand from the sub-area model and the regional will be process further to analyze the study area intersections.

### **Task 3.5 Future Year “No Action” Traffic Volume Networks**

Based on the results of the developed traffic model, VHB will develop 2025 No Action and 2035 No Action weekday AM and weekday PM peak hour traffic volume networks for the study area intersections.

### **Task 3.6 Future Year “No Action” Operational Analyses**

VHB will conduct an operational analysis for study area intersections for the 2025 No Action weekday AM and PM peak hour and 2035 No Action weekday AM and PM peak hour conditions using the same established integrated multimodal evaluation criteria that was applied to the Base Year conditions.

### **Task 3.7 Brainstorming Transportation Strategies**

Having developed and evaluated the future year “No Action” condition, the next step is to define specific alternative strategies to be evaluated. To do this, VHB will meet with CCRPC and City staff in an informal workshop-type brainstorming session. The brainstorming session will include a brief presentation by VHB on the results of the data collection effort and the results of the multimodal operational analyses for the base year and future year “No Action” condition. The presentation will be followed by an interactive discussion on the City’s vision and potential strategies to obtain the vision. The purpose of the session is to talk through a range of ideas and settle on which alternatives are to be evaluated under Task 3.8.

### **Task 3.8 Alternatives Traffic Volume Networks**

VHB will reassign traffic volumes and develop traffic volume networks for the various alternative transportation strategies identified under Task 3.7. The reassignments will include consideration for such strategies as a parallel roadway north of Williston Road, the construction of I-89 Exit 12B, potential modifications to Exit 13, and reductions in traffic demand resulting from TDM strategies such as increased transit use and enhanced bicycle and pedestrian mobility.

### **Task 3.9 Alternatives Evaluation**

VHB will conduct an operational analysis for study area intersections for the 2025 Build weekday AM and PM peak hour and 2035 Build weekday AM and PM peak hour conditions using the same established integrated multimodal evaluation criteria that was applied to the Base Year and Future Year

No Action conditions. LOS and other operating parameters will be summarized for automobiles, transit passengers, bicyclists, and pedestrians for each of the alternative strategies.

The results of the alternatives evaluation will be summarized in an “evaluation matrix” that will provide a straightforward comparison of the various alternatives and strategies. In addition to the results of the operational analyses, the matrix will include any identified planning level environmental, socio-economic and cultural impacts. Planning level “ball park” cost estimates will also be provided for each strategy.

### **Task 3.10 Implementation Program**

Upon completion of the Alternatives evaluation, VHB will work closely with the CCRPC and the City of South Burlington to identify short-term, mid-term, and long-term strategies. The implementation program will define which strategies are relatively easy to implement and can move forward quickly and which strategies are more involved from a cost and permitting perspective. This task will define “next steps” (more detailed evaluation, permitting process, etc.) for these more involved strategies.

### **Task 3.11 Draft and Final Reports**

VHB will prepare a summary report of existing and future traffic conditions and transportation strategies within the study area. The existing and future year operational analysis will be summarized with documentation of major segment deficiencies and will include a discussion of all modes of transportation. This information will serve as the basis for developing an initial list of pros and cons for the short and long-term transportation strategies and a subsequent implementation plan for those improvements.

VHB will first develop a Draft Report with appropriate text, tables, and graphics needed to concisely document the study findings. A pdf version will first be submitted to the CCRPC and the City for internal review. Following this initial review and any needed revisions to the report, an updated draft PDF version will be provided for review by a greater audience and the Steering Committee.

Upon receipt of comments on the draft, VHB will prepare a Final Report. As was done with the Draft Report, an electronic pdf version of the Final Report will first be submitted to the CCRPC and the City for internal review. Following the internal review and any needed revisions to the report, a final copy will be made available for review of the Steering Committee, the communities and the public.