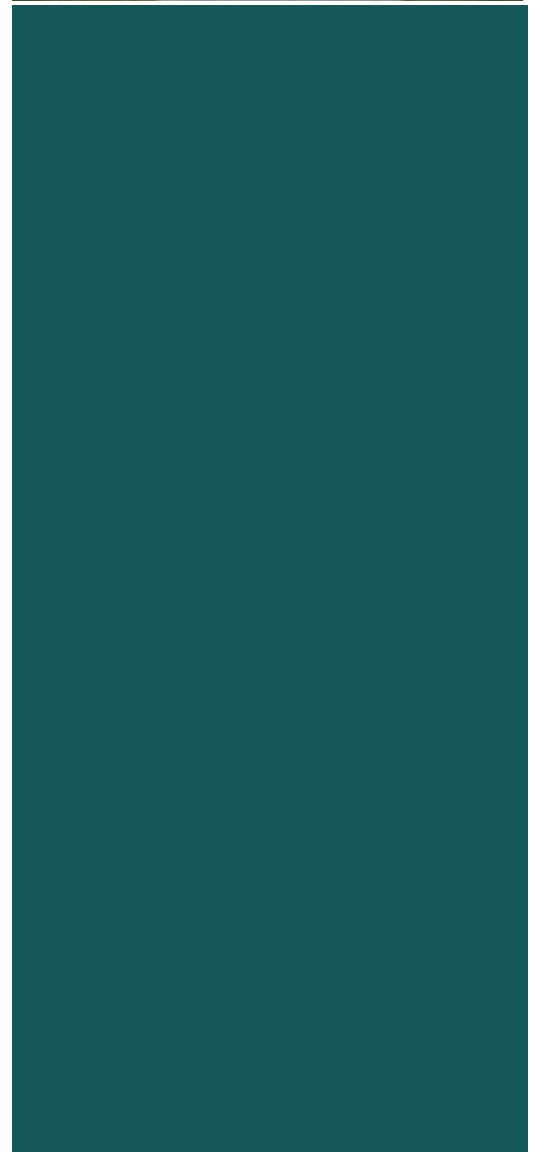




Chittenden County Park-and-ride / Intercept Facility Plan

Project Memo 4
Preliminary
Prioritization
Method

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Draft



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Report Prepared by:



60 Lake Street, Suite 1E, Burlington, Vermont 05401
TEL 802.383.0118 ■ FAX 802.383.0122 ■ www.rsginc.com

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	ASSESSMENT OF 2004 PRIORITIZATION METHODOLOGY	1
3.0	PROPOSED 2010 PRIORITIZATION METHODOLOGY	6
4.0	PRELIMINARY RESULTS.....	11

LIST OF TABLES

Table 1: 2004 Prioritization Categories and Criteria	1
Table 2: Comparison of 2004 Prioritization Criteria to proposed 2010 Goals and Objectives.....	3
Table 3: Prioritization Categories 2004 versus Proposed 2010.....	6
Table 4: 2010 Prioritization Criteria	7
Table 5: Transit Connectivity Point Scale	8
Table 6: Bicycle and Pedestrian Connectivity Point Scale	8
Table 7: Interstate/Arterial Access Point Scale	9
Table 8: Activity Center/Service Access Point Scale	9
Table 9: Congestion Point Scale	9
Table 10: Safety Point Scale	10
Table 11: Site Identification Point Scale	10
Table 12: Right-of-Way Acquisition Point Scale	10
Table 13: Right-of-Way Acquisition Point Scale	11
Table 14: Test Ranking of Potential Park-and-Ride Locations	12
Table 15: Test Ranking of Potential Intercept Facility Locations.....	13



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1.0 INTRODUCTION

The purpose of this project is to develop a Chittenden County Park-and-Ride and Intercept Facility Plan that is guided by overall program goals and objectives. The outcome will be a plan that identifies upgrades to existing park-and-ride and intercept facilities, assesses the need for and location of new facilities, updates and applies a prioritization process, and includes an implementation plan.

The 2004 *Chittenden County Park-and-ride Facility Prioritization* plan presents and applies a methodology for ranking park-and-ride lots and intercept facilities. This project memorandum recommends updates to the 2004 prioritization methodology based on the draft goals and objectives under consideration for the 2010 update (August 5, 2010 revision), the 2010 park-and-ride survey (*Project Memorandum 2 Park and Ride Survey Results*, June 18, 2010) and the assessment of existing conditions (*Project Memorandum 1 Inventory and Travel Characteristics*, February 23, 2010) completed during previous phases of this project. The revised method is tested by applying it to the list of proposed projects from the 2004 plan. The preliminary list provides a means to check the reasonableness of the proposed prioritization methodology. Additional locations may be included in the final list once the methodology has been finalized and approved by the advisory committee.

2.0 ASSESSMENT OF 2004 PRIORITIZATION METHODOLOGY

This section provides an overview of the 2004 prioritization methodology and compares it to the proposed 2010 goals and objectives.

The 2004 prioritization methodology is easy to understand and transparent. Only minor revisions to the overall approach are suggested to make the scoring criteria consistent with the proposed goals and objectives for intercept and park-and-ride facilities. The 2004 prioritization methodology is organized into the three general categories of demand, location and readiness; each of which are each assessed using specific scoring criteria (Table 1).

Table 1: 2004 Prioritization Categories and Criteria

Category	Criteria	Maximum Points Possible
Demand	Annual Average Daily Traffic (AADT)	5
	Transit Connections	5
	Bicycle or Pedestrian Connections	2
Location	Activity Center	2
	Interstate/Arterial	3
	Congestion	1
	Services	1
Readiness	Site is identified	3
	ROW has been aquired	3
Totals		25

Table 2 compares the 2004 prioritization criteria to the draft goals and objectives for the 2010 park-and-ride and intercept facilities plan. The objectives apply to different phases of a project such as planning, design, location choices, and operation. Most of the objectives will affect facility design and are not useful in distinguishing one location from another. The



inconsistencies between the 2004 prioritization method and 2010 draft goals and objectives are relatively minor. The 2004 method does not include a criterion for safety (2010 objective 4.2) and does not consider whether or not a project involves a public/private partnership (2010 objective 5.2).

Although not apparent from in Table 2, the two location criteria related to Activity Center and Services in the 2004 method are not associated with any of the draft goals and objectives. Locating facilities close to activity centers and services ranked low as desired improvements or amenities by respondents to the 2010 park-and-ride survey and was therefore not explicitly included in the goals and objectives.



Table 2: Comparison of 2004 Prioritization Criteria to proposed 2010 Goals and Objectives

Goal and Objective	Guides Planning, Location, Design, and/or Operation	Should it be considered in prioritization of new facilities?	Is it addressed in the 2004 Prioritization Methodology?	
			Yes or No	2004 Category - Criterion
1. Expand multi-modal options.				
1.1. Intercept Facilities				
1.1.1. Locate all facilities along existing or planned transit routes.	Location	Yes	Yes	Demand - Transit
1.1.2. Design all facilities along existing and planned transit routes to accommodate transit vehicles.	Design	No		
1.1.3. Provide for bicycle access and weather proof bicycle storage.	Design	No		
1.1.4. Provide sidewalks to and within intercept facilities.	Design	No		
1.2. Park-and-Ride Facilities				
1.2.1. Design park-and-ride facilities that are along existing and planned transit routes to accommodate transit vehicles.	Design	No		
1.2.2. Provide for bicycle access and weather proof bicycle storage for facilities located along existing or planned bicycle routes.	Design	No		
1.2.3. Provide sidewalks to and within facilities that are within walking distance (1/2 mile) of residential uses and/or employment and service centers.	Design	No		
1.3. Locate park-and-ride and intercept facilities to provide easy access to the highway system.	Location	Yes	Yes	Location - Interstate/Arterial
2. Increase use and match the supply of parking to demand.				
2.1. Site new facilities in strategic locations relative to demand.	Location	Yes	Yes	Demand - AADT
2.2. Coordinate planning and location of new facilities with existing and future Transportation Demand Management programs.	Planning	No		
2.3. Increase the number of parking spaces in an existing facility when parking demand regularly exceeds supply, if feasible.	Design	No		
2.4. Provide access to all modes (see Goal 1).	Design	Yes	Yes	Demand - Transit, Bike/Ped
3. Preserve and maintain existing facilities.				
3.1. Maintain all existing park-and-ride and intercept facilities in good condition.	Operation	No		

Table 2: Comparison of 2004 Prioritization Criteria to proposed 2010 Goals and Objectives (Continued)

Goal and Objective	Guides Planning, Location, Design, and/or Operation	Should it be considered in prioritization of new facilities?	Is it addressed in the 2004 Prioritization Methodology?	
			Yes or No	2004 Category - Criterion
4. Provide safe and efficient access for all users.				
4.1. Reduce vehicular congestion at facility entrances	Design	Yes	Yes	Location - LOS
4.2. Eliminate High Crash Locations at facility entrances	Design	Yes	No	None
4.3 Provide for the safe entrance, egress and circulation of cyclists and pedestrians	Design	No		
4.4. Design facilities to be barrier free to support transportation services for senior citizens, low-income groups and the handicapped.	Design	No		
4.5 Consider the needs of low income and minority groups in the design of all facilities	Design	No		
5. Minimize the cost to design, construct and operate facilities.				
5.1. Increase the use of existing facilities to realize the value of the investment.	Operation	No		
5.2. Minimize the cost to public agencies through the use of joint-use facilities, joint development, and privatization opportunities.	Design	Yes	No	None
6. Support the Economy.				
6.1. Locate new facilities to support transportation demand management programs, services and incentives offered by employers.	Planning	No		
6.2. Design facilities located along or near tourist routes, major attractions, and designated byways to accommodate tour buses.	Design	No		
6.3. Provide tourism information at facilities located along or near tourist routes, major attractions, and designated byways to accommodate tour buses.	Design	No		
7. Reduce energy use and reliance on fossil fuels.				
7.1. Use alternative sources of energy to provide for on-site electrical needs.	Design	No		
7.2. Include provisions in new facilities for the future use of alternative fuel vehicles.	Design	No		
8. Avoid and minimize impacts to the environment.				
8.1. Design and build all facilities consistent with National Environmental Policy Act requirements.	Design	No		
8.2. Manage stormwater run-off using best practices supplemented with innovative techniques where appropriate.	Design	No		

Table 2: Comparison of 2004 Prioritization Criteria to proposed 2010 Goals and Objectives (Continued)

Goal and Objective	Guides Planning, Location, Design, and/or Operation	Should it be considered in prioritization of new facilities?	Is it addressed in the 2004 Prioritization Methodology?	
			Yes or No	2004 Category - Criterion
9. Implement projects efficiently and with minimal delays.		Yes	Yes	Readiness - Site identified and ROW Acquired
9.1. Coordinate with surrounding regions and municipalities on the location and design of park-and-ride facilities.	Design	No		
9.2. Include representatives from all modes in the planning and design of facilities.	Planning	No		
9.3. Seek public-private partnerships in the funding, construction and operation of new facilities.	Design	Yes	No	None
9.4. Regularly monitor parking space utilization, transit riders, bicycle and pedestrian users and user satisfaction.	Operation	No		
10. Coordinate facility design and location with land use and enhance community character.				
10.1. Locate and design facilities consistent with regional and local land use plans and regulations.	Design	No		
10.2. Locate facilities such that they do not add through traffic to local streets.	Location	No		
10.3. Locate facilities such that they do not cause a disproportionate negative impact to concentrations of low income or minority populations.	Location	No		
10.3. Incorporate TOD and smart growth principles	Design	No		
10.4. Incorporate landscaping and public art.	Design	No		
11. Create a positive experience for park-and-ride and intercept facility users.				
11.1. Provide shelters, lighting and other user amenities.	Design	No		
11.2. Provide safe and secure waiting facilities.	Design	No		
11.3. Provide traveler information	Design	No		

3.0 PROPOSED 2010 PRIORITIZATION METHODOLOGY

This section describes the proposed changes to the 2004 prioritization methodology, presents the 2010 methodology and describes each of the specific criteria and their associated point scales.

Proposed Changes

The proposed 2010 method is organized around the same three prioritization categories of demand, location and readiness. The maximum score of 25 points is maintained with one point shifted from the location category to the demand category (Table 3).

Table 3: Prioritization Categories 2004 versus Proposed 2010

Category	2004 Method		Proposed 2010 Method	
	Max. Points Possible	Percent of Total Score	Max. Points Possible	Percent of Total Score
Demand	12	48%	13	52%
Location	7	28%	6	24%
Readiness	6	24%	6	24%
Totals	25	100%	25	100%

The specific criteria and associated maximum scoring for the proposed 2010 prioritization methodology are presented in Table 4. Proposed changes include:

- The maximum score associated with the bicycle/pedestrian connections criterion has been increased from two to three points. The additional point was available from the consolidation and point reduction of the activity center and services criteria as discussed below.
- The activity centers and services criteria have been combined into one criterion. Under the 2004 method, these two criteria had a combined total of three points. Under the proposed method, the combined total has been reduced to one point. Proximity to an activity center or services is not singled out in the goals and objectives, and was not rated highly by respondents to the 2010 park-and-ride survey. However, there are benefits of co-location such as the potential for shared parking and reduced vehicle travel that support the continued inclusion of these criteria in the prioritization methodology.
- A criterion for safety has been added and has been assigned a maximum value of one point. The additional point was available from the consolidation and point reduction of the activity center and services criteria.
- Under project readiness, a criterion for public/private partnership opportunities has been added. The total value of the readiness category has not changed from a total of 6 points (24% of the total score). To accommodate the additional criterion, the value of the site identified and ROW acquired criteria have been reduced from three to two points.

Details on how each criterion is score are provided below.



Table 4: 2010 Prioritization Criteria

Category	Criteria	Maximum Points Possible	Comparison to 2004 Method
Demand	Annual Average Daily Traffic (AADT)	5	No change
	Transit Connections	5	No change
	Bicycle or Pedestrian Connections	3	Increased from 2 points
Location	Interstate/Arterial Access	3	No change
	Low to Moderate Congestion	1	No change
	No Safety Issues	1	Added this criterion
	Activity Center/Services	1	Combined and reduced points from 3 to 1
Readiness	Site is Identified	2	Reduced points from 3 to 2
	Right-of-way is acquired or otherwise	2	Reduced points from 3 to 2
	Confirmed Partnership Opportunity	2	Added this criterion
Totals		25	No change to total points

Category and Criterion Descriptions and Point Scales

Demand Category

Goal two of the 2010 plan calls for the increased use of park-and-ride and intercept facilities. The criteria below seek to increase demand by locating facilities near high traffic corridors, along transit routes and within walking and biking distance from trip origins and destinations.

Annual Average Daily Traffic (AADT)

As noted in the 2010 park-and-ride survey, driving by car, either alone, in a car pool or by being dropped off, is the most common mode used for access to park-and-rides. Therefore, the amount of traffic passing by or near a proposed location is a reasonable proxy for its potential use. Average Annual Daily Traffic (AADT) on nearby roads was documented for each location. The location with the largest amount of AADT is assigned five points and the location with the lowest AADT is assigned one point. All other locations are assigned points proportionally rounded up to the nearest whole number (2, 3 or 4). Park-and-ride and intercept facilities are scored separately. AADTs on roadways adjacent to or near proposed park-and-ride locations ranged from 2,400 to 62,700 vehicles per day. AADTs on roadways adjacent to or near proposed intercept facility locations ranged from 27,400 to 92,900 vehicles per day. AADT is the combination of traffic on roadways adjacent to and near a proposed location and is based on the actual and estimated 2007 counts in the route logs published by VTrans. For example, the AADT for the proposed intercept facility at Exit 14 includes traffic on I-89 north of Exit 14 and on US 2 between the Spear Street/East Avenue Jug Handle and the Exit 14 on ramps.

Transit Connection

Demand for park-and-ride and intercept facilities will be significantly higher when transit service is provided. As noted in *Project Memorandum 1 Inventory and Travel Characteristics* (February 23, 2010 Draft) transit riders create about 30% of the demand for parking spaces at existing park-and-ride facilities that are served by transit. The proposed 2010 point scale is similar to the 2004 method and includes modifications to account for the commuter bus service that has since started (Table 5). It assigns the most points for facilities that are served by routes that run throughout the day with a minimum ½ hour headway. Respondents to the 2010 park-



and-ride survey reported using park-and-rides slightly more often for recreational and personal business trips than for the commute to work or business related travel. These types of trips generally occur throughout the day and are not concentrated in the morning and afternoon peak hours like work trips. Therefore, having transit available throughout the day is given the highest amount of points (five) and is ranked higher than AM and PM peak hour commuter service. The scoring scale also accounts for less frequent transit service and for locations where transits service is planned in the future.

Table 5: Transit Connectivity Point Scale

Availability of Transit Service	Points
On an existing, high frequency route (min 1/2 hour headway)	5
On an existing commuter service route w/ AM and PM peak hour service	4
Existing low level service route	3
Potential for future bus service in near to mid-term	2
Service possible in long term	1
No existing or planned transit service	0

Bicycle and Pedestrian Connections

As noted above, the total amount of points awarded for bicycle and pedestrian connections has been increased from two to three. This increased is justified by the results of the 2010 park-and-ride survey which indicate that 29% (10% often and 19% sometimes) of survey respondents reported walking or biking to access park-and-ride facilities. A similar percentage of respondents report walking and biking as the mode they transfer to at a park-and-ride. The proposed point scale uses a more refined definition of walk/bike access that considers the typical distances people are willing to travel on foot or by bike and whether or not sidewalks and bicycle facilities are available. A park-and-ride or intercept lot is considered accessible by walking and biking if the trip origin (a residential area for example) or destination (an employment center for example) is within 1/2 mile and 2 miles respectively¹. The proposed point scale incorporates these two thresholds with the availability of sidewalks and biking facilities (Table 6).

Table 6: Bicycle and Pedestrian Connectivity Point Scale

Bicycle and Pedestrian Connections	Points
Within 1/2 mile of residential or employment area & sidewalks exists and/or ; Within 2 miles biking distance of residential or employment area and biking facilities exist	3
Within 1/2 mile of residential or employment area & sidewalks possible and/or ; Within 2 miles biking distance of residential or employment area and biking facilities possible	2
Not accessible by bike or foot	0

Location Category

The location category includes criteria that may benefit or detract from a proposed location.

¹ <http://www.bicyclinginfo.org/transit/>; <http://www.vtppi.org/tdm/tdm2.htm>;
http://www.fairfaxcounty.gov/planning/tod_docs/walking_distance_abstracts.pdf



Interstate/Arterial Access

No changes are proposed to the point scale for this criterion. The junctions of interstate and arterial highways are situated along the major commuter corridors, typically serve the largest amount of traffic volumes and are natural meeting places.

Table 7: Interstate/Arterial Access Point Scale

Interstate/Arterial Access	Points
At interstate exit or on a principal arterial	3
Just off a principal arterial	2
Not on or near a principal arterial	0

Activity Center/Services Proximity

As noted above, proximity to an activity center or services have been combined into one criterion and the total amount of points has been decreased from three to one. The consolidation and point reduction is justified by the results of the 2010 park-and-ride survey which suggest that access to services is not a high priority for park-and-ride users. In addition access to activity centers and services is covered to a certain extent by the bicycle/pedestrian connectivity criterion which is based on distance to residential and employment centers.

Table 8: Activity Center/Service Access Point Scale

Proximity to Activity Center or Services	Points
Less than 1/2 mile	1
More than 1/2 miles	0

Congestion

Locations with high levels of congestion could make a proposed park-and-ride or intercept facility more difficult to access. In addition, traffic attracted to a new park-and-ride or intercept facility may exacerbate an existing congestion problem requiring mitigation measures that would increase the cost of the project. In most cases, congestion can be addressed using a variety of means and should not be the final determinant for any proposed project. However, all things being equal, a location with low or moderate congestion is preferred over a location with high levels of congestion. Congestion is defined using the standard traffic congestion measure of Level of Service (LOS), a qualitative measure describing the operating conditions as perceived by motorists driving in a traffic stream. Level of Service is rated from A through F. In general LOS A, B and C represent mostly free flowing traffic with minimal delay; LOS D represents stable traffic flows, some vehicle queues at intersections, and moderate delays; and LOS E and F represent situations where the amount of traffic exceeds available capacity and is characterized by unstable traffic flows, long delays and long vehicle queues. For the purpose of the prioritization method, an LOS of A through D on adjacent roadways and intersections is considered acceptable and awarded one point. Locations near roadways or intersections that operate at LOS of E or F are not awarded any points (Table 9).

Table 9: Congestion Point Scale

Congestion	Points
LOS D or Better	1
LOS E or F at nearby intersection or road	0



Safety

This criterion was not included in the 2004 method but is suggested because safety is identified as an objective of the park-and-ride and intercept facility plan. Similar to the congestion criterion, existing safety issues could make a proposed park-and-ride or intercept facility more difficult to access; and the proposed facility may exacerbate an existing problem. Therefore, all things being equal, a location without an identified safety problem should rank somewhat higher than a similar location with a safety problem. A location is considered to have a safety problem when a nearby intersection or road segment has been identified by VTrans as a high crash location (HCL). To be classified as an HCL, an intersection or road segment must have experienced at least five reported crashes over a five year period and the rate of crashes must be significantly higher than crash rates on similar types of facilities around the state.

Table 10: Safety Point Scale

Safety	Points
No High Crash Location near entrance	1
High crash location near access	0

Readiness Category

A goal of the park-and-ride and intercept facility plan is to implement projects efficiently and with minimal delays (Goal 9). The criteria in this category award points to projects that have addressed to some degree the most common implementation challenges.

Sites Identified

Identifying specific sites that are acceptable to all of the parties involved in a project eliminates one step in the project development process and allows design efforts to focus alternative designs.

Table 11: Site Identification Point Scale

Site Identified	Points
Yes	2
No	0

Right-of-way Acquisition

Acquiring the land for a proposed facility may take years to complete in order to address property owner desires and federal and state procedures. Therefore, if the land is already available and has been acquired consistent with federal and state procedures, a significant step in the implementation process has been achieved and a project can move forward relatively quickly.

Table 12: Right-of-Way Acquisition Point Scale

Right-of-way has been acquired	Points
Yes	2
No	0



Public/Private Partnership Opportunities

This criterion was not included in the 2004 prioritization method. It is well known that there is a gap between available funding and the cost to preserve the existing transportation system and meet demand for new infrastructure, programs and services¹. Therefore, park-and-ride and intercept facility projects that can leverage supplemental funding and be implemented through public/private partnerships should be ranked higher than similar projects without these advantages.

Table 13: Right-of-Way Acquisition Point Scale

Partnership Opportunities	Points
Yes	2
No	0

4.0 PRELIMINARY RESULTS

The proposed 2010 prioritization methodology has been used to rank the park-and-ride and intercept facility locations evaluated in the 2004 plan. The results are presented in Table 14 for park-and-rides and Table 15 for intercept facilities. The test provides a means to check the reasonableness of the proposed prioritization methodology. The methodology may be revised after comments from the advisory committee and additional locations may be included once the methodology has been approved by the advisory committee.

¹ The issue has been documented extensively and options considered by the CCMPO's Blue Ribbon Commission on Innovative Finance. See <http://www.ccmpto.org/finance/>



Table 14: Test Ranking of Potential Park-and-Ride Locations

Reference Number	Town	Location	DEMAND			LOCATION				READINESS			Total Score
			AADT	Transit Connection	Bicycle / Pedestrian Connection	Highway access	Activity Center or Village Proximity	Congestion	Safety	Site Identified	ROW Acquired	Confirmed Partnership Opportunities	
25	Williston	I-89 Exit 12 Taft Corners	5	5	3	3	1	0	0	2	0	0	19
10	Essex	VT 117 & CCCH	1	5	0	3	0	1	1	2	2	0	15
4	Essex	Lang Farm, VT 15 & CCCH	3	5	2	3	1	0	1	0	0	0	15
6	Shelburne	Shelburne Village	2	5	3	3	1	0	1	0	0	0	15
9	Essex	VT 15 & Allen Martin Drive	2	2	2	3	0	1	1	2	0	0	13
7	Jericho	VT 15 & River Road, Big Johns	1	2	3	3	0	1	1	2	0	0	13
11	Charlotte	Railroad station or other permanent location	2	4	2	2	0	1	1	0	0	0	12
5	Essex	VT 2A CCCH Interchange	3	0	0	3	0	1	0	2	2	0	11
16	St. George	VT 2A/VT 116 intersection	2	2	0	3	1	1	1	0	0	0	10
12	Colchester	Near US 7/Severance Road	3	0	2	3	0	1	0	0	0	0	9
8	Colchester	VT 127 Near Heineberg Bridge over Winooski River	2	0	0	3	0	1	0	2	0	0	8
17	Westford	Westford Village	1	0	3	0	1	1	1	0	0	0	7
15	Richmond	Richmond Village	2	0	3	0	1	1	0	0	0	0	7
18	Williston	Redmond Road near CCCH	1	0	0	3	0	0	1	0	0	0	5

Table 15: Test Ranking of Potential Intercept Facility Locations

Reference Number	Town	Location	DEMAND			LOCATION				READINESS			Total Score
			AADT	Transit Connection	Bicycle / Pedestrian Connection	Highway access	Activity Center or Village Proximity	Congestion	Safety	Site Identified	ROW Acquired	Confirmed Partnership Opportunities	
20	South Burlington	US 2 at I-89 Exit 14	5	5	3	3	1	1	0	2	2	2	24
19	Burlington	South End Transit Center	3	5	3	3	1	1	0	2	2	2	22
23	Colchester	US 7 near I-89 Exit 16	4	4	2	3	1	0	0	0	0	2	16
21	South Burlington	US 7, south of I-189	5	5	2	3	1	0	0	0	0	0	16
22	Colchester	VT 15/Barnes Ave	3	5	0	3	0	1	0	0	0	0	12
25	South Burlington	I-89 and VT 116	4	2	0	3	0	1	1	0	0	0	11
24	Burlington	Northern Connector/VT 127 near RR	2	3	0	3	0	1	1	0	0	0	10