Goals & Objectives of the Study

- Identify Existing and Projected Parking Demand & Supply
- Identify Existing Pedestrian & Traffic Conflicts and Traffic Calming Measures
- Evaluate Options to Reduce Traffic Congestion in Hanover
- Evaluate Improvements to Traffic Flow Around Campus
- Identify Future Parking Policies to Encourage Reduction in Single Occupant Vehicle Commuting
Three Major Study Initiatives

- Identification of Alternatives to Improve Traffic Circulation Problems, Parking Shortages, and Safety Deficiencies
- Preparation of a Stated-Preference & Revealed-Preference Electronic Survey for Employees of the College
- Creation of a Microscale Traffic Simulation Model of Downtown Hanover and the Dartmouth Campus
Campus Master Plan – Five to Ten Year Horizon
Estimated Commuting Routes of Dartmouth Employees

**Figure 18: Estimated Commuting Routes of Dartmouth Employees***

- **Legend**
  - 6 - 39 Employees
  - 40 - 100 Employees
  - 101 - 275 Employees
  - 276 - 500 Employees
  - 501 - 800 Employees
  - 801 - 1050 Employees
  - 1051 - 1400 Employees
  - Number of Employees
  - Dartmouth College
  - State Route
  - U.S. Route
  - Interstate

*excluding Hanover residents (25%) and non-assignable employees (1%)*
Proportion of Dartmouth Employees by Major Routes into Hanover

- West Wheelock: 53%
- NH 10 South of Downtown: 7%
- NH 120 at Town Line: 35%
- NH 10 Lyme Town Line: 5%
Campus Master Plan – Existing Parking Spaces
In-Session Parking Lot Survey Results (Spring, 2000)

<table>
<thead>
<tr>
<th>Parking Zone</th>
<th>Total Spaces</th>
<th>Percent Occupied</th>
<th>Visitors</th>
<th># Empty Visitor Spaces</th>
<th>Cars Parked in Illegal Zones</th>
<th>Construction Vehicles</th>
<th>Unauthorized Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Campus</td>
<td>429</td>
<td>93%</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>North Campus</td>
<td>1,160</td>
<td>84%</td>
<td>6</td>
<td>8</td>
<td>21</td>
<td>36</td>
<td>25</td>
</tr>
<tr>
<td>Athletics</td>
<td>118</td>
<td>82%</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Downtown</td>
<td>157</td>
<td>95%</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Tuck/Thayer</td>
<td>300</td>
<td>94%</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Thompson</td>
<td>342</td>
<td>97%</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>51</td>
</tr>
<tr>
<td>Student Lots¹</td>
<td>867</td>
<td>89%</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>26</td>
<td>13</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,373</td>
<td>89%</td>
<td>21</td>
<td>11</td>
<td>46</td>
<td>81</td>
<td>134</td>
</tr>
</tbody>
</table>

Employee spaces = 2506. Includes 160 spaces leased to Town of Hanover.

¹. Includes 50% of H and J lots which are approximately half student use, but does not include fraternities and sororities.
Comparison of Parking Utilization: In-Session vs. Out-of-Session

The diagram compares the average percent occupied for various locations during in-session and out-of-session periods. The locations include Thompson, Downtown, Tuck/Thayer, Central Campus, Student Lots, North Campus, and Athletics.

- Thompson: In-Session (90%), Out-of-Session (60%)
- Downtown: In-Session (95%), Out-of-Session (70%)
- Tuck/Thayer: In-Session (95%), Out-of-Session (75%)
- Central Campus: In-Session (90%), Out-of-Session (65%)
- Student Lots: In-Session (85%), Out-of-Session (60%)
- North Campus: In-Session (80%), Out-of-Session (60%)
- Athletics: In-Session (75%), Out-of-Session (60%)

Legend:
- Black: Percent Occupied In-Session
- Light Blue: Percent Occupied Out-of-Session
Minimum, Average, & Maximum Parking Demand on Campus

Note: These demands do not occur simultaneously during the day.
Parking Demand On Campus is a Function of:

- Proportion of Non-Resident vs. Resident Students
- Student Vehicle Policies
- Access of Staff and Students to Public Transportation
- Costs of Parking
- Visitors and Special Events
- Future Program & Employee Growth
### Maximum Projected Parking Demand through 2011

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>ADDITIONAL PARKING DEMAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Identified Projected Facilities Growth</td>
<td>413</td>
</tr>
<tr>
<td>II. Project Caused Parking Loss</td>
<td>649</td>
</tr>
<tr>
<td>III. Project Employment Growth 2001-2011</td>
<td>581</td>
</tr>
<tr>
<td>IV. Less Identified Building Population Increase</td>
<td>-263</td>
</tr>
<tr>
<td><strong>SubTOTAL</strong> Projected Parking Requirement</td>
<td><strong>1,380</strong></td>
</tr>
<tr>
<td>OPTIONAL Projects</td>
<td>780</td>
</tr>
<tr>
<td>Total</td>
<td>2,160</td>
</tr>
</tbody>
</table>
Parking Surplus & Deficit Areas (Within 5 Minute Walking Distance)
Parking Surplus & Deficit Areas
(Within 10 Minute Walking Distance)

FIGURE 7: PARKING SURPLUS AND DEFICIT AREAS WITHIN TEN MINUTE WALKING DISTANCE

LEGEND
NUMBER OF AVAILABLE PARKING SPACES WITHIN A 5 MINUTE WALK

-2000 -> -750
-750 -> -500
-500 -> -250
-25 -> -25
-25 -> 250
250 -> 500
500 -> 750
750 -> 2000

NOTE: the units for these numbers correspond to the number of parking spaces minus the number of employees within a 1350 foot radius (or five minute walk).
NOTE: each square corresponds to a ground surface of 56 square feet.

HORIZONTAL SCALE IN FEET
500 0 500

PROJECT: Dartmouth Master Plan
CLIENT: Dartmouth College
DATE: 1/19/XX

Resource Systems Group, Inc.
334 Olden Drive
White River Junction, VT 05001
Tel: 802.295.1099
Fax: 802.295.1089
Web: www.resource.com
Recommendations for Changes in Parking
at Dartmouth College in FY 2002

◆ Institute a **Voluntary Commuter Fringe Benefit Program**, or
  “We’ll Buy-Out your campus parking privileges”: An
  annual financial incentive to employees who take the bus, ride in a carpool or
  vanpool, walk to work or bicycle. Pre-tax incentive allowed by IRS.

◆ **A Guaranteed Ride Home**: In an emergency, Dartmouth will pay for
  your ride home, no questions asked, for those participating in the Buy-OUT
  program. A safety valve for parents.

◆ **Raise on-campus parking rates by 25%**.

◆ **Do not allow new hires to park on campus except in
  peripheral parking lots**.
Re-institute a Carpool and Vanpool Demonstration Program with Financial Subsidies & Priority Parking

Run the Dewey Lot shuttle to Tuck/Thayer.

Change Existing Parking Policies: Only one car can be registered, no second car registrations for Thompson, college housing residents close to campus encouraged to walk, tan decals at full price, etc.

Continue Planning for Future Parking Structures on Campus
Ridership on Advance Transit is increasing but needs to get much higher to make a difference to reduce traffic congestion.
Summary of Parking Garage Location Attributes: 1

◆ Thayer School Lot
  Excellent Location Relative to Vermont Traffic Flow
  Competes with Future Building Siting Needs
  High Pedestrian Conflicts

◆ Dewey Field
  Available Land
  Already Dedicated for Surface Parking
  Not Competing with Future Building Sites
  Potential Traffic Congestion at this Site
  On Northern Edge of Campus
Summary of Park Garage Location Attributes: 2

◆ Thompson Arena
  - Established Surface Lot & Shuttle Bus Route
  - Good Site for Public Events Parking
  - Poor Road Intersection and Access into Site
  - Existing Traffic Congestion at this Location
  - Controversial Permitting Process

◆ West Wheelock Street Site
  - Excellent Location Relative to Vermont Traffic Flow
  - Zoning Change Required
  - Controversial Permitting Process
  - Land Acquisition Required
  - Good Proximity to Campus
Summary of Parking Garage Location Attributes: 3

◆ River Lot
   Excellent Location Relative to Vermont Traffic Flow
   Currently Dedicated to Surface Parking
   Negative Location from Aesthetic Perspective
   Controversial Permitting Process
   On Western Edge of Campus

◆ Route 120 Lot
   Excellent Location Relative to Traffic Flow
   Not Competing with Future Building Sites
   Far from Central Campus
   High Shuttle Bus Costs
Going Forward, We Recommend:

- Enhance Pedestrian Safety on Campus
- Calm Traffic Through Campus – Slow it Down
- Reduce the Overall Number of Vehicles on Campus
- Commit to an Enhanced TDM Program
- Plan Now to Accommodate Future Growth with Parking Structures
- Longer Term – Continue to Develop Affordable Faculty/Staff Housing in Hanover – Reduce Trips
Communications Plan

We Have a Lot of Work Still to Do:

- Meetings with Campus Groups
- Meetings with Town of Hanover
- Articles & Mailings to Faculty & Staff
- Electronic Opinion Survey
- Roll-Out New Programs in 2002
CORSIM Traffic Networking Model

◆ 2-Stage Modeling Process
  Upper Valley Regional Model
  Micro-Simulation Model of Downtown & Campus
  High Level of Network Detail
  Calibrated to October, 2000

◆ Scenario Testing – “What If”
  Alternative Growth Rates
  Alternative Parking Configurations
  Multiple Measures of Effectiveness for Evaluating Alternatives

◆ Demonstrations