Towards More Sustainable Transportation at UMD

David Allen
Director, Department of Transportation Services (DOTS)
1999: Parking expanded fleet to pick up students who could drive, thus removing commuter vehicles from campus
2002: Shuttle-UM and Parking Services merged creating DOTS
2004: Park and Rides and Intra-Campus service offered to further reduce commuter vehicles
Sustainable Transformation

DOTS continues to search for innovative operational solutions with the lowest possible environmental impact. Additionally, we seek to change the behavior of students long after they graduate.
Qualitative Decision Making

• We gather information and recommendations from various stakeholders comprising of faculty, staff and students.
• We also engage in collaborative efforts with various offices including the Office of Sustainability, Off-Campus Student Involvement, Campus Police, Campus Recreation and Stamp Student Union and others.
• RESULTS
  – CIER Survey
  – Student Organization Resolutions
  – Joint Programming
  – C-TAC Recommendations
Quantitative Decision Making

Shuttle-UM

Ridership Data
• Allows for determination of headways and the number of buses required.

Stop Analysis
• Allows for adjustment of stop on a route.

Parking

Lot Inventories
• Determines capacity of a lot

Permit Analysis
• Determines demand

Zip Code Analysis
• Determines GHG impact
Ridership data is collected and analyzed by semester, by day of the week and by run.

Campus demand results in multiple peaks and valleys of demand due to class schedules. As a result, a bus can be full to capacity at 1:30 and almost empty at 2:40 and full again at 3:30.
Cluster map showing local addresses for students holding commuter student permits.
We can isolate an address, such as U-View, to determine the number of permits in the area.
Collaborations with the Office of Sustainability have resulted in sophisticated analyses of our greenhouse gas emissions (GHG).

Count: 1,718; 17% of fleet
Average Fuel Efficiency: 29.05 MPG
# Sustainable Initiatives

## Current
- Bike Program
- Hybrid Buses
- Park and Rides
- Zimride
- Zipcar
- License Plate Recognition Technology
- BioDots

## Future?
- Parking restrictions
- Vanpools
- Carbon footprint based permit fees
Where are we now?
Parking Supply and Demand

### SUPPLY & DEMAND

<table>
<thead>
<tr>
<th></th>
<th>FY 08</th>
<th>FY 09</th>
<th>FY 10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Parking Supply</td>
<td>21,154</td>
<td>20,988</td>
<td>19,856</td>
<td>19,483</td>
<td>19,446</td>
<td>19,846</td>
<td>19,846</td>
</tr>
<tr>
<td>Net Parking Supply</td>
<td>20,404</td>
<td>20,238</td>
<td>19,106</td>
<td>18,733</td>
<td>18,696</td>
<td>19,096</td>
<td>19,096</td>
</tr>
<tr>
<td>Parking Demand</td>
<td>20,090</td>
<td>19,680</td>
<td>19,106</td>
<td>18,733</td>
<td>18,696</td>
<td>19,096</td>
<td>19,055</td>
</tr>
<tr>
<td>Variance (net supply vs. demand)</td>
<td>314</td>
<td>558</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>41</td>
</tr>
<tr>
<td>memo: Buffer¹</td>
<td>750</td>
<td>750</td>
<td>750</td>
<td>750</td>
<td>750</td>
<td>750</td>
<td>750</td>
</tr>
</tbody>
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Note1: Buffer represents overflow and special demand (Maryland Day, History Day, etc.) requirements

*Analysis completed in 2008
Shuttle-UM and Alternate Transportation Ridership Details

<table>
<thead>
<tr>
<th>Route</th>
<th>Ridership 2002</th>
<th>Ridership 2009</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Use</td>
<td>1,224,757</td>
<td>2,627,029</td>
<td>118%</td>
</tr>
<tr>
<td>Intra-campus Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus Connector North</td>
<td>68,245</td>
<td>78,143</td>
<td>14.5%</td>
</tr>
<tr>
<td>Campus Connector South</td>
<td>13,497</td>
<td>47,350</td>
<td>251%</td>
</tr>
<tr>
<td>Park and Ride</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laurel</td>
<td>3,704</td>
<td>8,897</td>
<td>140%</td>
</tr>
<tr>
<td>Burtonsville</td>
<td>2,761</td>
<td>11,364</td>
<td>311%</td>
</tr>
<tr>
<td>Bowie</td>
<td>4,503</td>
<td>8,223</td>
<td>96%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Two Wheel Vehicle</th>
<th>Registration 2008</th>
<th>Registration 2009</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycles</td>
<td>280</td>
<td>910</td>
<td>225%</td>
</tr>
<tr>
<td>Scooters</td>
<td>n/a</td>
<td>180</td>
<td>n/a</td>
</tr>
</tbody>
</table>
President Mote signed the Climate Action Plan. This plan calls for zero emissions by 2050. Suggested milestones for reducing the commuter carbon footprint are as follows:

- **By 2015** – a reduction of 3,450 commuter permits (7,659 MTCO2e annually by 2015);
- **2015-2020** – a reduction of an additional 1,200 commuter permits (an additional 2,664 MTCO2e annually by 2020, >10,323 annually post 2020);
- **2020-2025** – a reduction of an additional 1,200 commuter permits (an additional 2,664 MTCO2e annually by 2025, >12,987 annually, post 2025); and
- **2025-2050** – a reduction of an additional 6,050 commuter permits (an additional 13,431 MTCO2e annually by 2050, >26,418 annually, post 2050).
How much is 3450?
Fixed vs. Variable Permit Costs

D.O.T.S. FY10 BUDGETED EXPENSES

- Mandatory Expenses, 4,355,988, 30%
- Core Expenses, 1,508,525, 10%
- Shuttle Expenses, 3,218,781, 22%
- Unrelated Other Operational Expenses, 4,326,761, 29%
- Variable Permit Expenses, 1,290,351, 9%

Core Expenses, 1,508,525, 10%
Mandatory Expenses, 4,355,988, 30%
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Shuttle Expenses, 3,218,781, 22%
Variable Permit Expenses, 1,290,351, 9%
Permit Reduction Savings

D.O.T.S. Variable Permit Impact

3,450 Permit Reduction Savings  $352,632  27.3%
Total Variable Permit Expenses  $1,290,351  100.0%

Amount available to apply to revenue shortfall from 3450

$0  $250,000  $500,000  $750,000  $1,000,000  $1,250,000  $1,500,000

$0  $250,000  $500,000  $750,000  $1,000,000  $1,250,000  $1,500,000
Revenue Shortfall

Revenue shortfall if all 3450 permits came from student commuters.

$734,850.00

$1,393,800.00

$2,087,250.00

$213.00

$404.00

$605.00
Financial Constraints

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<tr>
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<tbody>
<tr>
<td><strong>Savings</strong></td>
<td>$352,632</td>
</tr>
<tr>
<td><strong>Shortfall</strong></td>
<td>-$734,859</td>
</tr>
<tr>
<td><strong>COST</strong></td>
<td>$382,277</td>
</tr>
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The cost increases if:
- Shuttle services increase to meet added demand
- Any of the reduced permits are faculty or staff

- Developer MOUs
- Parking subsidizes Shuttle budget
- Fee increases must be under 3% a year
- High Sensitivity to fee increases
How committed are we?

Only if someone else pays for it.

Only in boom years.

The environment is priceless.