Sustainable Transportation Award Winner

UC/CSU Sustainability Conference
Santa Barbara, 2006
BIKE SHUTTLE

- UC Santa Cruz
- Transportation Demand Management
- Larry Pageler, Senior Transportation Planner
PROJECT DESCRIPTION

Overcoming Inhibitions
Overcoming Inhibitions: What Commuter Surveys Have Told Us…
“What inhibits your use of Transportation Alternatives?”

• I don’t have a bicycle
• No convenient showers for bicyclists
• Fear of bike theft
• The hill to campus is too steep to bicycle
• I need my car for off-campus meetings
• I need my car for personal mid-day errands
• I’ve already paid for parking
• The bus takes too long to get where I’m going
• The bus doesn’t come near my home
• I can’t find a carpool partner
• I drop off/pick up my child en route to/from campus
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“The hill to campus is too steep to bicycle”

- 11.5% of Student respondents
- 17.1% of Faculty respondents
- 20.9% of Staff respondents

What was worse?
- Long travel time on bus
- Wait between buses is too long
- Drop-off/pick-up child en route (faculty & staff)
- Need my car for personal mid-day errands
- My work hours vary too much
- I’ve already paid for parking (students)
UC Santa Cruz

- Perched on the side of Ben Lomond Mountain, overlooking Santa Cruz and Monterey Bay
- Redwood and oak forests to the north, rolling grasslands to the south
- 2,020 acres, only 450 acres developed
- 1 mile from Main Entrance to Central Campus
- Bounded on three sides by State and City parks
UC Santa Cruz (2004-05)

• **14,538** students:
  - **13,238** undergraduates
  - **1,300** graduate students

• **3,760** faculty and staff work at the main campus

• Ten residential colleges house 45% of the total student enrollment.
UC Santa Cruz (2004-05)

- 14,538 students:
  - 13,238 undergraduates
  - 1,300 graduate students
- 3,760 faculty and staff work at the main campus
- Ten residential colleges house 45% of the total student enrollment.
- 4,840 auto and 330 motorcycle parking spaces in over 65 on-campus parking lots
- Only two roads into/out of campus
- Average Daily Traffic (ADT) in/out of campus = 25,174 vehicle trips/day
- Per capita daily trip rate = 1.38
PROJECT DESCRIPTION

The ride down the hill is great…

But the ride up is a workout!
PROJECT DESCRIPTION

Transit and Topography

UCSC is located on a hillside above coastal Santa Cruz...
PROJECT DESCRIPTION

Transit and Topography

UCSC is located on a hillside above coastal Santa Cruz...

Downtown Santa Cruz
(40 ft. elevation)
Transit and Topography

UCSC is located on a hillside above coastal Santa Cruz...

Main Campus Entrance
(230 ft. elevation)

Downtown Santa Cruz
(40 ft. elevation)
Transit and Topography

UCSC is located on a hillside above coastal Santa Cruz...

- Downtown Santa Cruz (40 ft. elevation)
- Main Campus Entrance (230 ft. elevation)
- Central Campus (660 ft. elevation)
Transit and Topography

UCSC is located on a hillside above coastal Santa Cruz...

- Downtown Santa Cruz (40 ft. elevation)
- Main Campus Entrance (230 ft. elevation)
- Central Campus (660 ft. elevation)
- Upper Campus lands (1,150 ft. elevation)
- Meadow
- Edge
- Forest
- Existing Academic Core
PROCESS

Create a bike program responsive to the unique character of the UCSC campus and its community.
Focus on a single goal: Getting bicyclists up the hill to campus

Make use of available resources:

- Use 15-passenger vans from other TAPS programs
- Operated by Campus Transit drivers
- Fabricate a trailer and rack to safely carry 12 bikes (SportWorks)
- Rely on gravity for a great ride home!
## TECHNICAL INFORMATION

### Growth in Ridership, Service Hours and Headways:

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Total &amp; Average Daily Ridership</th>
<th>Service Hours</th>
<th>Frequency of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>619 26.9</td>
<td>7am - 10am Weekdays</td>
<td>30-minute headways</td>
</tr>
<tr>
<td>2000-01</td>
<td>14,420 60.8</td>
<td>6:45am - 10am School term, 7:15am - 9:45am Summer</td>
<td>15-minute School term, 30-minute Summer</td>
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<td>2001-02</td>
<td>17,703 77.6</td>
<td>6:45am - 10am School term, 7:15am - 9:45am Summer</td>
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<td>17,656 75.5</td>
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Bike Shuttle: Average Daily Ridership
### Ridership Analysis

**Periods of high utilization appear as tall “hot” colors**

<table>
<thead>
<tr>
<th>Days of Service</th>
<th>FALL QUARTER</th>
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<tbody>
<tr>
<td>Time of Run</td>
<td>7:00</td>
</tr>
<tr>
<td>Capacity</td>
<td></td>
</tr>
<tr>
<td>&gt;=12</td>
<td>0%</td>
</tr>
<tr>
<td>&gt;=10</td>
<td>0%</td>
</tr>
<tr>
<td>&gt;=7</td>
<td>0%</td>
</tr>
<tr>
<td>&gt;=5</td>
<td>0%</td>
</tr>
<tr>
<td>1-5</td>
<td>0%</td>
</tr>
<tr>
<td>0</td>
<td>0%</td>
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**Periods of low utilization appear as “cool” colors**
BARRIERS

• **Capacity issues:** What happens when more than 14 people are waiting to board the Bike Shuttle? “Take A Number”

• **Loading locations:** Where can we park and load a van and trailer that’s safe and not obstructing traffic? Drug store parking lot

• **Heavy bikes:** Will the driver help load my bike? No

• **Convenience vs. Efficiency:** Request for additional pick-up points throughout town — not just at the bottom of the hill:
  => Longer cycle times & more miles traveled (higher emissions)
  => Lower overall capacity and/or higher costs
ACCOMPLISHMENTS

Mode Shift:
• Half the Bike Shuttle riders used to be Transit riders — making room on crowded buses for the more transit-dependent campus commuter
• One-fifth were bike riders
• Only one in eight drove alone
• About three-quarters are students

When not using the Bike Shuttle:
• Half the students revert to Transit
• One-third of the faculty and staff drive alone

Reductions in Parking and Traffic:
• Parking reduction is (theoretically) 100%
• In reality, parking reduction is closer to 15%
• The Bike Shuttle generates only 21% of the auto traffic resulting if every participant drove alone. (Remember: the Bike Shuttle makes 20 round-trips/day, 5 days/week during much of the school year)
ACCOMPLISHMENTS

Emissions Savings:
• A typical Bike Shuttle rider spends only 4 miles out of 10 burning fossil fuel — but the Bike Shuttle itself burns fossil fuel during 8 of those 10 miles.

Consider three comparative scenarios:
• Bike all the way to/from campus = 0 lbs CO2/year/ rider

• Use the Bike Shuttle = 353 lbs CO2/year/ rider

• Drive alone in a Prius = 700 lbs CO2/year/ rider
LESSONS LEARNED

• Pay attention to utilization trends while keeping in mind uncontrollable variables (seasons, weather, etc.)

• Keep the original objective in mind: get cyclists up the hill

• Survey users to learn what they think — and keep in touch with operators to learn what they do.

• Consider larger/indirect benefits of your program

• Remember to consider the “what if” of Success:
  • Demand exceeding capacity
  • Users who vehemently love your program
TEAM

- Wes Scott, TAPS Director
- Tracy Freeman, Campus Transit Manager
- Campus Transit operators and Lead Drivers
- Candice Ward, TAPS Marketing Coordinator
- Larry Pageler, Senior Transportation Planner
- SportWorks Northwest, Inc.
CONTACT INFORMATION

Bike Shuttle Team:

- Wes Scott, TAPS Director — Oversaw trailer fabrication & program development. 831-459-4289, wesscott@ucsc.edu
- Larry Pageler — Ongoing service planning & analysis. 831-469-1940, pageler@ucsc.edu

- http://www2.ucsc.edu/taps/pages/bikeshuttle.html

- Sportworks Northwest, Inc. — Trailer fabrication
  - 1-888-661-0555, lisaf@sportworks.com