State of the Practice and Guide to Implementation

Getting Started with Bike Share

Federal Highway Administration
Pedestrian and Bicycle Information Center
Toole Design Group, LLC

March 22, 2012
Focus of study

• Document current practices
  – Planning
  – Business models
  – Funding sources
  – System design and technology
  – Performance measures

• Provide implementation guidance
  – Program goals
  – Feasibility studies
  – Infrastructure options
  – Policy considerations
  – Promotion and marketing

• Support program success!

Source: Capital Bikeshare
EXISTING PROGRAMS

- Boulder B-cycle (May 2011)
- Capital Bikeshare (DC Area | Sep. 2010)
- Deco Bike (Miami Beach | March 2011)
- Denver B-cycle (April 2010)
- Hubway (Boston | July 2011)
- Nice Ride (Minneapolis | June 2010)
- San Antonio B-cycle (March 2011)
- Spartanburg B-cycle (July 2011)
- ZotWheels (UC Irvine | Oct. 2009)

UPCOMING PROGRAMS

- Chicago (summer 2012)
- Baltimore (fall 2012)
- Atlanta (feasibility study - summer 2012)
Answer the questions:

- What is bike share?
- What does it cost?
- How do we pay for it?
- What about safety?
- How do we get started?
“We should start a bike share program!”

“... But what is bike share?”
What is bike sharing?

- Automated self-service rentals
- Priced to encourage short trips
- One style of bicycle
- One-way use/return bicycle at any station
- Long-term and casual members

Source: Nice Ride
## Program profiles
### Large systems (800-1,200 bikes)

<table>
<thead>
<tr>
<th></th>
<th>Capital Bikeshare</th>
<th>Nice Ride</th>
<th>Deco Bike</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start date</strong></td>
<td>September 20, 2010</td>
<td>June 10, 2010</td>
<td>March 15, 2011</td>
</tr>
<tr>
<td><strong>Number of bikes</strong></td>
<td>1200</td>
<td>1200</td>
<td>800</td>
</tr>
<tr>
<td><strong>Number of Stations</strong></td>
<td>140</td>
<td>116</td>
<td>91</td>
</tr>
<tr>
<td><strong>Docks per station (Range)</strong></td>
<td>11 to 39</td>
<td>11 to 39</td>
<td>13 to 19</td>
</tr>
<tr>
<td><strong>Solar vs. wired</strong></td>
<td>Solar</td>
<td>Solar</td>
<td>Solar</td>
</tr>
<tr>
<td><strong>Service Area (Sq Mi)</strong></td>
<td>35.95</td>
<td>33.30</td>
<td>6.30</td>
</tr>
<tr>
<td><strong>Average Station Density (# station per Sq. Mile)</strong></td>
<td>3.92</td>
<td>3.48</td>
<td>14.13</td>
</tr>
<tr>
<td><strong># of Members (Annual/Casual)</strong></td>
<td>19,200 Annual</td>
<td>3,521 annual</td>
<td>2,500 annual</td>
</tr>
<tr>
<td></td>
<td>105,644 casual</td>
<td>37,103 casual</td>
<td>No casual data reported</td>
</tr>
<tr>
<td><strong>Year round or seasonal</strong></td>
<td>Year-Round</td>
<td>Seasonal (Closed Nov-Mar)</td>
<td>Year-round</td>
</tr>
<tr>
<td><strong># of Trips per year</strong></td>
<td>1,171,562 trips in 365 days</td>
<td>217,530 trips in 212 days</td>
<td>540,000 trips in 274 days</td>
</tr>
<tr>
<td><strong>Business Model</strong></td>
<td>Jurisdiction owned and managed</td>
<td>Non-Profit</td>
<td>For-Profit</td>
</tr>
</tbody>
</table>
## Program profiles
### Medium systems (200-600 bikes)

<table>
<thead>
<tr>
<th></th>
<th>Hubway</th>
<th>Denver B-Cycle</th>
<th>San Antonio B-Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start date</strong></td>
<td>July 28, 2011</td>
<td>April 22, 2010</td>
<td>March 1, 2011</td>
</tr>
<tr>
<td><strong>Number of bikes</strong></td>
<td>600</td>
<td>520</td>
<td>200</td>
</tr>
<tr>
<td><strong>Number of Stations</strong></td>
<td>60</td>
<td>52</td>
<td>20</td>
</tr>
<tr>
<td><strong>Docks per station (Range)</strong></td>
<td>13 to 19</td>
<td>9 to 19</td>
<td>7 to 23</td>
</tr>
<tr>
<td><strong>Solar vs. wired</strong></td>
<td>Solar</td>
<td>Solar and Wired</td>
<td>Solar and Wired</td>
</tr>
<tr>
<td><strong>Service Area (Sq Mi)</strong></td>
<td>11.79</td>
<td>12.571</td>
<td>4.77</td>
</tr>
<tr>
<td><strong>Average Station Density (# station per Sq. Mile)</strong></td>
<td>4.83</td>
<td>4.1365</td>
<td>4.19</td>
</tr>
<tr>
<td><strong># of Members (Annual/Casual)</strong></td>
<td>3,600 Annual/30,000 Casual</td>
<td>2,659 Annual/40,600 Casual</td>
<td>1,000 Annual/2,800 casual</td>
</tr>
<tr>
<td><strong>Year round or seasonal</strong></td>
<td>Seasonal (Closed Dec-Mar)</td>
<td>Seasonal (Closed Dec-Mar)</td>
<td>Year-round</td>
</tr>
<tr>
<td><strong># of Trips per year</strong></td>
<td>60,000 trips in 120 days</td>
<td>202,731 trips in 271 days</td>
<td>23,272 trips in 180 days</td>
</tr>
<tr>
<td><strong>Business Model</strong></td>
<td>Advertising and Sponsorship Concession with profit sharing</td>
<td>Non-Profit</td>
<td>Non-Profit</td>
</tr>
</tbody>
</table>
## Program Profiles
### Small systems (under 150 bikes)

<table>
<thead>
<tr>
<th></th>
<th>Boulder B-Cycle</th>
<th>Spartanburg B-Cycle</th>
<th>ZotWheels*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start date</strong></td>
<td>May 20, 2011</td>
<td>July 7, 2011</td>
<td>October 1, 2009</td>
</tr>
<tr>
<td><strong>Number of bikes</strong></td>
<td>110</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td><strong>Number of Stations</strong></td>
<td>15</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Docks per station</strong></td>
<td>11 to 15</td>
<td>9 and 11</td>
<td>8 to 12</td>
</tr>
<tr>
<td><strong>Solar vs. wired</strong></td>
<td>Solar and Wired</td>
<td>Solar and Wired</td>
<td>Wired</td>
</tr>
<tr>
<td><strong>Service Area</strong></td>
<td>4.69</td>
<td>1.42</td>
<td>1.29</td>
</tr>
<tr>
<td><strong>Average Station Density</strong></td>
<td>3.20</td>
<td>1.41</td>
<td>3.11</td>
</tr>
<tr>
<td><strong># of Members</strong></td>
<td>1,171 Annual</td>
<td>100 Annual</td>
<td>100 Annual</td>
</tr>
<tr>
<td><strong>(Annual/Casual)</strong></td>
<td>6,200 Daily</td>
<td>450 Casual</td>
<td>No casual data reported</td>
</tr>
<tr>
<td><strong>Year round or seasonal</strong></td>
<td>Seasonal (Closed Dec- Mar)</td>
<td>Year-round</td>
<td>Year-round</td>
</tr>
<tr>
<td><strong># of Trips per year</strong></td>
<td>18,500 trips in 270 days</td>
<td>1500 trips in 150 days</td>
<td>2200 rides in 252 days</td>
</tr>
<tr>
<td><strong>Business Model</strong></td>
<td>Non-Profit</td>
<td>Non-Profit</td>
<td>Non-Profit</td>
</tr>
</tbody>
</table>

*ZotWheels was included to provide insights into university owned and managed programs. While this analysis does share lessons learned from the program, the findings of the report concentrate on urban bike sharing programs.*
Program components

Bike sharing program

Planning
Funding
Operation
Marketing
Why bike sharing?

- Spontaneous bicycle trips
- Increased mobility options
- Complement transit and other modes
- Environmental, social, economic and health benefits
- Reduced traffic congestion

Source: Boulder B-cycle
“So, how much does it cost?”
Cost elements

- Program planning:
  - Feasibility study
  - Procurement

- Program startup:
  - Equipment
  - Permitting and installation
  - Marketing and outreach

- Sustaining the program:
  - Maintenance and operations
  - Customer service
  - Advertising and marketing*
  - Vendor payments
  - System evaluation, planning and expansion

Source: Deco Bike
## How much does it cost?

<table>
<thead>
<tr>
<th>Station Size (Docks)</th>
<th>Bikes</th>
<th>Equipment and Installation</th>
<th>Approximate Annual Operating costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>6</td>
<td>$35,000 to $40,000</td>
<td>$12,000 to $15,000</td>
</tr>
<tr>
<td>15</td>
<td>8</td>
<td>$45,000 to $48,000</td>
<td>$18,000 to $21,000</td>
</tr>
<tr>
<td>19</td>
<td>10</td>
<td>$53,000 to $58,000</td>
<td>$24,000 to $28,000</td>
</tr>
</tbody>
</table>

Source: Interviews with Advisory group (Nov. 2011 - Jan. 2012)
“How do we pay for it?”
• US DOT 2010 *Policy Statement on Bicycle and Pedestrian Accommodation*
  — “...DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists...”

• FTA 2011—eligibility of pedestrian and bicycle improvements
  — First and last mile focus
  — Catchment area (radius) around stop/station
    • Bike - 3 miles
    • Pedestrian - ½ mile
    • Can extend beyond if strongly connected
  — *Mentions bicycle share eligibility*
Federal Funding
Existing supporting programs

FHWA
• Formula
  – Congestion Mitigation and Air Quality Improvement Program (CMAQ)
  – Surface Transportation Program/Transportation Enhancement (TE)
• Discretionary
  – Transportation, Community, and System Preservation Program (TCSP)
  – TIGER
• Other
  – Nonmotorized Transportation Pilot Program

Source: Capital Bikeshare
Federal Funding Programs which can support Bike Sharing

FTA
- Bus Livability
  - Orange County (CA) Transportation Authority (OCTA)
  - Austin, TX (Capital Metropolitan Transportation Authority)
- Paul S. Sarbanes Transit in Parks grant program
  - San Antonio, TX
- Job Access Reverse Commute
  - Planned for Montgomery County, MD

Source: Denver B-cycle
Federal Funding Issues for bike share

• US DOT working on consistent approach to funding eligibility questions.

• Funding issues:
  – Federal funding eligibility;
  – Grant administration and contract management;
  – Right-of-way (highway encroachment, public property use, private property impacts, outdoor advertising);
  – Buy America—products made of steel or iron;
  – Funds not for operating expenses and maintenance.

• Can federal funds pay for the bikes?
  – FTA: No. FTA has not historically included bicycles within the definition of public transportation.
  – FHWA: Yes. Bikes are part of a parking system.
Federal funding in the future

• Follow the debate in Congress
• US DOT FY 2013 budget *proposal*
  – Program consolidation
  – Livable Communities formula and discretionary programs
• How will funding options for bike share programs change in reauthorization?
### Funding sources

<table>
<thead>
<tr>
<th>PRIVATE GRANTS</th>
<th>CUSTOMER FEES</th>
<th>PUBLIC</th>
<th>ADVERTISING AND SPONSORSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRANTS</strong></td>
<td><strong>MEMBERSHIP FEES</strong></td>
<td><strong>FEDERAL</strong></td>
<td><strong>• Naming rights</strong></td>
</tr>
<tr>
<td>• Blue Cross/Blue Shield</td>
<td>• $45-$85 – one year</td>
<td>• Formula</td>
<td>• Advertising</td>
</tr>
<tr>
<td>• Humana</td>
<td>• $15-$60 – one month</td>
<td>• Discretionary</td>
<td>• Logos on equipment and website</td>
</tr>
<tr>
<td>• New Balance</td>
<td>• $15-$30 – 3 day/weekly</td>
<td>• FTA</td>
<td>• others</td>
</tr>
<tr>
<td>• Mary Black Foundation</td>
<td>• $5-$7 – daily</td>
<td>• FHWA STATE</td>
<td>•</td>
</tr>
</tbody>
</table>
Business models

JURISDICTION OWNED AND MANAGED

NON-PROFIT ORGANIZATION

ADVERTISING AND SPONSORSHIP CONCESSION WITH PROFIT SHARING

FOR-PROFIT BUSINESS
Planning
Selecting a Business Model

JURISDICTION OWNED AND MANAGED

- Jurisdiction buys and owns the equipment
- Fixed contract with system operator – maintenance and operation
- Profits (if any) are reinvested into the program
- Jurisdiction provides majority of capital funding

Capital Bikeshare (DC Area)
Source: Capital Bikeshare
Planning
Selecting a Business Model

ADVERTISING AND SPONSORSHIP
CONCESSION WITH PROFIT SHARING

- Program operates through shared costs and/or revenue agreements
- Contractor receives advertising and sponsorship revenues
- Contractor operates and maintains equipment
- Jurisdiction and contractor share net revenues
Planning
Selecting a Business Model

NON-PROFIT ORGANIZATION

- Non-profit entity created to operate bike share
- Jurisdiction(s) may act as conduit for public funding
- Non-profit assumes liability (legal and financial)
Planning Selecting a Business Model

FOR-PROFIT BUSINESS

- System run by a private, for-profit operator
- Revenues from grants, member fees, advertising, and investors
- Minimal governmental involvement (incl. funding)
- Fees paid to jurisdiction for use of public space and permitting

Deco Bike (Miami Beach)
Source: Deco Bike
Business models, cont.

• Overlap between business models

• Multiple influencing factors:
  – Politics
  – Funding sources
  – Institutional capacity
  – Liability concerns
  – Regulations

Source: Boulder B-cycle
“Alright, I get it … What about safety and liability?”
Promoting safety

- Very low rates of reported crashes
- Helmet use encouraged
- Bicycle design (heavier, slower, highly visible)
- Educational information on websites and at kiosks
- Links to bicycle safety resources and training

Getting a helmet for Boston’s Hubway

**Online** - When you sign up for a Hubway membership, you can add a helmet to your purchase while registering. We'll mail it right to your front door.

**In a Local Business** - Buy a helmet from one of these retailers, many which are located conveniently near Hubway stations.

**On the Street** - Look for the Boston Bikes and Hubway Street Teams out at busy Hubway stations. We'll have helmets available right where the bikes are. Find out where we will be next on Facebook and Twitter.
Limiting liability

- Maintain equipment and infrastructure
- Include waivers in rental agreements
- Educate users about safe bicycling
- Strategic partnerships to distribute risk
- Purchase insurance
- Work with local attorneys

Source: Mary Black Foundation
“Great! Will it work?”
Planning Feasibility studies

- Potential demand
- Scope and service area
- Business model
- Program costs
- Funding sources
- Technology/equipment
- Phasing
- Program administration, contracts, and procurement
- Sustainability

Source: Seattle Bikeshare Feasibility Analysis
Planning
Common variables

Service area/station siting:

- Population density
- Job density
- Retail density
- Presence of colleges/universities
- Infrastructure
- Tourist attractions
- Transit density/access
- Topography

Citywide Bicycle Sharing Suitability
Source: Pittsburgh Feasibility Analysis
Planning Statistics (PRELIMINARY)

- Service area profiles
  - Size: 1.5 sq. mi. to 36 sq. mi.
  - Station density: 1.4-14.3 stations/sq. mi. (avg. 4.7)
  - Station spacing: 0.1-0.75 mi.
  - Housing: 1,400-9,300 units/sq.mi.
  - Employment: 570-7,000 jobs/sq. mi.
  - Income: $28,000-$66,000 (avg. $47,000)
  - BTW rate: 0.2% - 5% (avg. 3%).

Citywide Bicycle Sharing Suitability
Source: San Francisco Feasibility Analysis
## Planning
Station siting and power

### AC POWER

<table>
<thead>
<tr>
<th>Docks</th>
<th>Width</th>
<th>Station Depth</th>
<th>Access Depth</th>
<th>Total Depth</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>31 to 32 feet</td>
<td>6 to 8 feet</td>
<td>4 feet</td>
<td>10' to 12'</td>
<td>3000 to 5000 lbs</td>
</tr>
<tr>
<td>15</td>
<td>40 to 42 feet</td>
<td>6 to 8 feet</td>
<td>4 feet</td>
<td>10' to 12'</td>
<td>4500 to 5500 lbs</td>
</tr>
<tr>
<td>19</td>
<td>50 to 52 feet</td>
<td>6 to 8 feet</td>
<td>4 feet</td>
<td>10' to 12'</td>
<td>5500 to 6500 lbs</td>
</tr>
</tbody>
</table>

### SOLAR POWER

Source: Interviews with Advisory group (Nov.2011- Jan. 2012)
Several successful large scale programs

- Capital Bikeshare
  (1,200 bikes - DC/Arlington, VA)
- Nice Ride
  (1,200 bikes - Minneapolis, MN)
- Deco Bike
  (800 bikes - Miami Beach, FL)
- Hubway
  (600 bikes - Boston, MA)
- Denver B-Cycle
  (520 bikes – Denver, CO)

Source: Capital Bikeshare
Program success

- Successful small scale programs too!
  - Different goals
  - Different models

<table>
<thead>
<tr>
<th></th>
<th>Spartanburg B-Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start date</td>
<td>July 7, 2011</td>
</tr>
<tr>
<td>Number of bikes</td>
<td>14</td>
</tr>
<tr>
<td>Number of Stations</td>
<td>2</td>
</tr>
<tr>
<td>Docks per station (Range)</td>
<td>9 and 11</td>
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<td>Solar vs. wired</td>
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<td>Service Area (Sq Mi)</td>
<td>1.42</td>
</tr>
<tr>
<td>Average Station Density</td>
<td>1.41</td>
</tr>
<tr>
<td>(# station per Sq. Mile)</td>
<td></td>
</tr>
<tr>
<td># of Members</td>
<td>100 Annual 450 Casual</td>
</tr>
<tr>
<td>Year round or seasonal</td>
<td>Year-round</td>
</tr>
<tr>
<td># of Trips per year</td>
<td>1500 trips in 150 days</td>
</tr>
<tr>
<td>Business Model</td>
<td>Non-Profit</td>
</tr>
</tbody>
</table>
Program evaluation

Multiple ways to measure success
Next steps

- Finalize document
- PBIC Webinar (April 26)
- Publish report (fall 2012)

Source: UC Irvine, Zotwheels
THANK YOU!

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