



BIKE SHARE SUMMARY REPORT

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PART ONE - BIKE SHARE RESEARCH FINDINGS

Research process

This research for this report was conducted between October 2009 and February 2010 at the request of Tanya Husick, Senior Transportation Planner for Cornell University. The goals were to:

- Provide an overview of a range of alternatives and best practices for university bike share programs.
- Develop a set of recommendations for the University from among various bike share program options.
- Outline specific conditions at Cornell University, including existing student efforts, likely partners, and other opportunities and limitations.

The Cornell Bike Share Steering Committee guided this research through monthly meetings to review priorities. Its members consist of:

- Lois Chaplin, Cornell Local Roads program
- Tanya Husick, Sr. Transportation Planner, Cornell University (Chair)
- Tom Knipe – Student Bike Share Coordinator, Cornell Transportation and Mail Services
- Susan Powell – Cornell Transportation and Mail Services (Big Red Bikes staff advisor)

The following methods were used to gather the information presented in this report.

- 1) Web-based research on traits of US and Canadian university bike share programs, categorized by type, size, years of operation, funding, etc. The complete list may be found as Appendix G.
- 2) Personal interviews with several outside university program leaders and independent bike share consultants. The programs chosen for interviews had characteristics which most closely match the Cornell situation.

Consultants

- a. Collegiate Bike Share Company – Jonathan Sobin
- b. Alta Bike Share – Alison Cohen
- c. Cambridge Innovation Center – Wayne Stokes
- d. CityRyde – Jason Meinzer

Universities

- e. Patrick Leslie – Fuji Bikes – Bike Emory (University)
- f. Duke University
- g. Drexel University
- h. St. Olaf University – Daniel Novak
- i. Michigan State University Bikes – Tim Potter

- 3) Bike Share best practice research: listserv archives, bike sharing blogs, company websites, and bike sharing in the news.
- 4) Interviews with Cornell University partners – see Part Two of this report for results.

Description of program types

Three terms are used to identify program type according to the type of check-out system employed. The terms will be used in this report, and are therefore defined below.

- 1st generation bike share: Bikes are made available for free, open use. Generally determined to be ineffective except in very small isolated/insulated communities.
- 2nd generation bike share: Some accountability and formalized check out system, but not fully automated. The program proposed by Big Red Bikes would be an example of this, but there is quite a range of second-generation programs, some of which do a better job with user accountability than others.
- 3rd generation bike share - high-tech point of use automated check-out system and integrated bike station/rack system. A municipal example is Bixi in Montreal. A handful of universities have 3rd generation programs, including Drexel University.

Each of the program types listed above should be distinguished from bike rental programs which are long-term in nature and require only a single check-in/check-out center. Bike share programs by definition are for short-term (less than 24 hours) point A to point B or small area use. Most current bike share programs at universities are 2nd generation.

Findings from external interviews and web-based research

- **User accountability** is vital to the long-term success of the program. Many free open use or 1st generation programs failed or were modified to include accountability due to theft, repair issues, and time-intensity of tracking/managing inventory. Some 2nd generation programs did a better job than others at accountability. Linking directly to a student ID card or credit card seems to be the preferred solution for 2nd generation programs. Some 2nd generation programs used a system of master keys which could unlock any available bike. The keys were distributed keys to registered user, and the honor system was the exclusive method of accountability amongst the pool of users. These programs were not effective at deterring theft and abuse (ie, users taking the bikes home). The user should be linked with a unique bike for a specific time period. 3rd generation programs are the best at addressing accountability, but are very expensive (see *budgetary considerations* on pg 4 and Appendix K for basic cost estimates).
- **Theft** – Bike locks alone are not sufficient to prevent theft. Bike attrition rates due to theft were very high with a number of the 2nd generation programs, and endemic to 1st generation programs. In one striking case, MSU bikes experienced a 75-80% attrition rate in their first year and today, seven years into the program, expects approximately 50% of their total inventory to disappear each year due to theft. Building financial accountability into the check-out process will be necessary to cover the cost of bike replacements due to theft. Also, all bike locks are not made equal. The U-Bolt variety is a better choice than cable locks.
- **Liability and safety** – Almost all programs require a signed waiver. Depending on how the program functions, the waiver is either signed once by a new “member” or upon each

use. Some programs provide lights and bells. Safe riding resources are typically made available but not required. Ease-of-use goals tend to outweigh the utility of safe riding tests, but these are typically included to the extent possible through passive education and information on on-campus bike skills classes. The issues of helmets and bike maintenance are also important from a risk management perspective. These are discussed in the **maintenance** and **helmets** sections which follow immediately.

- **Maintenance** is consistently mentioned as a significant program challenge. Professional bike shop partners are most commonly utilized for large repairs or annual fleet tune-ups. It is expensive and not advisable to pay bike shops for routine maintenance, such as flat tire repairs and filling tires with air (all bike tubes naturally lose a small amount of air over time and need to be filled with an air pump on a regular basis to maintain a consistent air pressure). If the bikes are purchased through a shop, then one should be able to negotiate a better deal for large-scale maintenance since these could be done in the off-season and would be expected income as part of a larger partnership. Routine, small-scale maintenance, such as regular bike safety checks and bolt tightening, tire checks and flat fixes, and brake adjustments is often most effectively handled by program volunteers and/or staff. Some programs have on-campus bicycle resource centers with at least one paid staff member where the maintenance occurs (e.g. UC Davis, Michigan State). These tend to be long-running and large programs that also offer long-term bike rental.
- **Helmets** – University bike share programs typically recommend rather than require helmets. In many cases, helmets are also provided. NY state law (like most state law) does not require adults to wear a helmet when riding a bicycle, but the evidence for use of helmets reducing risk of severe injury and death is incontestable. Helmet storage needs to be considered; helmet damage through routine handling should be minimized. Modern helmets with an adjustable helmet band are designed to fit 90% of adult head sizes. Risk management is the primary consideration when designing a helmet policy.
- **Budgetary considerations** – Budgets vary widely based on program type. 3rd generation programs are the most expensive. Initial capital costs for third-generation programs average \$3,000 to \$4,000 per bike (includes the full system). Annual operating costs for 3rd generation programs range from \$500 per bike to \$1,500 per bike. The range therefore for a 40-bike system would be \$120,000 to \$160,000 capital investment plus \$20,000 to \$40,000 annual operating cost. See Appendix K of this report for a comprehensive set of five possible budget scenarios.
- **User fee** – Many 2nd generation university bike share programs are offered free to users. Most 3rd generation programs offer a period of free use (typically the first 30 minutes to one hour of a given trip), after which an hourly fee kicks in. Many 3rd generation programs also have annual member fees. The fees can be structured to cover annual operating costs, but there is no existing business model for bike share in which capital costs are also recouped. A 3rd generation program therefore requires municipal or institutional funds to cover initial capital costs.
- **Fleet longevity** – The wear and tear on a bike share bike is expected to be greater than for a privately-owned bike. Each bike should be expected to last between two to four years. Fleet replacement due to wear and tear (along with attrition due to theft and loss)

should be built into budget assumptions. Salt from winter road treatments causes rapid deterioration of bicycle parts, drastically reducing bicycle longevity. Bicycles should therefore not be available for use during winter months. In Ithaca, that time period is approximately from mid-November to mid-March.

- **Program management** – There is no clear best practice or model for university bike share program management. Primary responsibility for program management lies in some cases with the university transportation department, in others with a paid coordinator (often a student) operating as a separate campus office/entity and in still others with a voluntary student group or other campus entity. A small number of universities contract management out to a 3rd-generation provider company.
- **Check-out / check-in process** – Generally, an effective process must promote user accountability, speed and simplicity in the transaction, liability minimization, safety, and tracking for evaluation purposes. See the bike check out description in the Cornell Library section (page 8) and Recommended Check Out Process (page 15) for a detailed treatment of questions surrounding an effective check-out process.
- **Optimum fleet size** – There is no optimum formula or ratio of bike share bikes to student population size or other variable. The size of the programs appears to be ad hoc and funding-based. There are several programs with as few as 20 bikes, and some well-established programs with several hundred bikes (UC Davis). A median range appears to fall somewhere around 40-80 bikes.
- **Bike Design** – Bike design in typical university bike share programs can be divided into three varieties, relating to the generational variety. 1st generation: typically donated, refurbished bicycles. 2nd generation – often also donated bicycles, but sometimes a new fleet purchased at discount from a bike shop partner or directly from a wholesaler. 3rd generation programs most commonly employ unique designs which integrate with automated bike stations/racks. The following design criteria illustrate an ideal bike design. These are drawn in part from Portland, Oregon's bike share design criteria. Some criteria may be more or less feasible under budget constraints.

Design Criteria

- Safety and stability in all weather conditions
- Upright riding position for confident riding in traffic
- Easy to operate; easy to mount and to hold in stopped position, including for shorter rider
- Reliable and intuitive braking system
- Protection from grease, dirt, and tire spray including enclosed drive train and full fenders
- One size to fit 90% of adult population with seat-only adjustment
- Theft deterrent (potentially through use of components not compatible with other bicycles and/or requiring tools not commonly available)
- Low-maintenance/durable, corrosion resistant
- Puncture resistant tires (to prevent flats)
- Lighting system including rear flasher and front headlight
- Front, rear, and side reflectors

- Compatibility with bus racks
- Gears and shifters that are easy to use and sufficient for use on hills

Additional Desired Bike Design Elements

- Capacity for sponsorship advertising that can be easily changed
 - Equipped with lock to enable user to secure bike to any bike rack or post while making a quick stop
 - Equipped with tracking devices, if cost-effective
 - Cargo capacity for typical briefcase, book bag, grocery bag weighing up to 20 pounds
- **Bike Accessories** – High-quality, easy to use locks which are incorporated in the frame or mount to the frame are essential. Lights and bells are recommended. Ideally, lights are bolted to the frame and operate on power from a generator in the front hub, but this increases the cost of the bikes significantly. LED lights are likely the best alternate option, with batteries being purchased and exchanged as part of regular bike maintenance checks.

Big Red Bikes – proposal evaluation

The following is a summary of the main program elements and an evaluation of the strengths and weaknesses of the Big Red Bikes proposal. The original proposal is attached as Appendix A.

Description

Big Red Bikes is an undergraduate student group formed in 2006 as part of Sustainability Hub with the goal of developing a Bike Share program for Cornell. Lois Chaplin acted as staff advisor until Sue Powell took over this role officially in Fall, 2009. In November 2009, the group received \$1 per undergraduate student in annual byline funding from the Cornell Student Assembly – approximately \$13,500 a year for two years, 2010-2011 and 2011-2012. The program proposes to install 20 bikes in year one and twenty more bikes (for 40 total bikes) in year two. The program proposes to serve undergraduates. Free – no charge - use for students is a key component. The check-in, check-out process is proposed to be managed through Cornell Libraries (Olin, Carpenter, Mann and the Vet Library). The bikes are a new fleet of identical units; the budget includes locks, lights, repair, replacement, charges for overdue or lost/stolen bikes. Group leaders include Noah Zallen '10, Pat Farnach '10, Sarita Upadhyay '11, Molly Futterman '11, Sonia Bui '12 and Jackie Chen '12. See the full Big Red Bikes proposal and info in Appendix A of this report for more proposal specifics.

Proposal strengths

- Student-driven.
- Partially funded and backed by larger student body.
- Good initial legwork and concept.
- Conceptually a good hybrid of accountability and affordability.
- As student organization, have valuable rights such as on-campus fundraising, ability to apply for space use, minimum insurance, etc.

Areas to address

- Program does not currently incorporate faculty, staff, grad student usage.
- Student administrative function needed for the program to work.
- Check-in system:
 - If library system: limitations include requirement of auxiliary paper-tracking system, and bike location limitations.
 - Need to build a check-in / tracking system – log book, waiver, key storage, etc
- Leadership is turning over. The group needs to build new leadership and bring in additional student involvement. Recommend creating task-oriented officer positions.
- Budget assumptions need another look:
 - Bike rack costs – composite racks will not be permitted. Possibility of sharing of cost of additional formal rack installations.
 - Insurance cost – not included. University Risk Management may require additional insurance.
 - Bike replacement costs are not built in – bikes will likely need to be replaced every 2-3 years. Sales of used fleet bikes could be a small additional revenue input.
 - Batteries for lights, bells, higher quality lock (u-lock variety)
- Bike Checks. Cannot be performed by library or TMS. What would a student-driven bike check and bike maintenance program look like?
- Bike make and model. There are some other options to consider besides Electra Townie. Key considerations are step-through frame, internal hub shifting, price range: \$250-\$400 retail, sponsorship opportunities.
- Funding restrictions may preclude graduate students and faculty from participating.
- The rack proposed by the group is not acceptable.
- Risk management and maintenance processes lack details.

Big Red Bikes current status – as of April, 2010.

1. Developing working teams with position descriptions in the following areas:
 - Leadership
 - Sponsorships
 - Partnerships and fundraising and planning
 - Bike maintenance and operations
 - Marketing and outreach
 - Finances
 - Webmaster
2. Working on check in / check-out process
3. Recruiting current and new members to take on the positions above.

Ubike – proposal evaluation

Undergraduate business student concept developed as part of a class project in Spring, 2009. Leaders are graduating seniors. 3rd generation style program. See Appendix B for proposal.

Proposal strengths

- Excellent background information in report.
- Supporting forms: Draft liability waiver is quite comprehensive, FAQ is well done.
- Marketing plan has good ideas.

Weaknesses

- A concept only. No organization, current activity or champions behind it.
- Requires very large investment (\$140,000 in year one) which students hoped to raise through private capital.
- Students are not engaged with Big Red Bikes group and are leaving campus in May 2010.
- Budget assumptions around rate of use are unrealistically aggressive on the revenue side.

Engineering class report and Jamie Hahn report

Good references for other data on University Bike Shares (See Appendix B)

PART TWO – CORNELL CAMPUS CONSIDERATIONS

Key partners, challenges and opportunities

Bike Share Coordinating Committee

This group has not yet been convened. Its role would be to coordinate campus approvals and opportunities. See draft stakeholders list in Appendix E for a list of possible committee members.

Cornell Outdoor Education (COE)

COE Executive Director Todd Miner met with the bike share steering committee in October, 2009 to explore ideas for a partnership between COE and a bike share program at Cornell. In addition Tom Knipe met with COE Director of Outdoor Programs Mark Holton and Land Programs Coordinator Chris Leeming in March 2010. COE has secured funds through an alumni donor to expand their mountain biking program. This will likely include the purchase of bikes and tools. A number of important ideas for partnership have been generated.

- **Transporting bikes** to a shop for maintenance: A COE staff member could transport bikes to a shop in their enclosed trailer towed behind a 12-passenger van on a regular basis. A precise cost has not been determined, but given the short distance and easy availability of a van and trailer along with a willingness on behalf of COE to support the project, cost is a minor concern. COE is open to having one of their staff members be the driver.
- **Management:** COE is interested in exploring a deeper partnership to provide supervision and management of a staff person who would be in charge of the maintenance and operations components of the bike share program. Bike sharing fits with their mission in terms of promoting sustainability and providing leadership and recreational opportunities.
- **Tools:** COE has a complete set of bicycle tools which they are willing to share. Long-term, COE may be interested providing repairs for the program at COE through a yet-to-be-developed campus-based bicycle resource center. Short-term, COE is willing to lend a bike share program whatever tools are required for on-site flat repairs. They will also provide storage for the tools. COE can provide access to the storage area nearly 24 hours a day to a qualified staff person or volunteer to access the tools.
- **Bike Storage:** COE might be able to provide winter bicycle storage space in their "Nebraska" space on the ground floor of Bartels Hall. This would require building a hoist rack to elevate bikes to the ceiling; they have lots of vertical space. The cost of the rack system could be shared. Other locations are being considered for storage (such as a garage at Marth Van Rensselaer Hall), and may be a better fit.

Cornell Library – bike check-out / check-in system option

Lois Chaplin and Tom Knipe met with Michelle Eastman, Executive Staff Assistant to the University Librarian, in December 2009. Pat Farnach of Big Red Bikes met with her earlier in the year. Big Red Bikes proposed using four libraries as check-out locations – Olin, Mann, Engineering and Vet. In summary:

- The library is supportive of the bike share project and is willing to have it use their electronic system (Voyager) for check-in / check-out.
- Eastman indicated that she is willing to act as the liaison to all of the necessary library departments/branches (accounting, circulation, etc).
- The circulation department at the library is sensitive to adding staff work; they are being asked to streamline processes.
- Eastman understood and agreed with the assessment that although there are still some details to work out about the check in process, etc, and there are certain limitations to using the libraries (locations, not keeping electronic data on user post check-in, etc), the library system may be a good initial fit for helping getting the project off the ground.
- The main reasons for going through the libraries are:
 - 1) it provides a system of accountability,
 - 2) it uses an existing electronic system which links to student bursar accounts,
 - 3) ease of transaction - any Cornell ID can check out the bike, and
 - 4) the central location of libraries and recognition provides a marketing benefit.
- It is unclear whether the system library can limit use to undergraduates; more research is needed.

Issues to consider if using the library for check-in/check-out:

- Vet Library hours are limited. No returns after 5pm. In addition, the Vet Library may close.
- The details of the check-in / check-out process need work
 - Library staff cannot manage any aspect of the bike-check / maintenance process.
 - Library staff will be able to manage the collection of waivers and the storage and use of a log book for check/in check out purposes.
 - Library staff will not be able to confirm the presence of bikes which are checked back in or crunch any data from the paper. The only data they will be able to generate is on overall use and fines.
- Each bike could be officially "housed" at just one library. The bikes can be returned at any library, but their location cannot be tracked electronically.
- The Voyager system can prevent bikes from being renewed online. We would want to require renewals to be made in person.

More check in/out process considerations:

- After-hours check in is an issue, since check-ins need to be done in person by a circulation staff member. There is a precedent for this with laptops/ AV equipment. After hours check-in must be prohibited.
- A paper tracking system will need to be devised as a secondary accountability measure, since once the key is checked in electronically, there will be no electronic record of the

user's name (due to privacy laws). An exception to this is if there is a fine assessed for late return, then the name will be attached.

- One idea is to check the bikes back in electronically ONLY after its presence at the library has been confirmed by either A) another user who is asking to check out that bike or B) a BRB officer / volunteer. But the mechanics of this might create problems with the fine system.
- A waiver should include a provision for charging the student for theft due to an "improperly locked bike". Check out process / waiver must show images of proper locking.
- Waiver must be signed each time a bike is checked out, regardless of whether that person has already checked out a bike or not.
- A system for flagging a bike requiring maintenance and taking that bike "offline" must be developed.
- A system of helmet storage must be developed. This could be a box or cabinet behind the circulation counter or helmets could be locked directly to the bikes.
- Big Red Bikes (BRB) may wish to develop an ID card for BRB officers / volunteers for library staff to easily recognize BRB officers / volunteers. This person would be granted access to the paper logbook, etc.
- When returning a bike, users could be required to place an "X" on a small map of the space around the library, denoting the location of the bike. The map (with a pre-stamped hole) could then be hung on the hook with the key and given to the next user or to the BRB officer / staffer doing bike checks to make it easy to find the bike.
- Big Red Bikes is currently funded through undergraduate student activity fee funds. Although not preferable, a user fee for graduate students and staff may need to be established. This should be explored further with the library.

Next steps for Big Red Bikes and the Cornell Library:

- Study the current laptop check-in/check-out process for processes to emulate.
- Develop paper tracking tools / process (log book, waiver, bike location map, etc).
- Develop a concept for key storage, such as a locking cabinet with hooks.
- Follow up with Michelle to share draft of paper tracking tools, comprehensive check out / check-in process, helmet storage plan, key storage plan, maintenance flagging process, communications process (e.g. notice regarding a maintenance issue, unreturned bicycle), etc.

The issue of user accountability is particularly important, given the high theft and attrition rates experienced by several other university bike share programs and tight budget of the proposed BRB program. Also, a single central location is not desirable in the long run, but is an option.

Risk Management

Craig McAllister and Alan Bova, Assistant Director and Director of Cornell Risk Management met with the bike share steering committee. They are generally supportive of the program moving forward given that certain requirements are met. Risk Management will require detailed plans which demonstrate that the program is minimizing liability in the areas of:

- bike maintenance
- a realistic plan for transportation of bikes to the repair facility
- helmet use
- check-out process.

General insurance for the activities of student groups is underwritten by a third party insurer. Additional insurance may or may not be required. Insurance may become an additional budget item; a range of possible costs is not yet available.

Alternate Bike Check-out Locations

Given certain limitations of partnering with Cornell libraries for bike check-out, several other options have been explored. A summary of findings follows. A web-browser based software tool for a bike share check-out system coupled with partners at campus Community Centers or other campus locations is considered. Given the need for consistent bike tracking, user accountability and ease of transactions at multiple locations, a browser-based tool is likely preferred to a paper-based or non-linked electronic tracking system. See the appendix of this report for one company's – CityRyde's - proposal to Cornell; this is the only bike share specific software tool that is currently offered. www.sparkmobility.com/tour/ Their proposal is for a \$5,000 annual investment for the software. University of Chicago has a contract with this system. This would be cost-prohibitive without additional program funding beyond Student Activity Fee byline funds.

Tom Knipe spoke with Jen Gudaz at Noyes Community Center (West Campus), Denise Cassaro, Campus Life Assistant Director at Robert Purcell (North Campus) and Brandi Smith, Assistant Director for Operations at Robert Purcell in March, 2010.

Noyes Community Center (West Campus)

- Gudaz is open to the idea of hosting a check out station for Big Red Bikes at Noyes. Could be a good fit for the Center. She is also a "daily bike commuter" and very supportive of the idea of exposing more students to cycling.
- Would likely need to be a browser-based system to facilitate ease of transaction/tracking. They have a computer which is on the internet all of the time which could be used for this purpose. I did not ask about the potential if a paper-based system, but we could do so in a follow up discussion (if the browser-based tool proves to be cost-prohibitive).
- Hours are extensive (7:30am to 1am) and a staff member is on duty at all times.
- There are some busy periods when people are signing in for classes or checking out equipment for classes when there might be a bottleneck and people checking out bikes would need to wait.
- Her staff cannot physically confirm the location of each bike upon check-in, but might be able to do regular checks, once or more daily. That being said, the lower racks are visible from the desk, through the windows.

- She expressed concern about bike rack capacity. This is something that would need to be worked out in subsequent discussions.
- If we decide to pursue this further she is willing to meet to begin to hash out the details.
- “Gravity well” issue may be a significant limitation of Noyes as a potential site. The downhill location of Noyes from central campus may mean that students will be unlikely to ride the bicycles uphill from that location. Bikes might collect and need to be transported uphill or be unavailable to users on central campus (this is not something that the program could do).

Robert Purcell Community Center (North Campus)

- Brandi Smith is the Director of Community Center Operations at Robert Purcell. Her separate student-staffed public desk handles package delivery, laundry services and other services and is open from 9am to midnight.
- Smith and her staff are very willing to act as a check-out location for bike share.

Appel Commons Recreation Center (North Campus)

- Denise Cassaro heads up recreational programming on North Campus and is supportive of the idea of partnership with Bike Red Bikes and her office. She has a student-staffed desk with an internet-linked computer from which bikes could be checked out.
- The hours of operation at the program desk are a significant limitation; it is only open from 5pm – 10pm.

Cornell Fitness Centers (Helen Newman, Teagle)

- Tish Tipping is the Director of Cornell Fitness Centers. Tipping expressed that her organization is currently in a position to support bike share. Reasons given were the lack of internet-linked computers on-site and limited staff capacity.

An important limitation of partnering with Community Centers is that they are not open during the summer months. No information as of 3/31/10 on Willard Straight Hall.

Bike Shops

Since there is no current on-campus resource for bike repair, area bike shops should be considered as partners for bike maintenance. There are at least 5 possible bike shops in Ithaca: The Bike Rack, Cayuga Ski and Cyclery, Glen Swann Cycles, Ithaca Running Company, and the US Outdoor Store. Other groups to be included in an RFP are RIBs (Recycle Ithaca's Bicycles) and COE (Cornell Outdoor Education).

A description of possible bike shop services follows. Lois Chaplin and Tom Knipe met in March 2010 with the owner of the Bike Rack in Collegetown to gather information for this report, but any decision to contract with a bike shop for repair or other services would be based on an RFP.

- Annual tune-ups could be performed on all bikes in the winter. The retail price is \$70 per bike; a shop would likely offer a 10+% discount.
- A la carte repairs (major repairs other than the annual tune-ups): a very short turn around on these (less than 24 hours) would be preferred.
- Classes to "certify" the Student Bike Share Operations Coordinator and Big Red Bikes volunteers in performing basic "bike safety checks" and basic flat repair could be offered free of charge. Once trained, these students could perform weekly on-site bike checks. See Bike Safety Check (pg 18) for more detail on this process.
- Bike purchase: going through a retailer would create an incentive for the retailer to offer a discount on repair services. In addition, a retailer may be able to assist in securing a lower price from their wholesale supplier.

Bike Shop Limitations / Considerations:

- Bike transportation: a shop cannot likely transport bikes from campus to the shop and back. This would need to be accomplished separately.
- On-site repairs are likely not an option except in the case of basic flat repairs, air pressure checks, etc. Otherwise, bikes must be brought to the shop.

Student Assembly (SA) decisions and funding:

Jennifer Davis, Assistant Dean of Students, provided the following information regarding student organization byline funding procedures. Big Red Bikes (BRB) was awarded byline funding in the amount of \$1 per undergraduate student per year for two years, with funds become available in Fall 2010.

- A one-time annual dispersal happens on September 1st. 5% is held back until the end of the term to account for fluctuations in the \$ figure, based on actual vs. anticipated enrollment.
- Use of funds requires advisor's approval (BRB advisor is Sue Powell, TMS).
- Funds are dispersed to a numbered account within the department under which the group is recognized as a "university organization" (as opposed to an independent organization - one with no university-paid advisor); this is determined by the department of the advisor.
- Unrelated alumni solicitation ideas need to go through alumni relations.
- There are no restrictions on other program fundraising vis-à-vis the use of student activity funds. Potential additional sources include grants, events, GPSA funding, etc.

Specific limitations on the use of funds have been issued by the SA, but we have not been able to obtain a copy of this “Appendix b” document as of 4/9/2010. Usually things like "include 'funded in part by SAO' in marketing” are the subject of this document.

Transportation and Mail Services (TMS)

TMS and campus planning are currently the lead campus offices on evaluating alternatives, supporting the student groups, developing appropriate partnerships, and communicating with other university offices about bike share.

University Landscape Architect

The Cornell bike share steering committee met with David Cutter, Cornell’s Landscape Architect to discuss bike rack placement, design and funding possibilities. The bike rack that was proposed by Big Red Bikes is not appropriate. Rather, standard inverted “U” style bike racks will need to be installed to increase capacity. A promising idea is to install one five-rack unit with capacity for 10 bikes at each of the proposed library locations. Funding must be discussed further. A follow up discussion about possible shared budget for bike rack purchase and installation should be scheduled.

The issue of having dedicated vs. non-dedicated bike racks for the bike share program has also been discussed. These could likely be decorated with Big Red Bikes colors or insignias, but exclusive use would not be guaranteed or needed.

University Planner and University Architect

The bike share steering committee will communicate with University Planner Mina Amundsen and University Architect Gilbert Delgado and others to ensure that the recommendations set forth herein and other future program iterations fit within the larger university planning and architecture goals and processes

PART THREE – RECOMMENDATIONS

The concept of a bike share program at Cornell has gained momentum recently through student support, funding, and media interest for the Big Red Bikes program. Overall, support for campus bicycle initiatives fits with goals outlined in Cornell’s recent Climate Action Plan and Transportation Impact Mitigation Strategies. A small student-run bike share program is unlikely (at least in its infancy) to translate to a significant direct reduction in vehicle miles traveled (VMT), but may serve as an important catalyst for enhancing awareness of cycling as a fun, healthy, climate-friendly means of transportation. It may also serve as an incubator for related initiatives.

Overall program recommendations: short term

- Continue to support Big Red Bikes (BRB) student proposal implementation, conditional on university requirements being met (see specific recommendations below).
- Hire part-time Student Bike Share Operations Coordinator.
- Form campus bike share coordinating committee to collectively address program implementation questions and opportunities.
- Monitor effectiveness of Big Red Bikes program; generate annual program evaluation.
- Explore additional funding or in-kind support to expand participation to graduate students, staff and faculty.
- Explore synergistic opportunities for an on-campus bicycle resource center. A campus bicycle resource center could serve the bike maintenance and program management needs of the BRB program and other campus bike programs such as Cornell Outdoor Education’s mountain biking program. It could also act as a hub of cycling activity with classes on bike maintenance and cycling skills, long-term rental of refurbished bikes, bike storage and repair for commuters, etc. The potential impact of such an investment in terms of increasing bicycle use at Cornell could be far greater in the long run than a bike share program alone.

Specific program element recommendations: short term

These are divided by subject area and described in narrative form below. Please see Appendix document *recommended program elements* for specific recommendations in chart form.

1. Facilities
2. Operations
3. Equipment
4. Fundraising and Budgeting
5. Management
6. Marketing

1. Facilities Recommendations

- ***Bike Racks*** – Install additional standard inverted “U” style racks at check-out locations. There should be a one-to-one ratio of designated bike rack parking spaces for each bike in the system. Work with Cornell Landscape Architect, University Planner, and Senior Transportation Planner to site new bike racks. Designate new racks as Big Red Bikes program racks through coloring and printed markings, but don’t enforce exclusive use. Recommend that funding for new racks and installation be shared by Grounds, Maintenance Management, and Transportation. The total cost for racks is approximately \$10,000 for two five-rack units (20 bike capacity) each year for the first two years. Rack installment can be phased.
- ***Check out locations*** – Work with Cornell Library as the primary partner for bike check out. Concentrate check-out in a single central location – Olin Library - in Year One, and add one or two additional library locations (Mann, Carpenter) in Year Two. Consider non-library partners (possibly campus Community Centers) for later phases. If additional funding is secured or new information about a computer-based check-out system comes forward by May 15, 2010, then the Community Centers should receive another look for Year One.
- ***Winter bike storage*** – Remove bikes to storage facility from mid-November through mid-March to avoid bike destruction from road salt. The first preference is to find an on-campus facility for winter storage (approximately 200-400 square feet of floor space), such as a garage space at Martha Van Rensselaer.
- ***In-season bike and parts storage*** - Partner with Cornell Outdoor Education to store basic repair kit, pumps, spare parts and accessories and bikes awaiting repair or identified as “parts” bikes.

2. Operations Recommendations

- ***Graduate students, faculty, and staff*** should be eligible to use the bikes. Additional funds to support use by the entire campus community should be allocated. Barring additional funds supporting use beyond undergraduates, the program should be made available for a nominal fee – paid upon check-out through the library or on a one-time membership basis - to grads and faculty/staff.
- ***Bike shop partnership*** – Develop an RFP for bike shop repair services and distribute in Summer 2010. Bike shop service to include annual winter tune-ups to be performed immediately prior to the fleet being released in the spring, and additional repairs as needed (see below), and training for the Bike Share Operations Coordinator and Big Red Bikes volunteers in performing bike safety checks and basic flat repairs.
- ***Program staff*** – Hire a Student Bike Share Operations Coordinator to provide continuity and accountability. The position will be housed in either TMS or COE, and work approximately 500 hours per year (quarter-time).
- ***Check out process – nuts and bolts***. A recommended check out system will include the following key elements:

- Cornell student I.D cards linking directly with the bursar will be used to check out bikes in the electronic library system. Fines and replacement charges will be assessed automatically.
- In addition to the electronic library system, a secondary paper log will be maintained by circulation staff members.
- A user will confirm the location of a bike, request to check out the bike from the circulation staff member, read the required safety information and sign the terms of use and liability waiver forms upon each use.
- The circulation staff member will enter the user's Cornell ID number, name, number of bike checked out, and time, date and location of check-out into a secondary paper log book; check the bike out in the electronic library system and give the user the corresponding numbered bike lock key from the locking key cabinet.
- A helmet will also be checked out to each user. Helmet storage details to be worked out with the library.
- Upon check-in, the circulation staff member will check the bike back in, ask the user whether the bike requires maintenance (and if so flag the bike for maintenance electronically and by placing the key in a different location in the locking key cabinet), write the time and date that the bike was returned on the paper log and replace the key in the cabinet.
- No overnight returns will be permitted.
- Signed waivers will be stored in a secure location in the library circulation area and transferred on a weekly or monthly basis to secure program files by the paid program coordinator.
- The library will automatically assess a daily late fee through the user's bursar account of \$20 for each day beyond 24 hours, and past two weeks late, the full replacement value of \$600 will be charged to the user. Overdue notices will be sent via email automatically by the library system. Total charges for a lost bike will not exceed \$600 per bike.
- A detailed appeals process for fines will be developed in consultation with Cornell Library and Cornell Outdoor Education.
- The above check out process will be tested through role-play exercises prior to implementation.
- ***Check out process: safety and risk mitigation*** will be built in to all parts of the process.
 - Users will be provided with ***written information*** on safe riding, helmet safety, proper helmet fitting, bike safety checks and proper bike locking technique prior to each use. This information will include easy-to-understand visuals.
 - Users will be required to read and sign a ***terms of use agreement and liability waiver*** upon each use.
 - Users will be required to perform a simple ***bike safety check*** before riding, e.g. “check the tire pressure, and tightness of the wheel bolts, handlebars, and seat post” (as for a rental car).

- Users will be instructed to inform library staff of any maintenance issues upon checking in the bike or prior to checking out the bike.
- **Physical bike safety checks** will be performed by the staff coordinator or a certified volunteer on each bike once per week at a minimum. Volunteers will be certified by the partner bike shop in performing bike safety checks. In addition, bikes flagged by users and other certified volunteers as requiring maintenance will be immediately removed from the check-out system and be made unavailable for use until repairs are completed by a qualified mechanic. An automatically generated email notice about a bike requiring maintenance will be sent from the library system to the staff bike share coordinator.
- A **professional bike shop** will complete all repairs beyond the most very basic type. Basic activities - flat tires, air pressure checks, bike safety checks – will be performed on site by the staff bike share coordinator or certified volunteers.
- **Equipment choice** – recommended bike equipment is chosen for its reliability, safety, durability, and lack of extra moving exterior parts (see below). In addition, **lights and bells** will be installed on bikes. Their physical condition will be checked on a weekly basis and new batteries will be installed in lights as needed.
- **Transporting bikes for maintenance** – Partner with Cornell Outdoor Education. A van and enclosed trailer will be made available on a regular weekly basis by COE for transporting bikes needing repairs to the shop. It will be driven by a COE staff member certified in operating the van and trailer.

3. Equipment Recommendations

- **The bike** – The following elements are recommended: internal 3-speed shifting, chain guard, rear coaster brake, front hand brake, relaxed frame geometry and step-through frame, bolt-on wheels (not quick-release – to deter wheel theft and enhance safety), adjustable seat, puncture-resistant tires and full fenders. (See Appendix M for photos of possible bikes matching this description). To balance cost and quality, the purchase-price range should be \$250 - \$450 per bike. In addition, the bikes should be uniform and distinctive in appearance.
- **The accessories** with which the bike is outfitted should include: a bell, front and rear lights (batteries will need to be stocked and replaced as part of weekly maintenance routine). Optional accessories include a rack or basket, kickstand
- **Helmets** to be required and provided. Helmets should have an adjustable head band, and should be of a universal variety (one fitting 90% of the population). Two XL and one XS sized helmet should be stocked for each group of 15-20 bikes in addition to the universal helmets, to accommodate very large or small heads. Helmets should have distinctive program markings.
- **A basic repair kit** for simple on-site repairs (flat fixes, bike safety checks, air pressure checks) by qualified staff or volunteers should include the following: spare tubes, tire irons, patch kits, a sturdy floor pump, a 4-way open ended box wrench with sizes 13-14-15-16 mm, a 3-way open ended box wrench box wrench, a three way bicycle allen

wrench. In addition, a sturdy floor pump should be provided at each location; it could be attached directly to the outside racks with a thin cable lock.

4. Fundraising and Budgeting Recommendations

- ***A phased approach*** – program implementation should take place in two phases in Year One. Phase one would be an initial launch of 12-15 bikes at one location in September, 2010.
- ***Student Assembly*** – TMS or COE must create a numbered account to which program funds are to be dispersed. Also, Big Red Bikes must keep up with SA reporting requirements.
- ***Additional Funding Sources*** – the following additional sources should be pursued:
 - **Advertising** – Recommend further exploration of sales of space on program publications, bicycles, and bike racks. Coordinate with Cornell Community Affairs.
 - **Sponsorship** - Recommend further exploration of in-kind donations or discounts on parts and bikes from bicycle manufacturers and retailers in exchange for promotion. Coordinate with Cornell Community Affairs.
 - **Graduate and Professional Student Assembly (GPSA)** – Recommend Big Red Bikes submitting an application in 2011 for Student Activity funds from GPSA. Additional ad-hoc funds may be available in the short term.
 - **Fundraising events or sales** – Big Red Bikes should aim to raise additional funds through on-campus events, individual donations and/or merchandise sales.
 - **Grants** – Big Red Bikes should seek additional grant funds; applications should be supported as needed by the Student Bike Share Coordinator.
 - **Alumni Affairs and Development** – Recommend contacting Alumni Affairs to share the opportunity for alumni to support an aspect of the program. Ideas include “in memorium” or donor-name-plated bike racks, names of individual donors and class on bicycles.
- ***Budget*** - Decrease the number of bikes for initial purchase from 20 to 12-15 to maintain a reserve for unanticipated repairs, replacements or other program expenses. Additional units may be purchased in Phase Two (spring) of Year One as funds allow. Several budget scenarios are available in the appendix of this report. A number of additional likely costs are built into these scenarios compared with the Big Red Bikes proposal.

5. Management Recommendations

- ***A part-time student employee*** (Bike Share Operations Coordinator) should be managed by either Transportation and Mail Services or Cornell Outdoor Education to provide overall program accountability and continuity. This person would be responsible for advising Big Red Bikes, coordinating with bike share program partners, managing program operations including bike maintenance and the check-out process, producing a program evaluation report, recommending program changes as needed. Recommended weekly hours are 5-10 hours per week during the period the program is operational; approximate annual

hours would be 250-500, at a wage of approximately \$11/hr. Approximate annual salary would be \$2,750 - \$5,500

- ***Bike Share Steering Committee*** – This group should continue to meet on a monthly or bi-monthly basis to provide general program oversight and support. The group should be expanded from its current four members to include key partners from Bike Red Bikes, Cornell Libraries, Risk Management, Transportation, Landscape Architecture, Community Affairs, and others as needed.
- ***Evaluation*** - A comprehensive annual program evaluation showing use history (#s, time of day, time of year, location), user survey data, partner surveys and internal program recommendations shall be performed in May or August for the first two years of the program by the Bike Share Steering Committee, with input on evaluation criteria from University Planning and Transportation. Establish outcome goals by Fall, 2010.

6. Marketing / Partnership Recommendations

- ***Marketing Plan*** – An annual marketing plan for Year One should be developed by May 2010. It should include an annual timeline of marketing activities, resources, and responsible parties.
- ***Marketing Collateral*** – Recommend that Big Red Bikes develop the following collateral:
 - Website (informational)
 - Marketing brochure
 - FAQ / policy piece - the fine print - or could this be included in the tri-fold/informational piece
 - Logo and tagline
 - Bike sticker - to place on bikes and bike racks to clearly identify them as big red bikes. Also bike numbers.
 - Posters - general promotional or advertising an event.
- ***Collateral distribution plan***: Locations of marketing brochure, when will they be distributed and restocked.
- ***Marketing partner list*** – Who can we ask to help spread the word - make a list. On a regularly timed basis to all incoming students? Via official campus communications? Group lists, etc.
- ***PR/media plan*** – Develop press release dates, topics and a clear organizational message.
- ***Events – media, fundraising and educational***: ideas include bike release event/celebration, campus celebrity photo-shoot, launch party, speakers, promotion at existing events, etc
- ***Bike prototype*** – show it off!

Overall program recommendations: Long term

- Keep up-to-date on developments in campus and municipal bike share systems. Stay on top of best practices.
- A third-generation program with automated check-out kiosks with integrated racks may be desired in the long run because of its ease of management and evaluation, ability to locate racks anywhere, and clear user accountability. However, the high start up and operations costs and current financial realities at Cornell most likely prohibit this investment in the short term. Still, it should not be ruled out as a future option.
- If bike sharing is successful at Cornell, consider partnering with the City of Ithaca, TCAT or other local partners to expand the reach of the program into the larger community.

APPENDIX – table of contents

- a. Big Red Bikes proposal
- b. Other Cornell-based proposals and reports
- c. Recommended (and required) program elements
- d. Key questions – and means of answering
- e. Draft list of partners and stakeholders
- f. Draft work plan for TMS
- g. US and Canadian university bike share projects list with traits
- h. Texts of selected interviews with other bike share programs
- i. Reports or resources from other bike share programs
- j. Big Red Bikes media
- k. Budget scenario sample spreadsheet
- l. Spark Mobility software proposal
- m. Images of bicycle options