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 ACTION        DISCUSSION        INFO X

**BOARD MEMORANDUM**

**TO:** Bicycle and Pedestrian Advisory Committee  
 Santa Clara Valley Transportation Authority  
 Board of Directors

**THROUGH:** Michael T. Burns  
 General Manager

**FROM:** Carolyn M. Gonot  
 Chief Development Officer

**SUBJECT:** Bike Racks on Light Rail Vehicles

**FOR INFORMATION ONLY****BACKGROUND:**

At the May 2006 Board and BPAC meetings, a member of the public, Mr. Mallett expressed the following concerns and suggestions about bike racks on light rail vehicles:

- Hanging bicycles conflict due to handlebars
- Bicycles occasionally fall off of the hooks
- Replace seats across from racks with more bike racks
- Implement policy that the bikes be hung alternately by the front wheel and the rear wheel

On July 18, 2006, VTA staff met with Joe Walton (VTA BPAC), and Mr. Mallett at the Younger Light Rail yard. Staff brought several bikes of various types to experience first hand the issues of loading single bikes and multiple bikes. This process was very informative for both understanding the issues listed above and for developing needed actions.

All agreed that bikes falling off of the hooks could pose a safety concern, and crowding in the rack area does seem to be compounded by people sitting in the seats provided. In addition, the angle of the racks and that four racks are provided make the bikes fit very close together and conflicts with handlebars can occur.

To get a broader perspective on the extent of the issues and to further inform this effort, VTA prepared and distributed a survey to current users of the racks. This memorandum documents the results of that survey effort.

## **DISCUSSION:**

The BPAC and SVBC assisted in developing the LRT bike rack survey questions (presented in Attachment A). The survey was available via a link to a website which VTA emailed to its BPAC members and also to the Silicon Valley Bicycle Coalition (SVBC) so they could distribute it to their membership. In addition, VTA also advertised the survey in the Take One newsletter for all VTA riders. VTA received 37 responses. The preliminary results of the survey as of September 12, 2006 are presented below. VTA will conduct further analysis of the responses and present any additional findings at the October 11, BPAC.

- **Demographics**

- 70% male, 30% female.
- Forty percent of respondents use LRV racks one or more days per week.

- **Racks vs. Standing with bike**

Almost 50% of respondents prefer to stand and hold their bikes rather than to use racks. Half of the standees said their bike was too heavy or they weren't strong enough to lift their bikes to the rack. The other half had various reasons why, it's easier to stand, including:

- riding a short distance
- too crowded to load bike onto rack (seats occupied)
- train moving makes it difficult
- size or shape of bike and/or its baskets /panniers makes it difficult to use racks

- **Bike Securement**

- 22 percent of the respondents had seen or experienced a bike falling off of the hooks.

- **Ease of use**

- 17 % thought racks are easy to use the first time and 17% feel racks are easy to use all the time.
- 67% thought the racks are easy to use with only one or no other bike present.
- 75% felt handlebars of adjacent bikes make it difficult to load/unload bikes, (30 % felt strongly).
- Over 75% felt that people sitting on the seats in front of the racks makes it difficult for riders to use the racks (almost 50% strongly agreed).
- Over 50% use the wheel track to assist with loading their bike but 14% do not know what the wheel track is.
- 34% felt that their bike is too heavy to use the racks.

- **Improvements**

- Over 50% support removing the seats to make it easier to load bikes, while 25% had no opinion and 22 % disagreed.
- Over 70% stated that they don't need to sit directly by their bike but want to be able to see it.

- **Comments - VTA received three or more comments on each of the following issues:**

- They appreciated the option of being able to stow/hang their bike and being able to hold it on the floor.
- The lurching car motion made it difficult to use the racks.
- Lowering the hooks/racks would make it easier to load bikes onto racks.
- Seats elsewhere in the car should be removed to allow more bike storage.

The survey affirmed the essential conclusions of the field visit to the yard. Based on the field visit and the survey results, we have the following preliminary findings. The issues associated with the current system can be categorized as either bike securement or convenience.

### **Potential Solutions**

#### **1. Securing the bikes to the racks**

Bikes occasionally falling off of the hooks appear to be the biggest issue. This appears to happen for two reasons: 1) the design of hook can allow a wheel rim to either slip off due to vibration and vehicle motion/bounce, or to partially catch at the top giving the person hanging the bike a false sense that they have adequately hooked the rim; and 2) bikes can move up or side-to-side because they are not secured at any other point, they are only held down onto the hook by gravity; the wheel track minimizes but does not prevent side-to-side motion and nothing prevents up-down movement.

The following potential solutions would be relatively easy to implement:

- Place a small rubber tube or coating on the hook to provide more traction between the metal hooks and the metal bicycle rims;
- Provide a Velcro strap on the wheel rail to dampen side-to-side and prevent upward motion.
- Enhance educational materials on how to load bikes onto the racks (e.g. pamphlets, a video)
- Provide some form of striping at the edges of the rack area to delineate the space for riders to stand with their bikes in the door/aisle area.

## **2. Convenience: Loading Bikes onto Rack/ Sitting Next to Their Own Bike**

Our field visit and the survey both concluded that the current design and location of the bike racks impede the ease with which people can load their bikes onto/off of the racks, specifically:

- Adjacent bike's handle bars are in the way when attempting to load and unload bikes;
- People sitting on the seats adjacent to the racks inhibit bikes loading and unloading;
- Bikes protruding into the aisle combine with people sitting across from bikes make maneuvering the bike onto the rack difficult;
- Many people cannot easily lift their bikes to the rack because they have exceptionally heavy bikes, odd-shaped bikes, bikes with baskets and/or panniers, and /or they are not strong enough. The survey also revealed that there are many types, shapes and sizes of bicycles and not all are conducive to hanging on the racks inside the LRV's.

The following are potential solutions:

- Eliminate seats across from bikes. If this were done then there are several possible follow-up options:
  - Keep the other side empty, and/or
  - Find another place to add seats
  - Provide another set of diagonal racks in that location, which would keep the aisle relatively clear
- Redesign / retool the wheel rail to allow the tires move closer to the wall – this would reduce the aisle way protrusion by a few inches and help secure the rim (long-term).
- Orient the racks at an angle to reduce aisle encroachment and handlebar conflicts, this would reduce the number of bike racks to three (long-term).

These actions could be combined.

### **Other Observations**

- VTA's low-floor vehicles have less floor-level space than other Light Rail Vehicles due to the need to place some machinery under the vehicle; thus there are the pockets of raised surfaces which reduce seating (but do allow the existing bike racks to be provided).
- Traditional and heavy rail operators (e.g. existing Caltrain and BART's proposed safe-routes-to-transit project) appear to have more flexibility to remove seats to provide storage space for bikes since they typically operate with four to ten cars. VTA currently operates 1- and 2- car trains.

## Next Steps

1. VTA will contact other light rail operators to determine if other options have been developed for low-floor vehicles.
2. The Bike Program staff and the BPAC will work with VTA Operations staff to implement the following actions to improve the securement of the bike to the racks:
  - Put a rubber-type tube or coating on the hooks;
  - Install velcro straps to secure bottom wheel;
  - Provide educational materials.
3. VTA will further evaluate the costs and impacts of removing the seats across from the racks.
4. Longer term options to reconfigure bike racks and/or remove seats elsewhere will be tabled pending results of these first actions.

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