Bus stops: a challenge for bike lanes and cycle tracks

Peter G. Furth, Northeastern University

Cycling Mobility (4), pp. 22-25, 2011.

On the road, cyclists usually ride between buses and pedestrians in keeping with the speed hierarchy. At bus stops, however, buses need to be next to the footway to pick up and let off passengers.

On one-way streets in New York City and Minneapolis, the conflict has been resolved by placing bike lanes on the left side of the street. This allows both bikes and buses to be next to a kerb without interfering with each other. A solution for two-way streets is not as easy to achieve. How can the needs of both groups be met?

Platform between street and cycle track

In many European cities and in Montreal, Canada, the conflict is overcome by placing a pedestrian platform between the cycle track and the lane used by the bus. Pedestrians cross the cycle track to get to the platform, and then access a bus.

This solution relies on having enough space in the right-of-way. Either there is space between the cycle track and the street to accommodate a platform, or the kerb can be extended into the parking lane and a platform built on that. Failing this, room for a platform can sometimes be created by using the space between cycle track and footway (if there is any), or by narrowing the cycle track (a treatment used in Montreal), the footpath or the traffic lanes on the road.

Where there is a parking lane, there are advantages to extending the kerb so that buses stop in the traffic lane. For pedestrians, it gives them more space and makes boarding and alighting safer and easier because it becomes much easier for buses to stop with both doors against the kerb, a study in San Francisco showed that there was a positive effect on traffic as well. The reason is that most parking lanes are so narrow that a stopped bus still blocks the travel lane. With an extended kerb, buses reach the stop more easily and passengers alight quicker as both sets of doors are against the kerb, and the bus blocks traffic for a shorter time[i].

Depending on space, the platform can be narrow or wide. Wide platforms serve as passenger waiting area, and can have a shelter and other amenities. Narrow platforms are intended only for momentary use when the bus arrives, with a passenger shelter placed on the footway.

If bus stops are positioned next to cycle tracks, the critical point is when a passenger steps off the bus, as they will be unable to see cyclists. A platform should be wide enough to receive an alighting passenger while a cyclist passes by on the cycle track.

To serve disabled passengers, there must be a path across the cycle track from the footway to the platform. Where the cycle track is at street level, accessibility can be achieved with ramps; however, a more space-efficient design is to raise the cycle track up to the level of the footway, providing pedestrians a level crossing. With a narrow platform, if the cycle track is at the same level, part of the cycle track can be used to accommodate people in wheelchairs getting on or off the bus.

Bike lanes changing to cycle tracks

Streets with on-road bike lanes can employ the cycle track-and-platform solution by leading cyclists from the bike lane onto a cycle track, placed behind a bus stop platform. This solution can be seen on many Dutch streets with bike lanes. You can use Google Streetview to see examples at Parkweg 75 in Voorburg (bit.ly/pZ4ssD) and Nassauplein in Delft (bit.ly/pWglh6). If there is a parking lane, the combined width of the bike lane and parking lane should be enough to host a platform and a cycle track. The kerbing, striping and ramps have to be laid out carefully to allow the bikeway to change from being beside the traffic lane at street level (when it's a bike lane) to the outside of the platform and possibly at footpath level (when it's a cycle track behind a platform).

Bus stop next to the cycle track

In Copenhagen, it is common for buses to stop at the edge of a cycle track, discharging passengers directly into the path of cyclists. In this situation, cyclists are required by law to stop when a bus stops. This not only leads to a delay for cyclists but, because the rule is occasionally ignored, a degree of pedestrian-cyclist friction and some injuries. One study of Copenhagen streets with cycle tracks reports 73 injury crashes between bicycles and pedestrians at bus stops, representing 27% of reported cyclist-pedestrian injury crashes[ii]. Having bus stops at the edge of the cycle track is a solution that Copenhageners have grown up with, stemming from a time when all traffic had to stop for a stopped tram; however, this solution is probably not suited to other cities.

Bus bays with bike lanes

Bus bays alongside bike lanes are often so shallow that stopped buses partially block the bike lane, forcing cyclists to move into the traffic lane. This is especially common when bus bays are

part of a parking lane. Standard steering mechanisms make it difficult for a bus to stop with its rear wheels next to the kerb in a recessed bay, unless the bus can make a long approach. Anybody considering a design involving bus bays and bike lanes should evaluate how easily buses can stop without blocking the bike lane.

When a bus has to move across a bike lane to reach a bus bay, it should be a relatively safe manoeuvre if bus drivers are trained to watch for and give way to bikes, but cases of cyclists being cut off by a bus entering a stop are unfortunately common. If there is a high number of cyclists, the bus can be delayed and forced to stop in the traffic lane, creating a safety hazard for car drivers behind the bus.,.

Bus stop in the bike lane

Where a bike lane runs next to a kerb, a bus pulling up to the kerb will block the bike lane, forcing cyclists to move into a traffic lane. Some cyclists may tolerate this, but others will look on the bike lane as a second-rate facility that puts them in danger. Situations like this are not allowed, for example, in Dutch traffic planning. Simply suspending the bike lane near a bus stop does not change the situation.

Bus stops where bikes ride in mixed traffic

On low-speed (30 kph or 20 mph), low-volume streets, bus stops present little challenge for cyclists because bikes and buses can usually pass each other safely. On city streets with faster speeds, however, the challenges at bus stops are the same as or worse than when bike lanes are marked. Where bays are provided in a parking lane, the problem of a bus blocking bikes tends to be worse where there is no bike lane. Because parking lanes are not usually wide enough to hold a stopped bus, the bus is likely to block the outside edge of a traffic lane, allowing motor traffic to squeeze by but leaving no place for bikes to pass unless they merge with the traffic lane.

Conclusion

There is an inherent conflict between buses and bikes, with both wanting to be next to the footpath at bus stops. Solutions include left-side bike lanes (on one-way streets), cycle tracks with passenger platforms between street and cycle track, and bus lanes with deep-enough bus bays that bikes can pass without encroaching on the adjacent traffic lane. Failing to pay attention to the safety needs of cyclists or passengers as they board or alight can lead to unsafe situations and can make a cycle route unacceptably dangerous for most cyclists.

[i] Fitzpatrick, K., K. Hall, S. Farnsworth and M.D. Finley. "Guidelines for the Use of Bus Bulbs." ITE Journal 73 (2002), May, 40-44.

[ii] Jensen, S. U. "Bicycle Tracks and Lanes: a Before-After Study". Transportation Research Board annual meeting, 2008.