

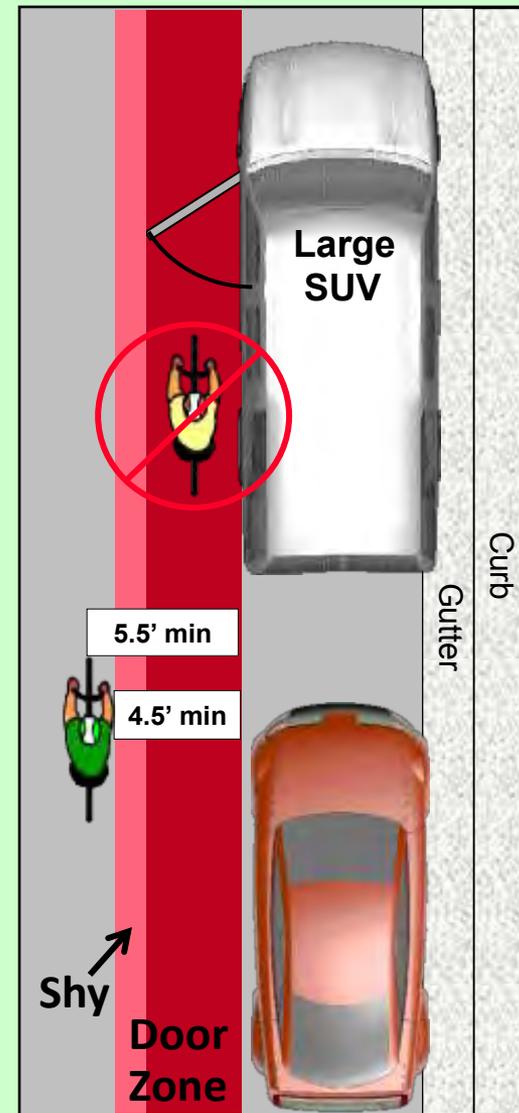
Sharrow and Bike Lane Best Practices for Streets with Parallel Parking

Dan Gutierrez & Brian DeSousa

Door Zone vs Standards and Guidance

- HDM/CA-MUTCD min bike lane width & min Sharrow placement, encourage door zone cycling and route cyclists into close passes by motorists
- US DOT Policy: Transportation agencies are encouraged to go beyond minimum standards to provide safe & convenient [bicycling] facilities...
- Exceeding min lateral stds for Sharrow & bike lane placement, routes cyclists out of door zone and discourage
- Video and scale drawings to illustrate the issues to follow:

Door Zone Hazard



Door Zone Hazard

Why You Should Avoid The Door Zone
Shows crash dummy test and real doorings



Where Can Cyclists Safely Operate?

Door Zone:

Fixed hazard region including the width of a car door + shy margin

Left Edge Shy Zone:

Fixed zone to the right of the travel lane or center line stripe.

Effective Lane:

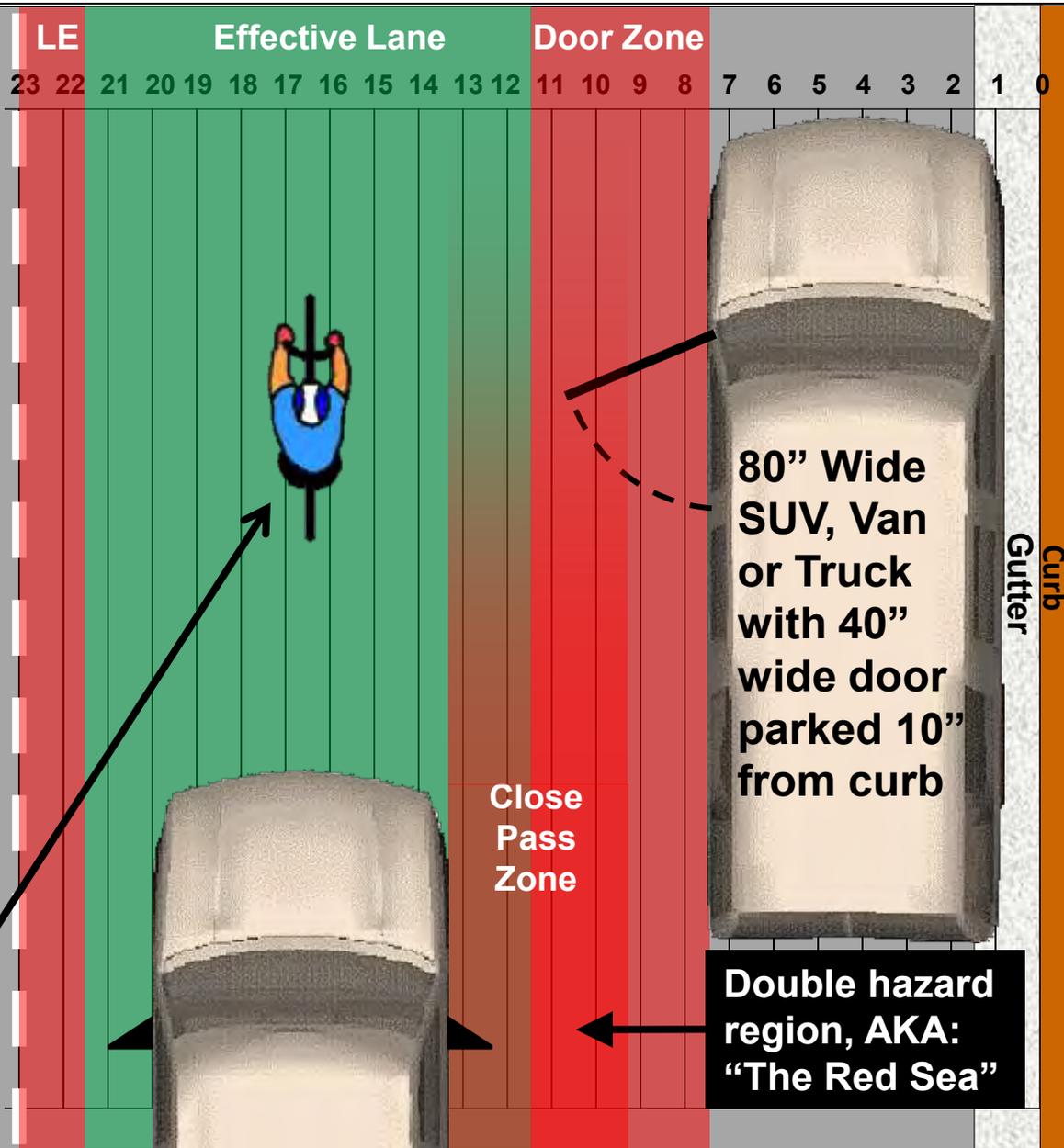
Fixed lane width, between the door zone and left edge shy zone

Close Pass Zone:

Dynamic hazard zone typically 4' to the right side of a moving motor vehicle, shown in translucent red

Lane Control:

Cyclist driving near the effective lane center to avoid the door zone and close passing zone.



SLM/Bike Lane Guidance with Street Parking

- **Sharrows should have lateral placements:**
 - Centered within the effective lane
 - 13.5' from the curb, for a 17' lane, up to 17.5' for a 25' lane [current min std is 11' from curb]
 - Useful for lanes from 17' to 25' wide
- **Bike Lane stripes should have lateral placements at:**
 - 15'/11' in a 26' lane + 7' Parking Ts [aiming to make min std]
 - 16'/11' in a 27', or wider lane
 - Useful for lanes 26' or wider [current min std is 23' lane]

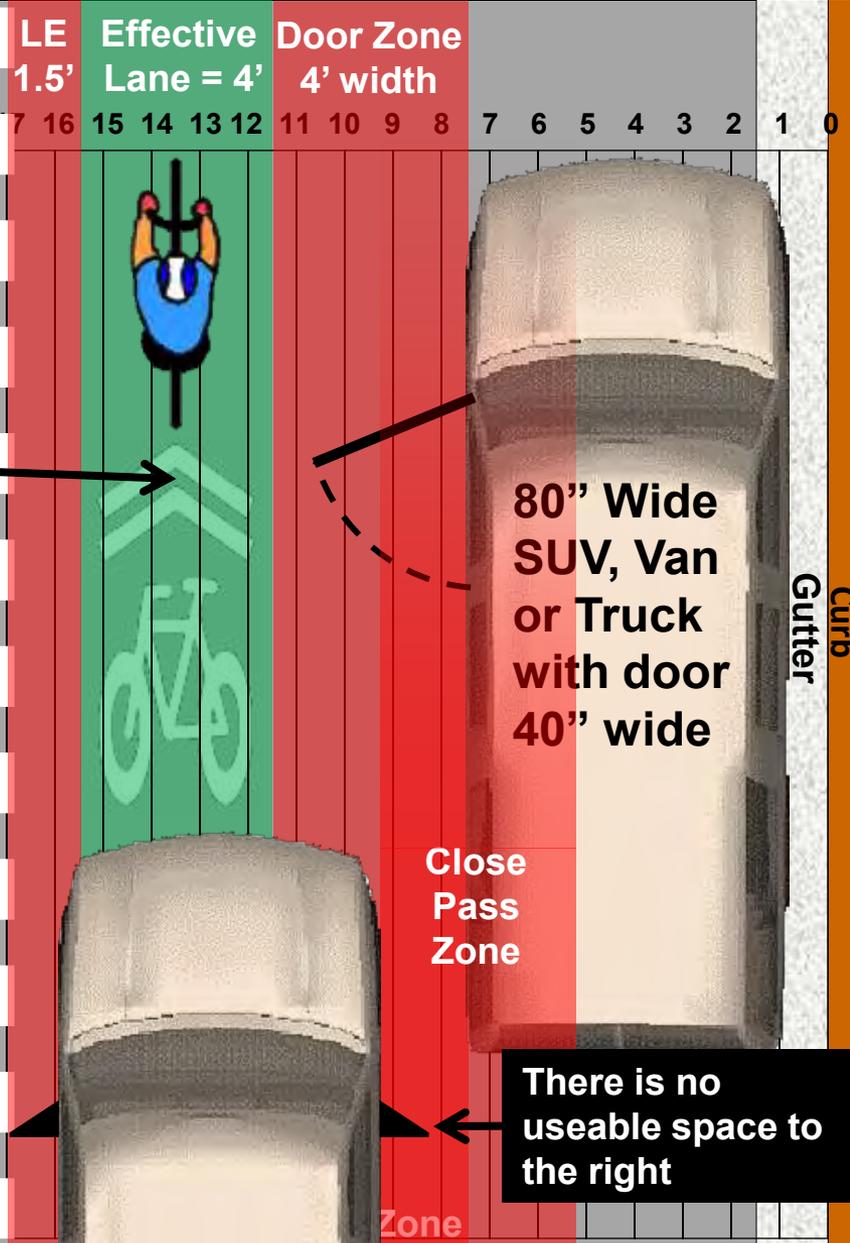
Note: Guidance is well beyond min stds, and encouraged by US DOT policy

17' Lane – Best Practice: Effective SLM at 13.5'

32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

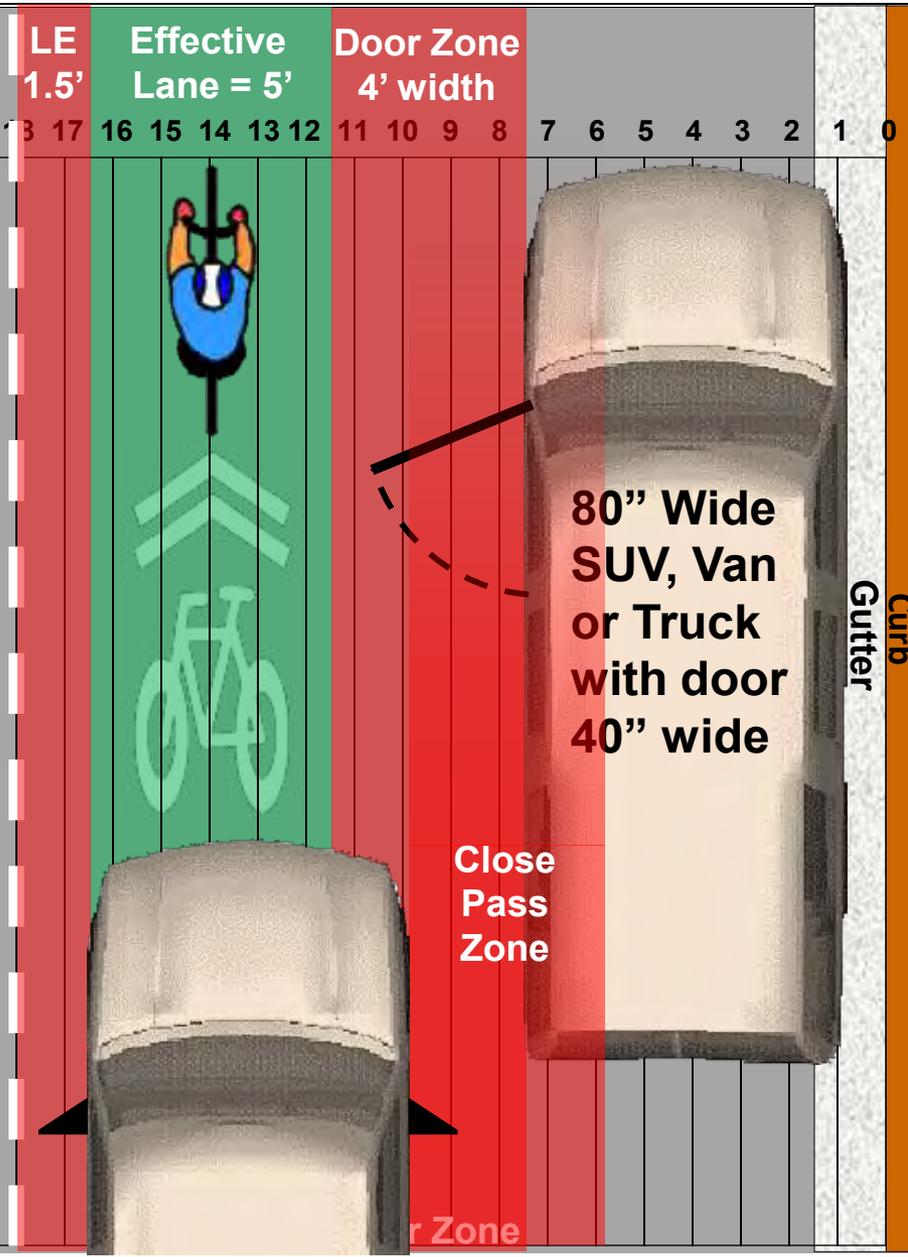
Best practice on a road with a 17' lane, where street parking is allowed is to locate the SLM at a distance of 13.5' from the curb, placing it in the effective lane center.

Note that the effective lane is only 4 feet wide!



18' Lane – Best Practice: Effective SLM at 14'

32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0



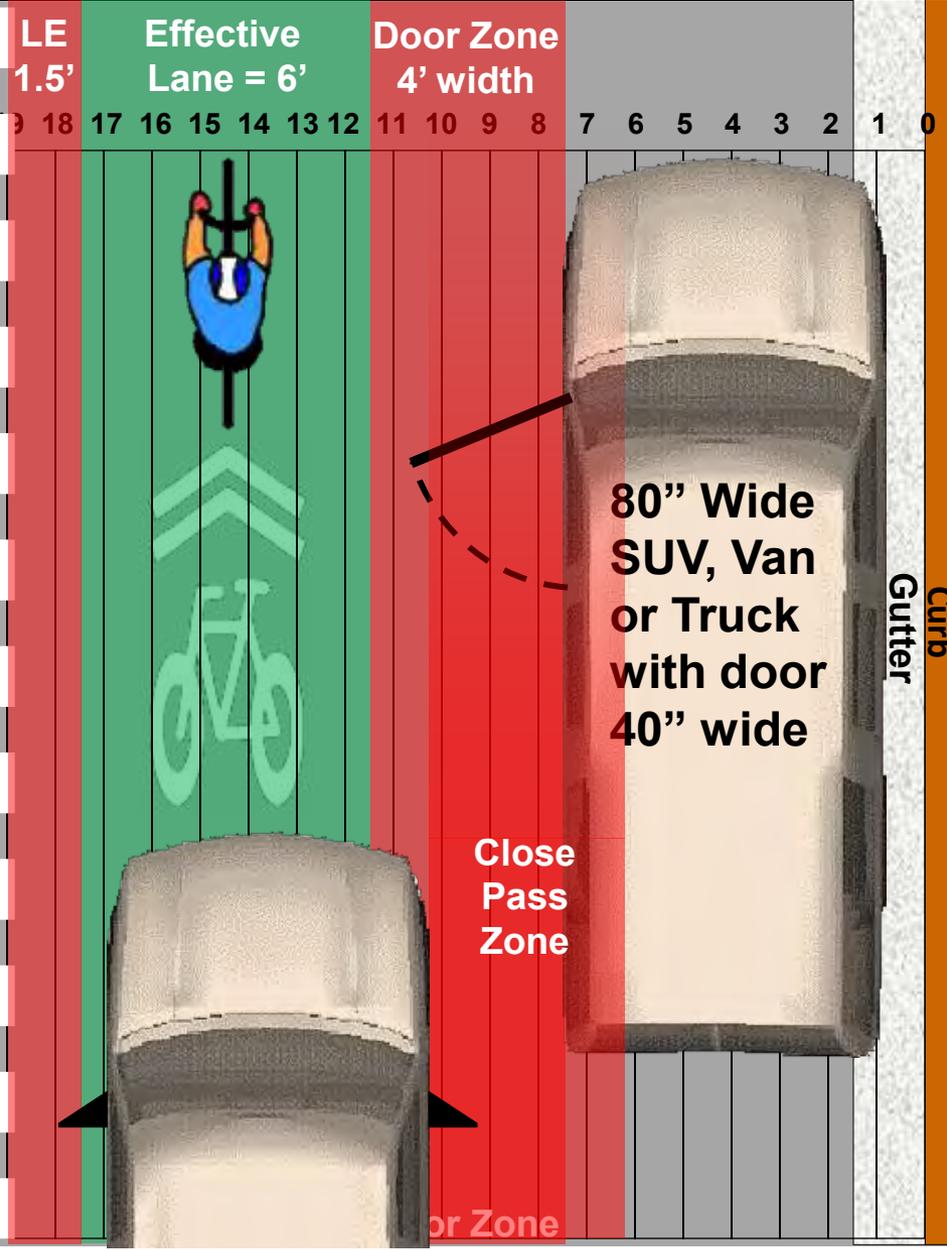
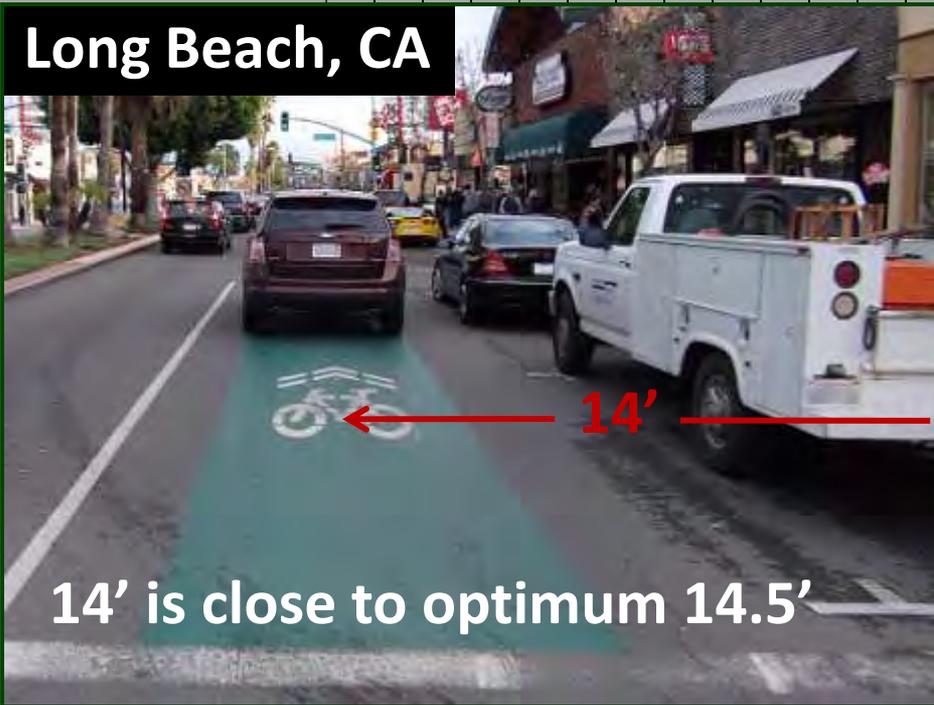
18'- 19' Lane Door Zone Avoidance

Lane sharing driver position in a narrow lane:
left of the door zone, clearly controlling the lane



19' Lane – Best Practice: Effective SLM at 14.5'

32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

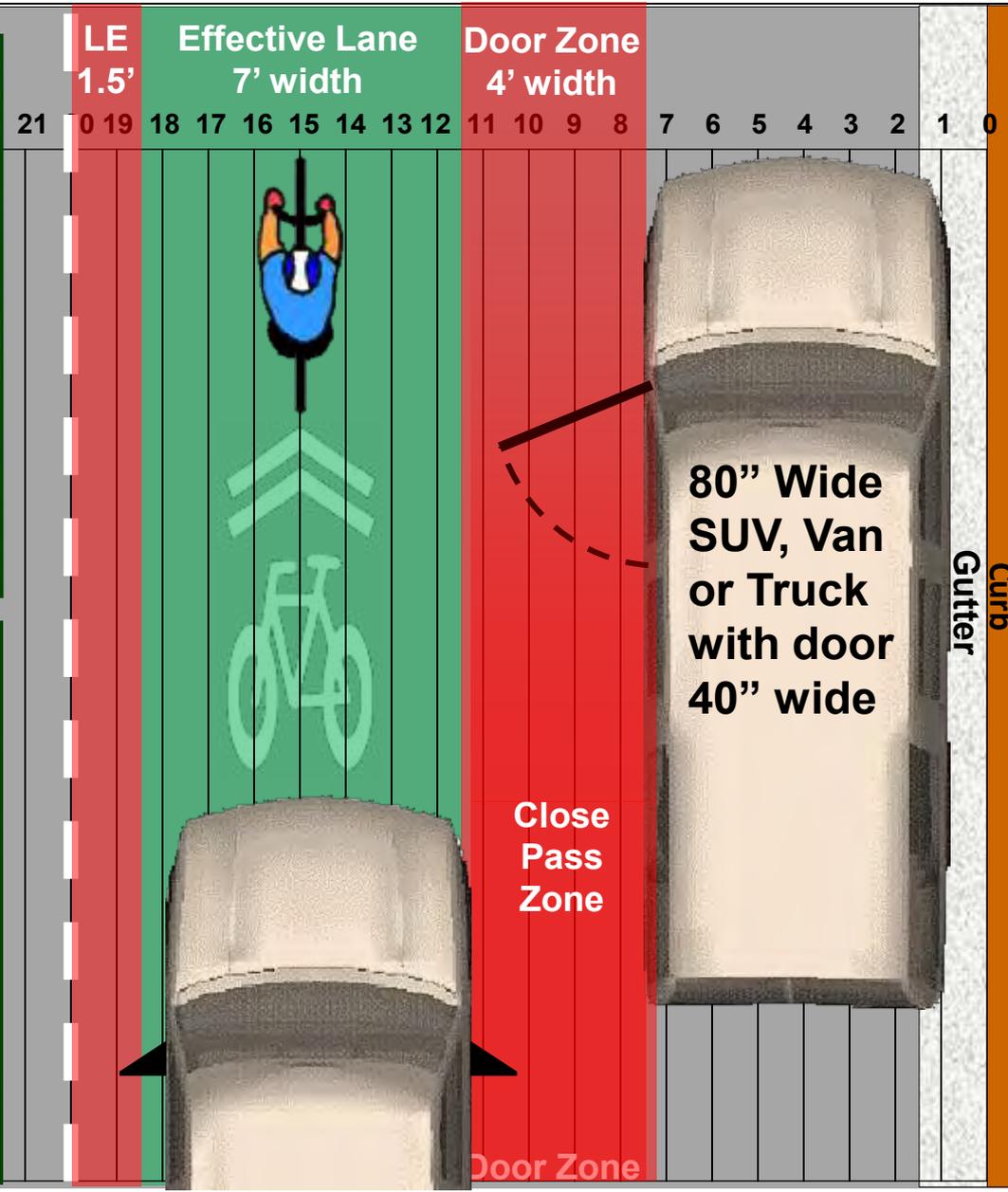


20' Lane – Best Practice: Effective SLM at 15'

Santa Monica, CA



Hermosa Beach, CA



20' Lane – SLM at 14'; Act as if 15'

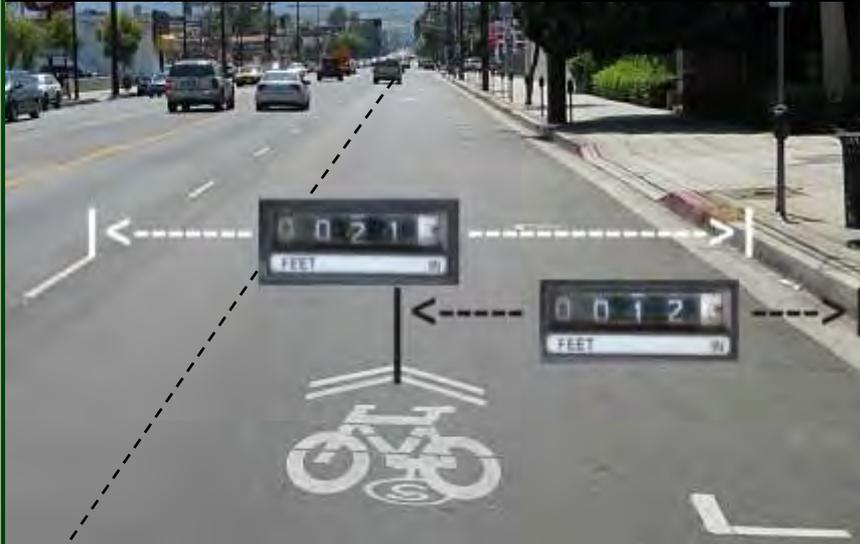


Note: this is a video clip showing that motorists wait behind or change lanes

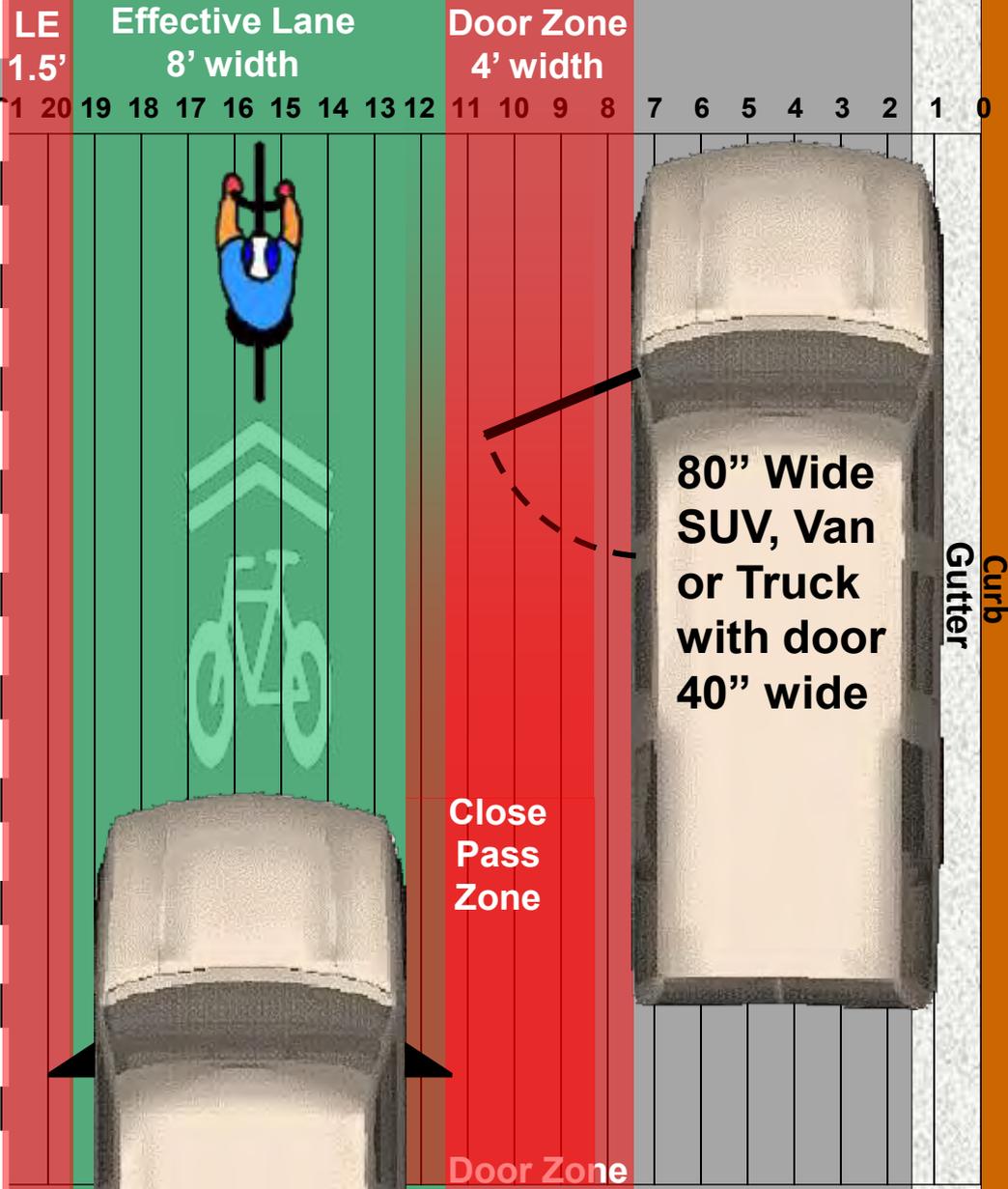
21' Lane – Best Practice: Effective SLM at 15.5'

32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

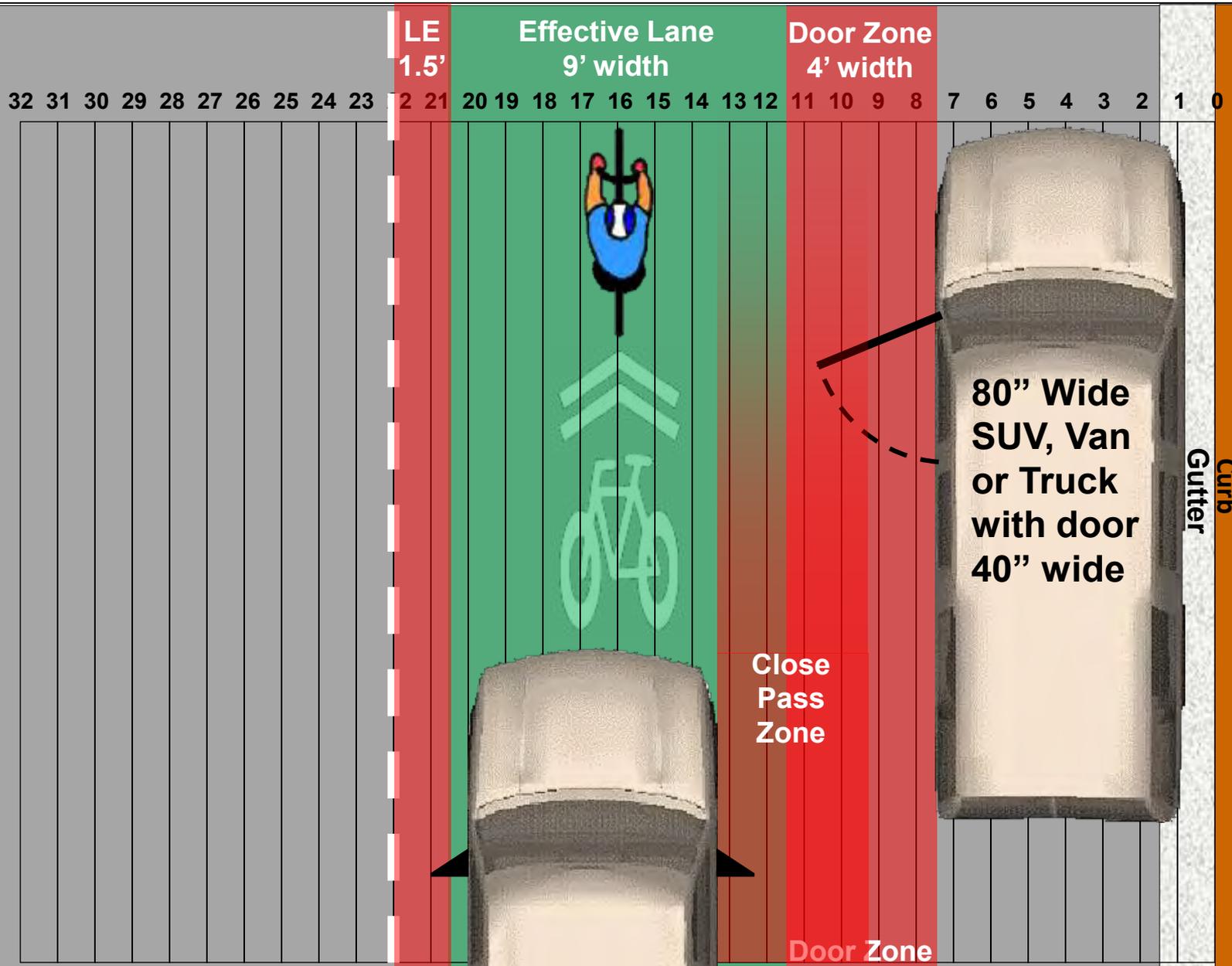
Los Angeles, California



Sharrow is 3.5' too far to right



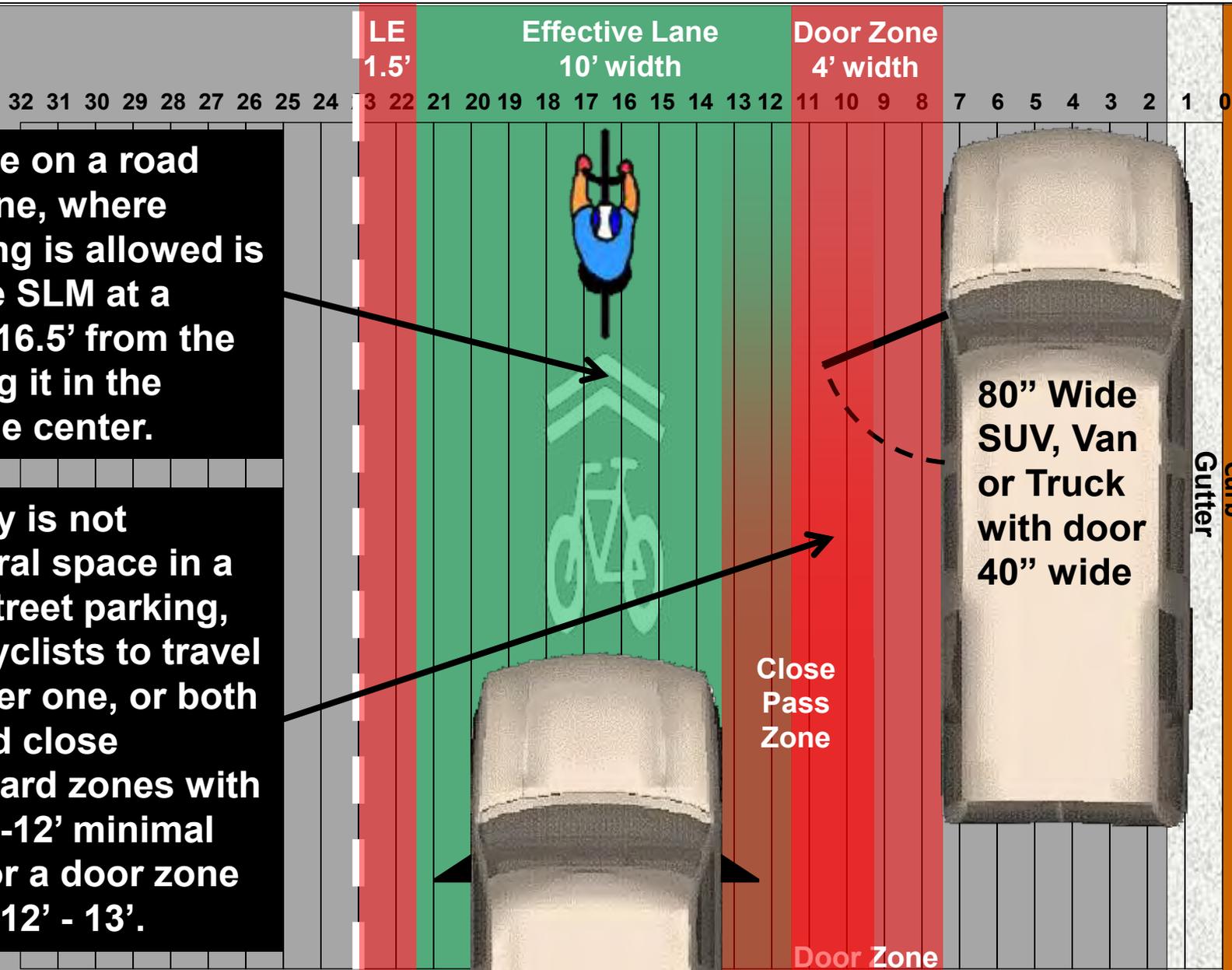
22' Lane – Best Practice: Effective SLM at 16'



23' Lane – Best Practice: Effective SLM at 16'

Best practice on a road with a 23' lane, where street parking is allowed is to locate the SLM at a distance of 16.5' from the curb, placing it in the effective lane center.

There simply is not enough lateral space in a 23' lane w/street parking, to allow bicyclists to travel outside either one, or both the door and close passing hazard zones with a SLM at 11'-12' minimal placement or a door zone bike lane at 12' - 13'.

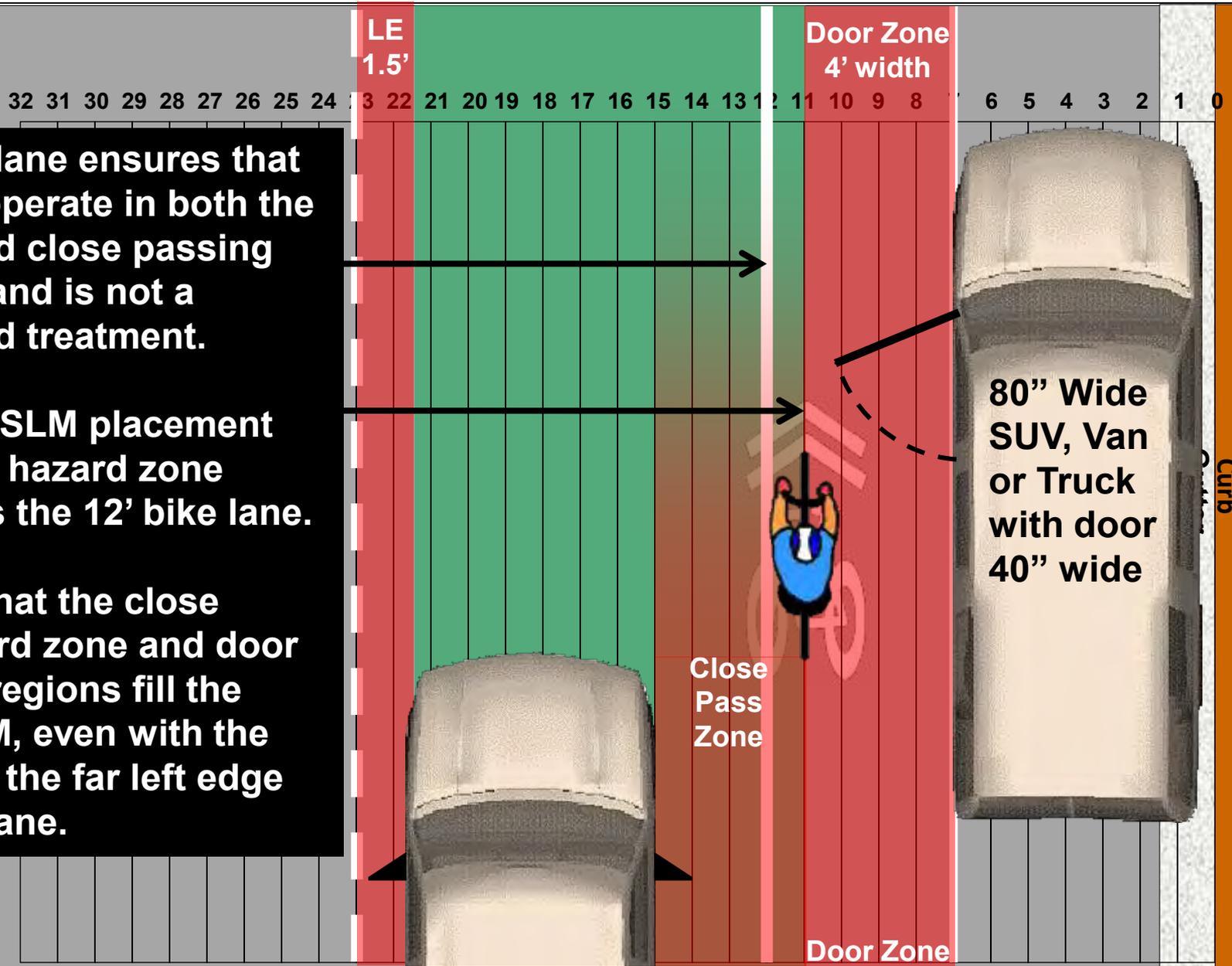


23' Lane – Hazards for 12'/7' Bike Lane or 11' SLM

This 12' bike lane ensures that cyclists will operate in both the door zone and close passing hazard zone and is not a recommended treatment.

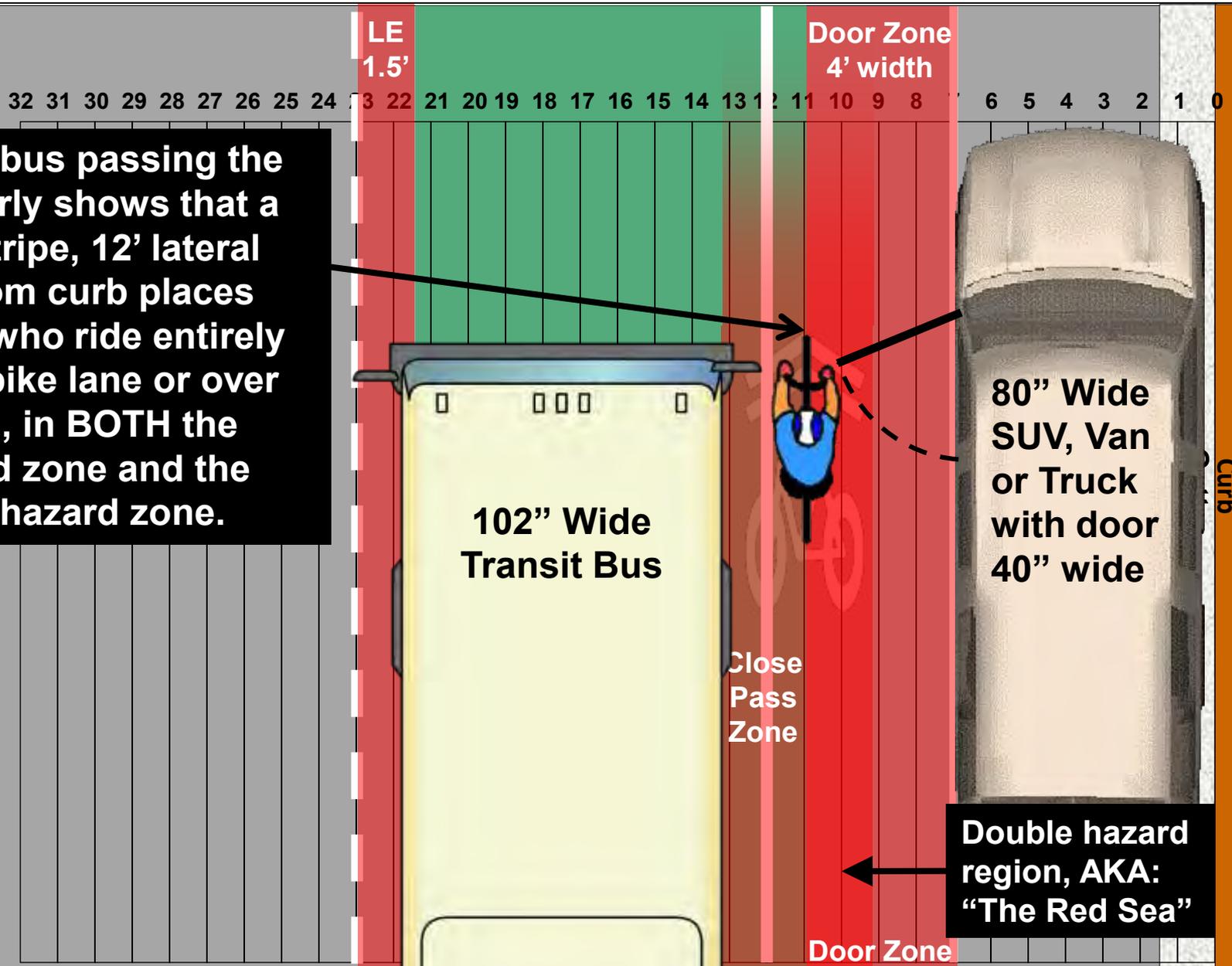
An 11' lateral SLM placement has the same hazard zone drawbacks as the 12' bike lane.

Please note that the close passing hazard zone and door hazard zone regions fill the entire BL/SLM, even with the SUV driver at the far left edge of the travel lane.



23' Lane – Bus Hazard for 12'/7' BL or 11' SLM

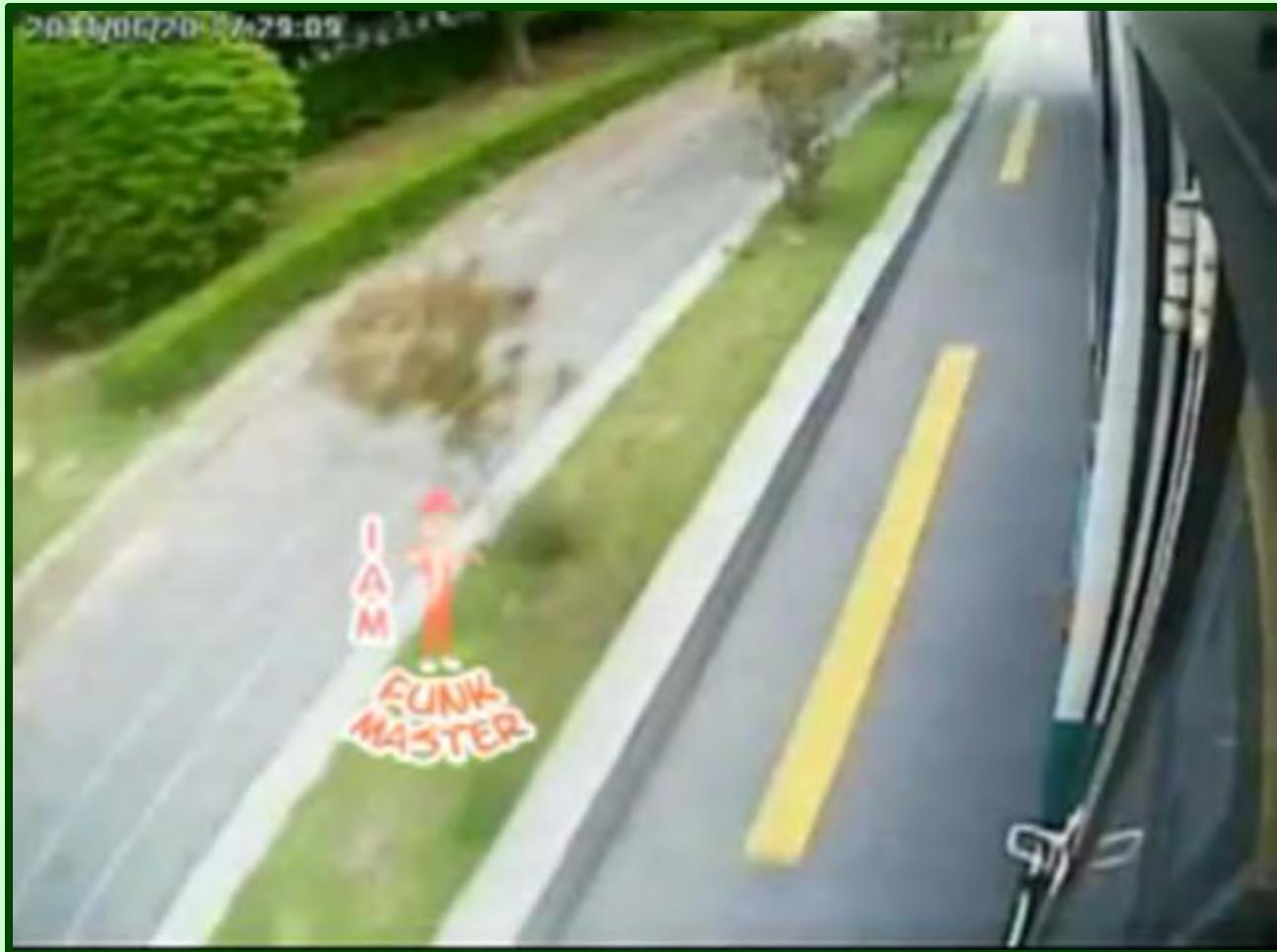
The transit bus passing the cyclist clearly shows that a bike lane stripe, 12' lateral position from curb places bicyclists, who ride entirely within the bike lane or over the 11' SLM, in BOTH the door hazard zone and the close pass hazard zone.



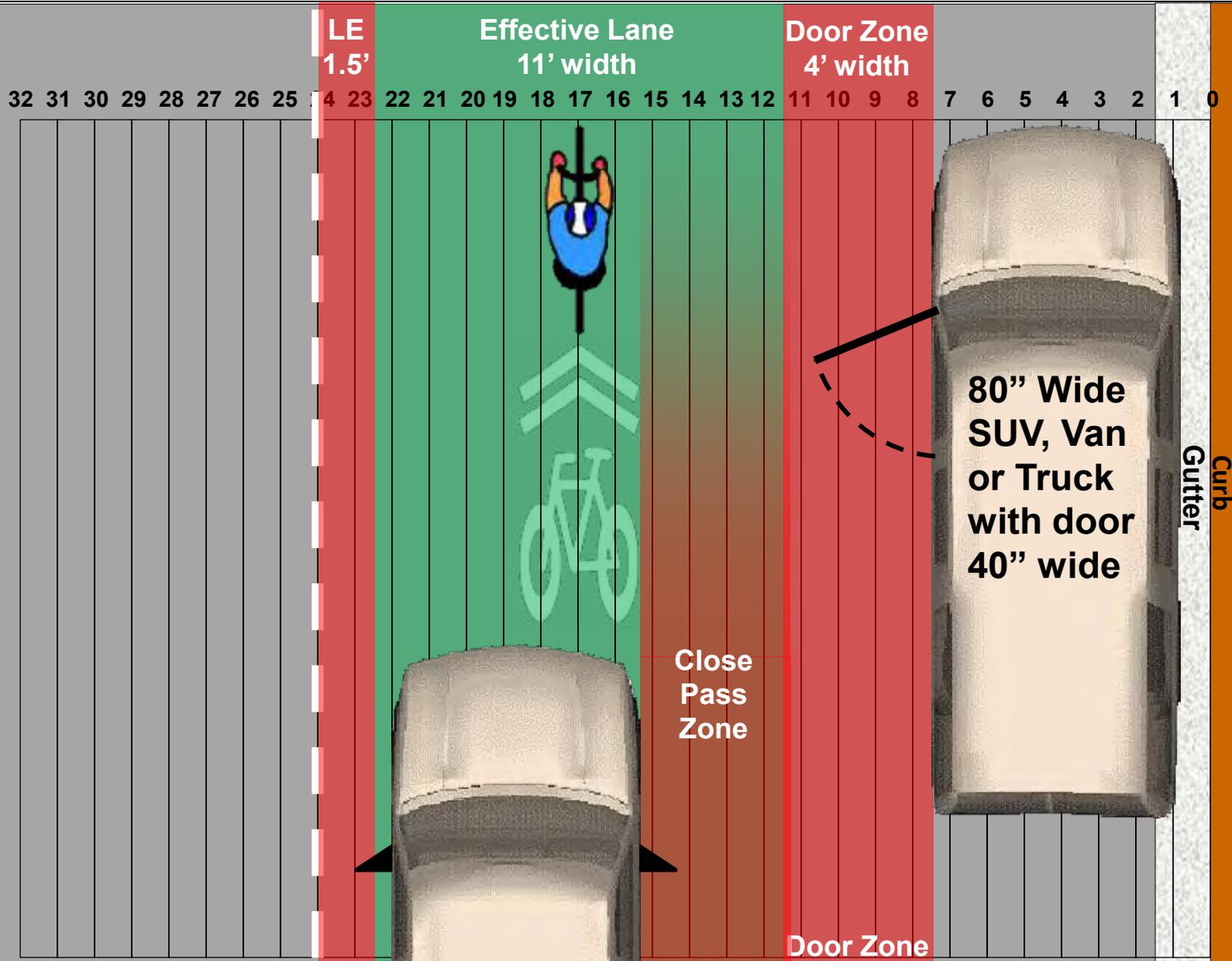
Close Pass Hazard

Why You Should Avoid The Road Edge

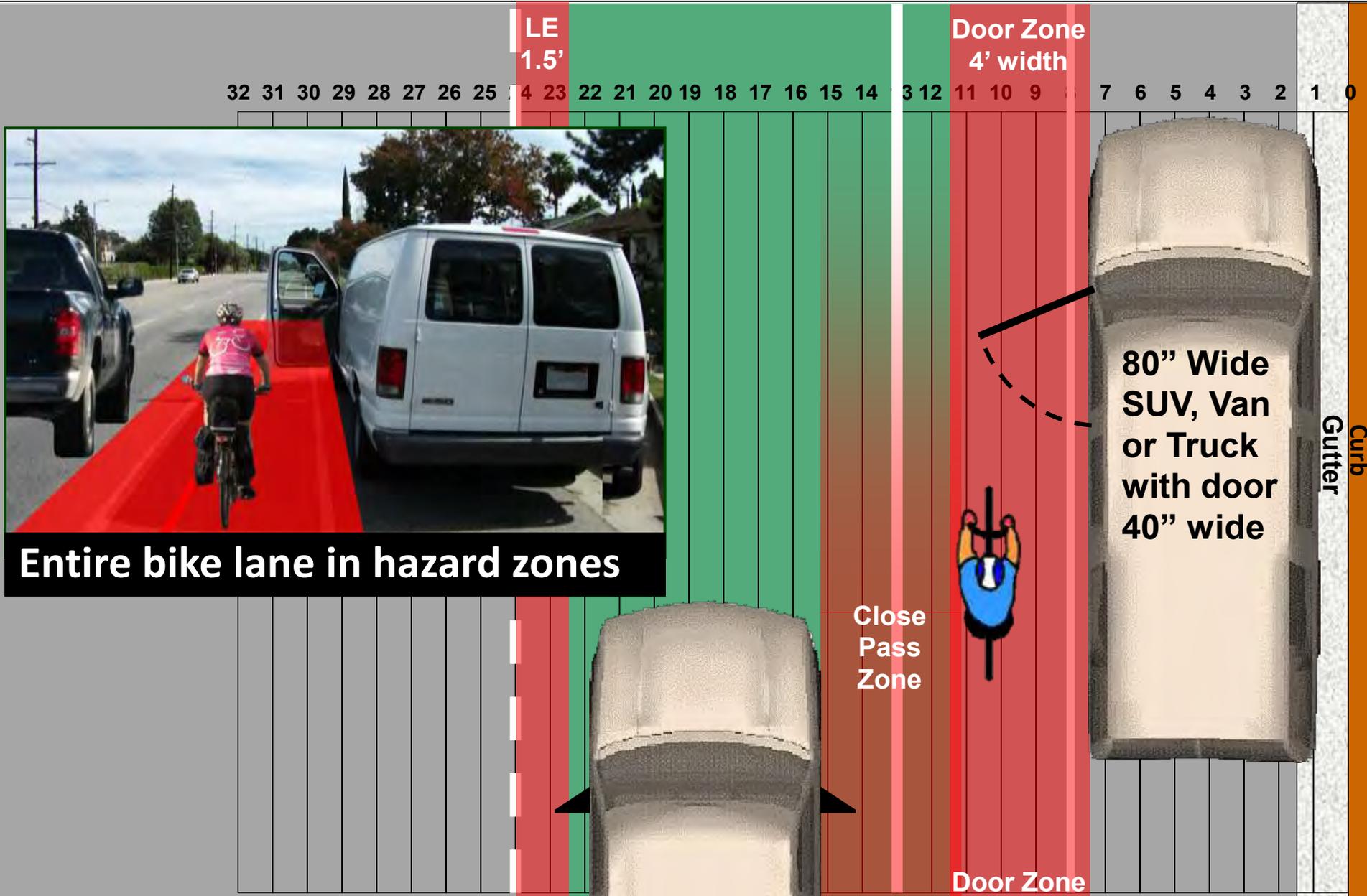
This is a real cyclist injury from being squeezed by a transit bus



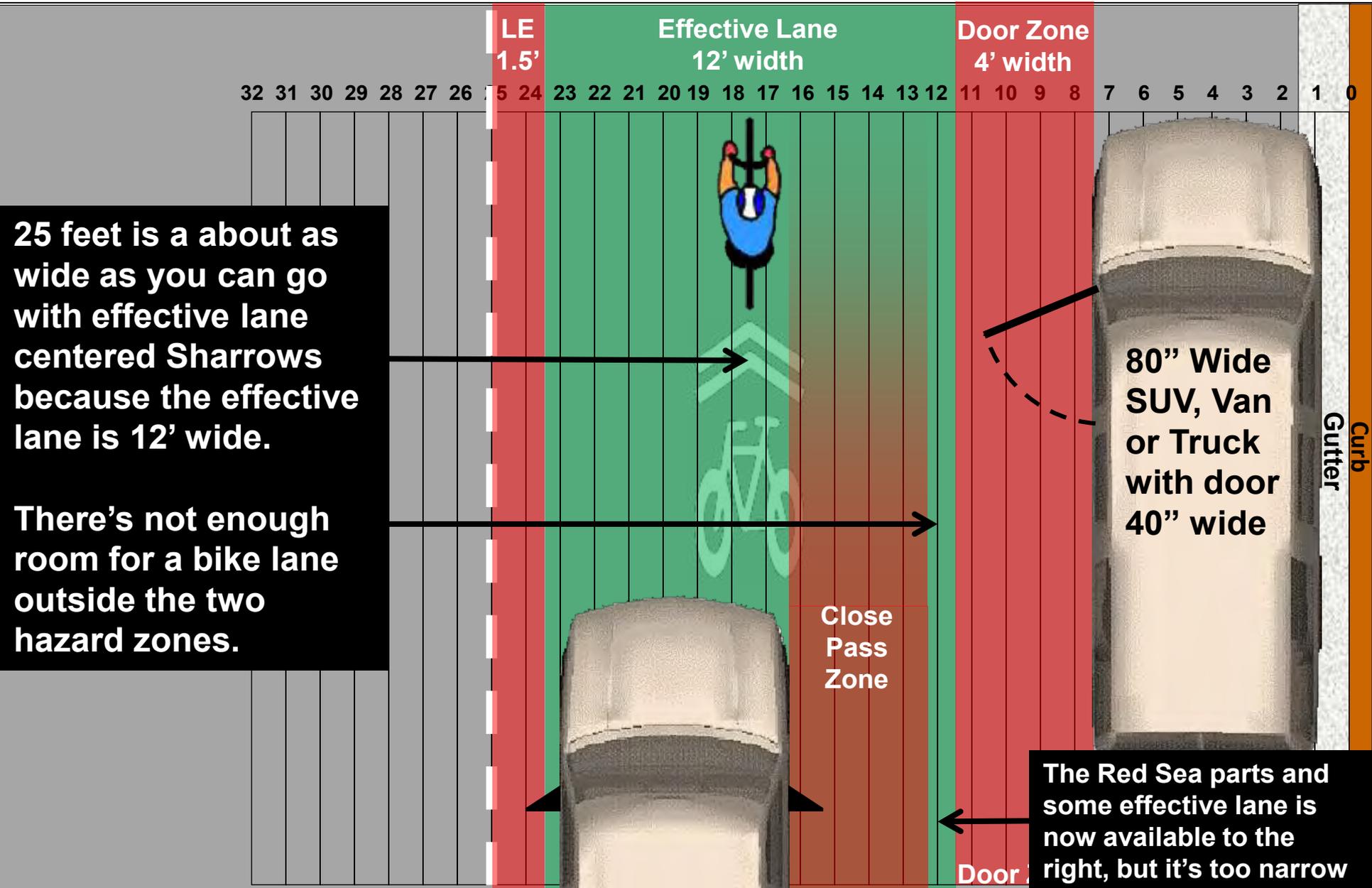
24' Lane – Best Practice: Effective SLM at 17'



24' Lane – 13' 8" BL in Door Zone



25' Lane – Best Practice: Effective SLM at 17.5'



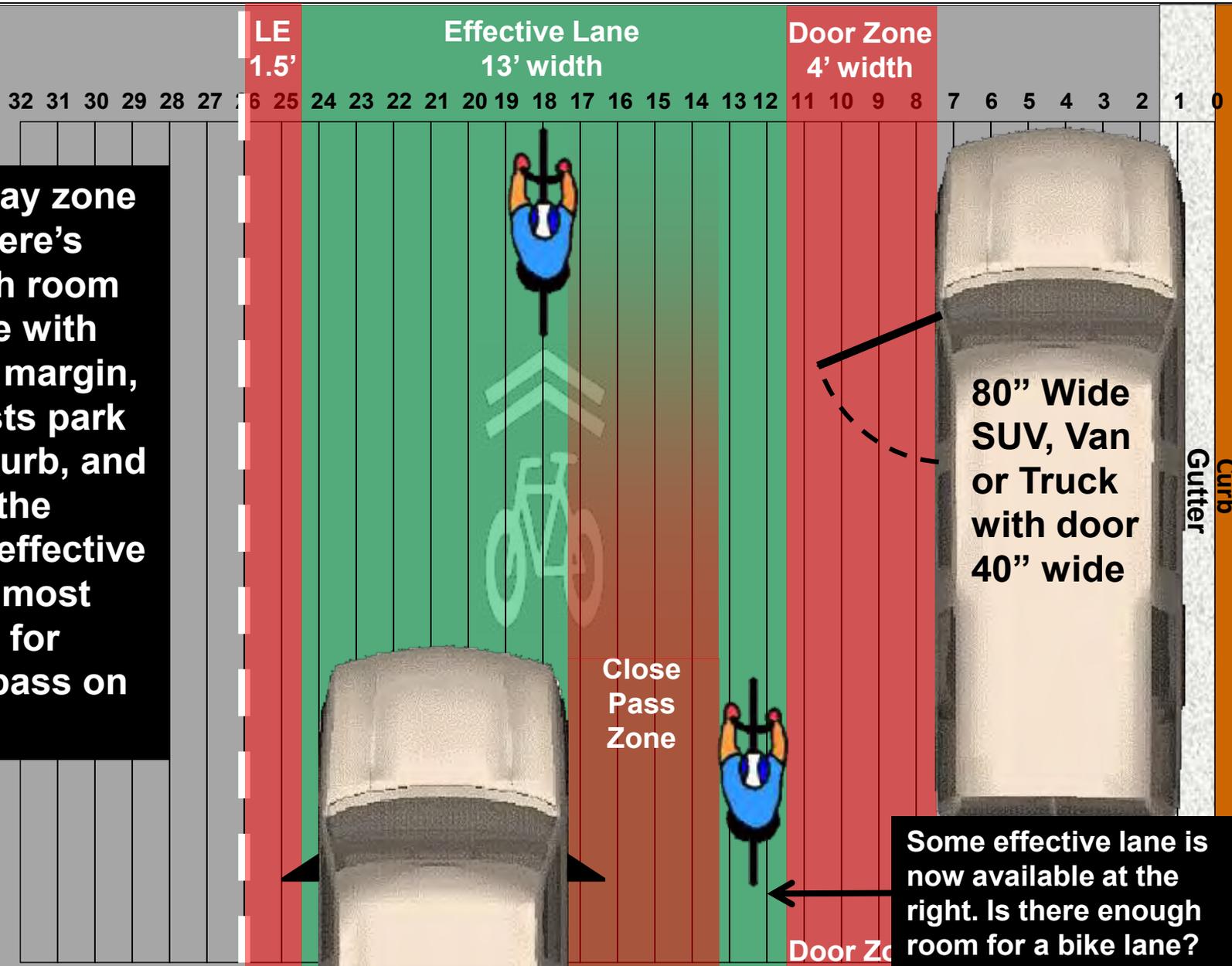
25-26' Lane – Door Zone/Close Pass Avoidance

Lane sharing position in wide lane:
left of the door zone, right of the motorists

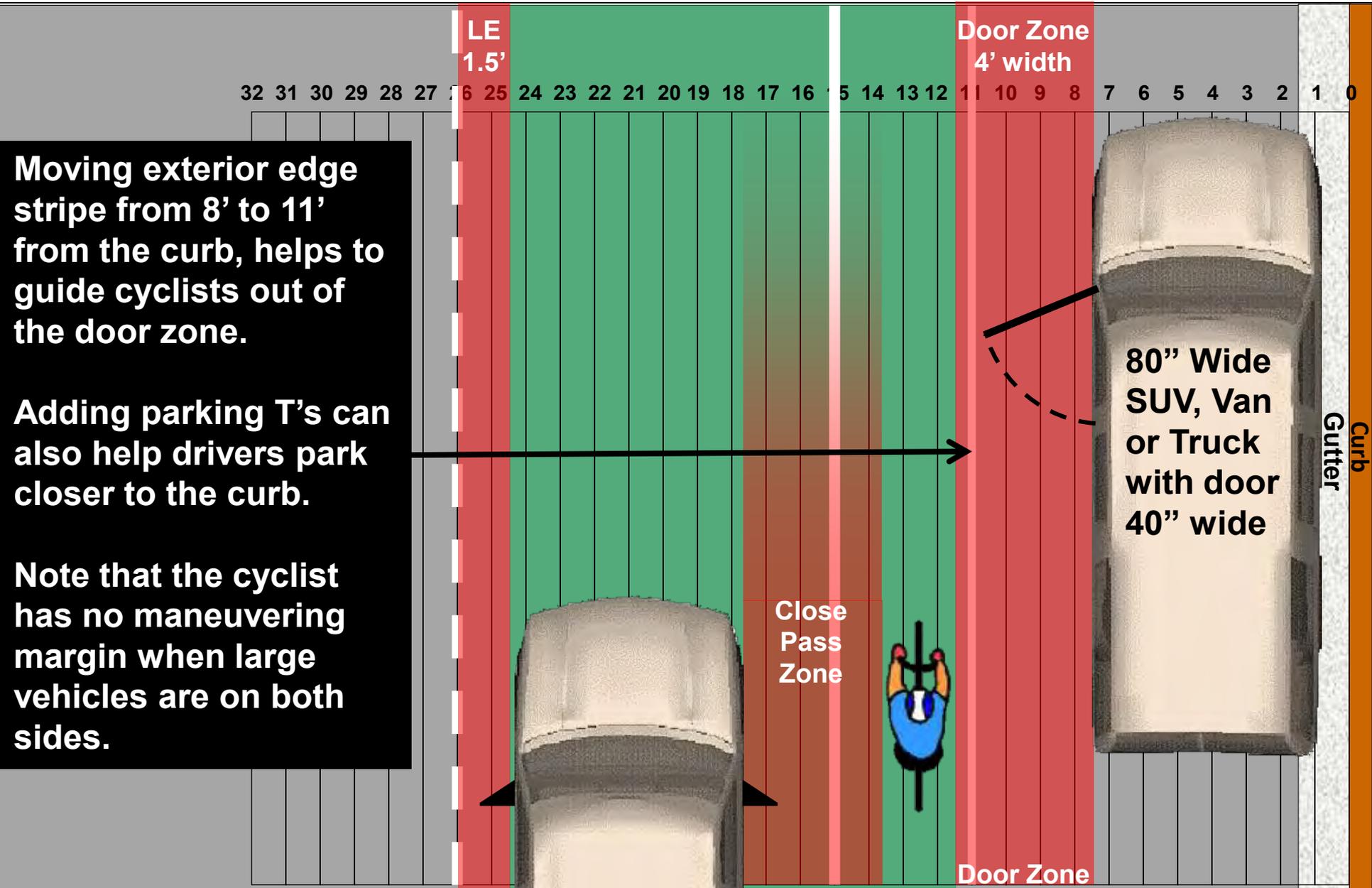


5D 26' Lane – Marginal SLM at 18'

26 feet is a gray zone for SLMs. There's barely enough room for a bike lane with maneuvering margin, when motorists park close to the curb, and a Sharrow in the center of the effective lane leaves almost enough room for motorists to pass on either side.



26' Lane – Bare Minimum Useable BL at 15'/11'

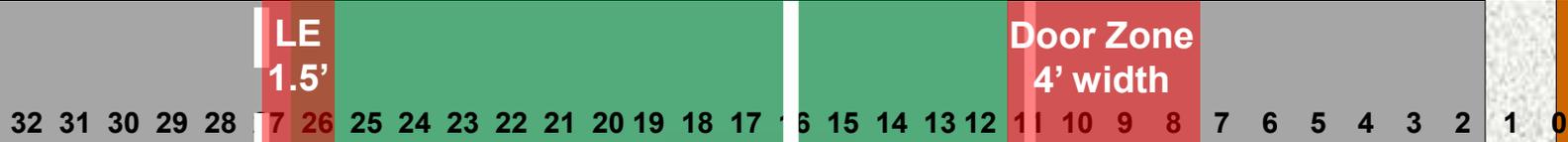


Moving exterior edge stripe from 8' to 11' from the curb, helps to guide cyclists out of the door zone.

Adding parking T's can also help drivers park closer to the curb.

Note that the cyclist has no maneuvering margin when large vehicles are on both sides.

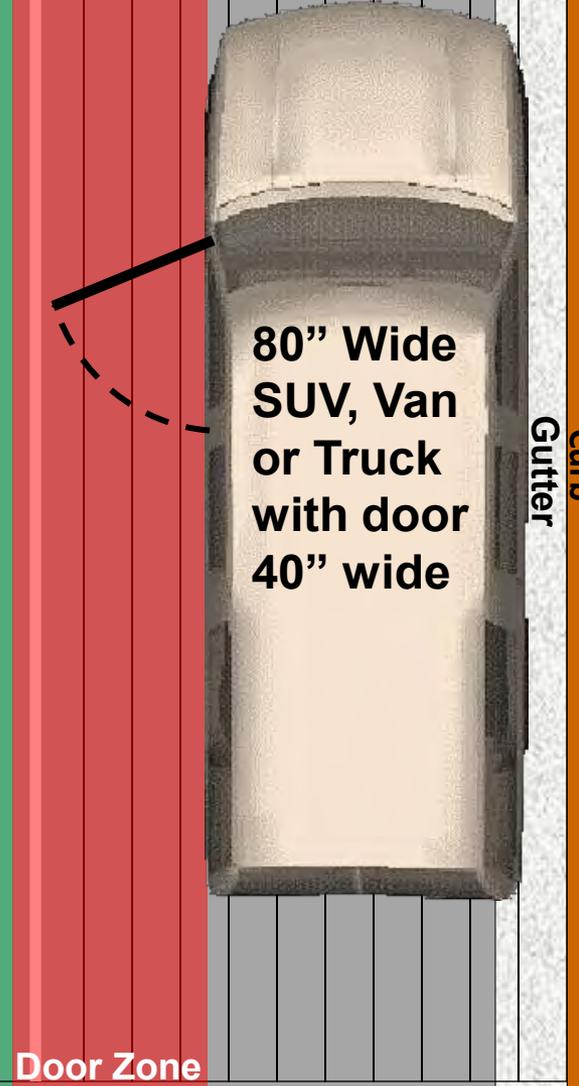
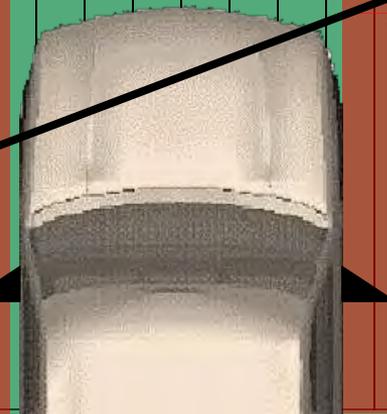
≥ 27' Lane – Best Practice Bike Lane at 16'/11'



Market St, SF, CA

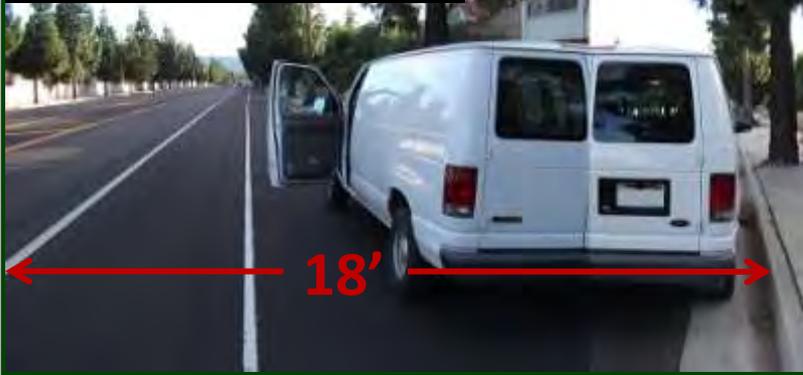


Improved minimum bike lane design when street parking is present: cyclist is outside both hazard zones and has some maneuvering room.

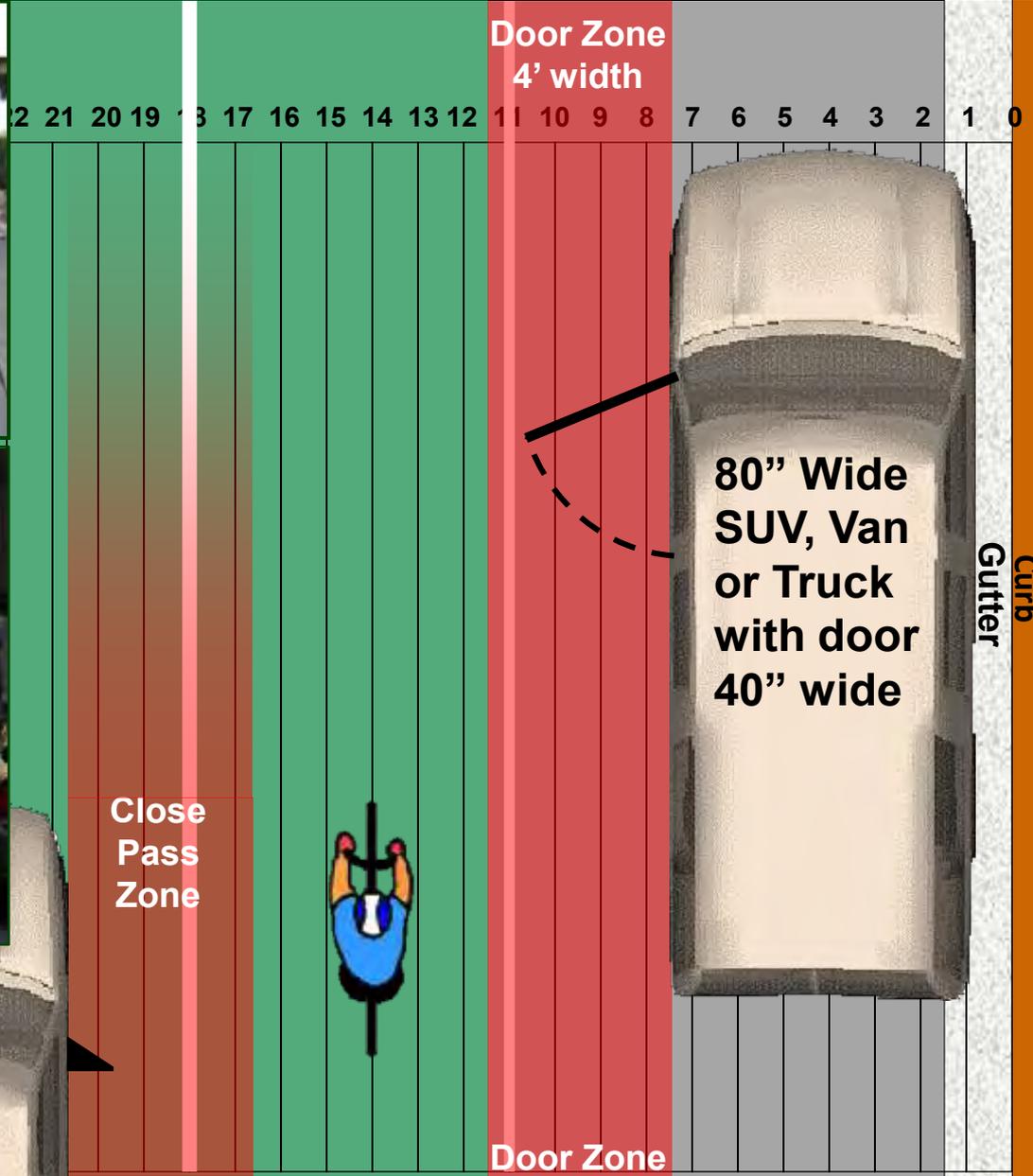
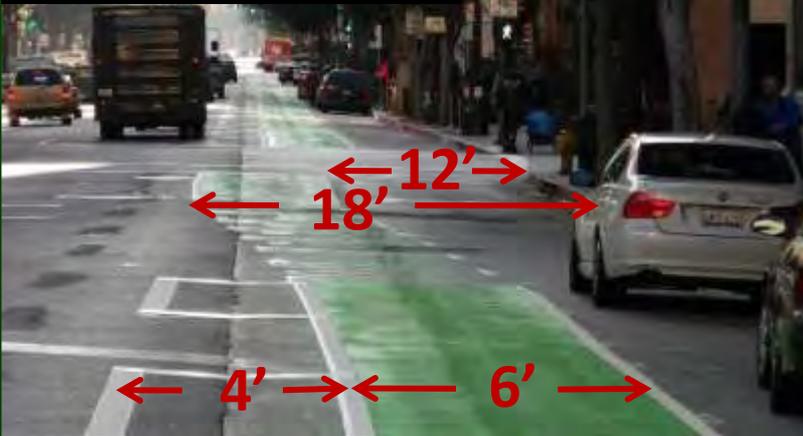


30' Lane – Wide Bike Lane at 18'/11'

Los Angeles, CA



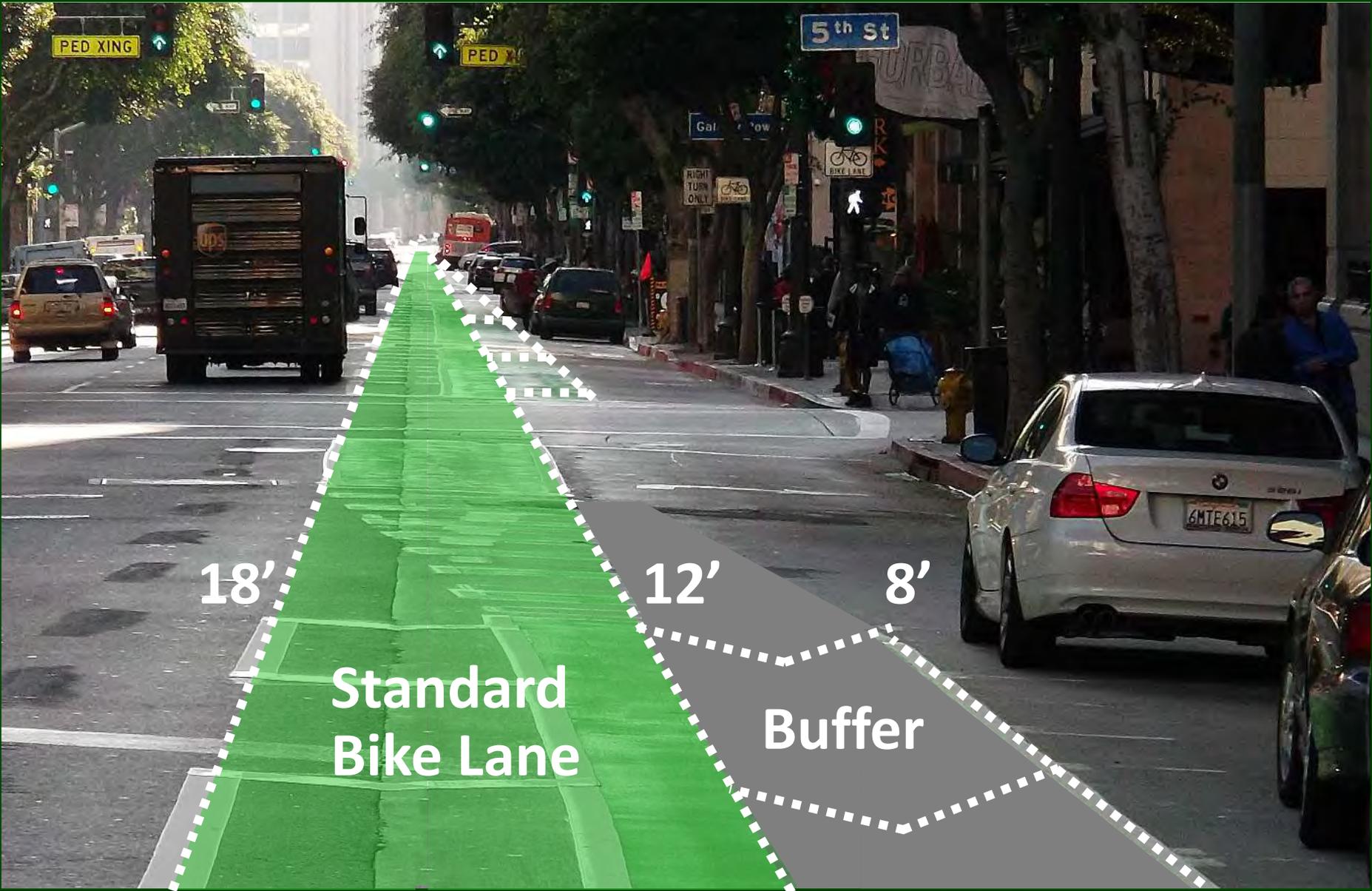
Los Angeles, CA



Buffered Bikeway in Los Angeles



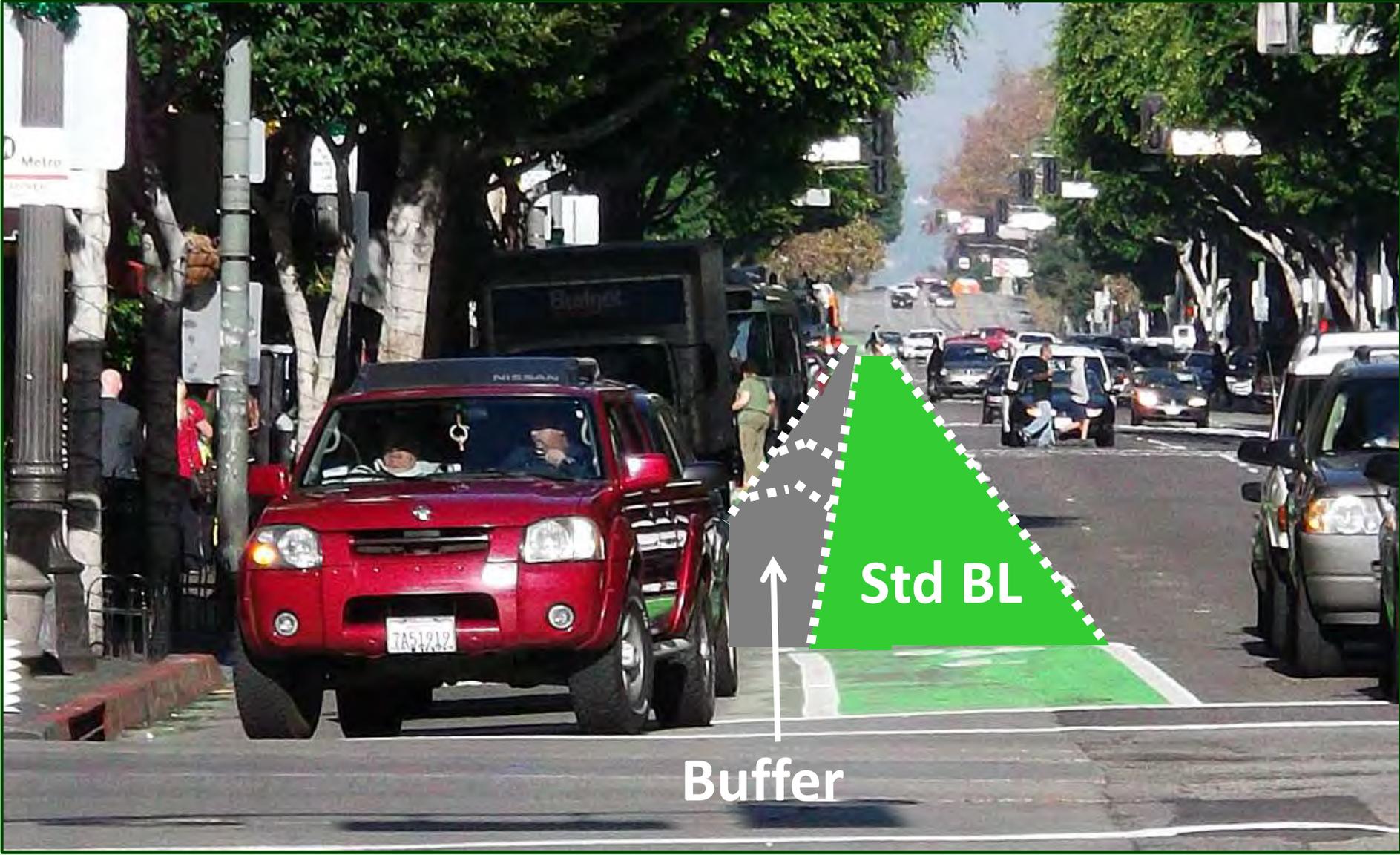
Buffered Bikeway in Los Angeles



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