

Best Planning and Design Practices in Complete Streets

Bicycle and Transit Emphasis

Coulee Region Transportation Study

August 26, 2015

Agenda

1. Bike Lanes

2. Cycle Tracks

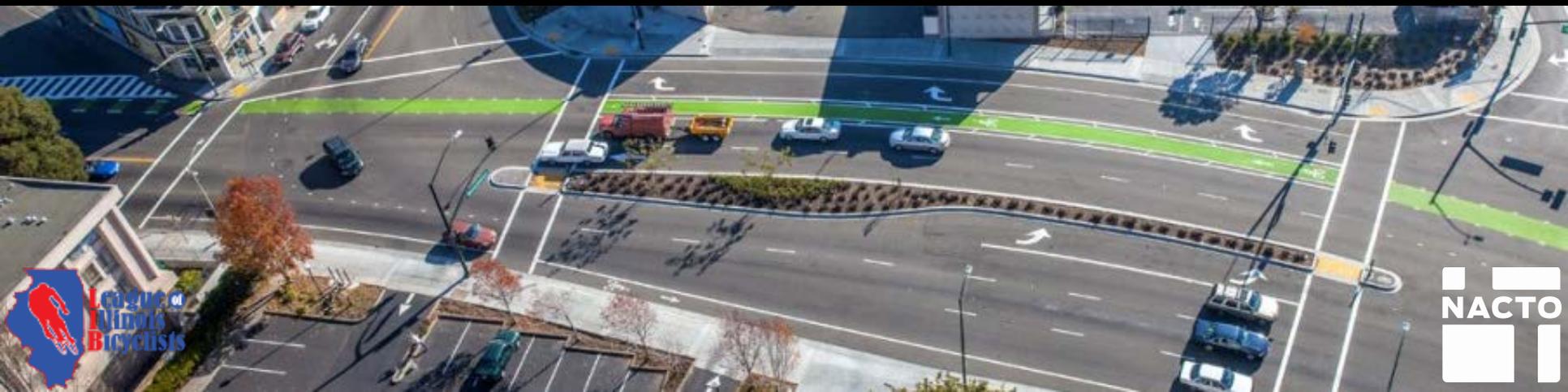
3. Intersections

4. Signalization

5. Pavement Markings

6. Bike Boulevards

7. Transit



What Makes a Best Practice?

Low-Stress:

Separating Conflicts is Key

Cohesive and Connected

Bike Lanes should *go* somewhere

Intuitive

Is It Easy to Understand?

Direct

Avoid Circuitous Routing,
Multiple Turns

Attractive

For Commuting and Recreation



Choose the Right Facility for Each Environment

Vehicle Speed

Neighborhood Greenway



Bike Lanes



Buffered Bike Lanes



Protected Bike Lanes

Shared Space

Shared Lane Markings



Greater Separation

Vehicle Volume

Design for Every Mode

Complete Street networks accommodate all users



Pay Attention to Sidewalk and Gutter

Elevation matters, and so does effective width



Avoid Cluttered Markings

Be clear, be sure you know what problem you're trying to fix



Design for Loading, Maintenance, Emergency Response



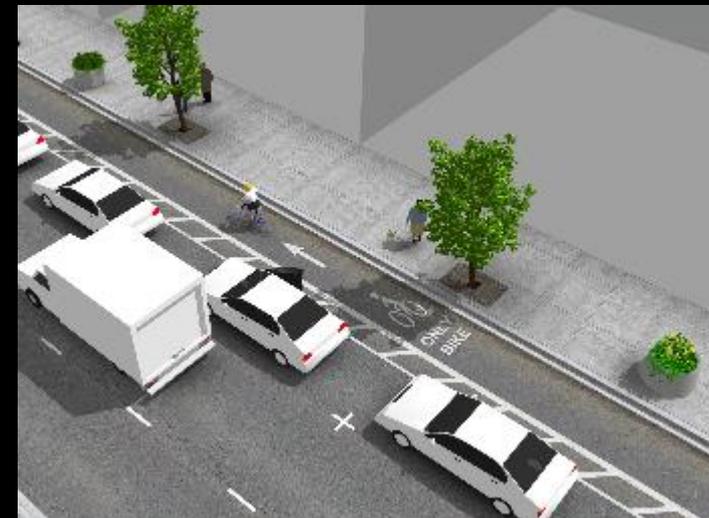
Prioritize Bikes at Intersections



Photo: Jonathan Maus, BikePortland

Making The Case For Change

1. It's been done
 - List of US Cities currently using a given treatment. Nothing in the NACTO Guide is new/untested.
2. Research, Design and Performance
 - Existing design guidelines, academic research, Federal RTE reporting, other studies.
3. Best Practice
 - Which elements are worth replicating?



BIKE LANES

BUFFERED
CONTRAFLOW
LEFT SIDE

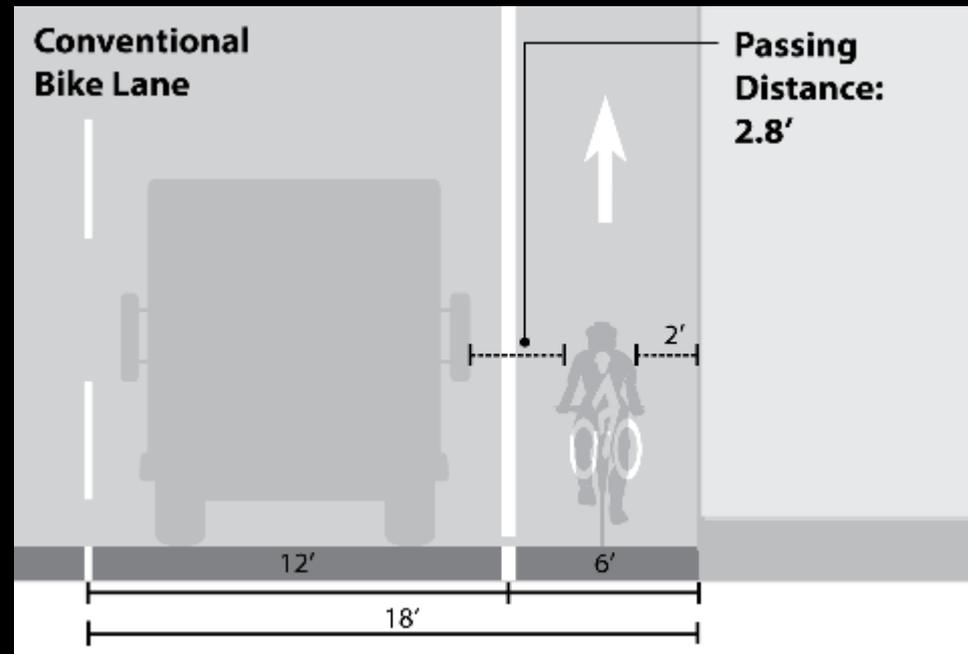


Buffered Bike Lanes

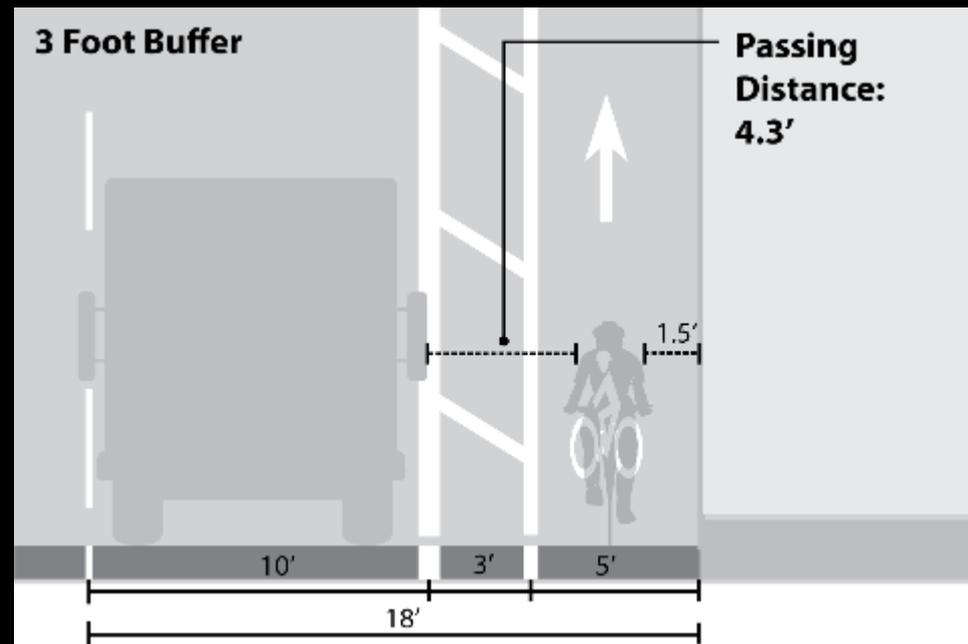
- 3' buffer preferred
- Parking-side buffer optional
- Add buffer if you have the width



Conventional Bike Lanes



Buffered Bike Lanes



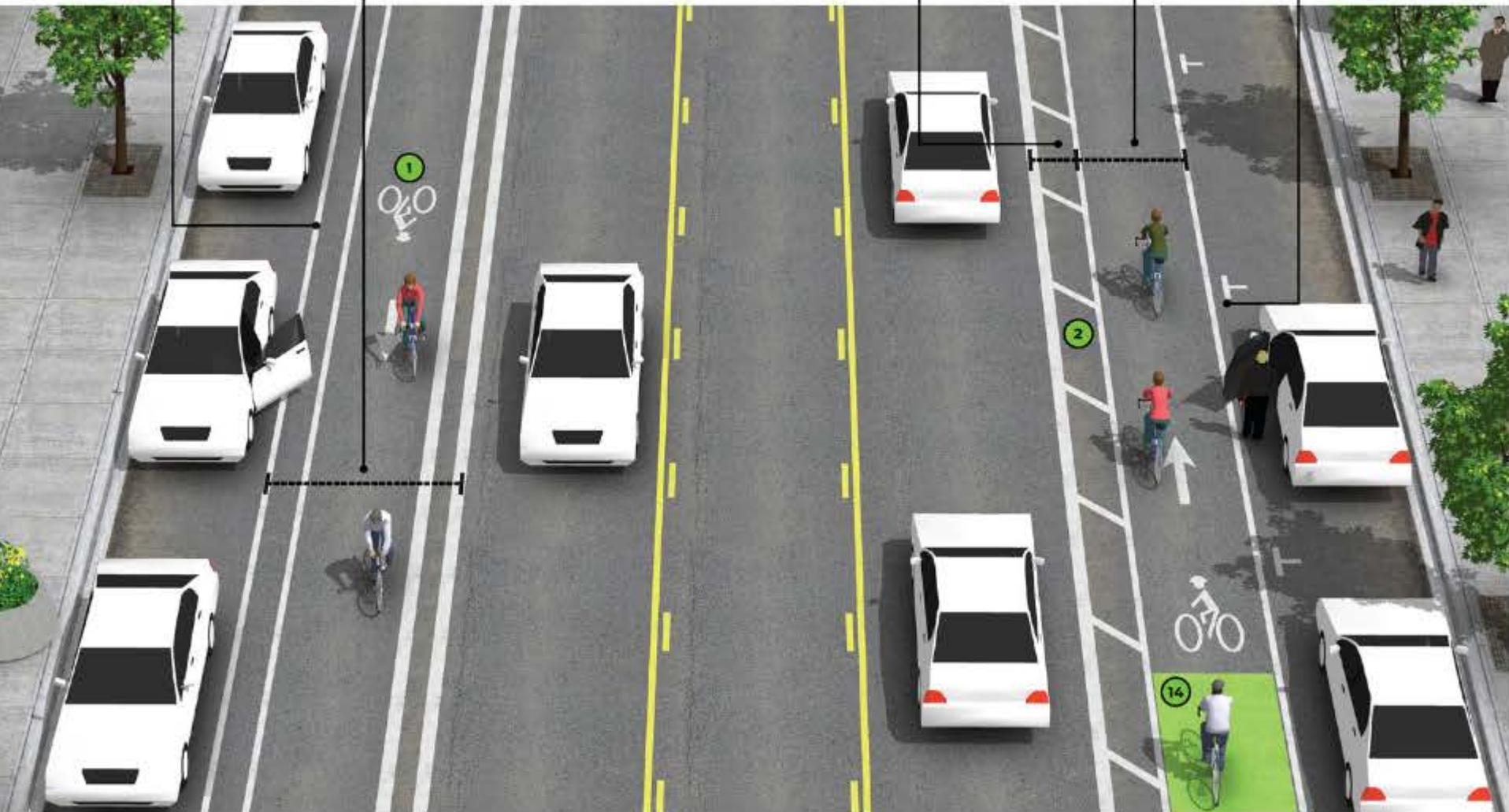
- 2** The buffer shall be marked with 2 solid white lines. Minimum buffer width: 18 inches
- 7**

- 5** The combined width of the buffer(s) and bike lane should be considered "bike lane width" with respect to other guidance.

- 3** The buffer area shall have interior diagonal cross hatching or chevron markings if 3 feet in width or wider

- 5** Desired minimum next to on street parking: 5 feet

- 11** Separation may also be provided between bike lane striping and the parking boundary to reduce door zone conflicts.



Parking Side Buffer Configuration

Travel Side Buffer Configuration



Conventional Bike Lanes

- Wider is better
- 6' preferred
- Mark through the intersection
- Typically



Contra-Flow Bike Lanes

- Short connections ideal
- Combine with bike signals
- Use physical barrier where appropriate



Left-side Bike Lanes

- Great for transit routes
- Use two-stage turns or bike boxes to facilitate transition from left to right



7

Desired width:
6 feet

1



3



2



PROTECTED BIKE LANES (a.k.a.) CYCLE TRACKS

**ONE-WAY
TWO-WAY
RAISED**

Variation on a Theme

1/2

use parked cars



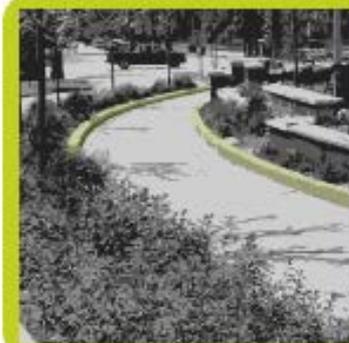
1/3

use plastic posts



1/4

use curbs



a few

use planters



2/3

are one-way



1/3

are two-way



Source: The Green Lane Project



One-way Cycle Track

- Separate using striped buffer, planters, or curbs
- Stakeholder outreach critical
- Pay attention to road's crown



One-way Cycle Track

- Take advantage of pedestrian benefits
- Wrap around transit stops



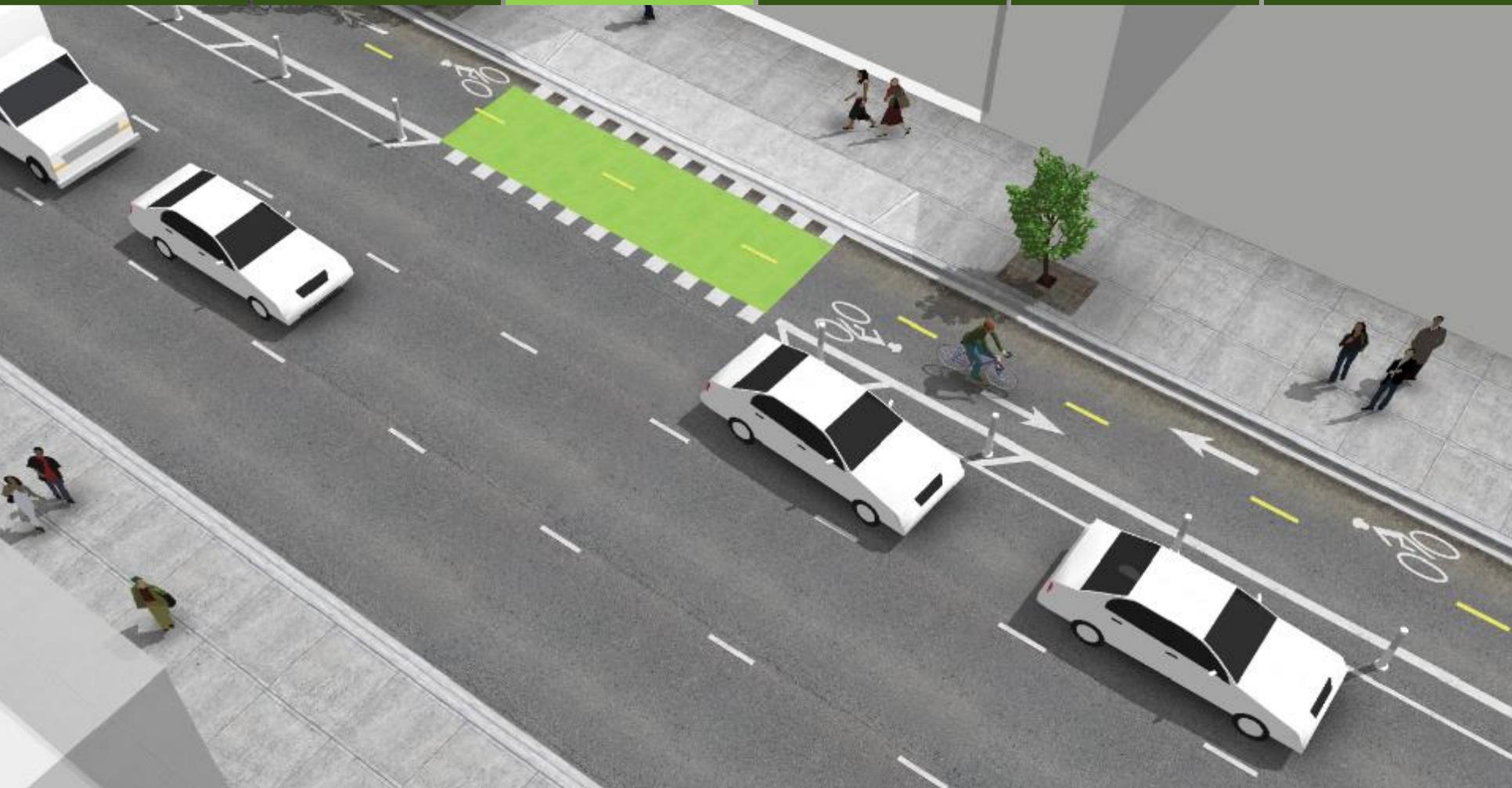
Key Advantages



5 to 7 Feet







Two-way Cycle Track

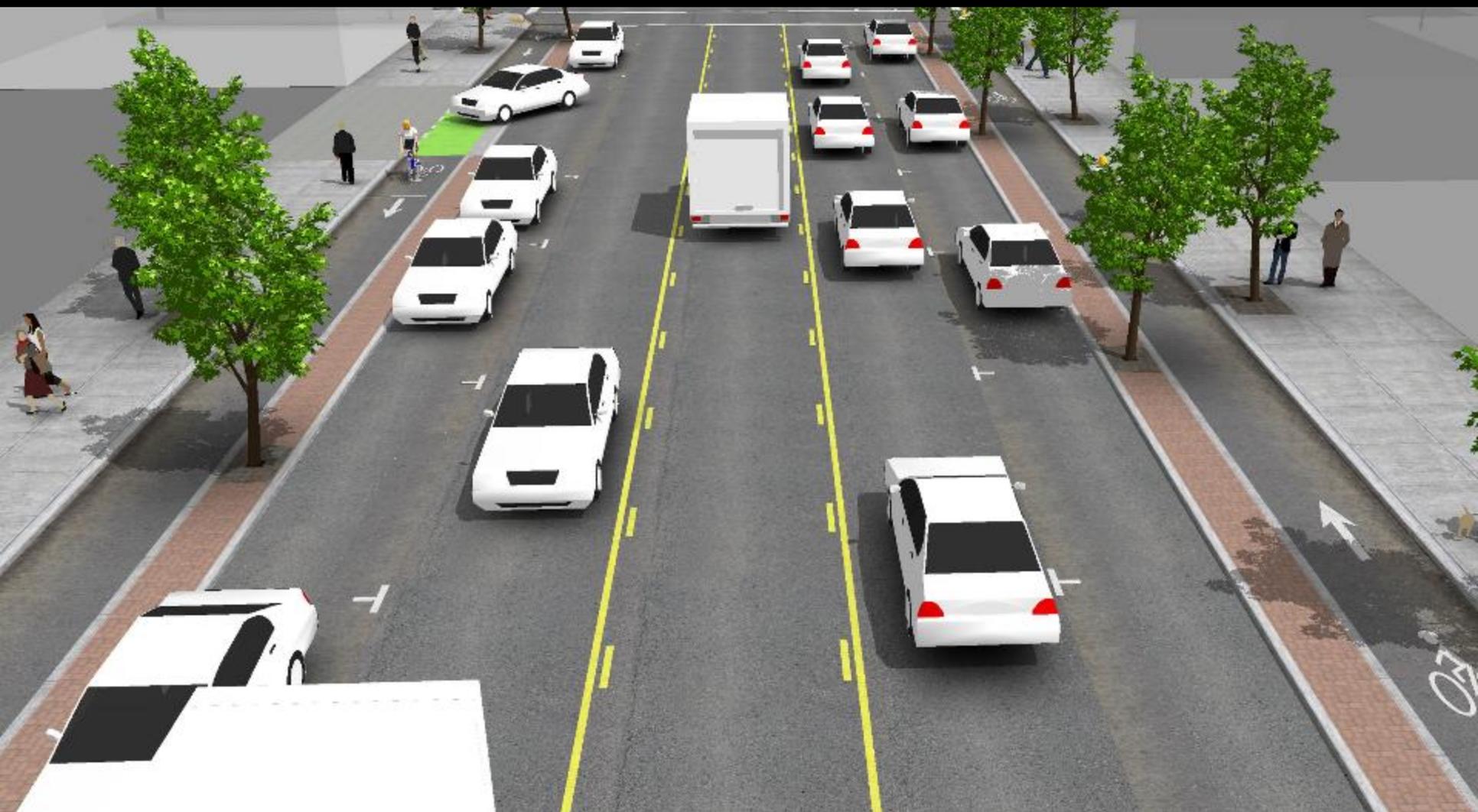




Austin, TX



Indianapolis, IN



Raised Cycle Track

- Should feel like part of the sidewalk
- Asphalt overlay can be cheaper
- Consider mountable curb



Raised Cycle Track (two-way)

INTERSECTIONS

BIKE BOXES

INTERSECTION CROSSING MARKINGS

BIKE BOX



INTERSECTION MARKINGS



© Jonathan.Maus/BikePortland

SIGNALS

**BIKE SIGNAL HEADS
RECTANGULAR RAPID FLASHING
BEACON (RRFB)**

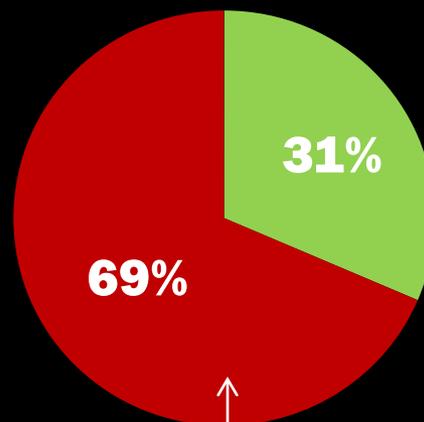
TRAFFIC SIGNAL PHASING



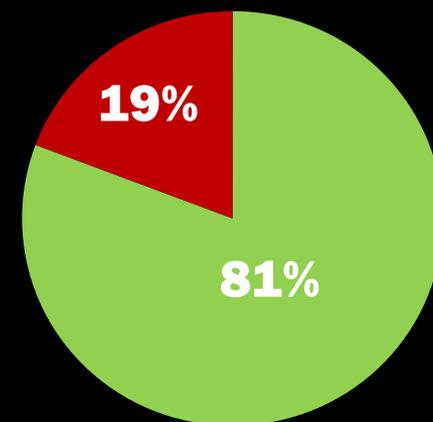


CYCLIST SIGNAL COMPLIANCE AT RED AND GREEN LIGHTS

BEFORE
INSTALLATION

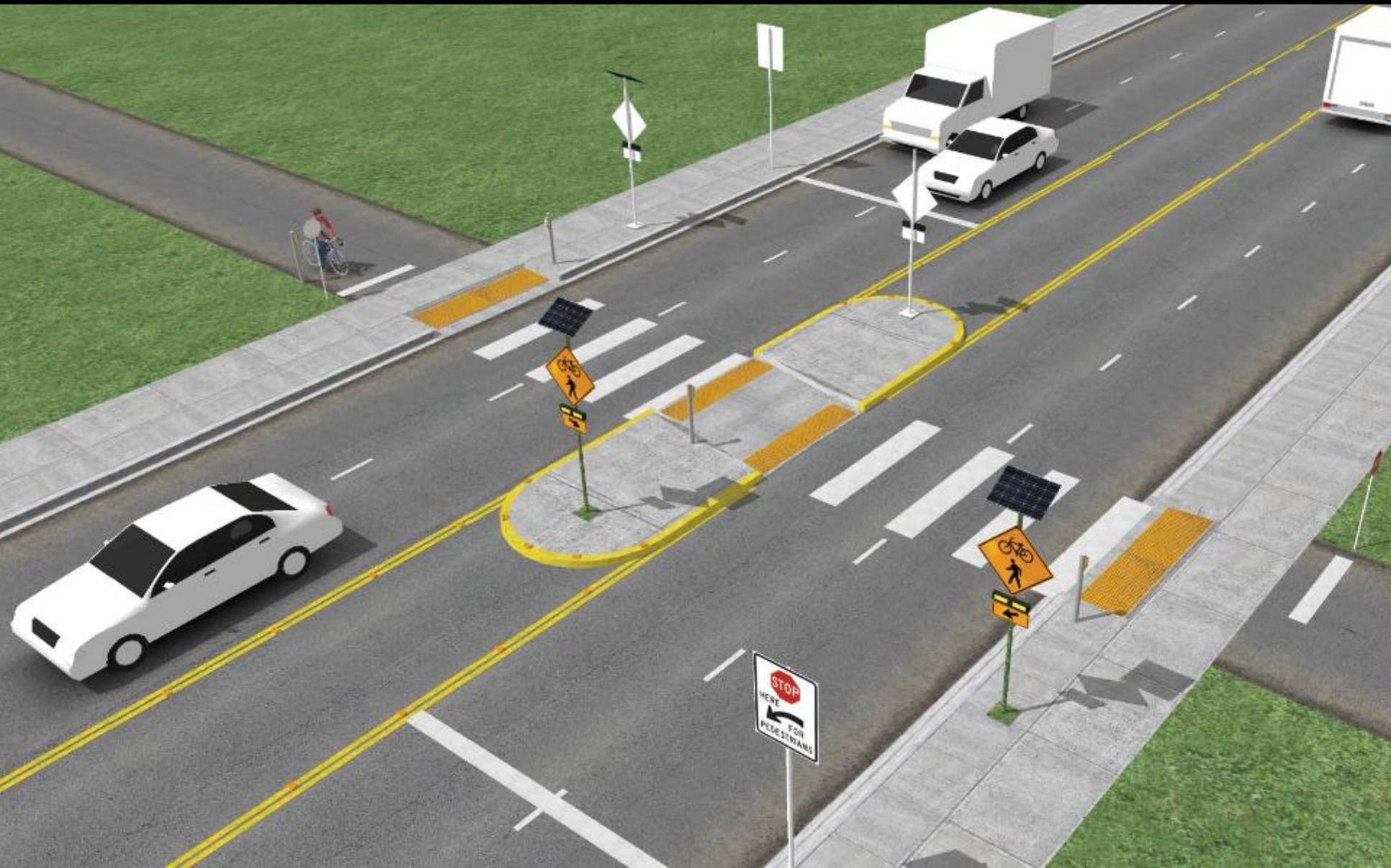


AFTER
INSTALLATION



Bikers entering
Intersection on Red Lights

RECTANGULAR RAPID FLASHING BEACON (RRFB)



PAVEMENT MARKING INNOVATIONS

GREEN BIKE LANES
DASHED VS. SOLID MARKINGS



Green Bike Lanes

- Choose your material wisely
- Use consistent applications
- Differentiate corridor and conflict green

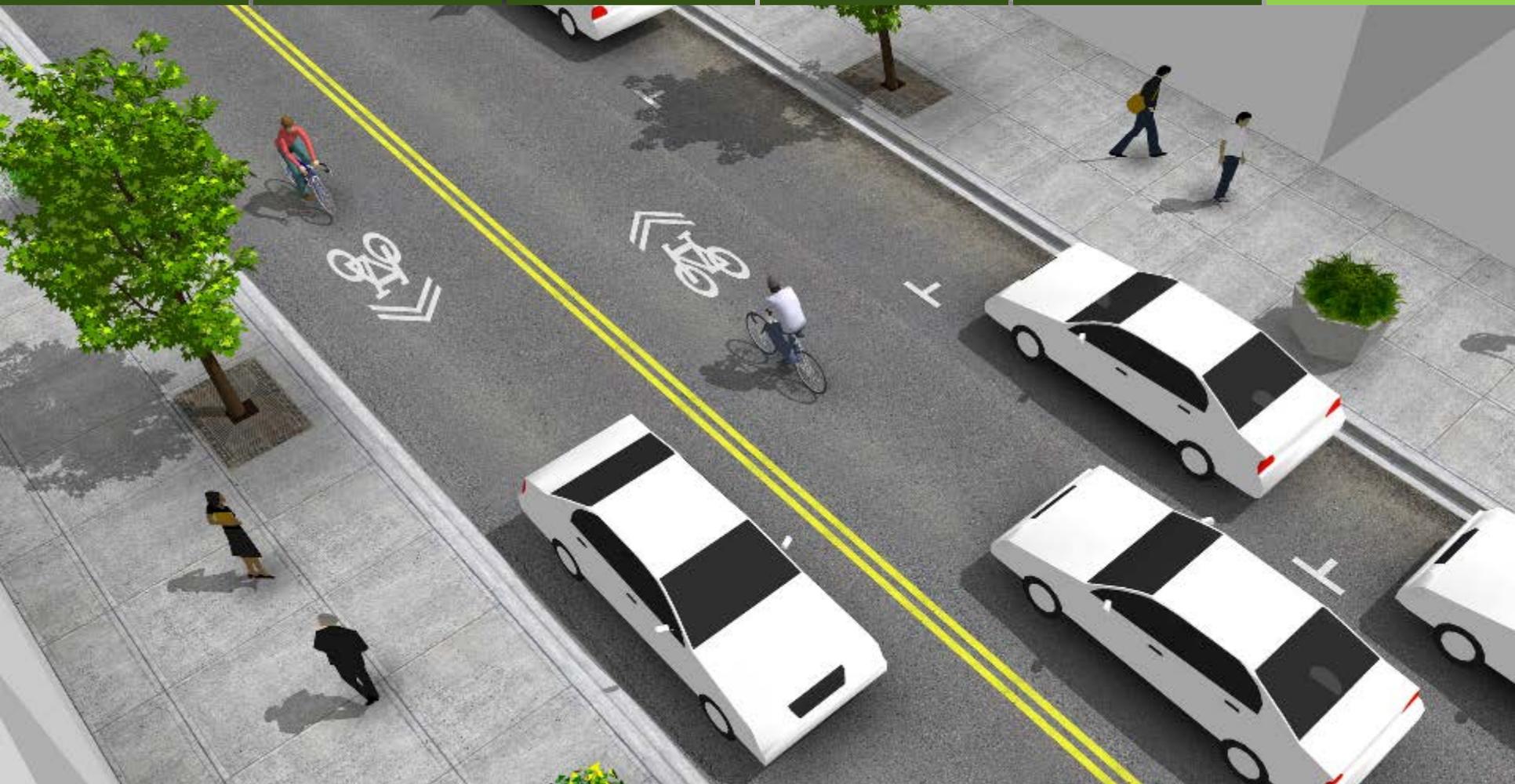
DASHED MARKINGS ARE FOR CONFLICT AREAS



BIKE BOULEVARDS

...and we're done!





Shared Lane Markings

- Low volumes and speeds
- Mark in center of travel lane
- Beginning of block and every 300'

SIGNAGE



BARNET

**RD
7200**







BIKE LEFT TURN LANE



TRANSIT

BUS-ONLY LANES
BUSES ON HIGHWAY SHOULDERS
TRANSIT BOARDING ISLAND

BUS-BIKE ONLY LANES



BUS-ONLY LANES

