

Traffic Signals & ITS to Encourage Walking & Cycling

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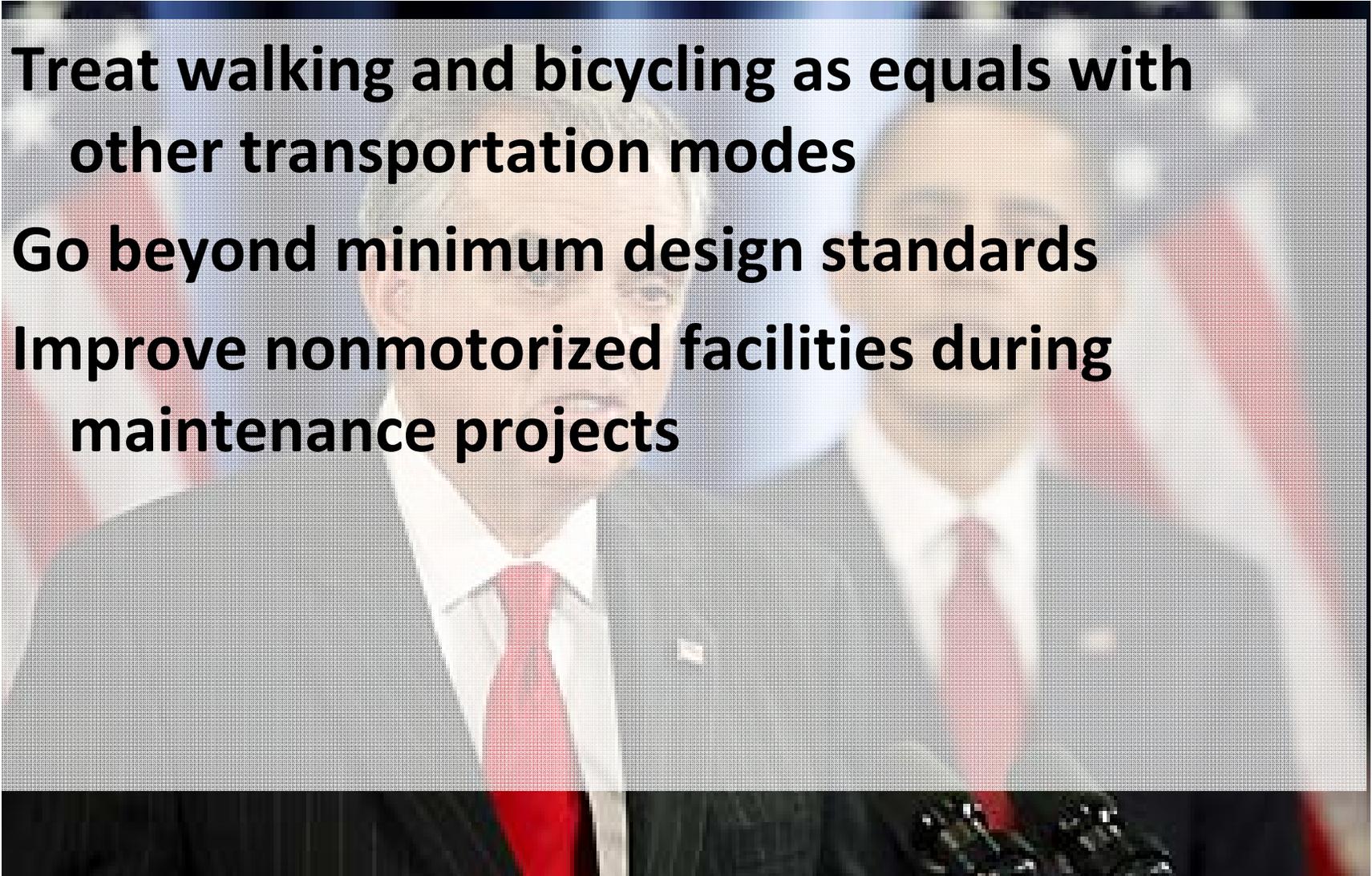


Current USDOT Policy Directive

Treat walking and bicycling as equals with other transportation modes

Go beyond minimum design standards

Improve nonmotorized facilities during maintenance projects



SIGNALS



Signals

Bicycle Signal Heads



Signal Detection
and Actuation



Detector Confirmation
Indication



Active Warning Sign
for Bike Route at Unsignalized
Intersection

N Broadway & Williams Proposed Characteristics



Lane Configurations:

1 Streetcar/thru lane

1 thru lane

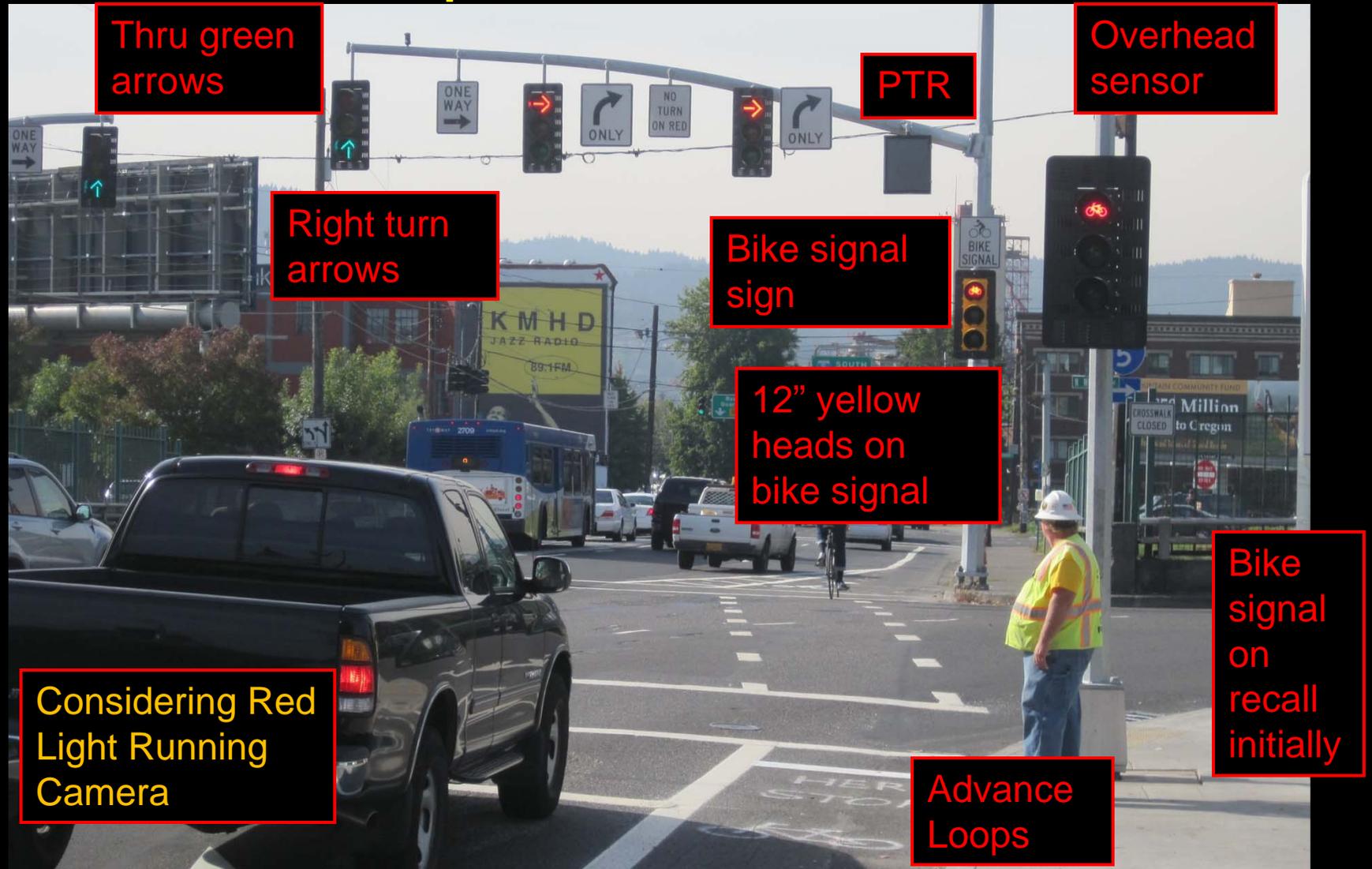
2 right-turn lanes
(no turn on red)

1 bike lane
(with bike signal)

N Broadway & Williams Improvements



N Broadway & Williams Improvements



N Broadway & Williams Improvements



N Broadway & Williams Improvements



How to Use the New Bicycle Signal

1 TO GET A GREEN LIGHT

Place your bicycle on the marking on the sidewalk,
with your wheels directly on the lines.



2 When the bicycle signal here is green...



3 ...cyclists can cross the intersection as shown here.



Questions? Comments?
Call City of Portland Bicycle Programs at (503)823-CYCL,
or submit a comment via the City of Portland's bicycle transportation website
at www.pdxtrans.org

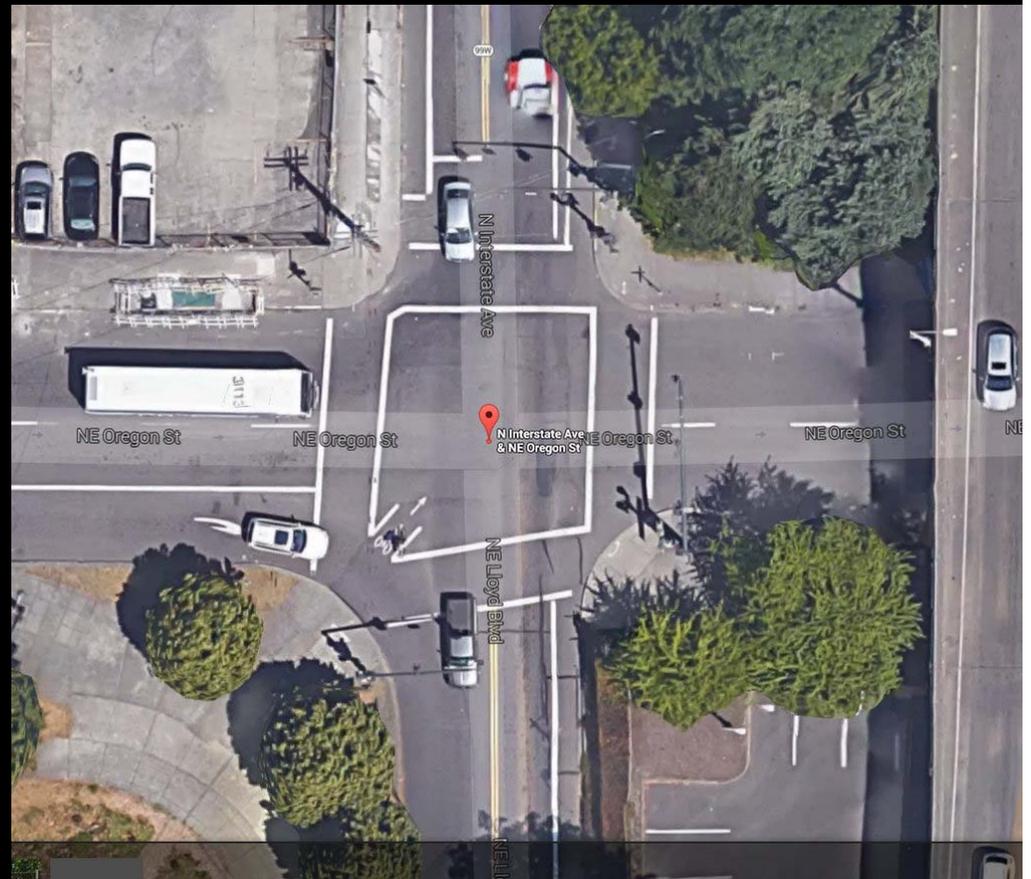
Scramble Phase Signal

N Interstate Ave & Oregon St

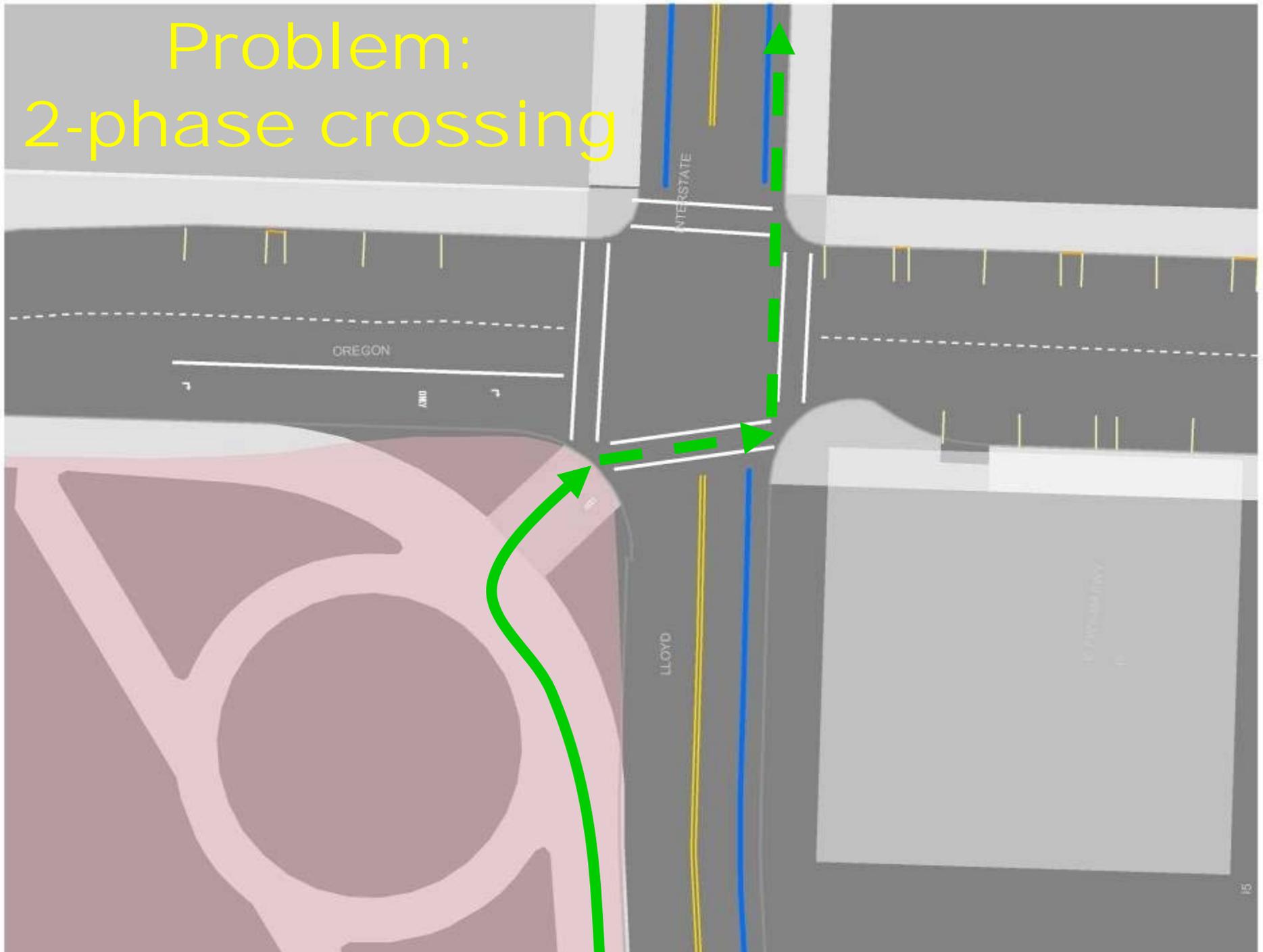
**Exclusive bike &
pedestrian phase**

**Bikes cross diagonally
from southwest to
northeast**

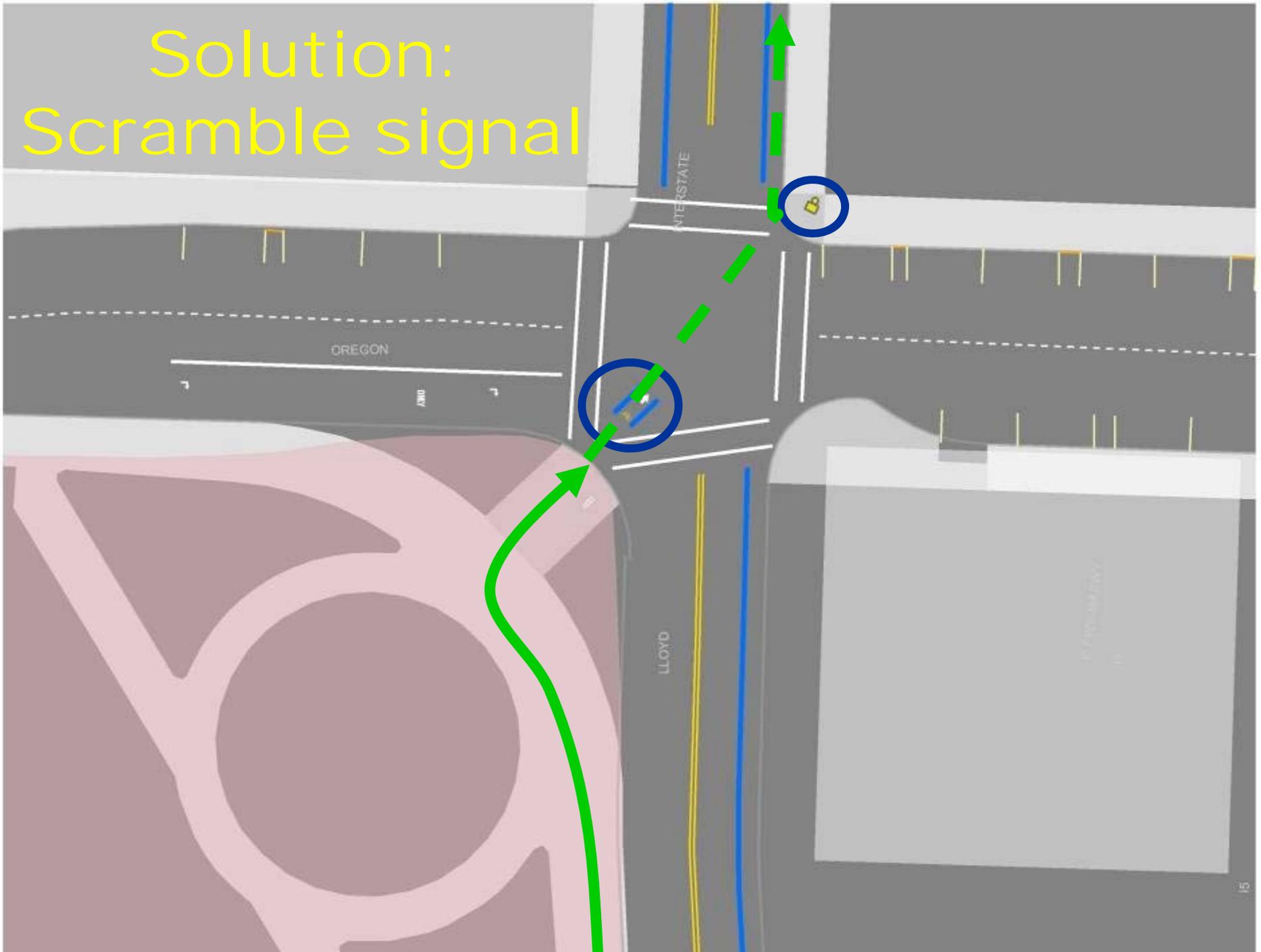
**Movement controlled
by a bike signal**



Problem: 2-phase crossing



Solution: Scramble signal



Scramble Phase Signal

N Interstate Ave & Oregon St



Bicycle approach on the SW corner of the intersection

Scramble Phase Signal

N Interstate Ave & Oregon St



Red bike signal phase



Green bike signal phase

Scramble Phase Signal

N Interstate Ave & Oregon St



No right turn on red display during green bike signal phase

Designing for bicycle travel



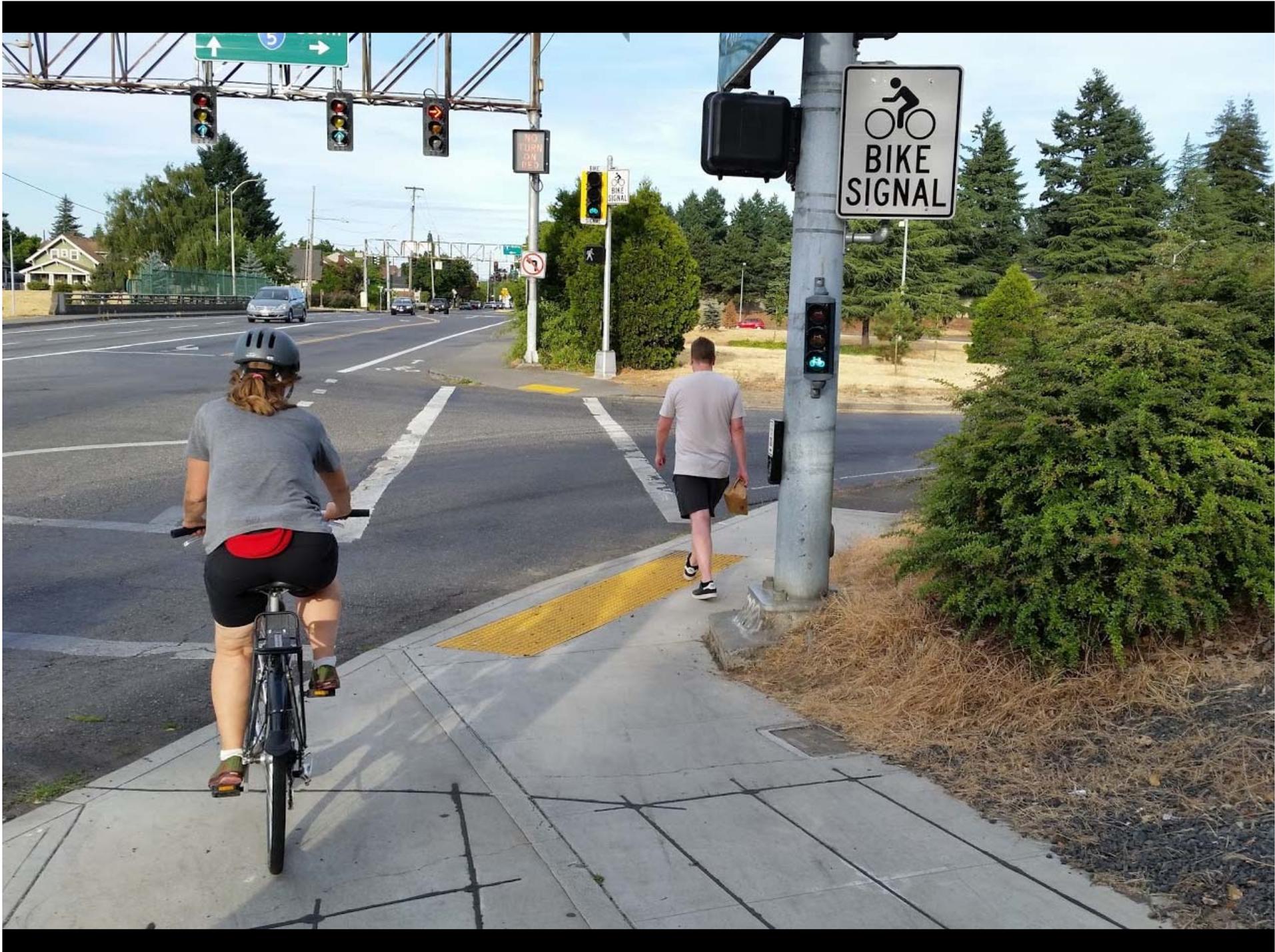
Build it and they will come

BICYCLE SIGNAL HEADS

- Separate bicycle movements from conflicting car, pedestrian, lightrail, and streetcar movement
- Lower placement
- Near side
- Smaller lens & housing (visual variation)



NEW YORK, NY





**Nearside bicycle
display, 4" size
mounted at human
scale**

PORTLAND, OR

SIGNAL ACTUATION & DETECTION

- Push-Button
- Inductive Loop
- Video
- Microwave Radar





Push Buttons are reliable

HALF OF
PORTLAND
BIKE RIDERS
DON'T KNOW
HOW TO
TRIGGER
GREEN
LIGHTS



What does the symbol in the picture above mean?

don't know or no answer

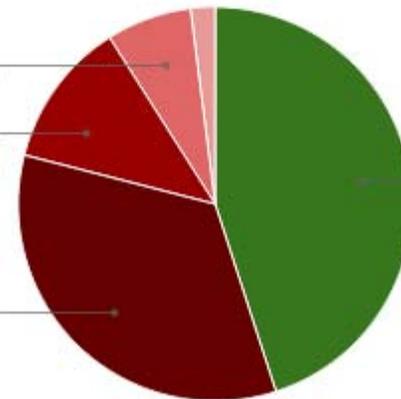
7%

"recommended waiting location"

12%

"bike lane/bike route"

34%



"wait here to trigger the signal" (correct)

45%



DETECTION



PORTLAND, OR

SIGNAL DETECTION – Best Practice

**Detector at stop bar
identifies presence**

**Advance detection
provides early notice
of to reduce delay,
and collects data
about use**

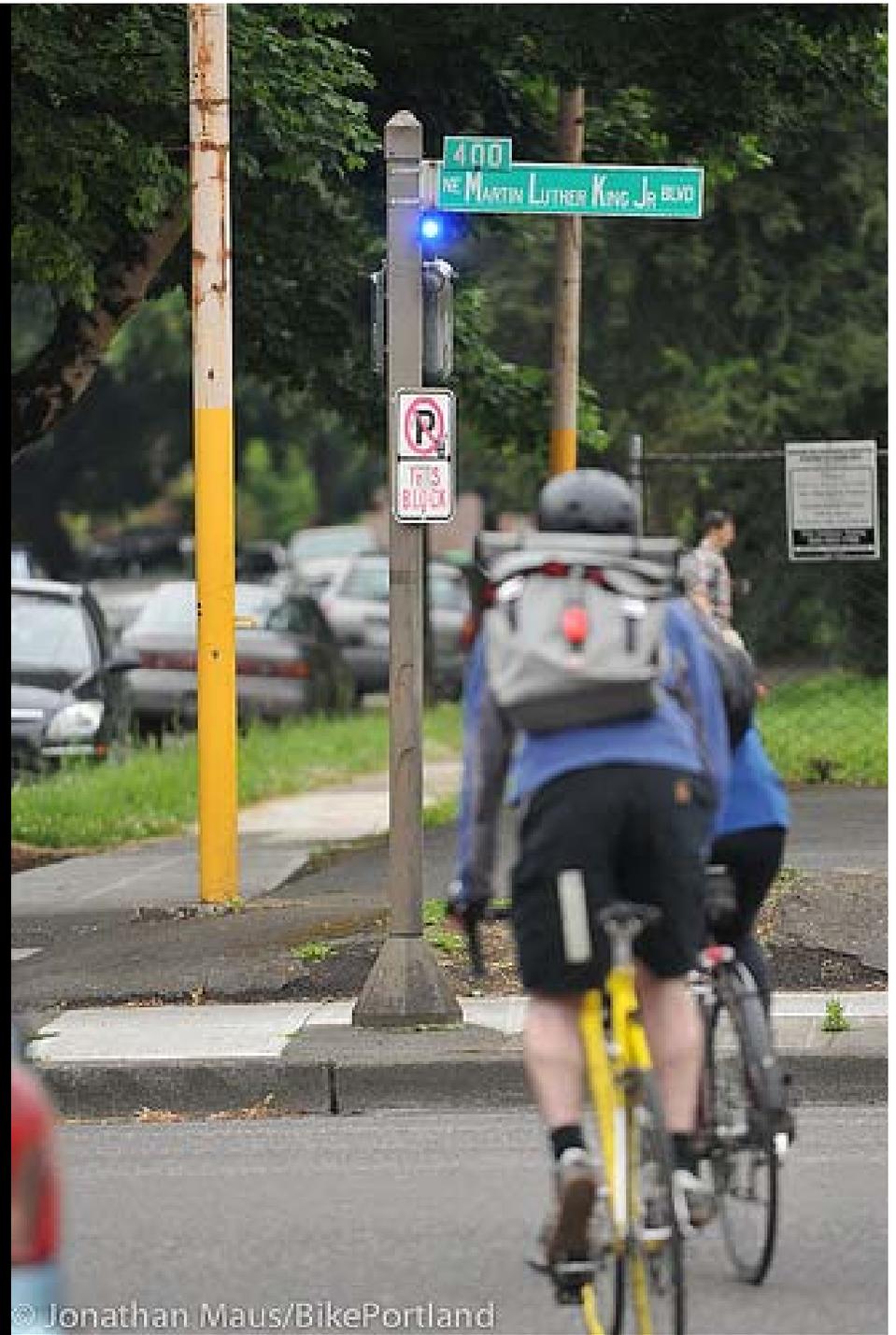


Improving Bicycle Detection

- **Vehicle detected when “Blue Light On”**
- **confirmation for bike or other traffic**



Green.
Yellow.
Red. Blue?
Portland's
new traffic-
light
experiment
comes in
peace



© Jonathan Maus/BikePortland

Dynamic Yield to Bikes Sign

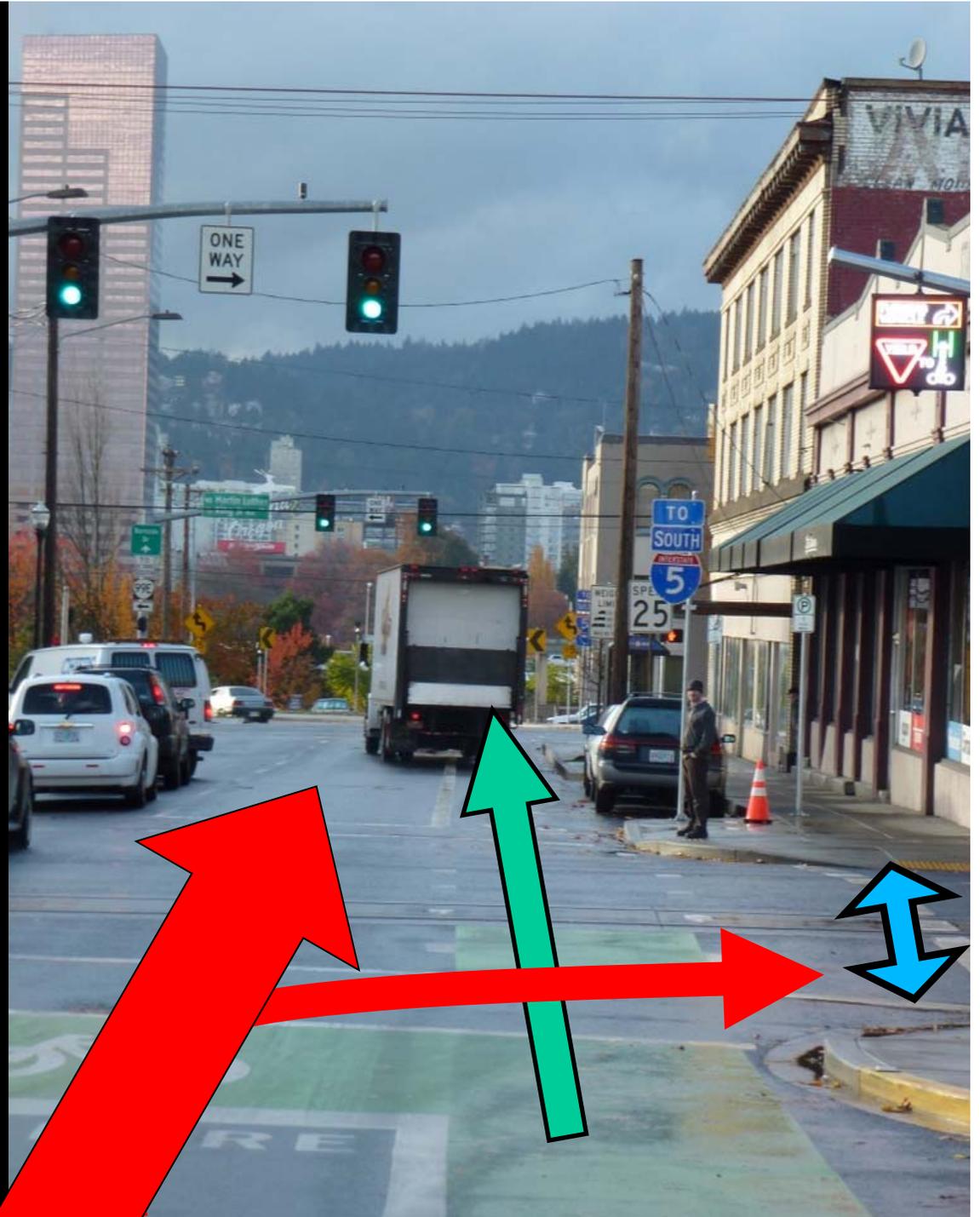
- One way street downhill grade
- Pedestrian
- Bike Box



Pedestrians

Vehicles

Bikes

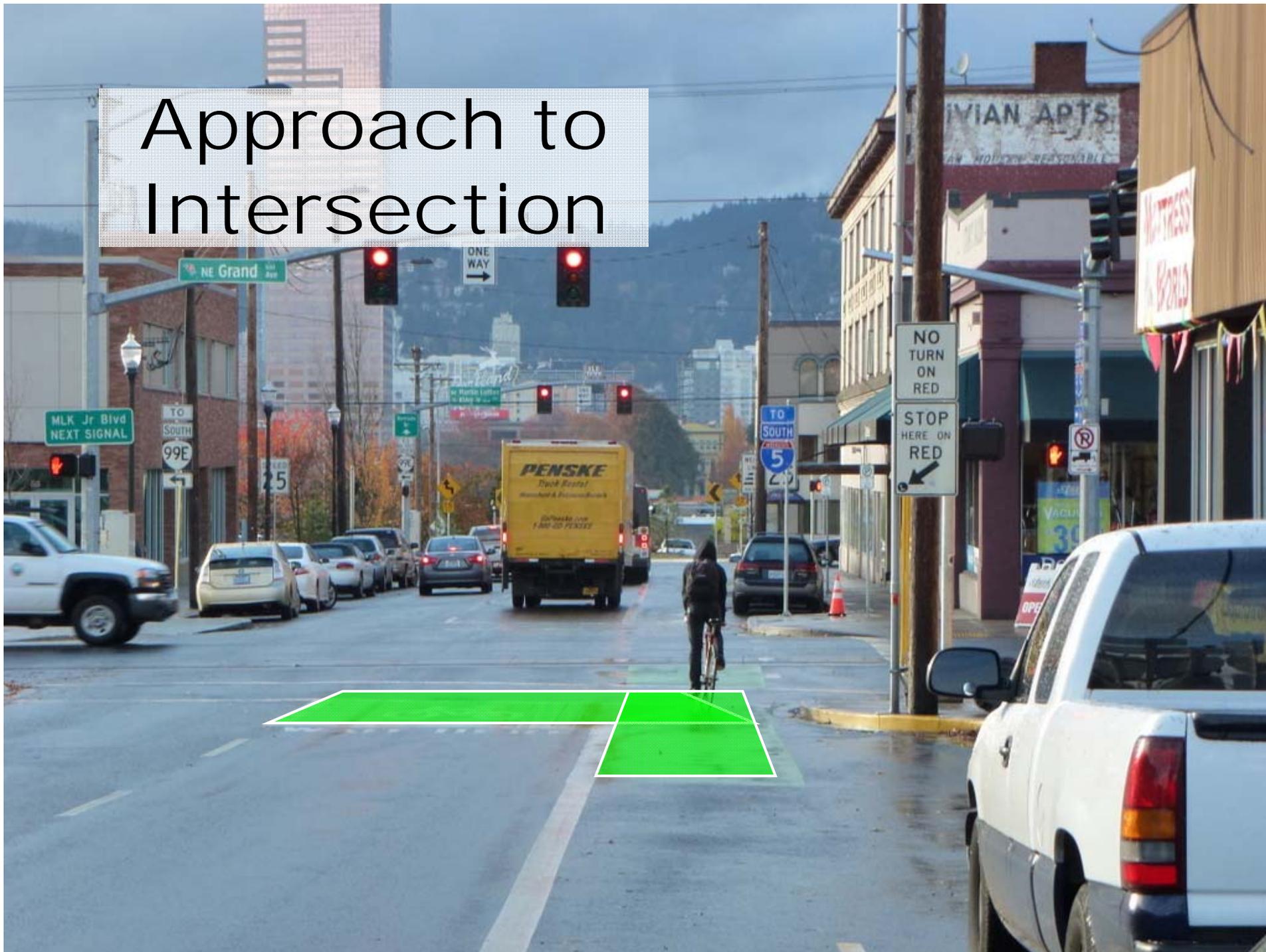


Activation of Sign

Detectors set at
200' & 120'

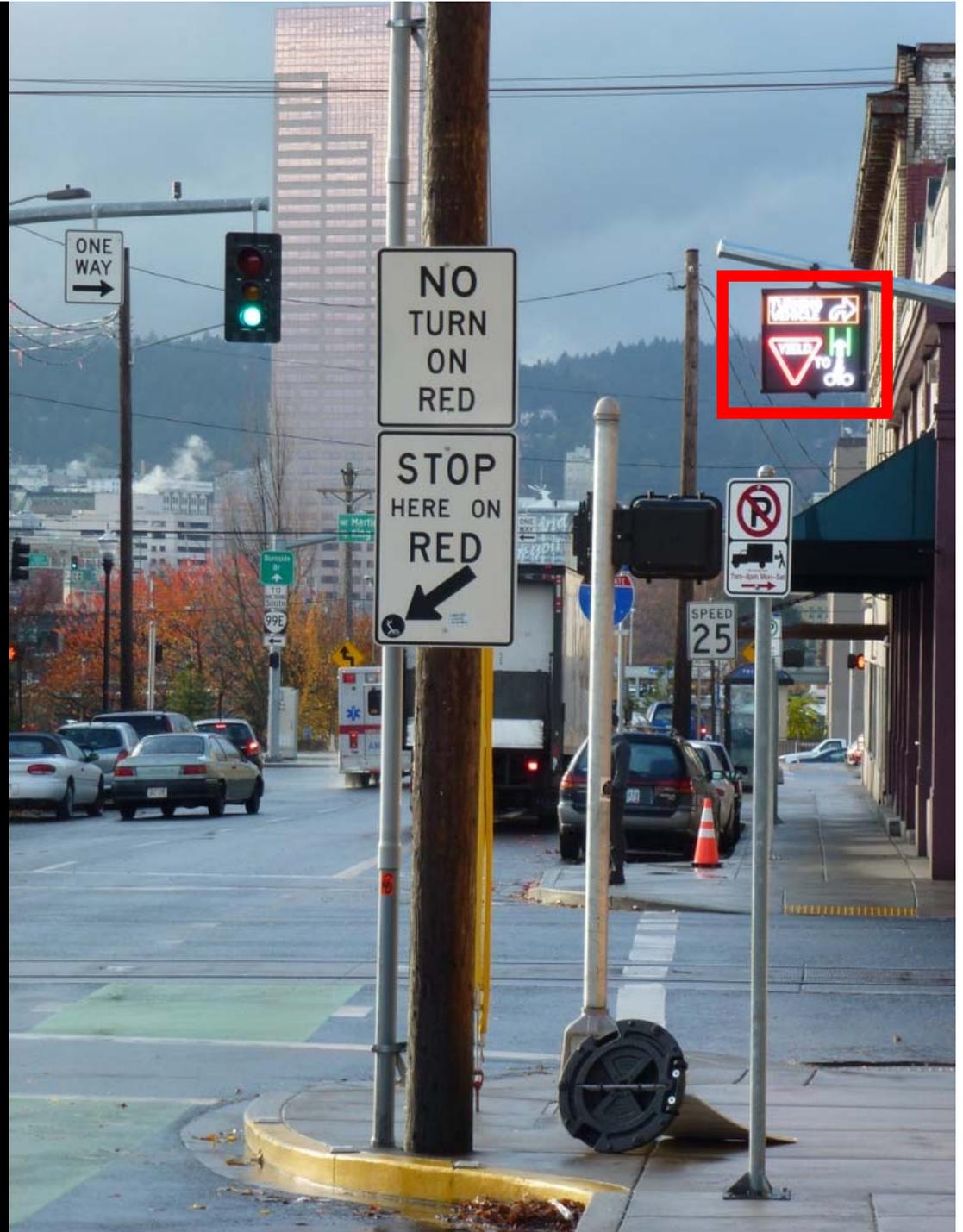


Approach to Intersection



Dynamic Sign

Sign is activated if it is likely that a bike will arrive during middle of green



Dynamic Sign

Sign is modeled after the standard MUTCD sign

bike and green lane replaces pedestrian



Active Sign

Yield blinks

bike and green lane
fully extended

