

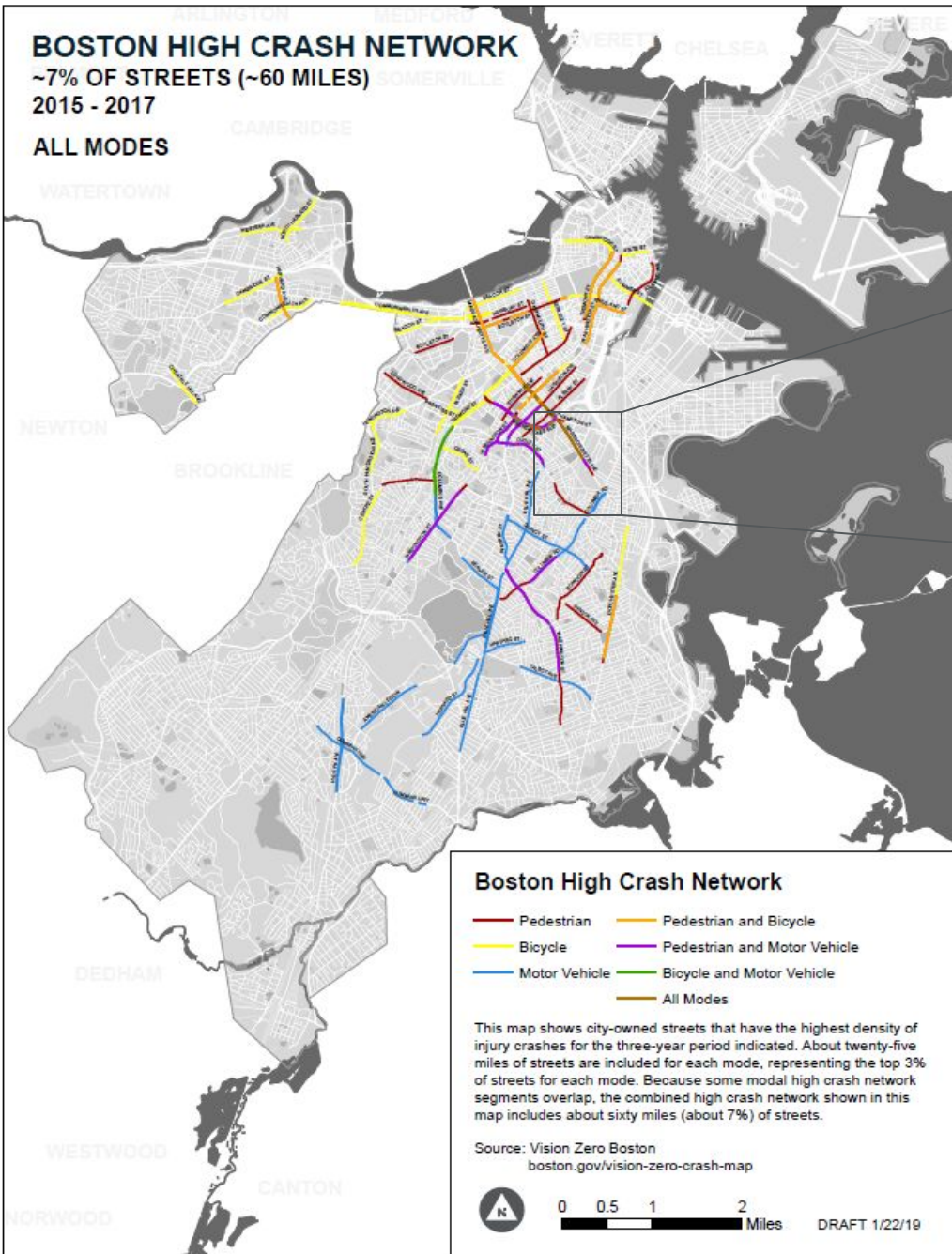
# MASSACHUSETTS AVENUE BETTER BIKE PROJECT

November 20, 2020

# OVERVIEW



**BOSTON HIGH CRASH NETWORK**  
 ~7% OF STREETS (~60 MILES)  
 2015 - 2017  
 ALL MODES

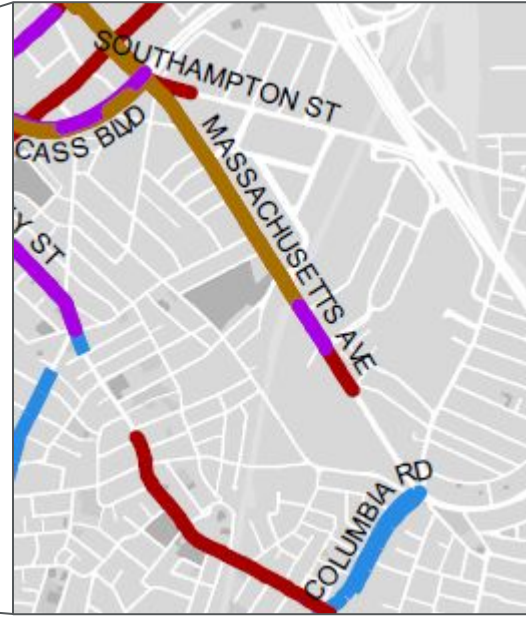


**Boston High Crash Network**

- Pedestrian
- Bicycle
- Motor Vehicle
- Pedestrian and Bicycle
- Pedestrian and Motor Vehicle
- Bicycle and Motor Vehicle
- All Modes

This map shows city-owned streets that have the highest density of injury crashes for the three-year period indicated. About twenty-five miles of streets are included for each mode, representing the top 3% of streets for each mode. Because some modal high crash network segments overlap, the combined high crash network shown in this map includes about sixty miles (about 7%) of streets.

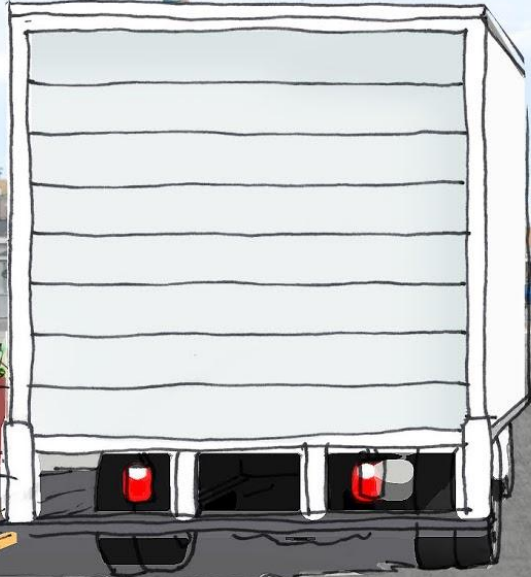
Source: Vision Zero Boston  
[boston.gov/vision-zero-crash-map](http://boston.gov/vision-zero-crash-map)



# Boston High Crash Network

- Pedestrian
- Bicycle
- Motor Vehicle
- Pedestrian and Bicycle
- Pedestrian and Motor Vehicle
- Bicycle and Motor Vehicle
- All Modes





GERAPO

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DI PIERRO  
DESIGN - BUILD - REMODEL

Best Western PLUS

# WHAT WE'VE DONE

# INITIAL OUTREACH

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## *October - December 2019*

- ▶ Flyered light posts and all residences along corridor
- ▶ Conducted two public walk/ride tours
- ▶ Presented at civic association meetings
- ▶ Delivered an informational flyer to every open business on the corridor
  - Returned twice to ensure every business had been visited and knew about the project
  - Encouraged early participation in discussions and walks/rides
- ▶ Presented at the Newmarket Business Association Meeting
- ▶ Hosted a walk/ride tour for businesses

# DISCUSSIONS WITH BUSINESSES

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## *January - September 2020*

- ▶ During the winter, we shared preferred concept with Newmarket Business Association and via 1:1 conversations with Association staff and each of the following businesses:
  - Di Pierro Construction
  - Best Western Roundhouse Suites
  - Victory Programs
  - Suffolk Construction
  - Edens
  - Ace Plumbing
  - South Bay Auto Body
  - Home Run Cafe
  - Dorchester Brewing Co.
- ▶ We met regularly with Newmarket Business Association staff (February 10, May 10, June 17, July 7, August 20)
- ▶ In late spring/early summer, we reached out and offered to meet with all of the above businesses about detailed design plans. We also met with National Development, M&M BBQ, Alvan-Mora LLC, and Good Seasons Trading Inc.
- ▶ We directed our consultants develop designs based on business feedback



# DISCUSSIONS WITH BUSINESSES

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## September - October 2020

- ▶ We reached out to business stakeholders on Shirley Street at the request of the Newmarket Business Association. We met with:
  - Metro Credit Union
  - Cram Seafoods
  - Holland Construction
  - City Fresh Foods
  - Taurus Packing Company
  - Ryder Truck Rental
  - A-2-Z Auto Repair
  - The BASE
- ▶ We again directed our consultants to modify the design based on business feedback



# DESIGN PRIORITIES

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*We identified the following design priorities from our outreach with residents and businesses:*

- ▶ Safety of people biking and walking
- ▶ Flow of buses, trucks, and cars
- ▶ Access to the curb
- ▶ Integration with ongoing planning and development

# THE DESIGN

# SAFETY & FLOW IMPROVEMENTS

*Curb extension improves turn for trucks*

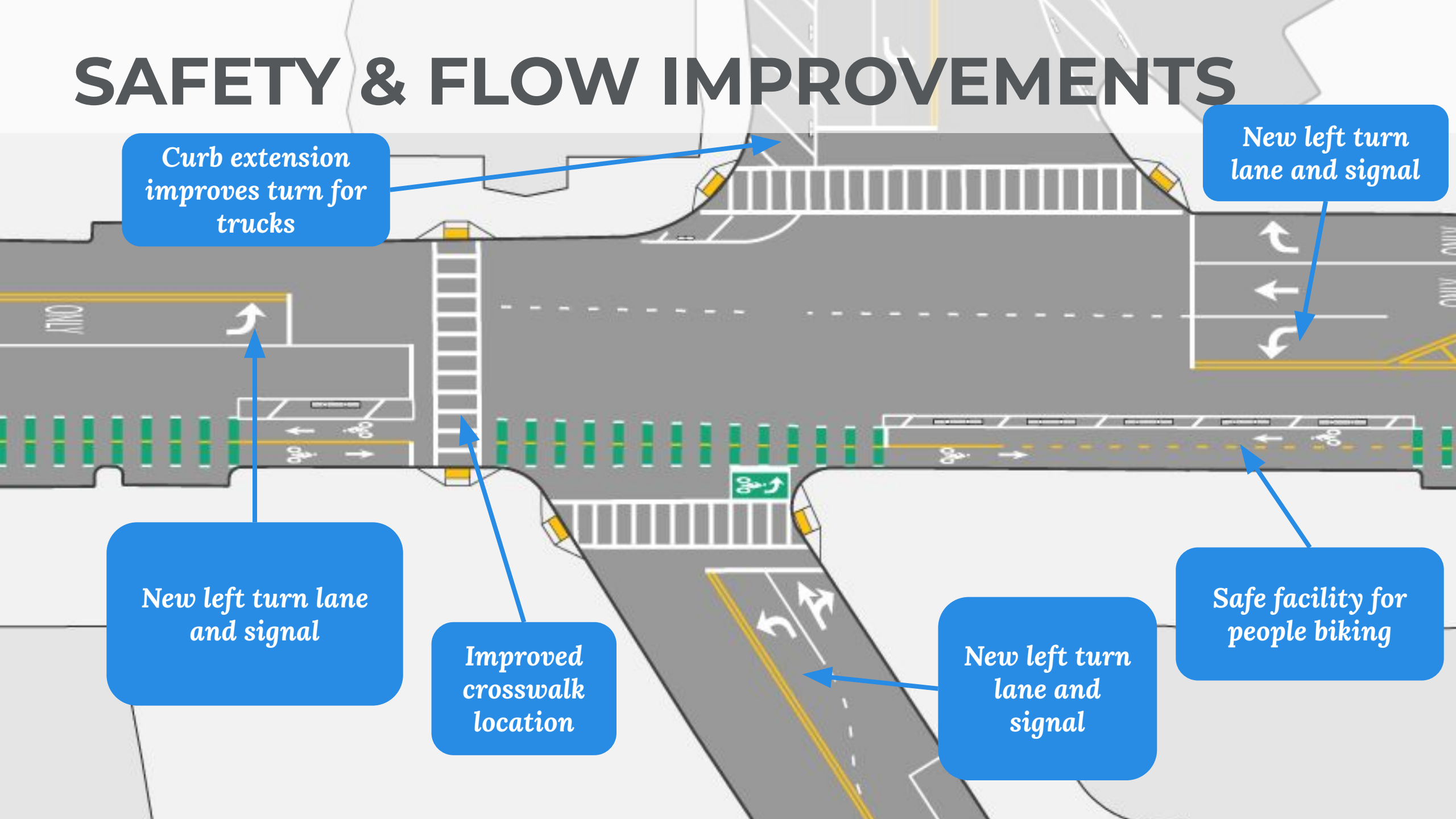
*New left turn lane and signal*

*New left turn lane and signal*

*Improved crosswalk location*

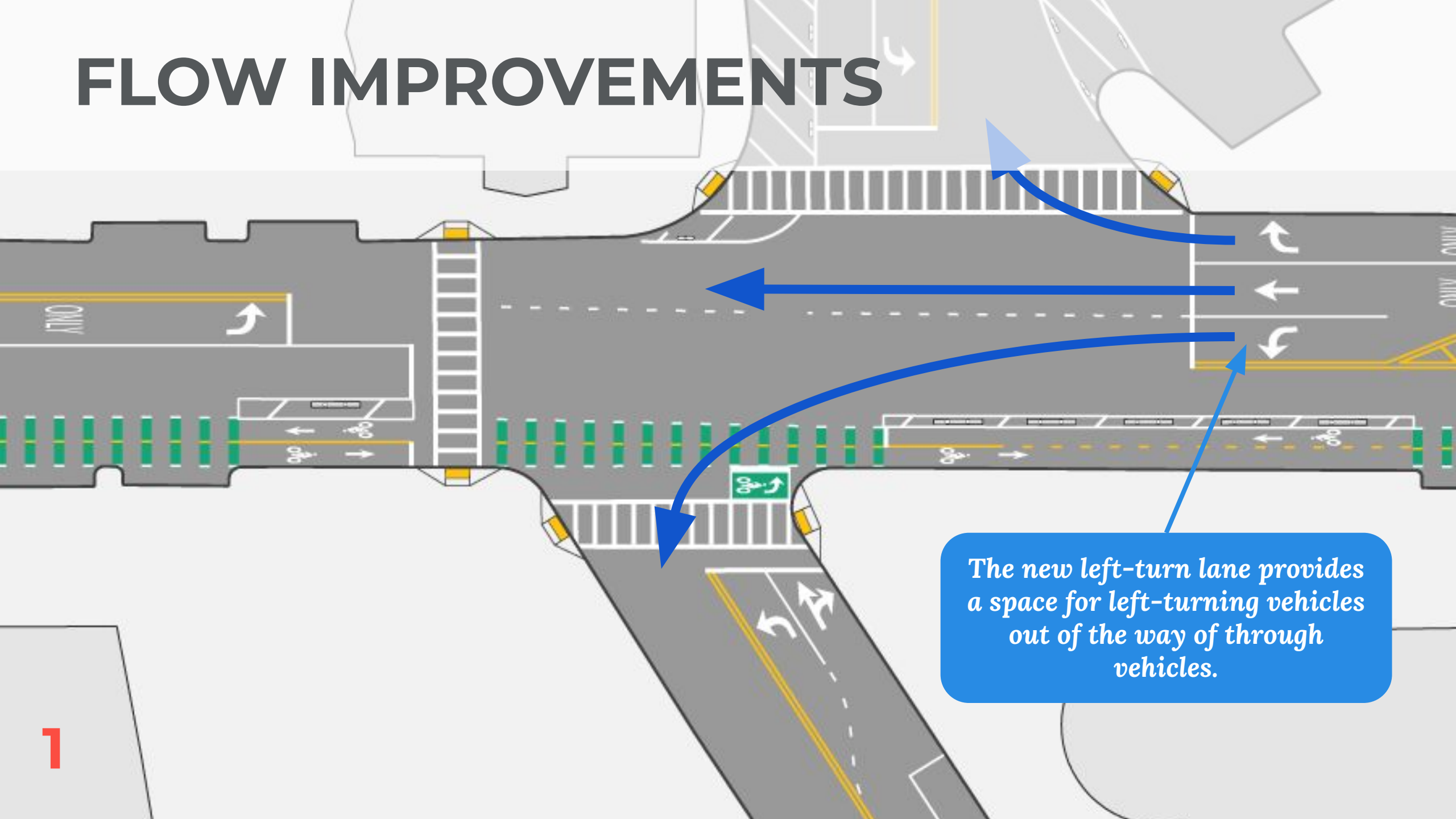
*New left turn lane and signal*

*Safe facility for people biking*



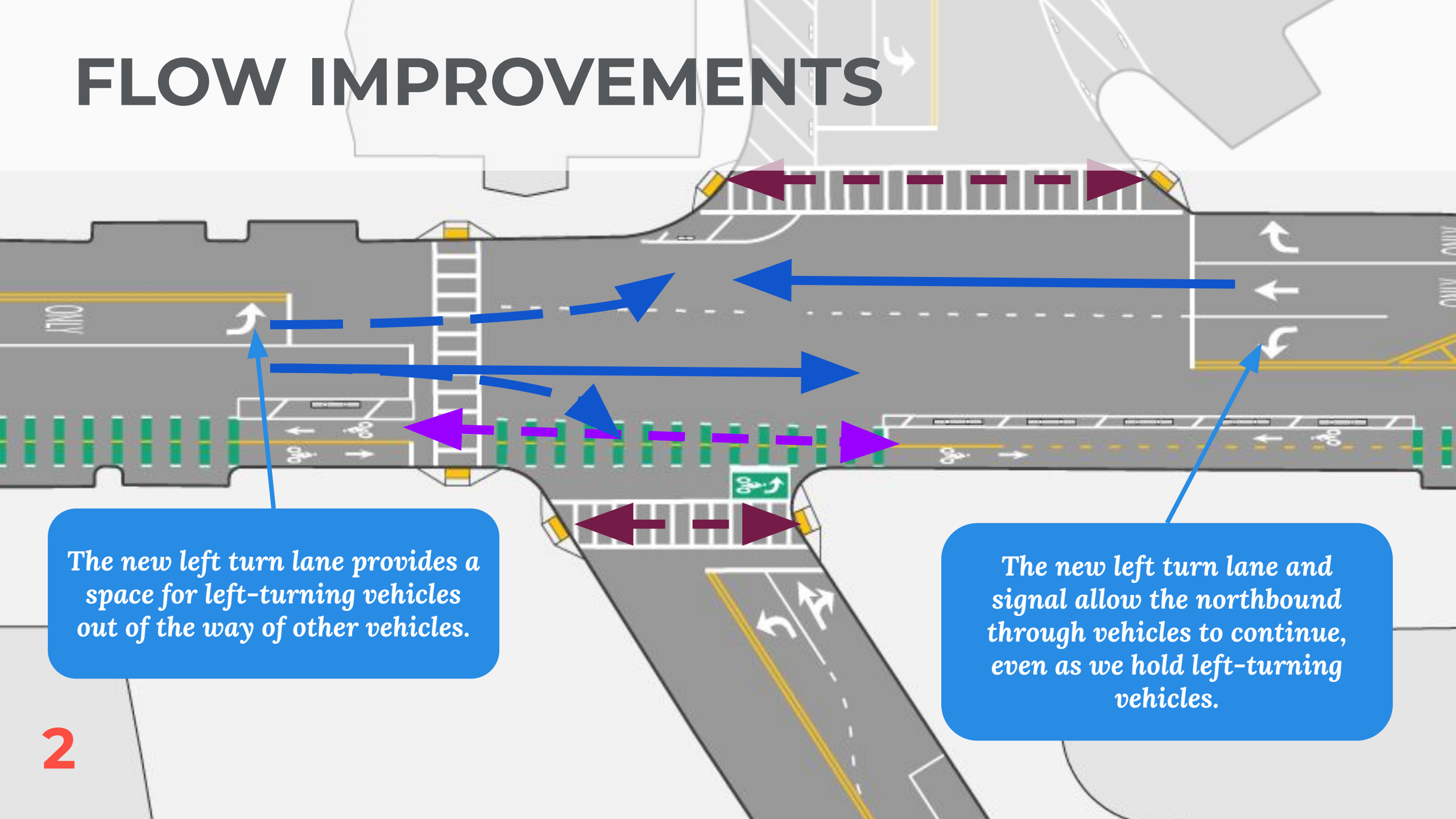


# FLOW IMPROVEMENTS



*The new left-turn lane provides a space for left-turning vehicles out of the way of through vehicles.*

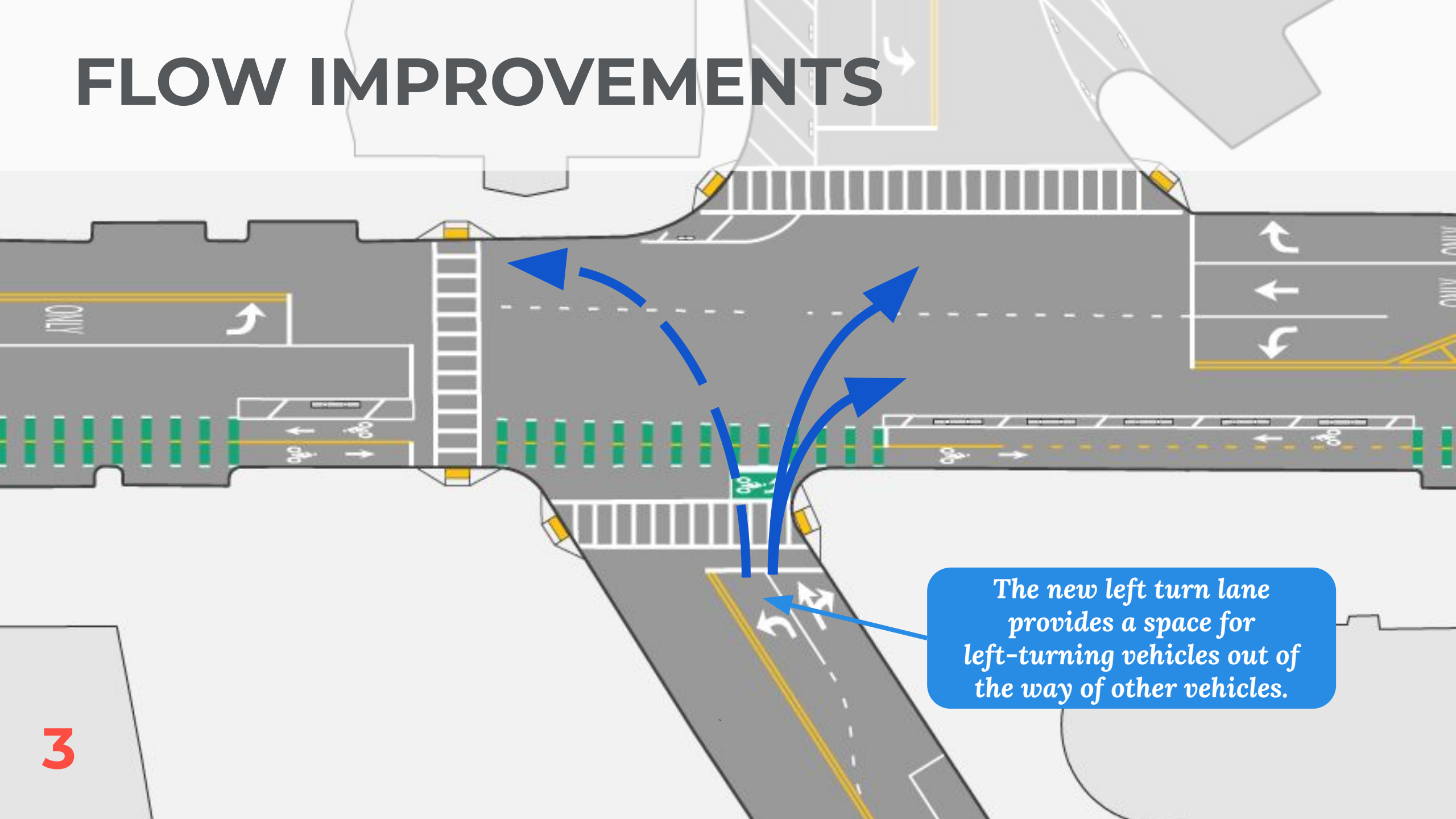
# FLOW IMPROVEMENTS



*The new left turn lane provides a space for left-turning vehicles out of the way of other vehicles.*

*The new left turn lane and signal allow the northbound through vehicles to continue, even as we hold left-turning vehicles.*

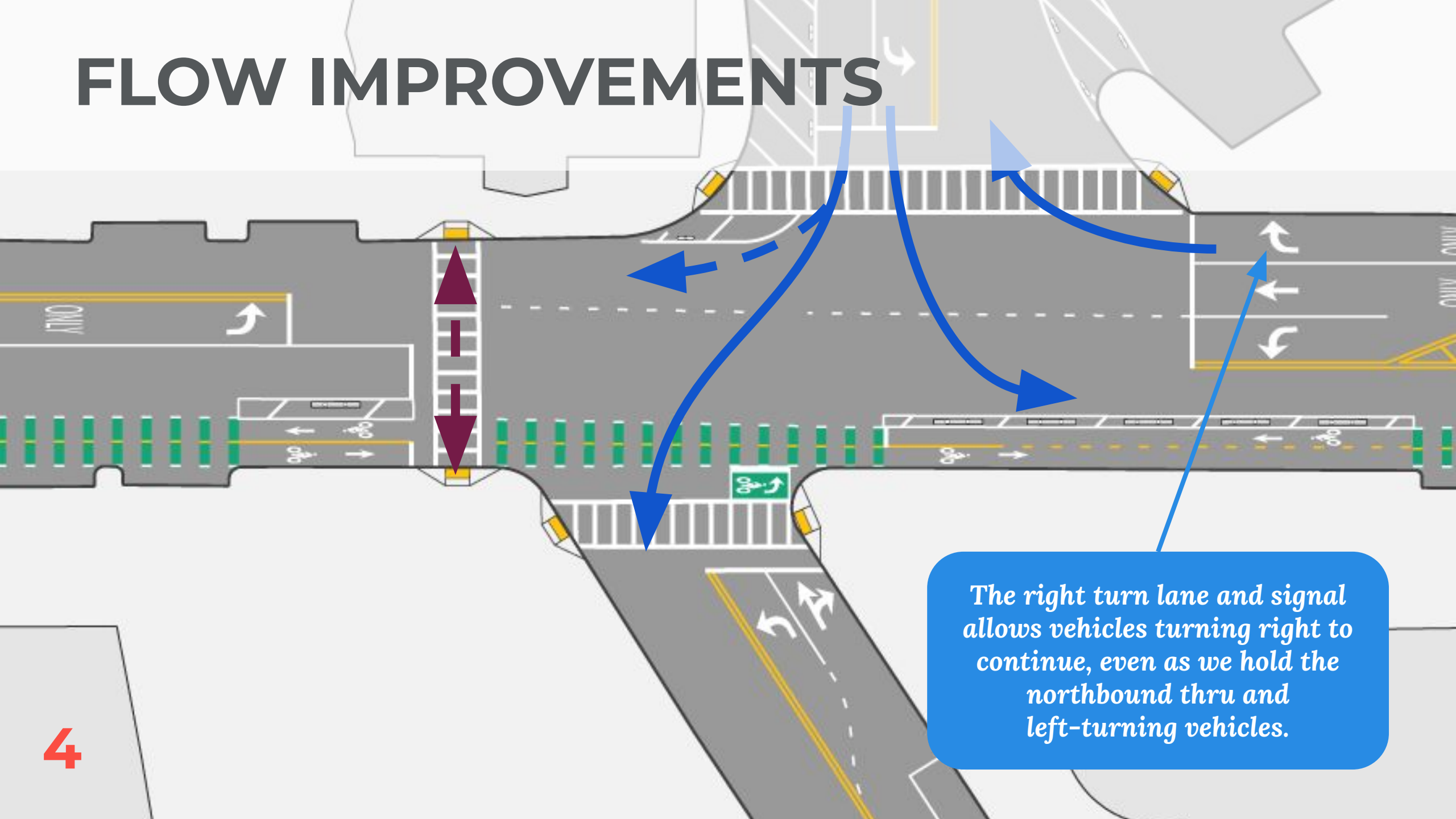
# FLOW IMPROVEMENTS



The new left turn lane provides a space for left-turning vehicles out of the way of other vehicles.

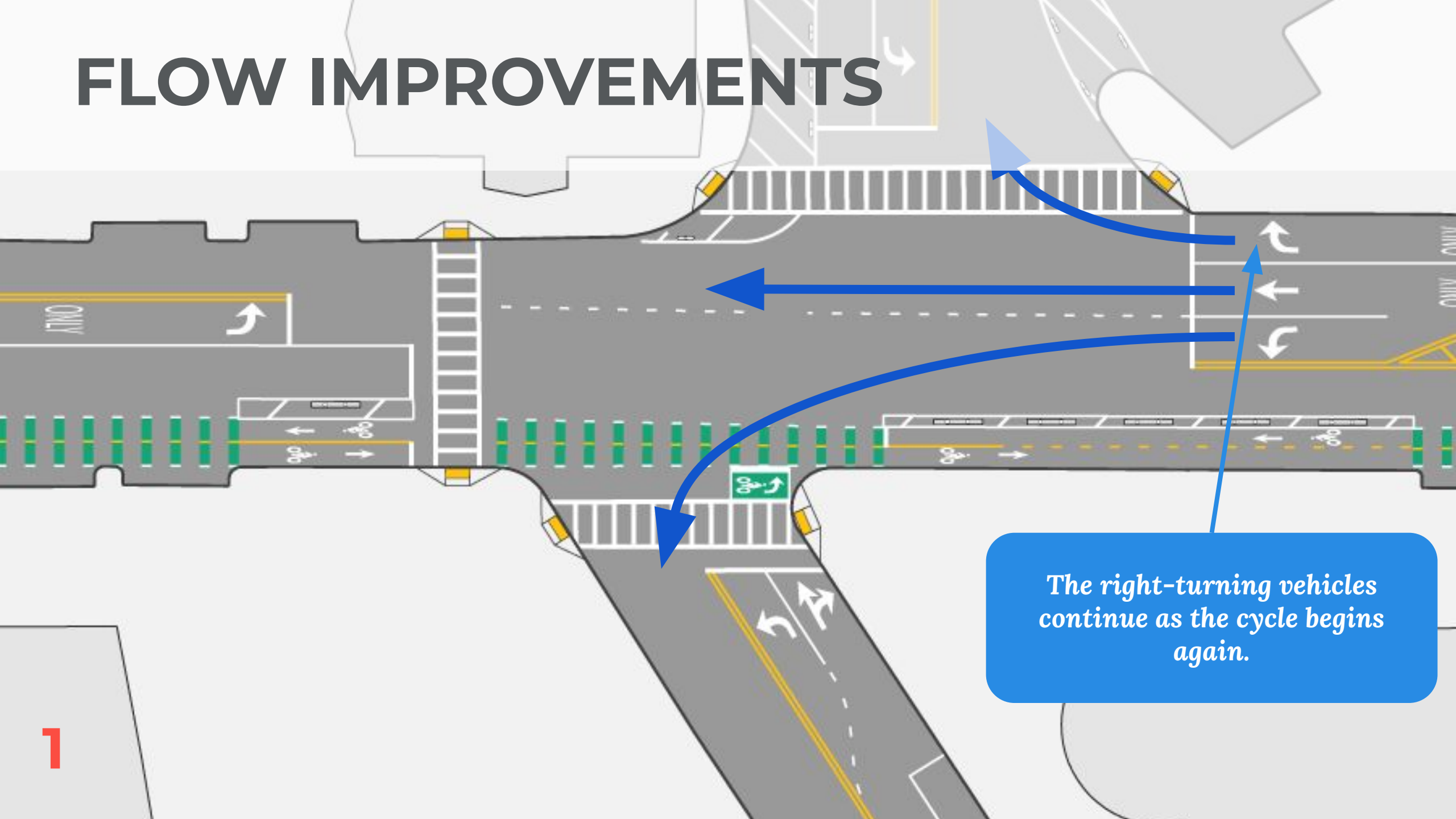


# FLOW IMPROVEMENTS



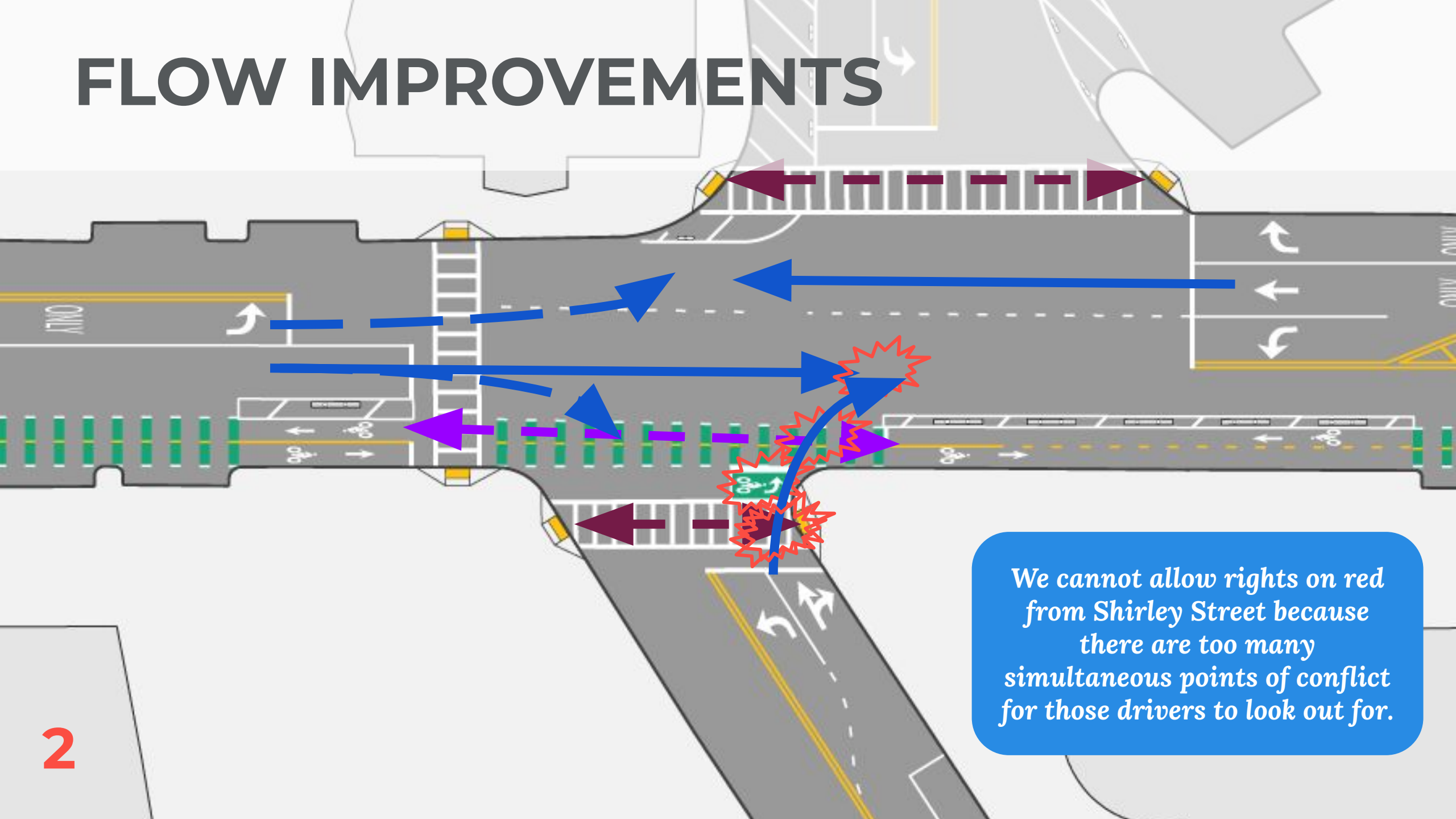
*The right turn lane and signal allows vehicles turning right to continue, even as we hold the northbound thru and left-turning vehicles.*

# FLOW IMPROVEMENTS



*The right-turning vehicles continue as the cycle begins again.*

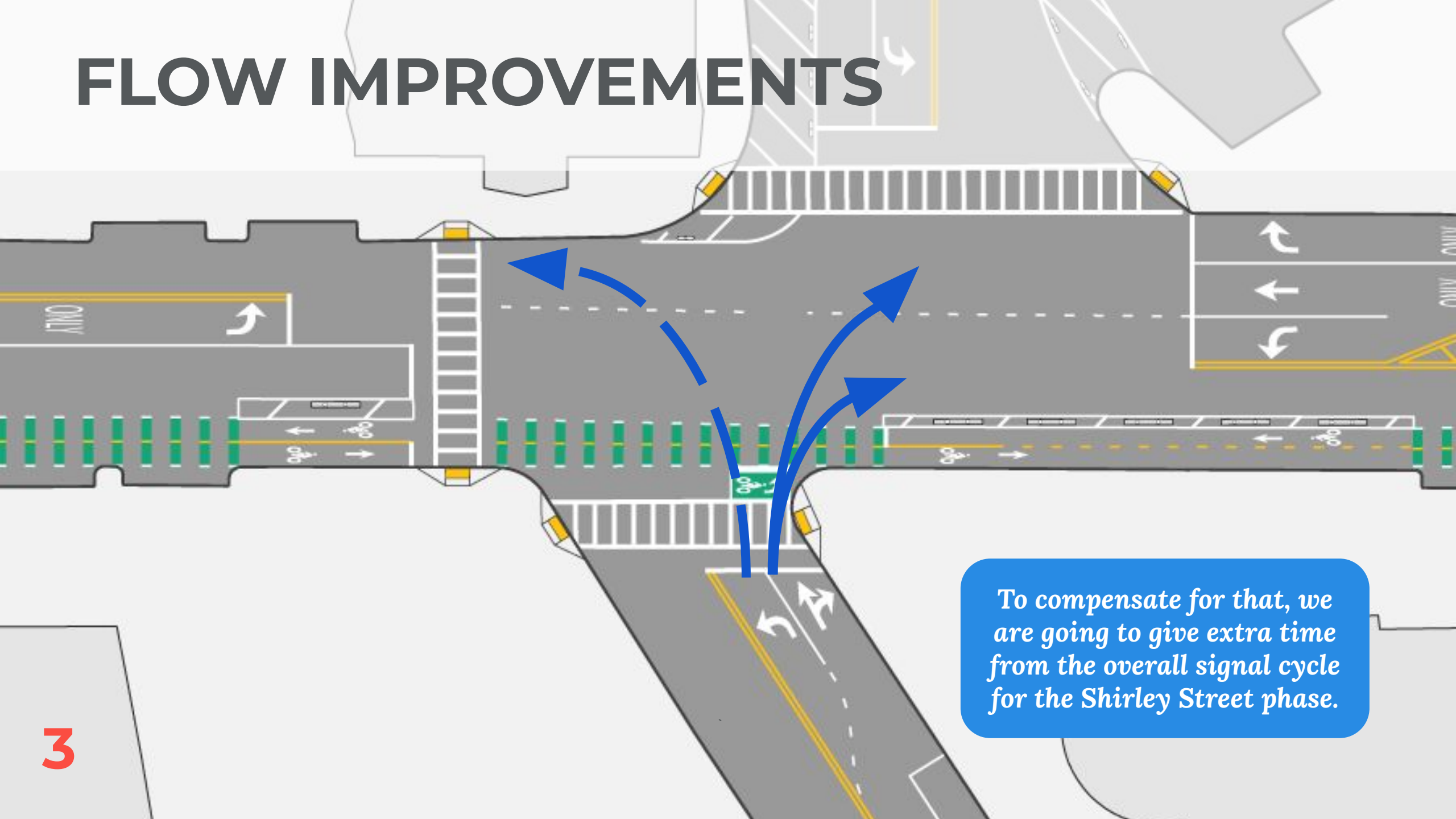
# FLOW IMPROVEMENTS



*We cannot allow rights on red from Shirley Street because there are too many simultaneous points of conflict for those drivers to look out for.*

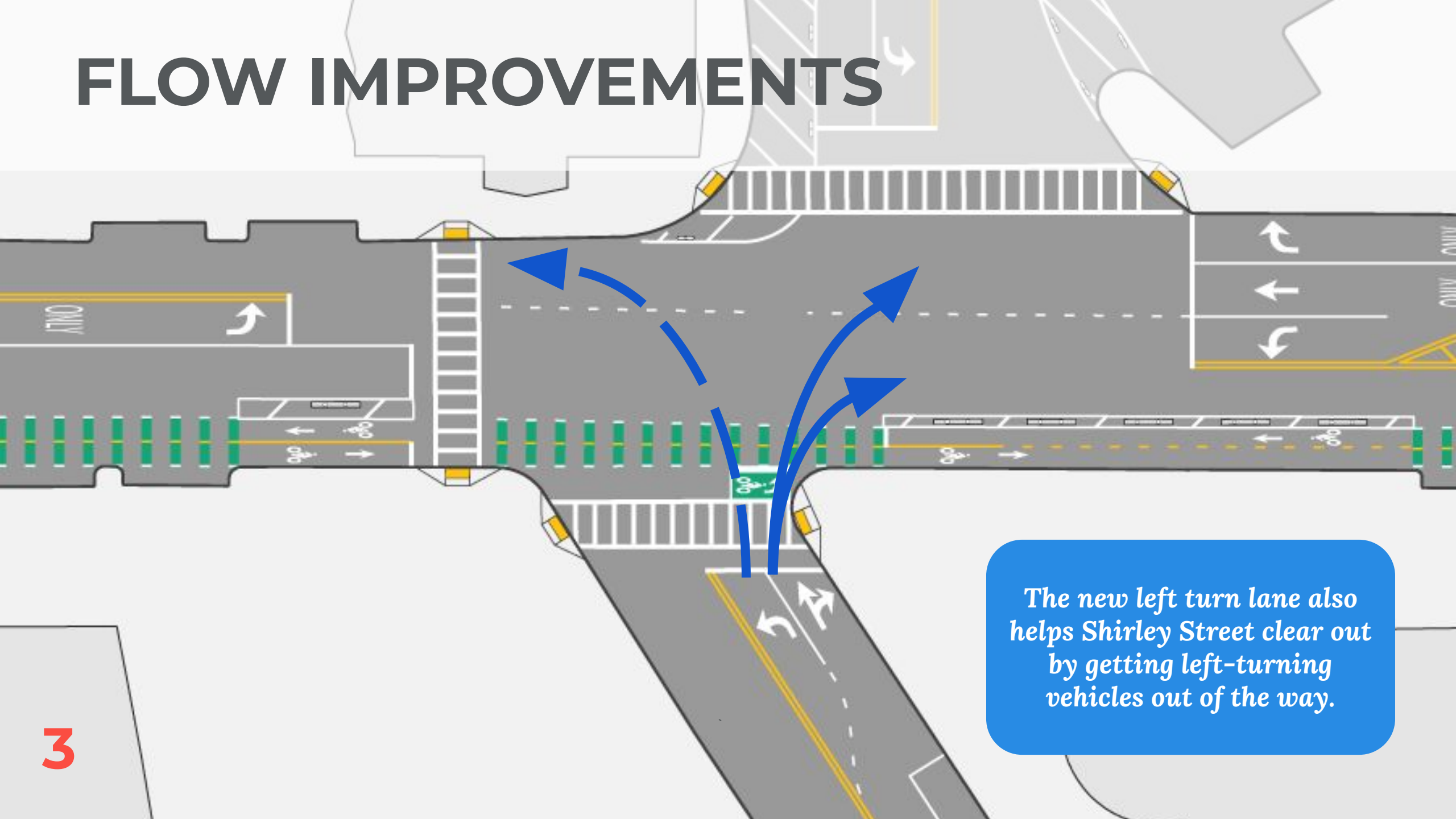


# FLOW IMPROVEMENTS



*To compensate for that, we are going to give extra time from the overall signal cycle for the Shirley Street phase.*

# FLOW IMPROVEMENTS

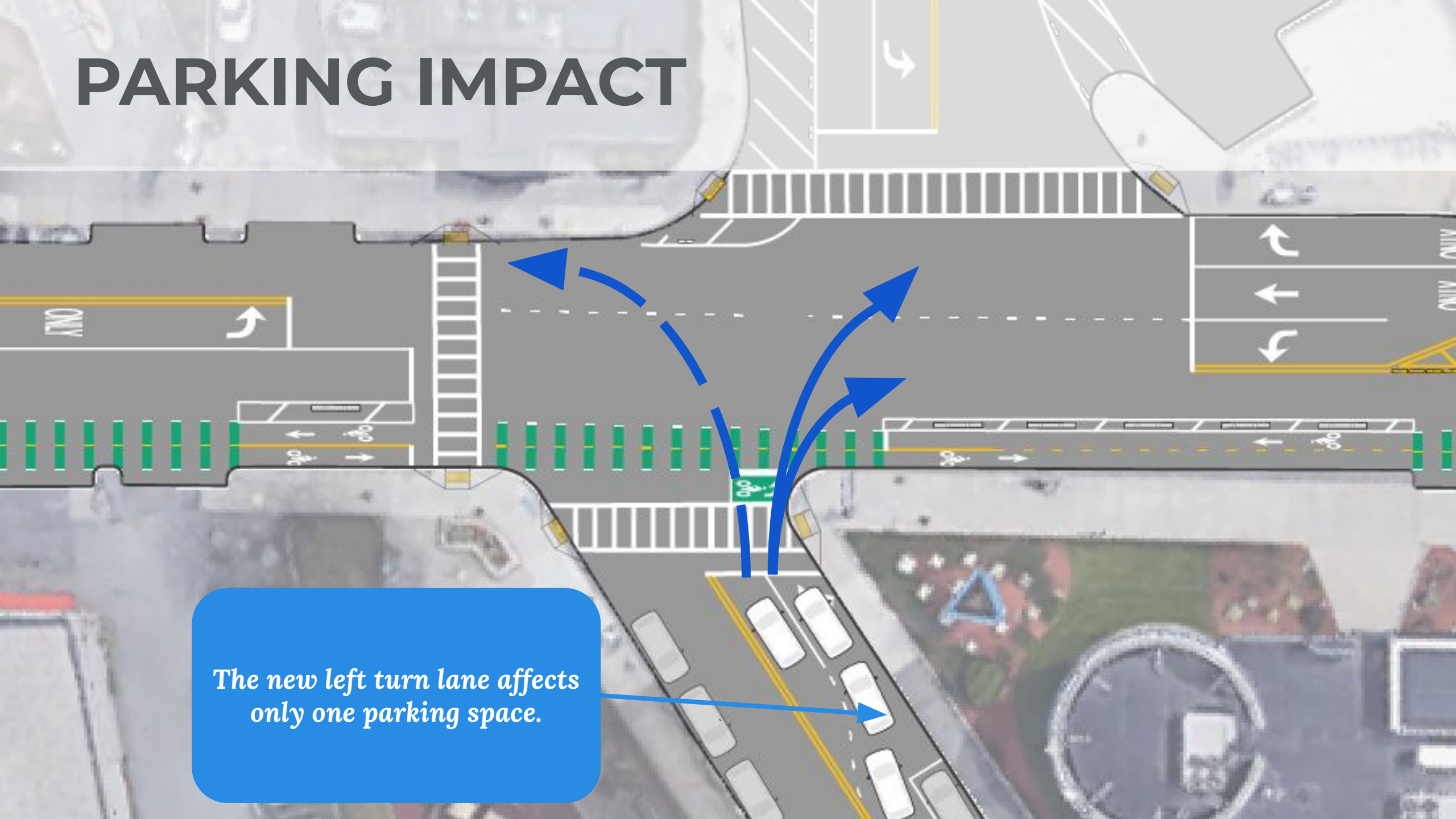


*The new left turn lane also helps Shirley Street clear out by getting left-turning vehicles out of the way.*

# YOUR CONCERNS


# PARKING IMPACT

*The new left turn lane affects only one parking space.*



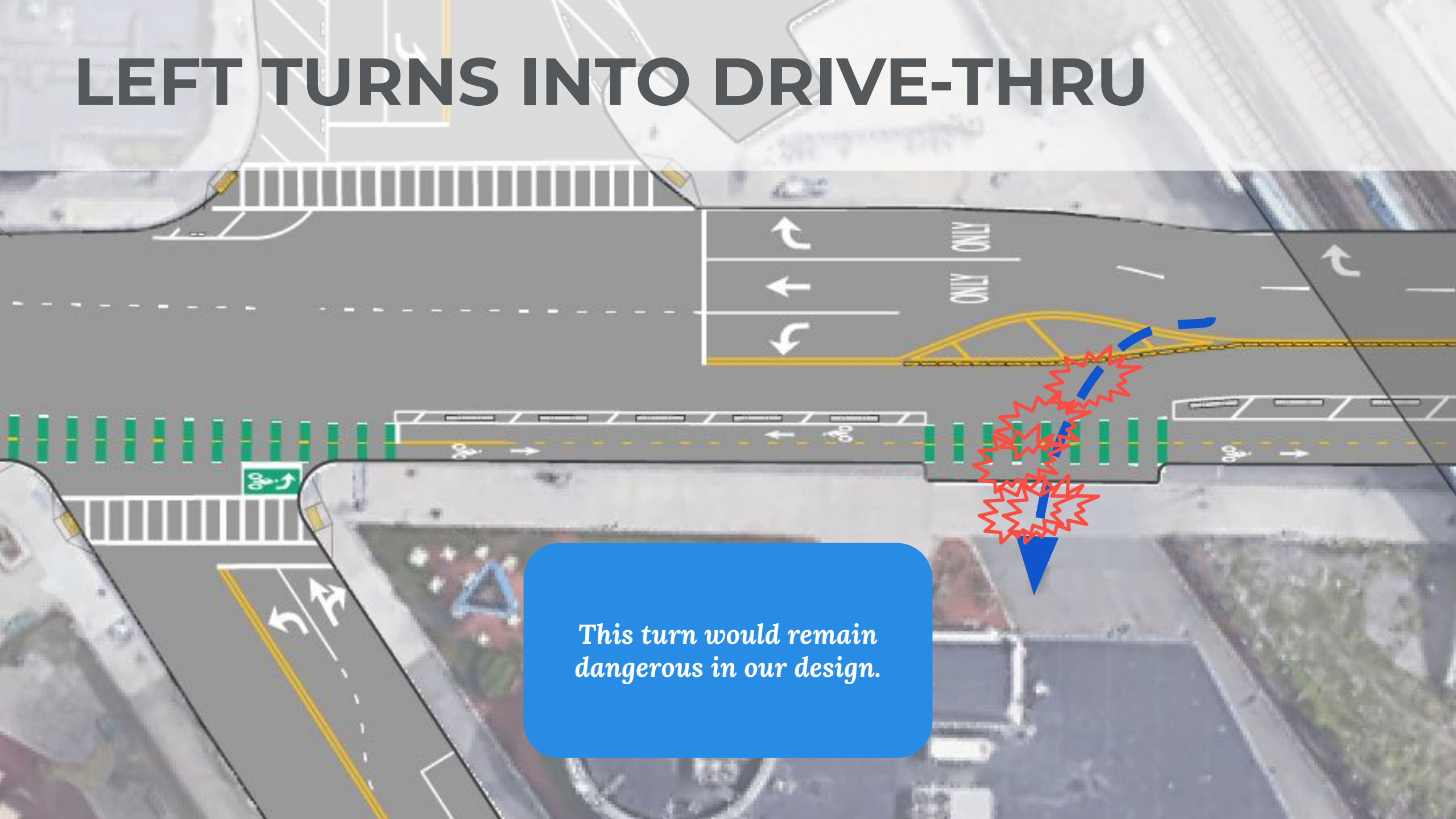


# LEFT TURNS INTO DRIVE-THRU

An aerial photograph of a drive-thru facility. A red starburst graphic with a jagged edge is positioned over a left-turn lane that leads into the drive-thru. A blue arrow points from the starburst towards the drive-thru entrance. A dashed blue line indicates the path of the left-turn lane. The drive-thru itself is a long, narrow concrete structure with a yellow line marking. The surrounding area includes parking lots, roads, and some greenery.

*Left turns into the drive-thru were not anticipated in the site's design. They are dangerous.*

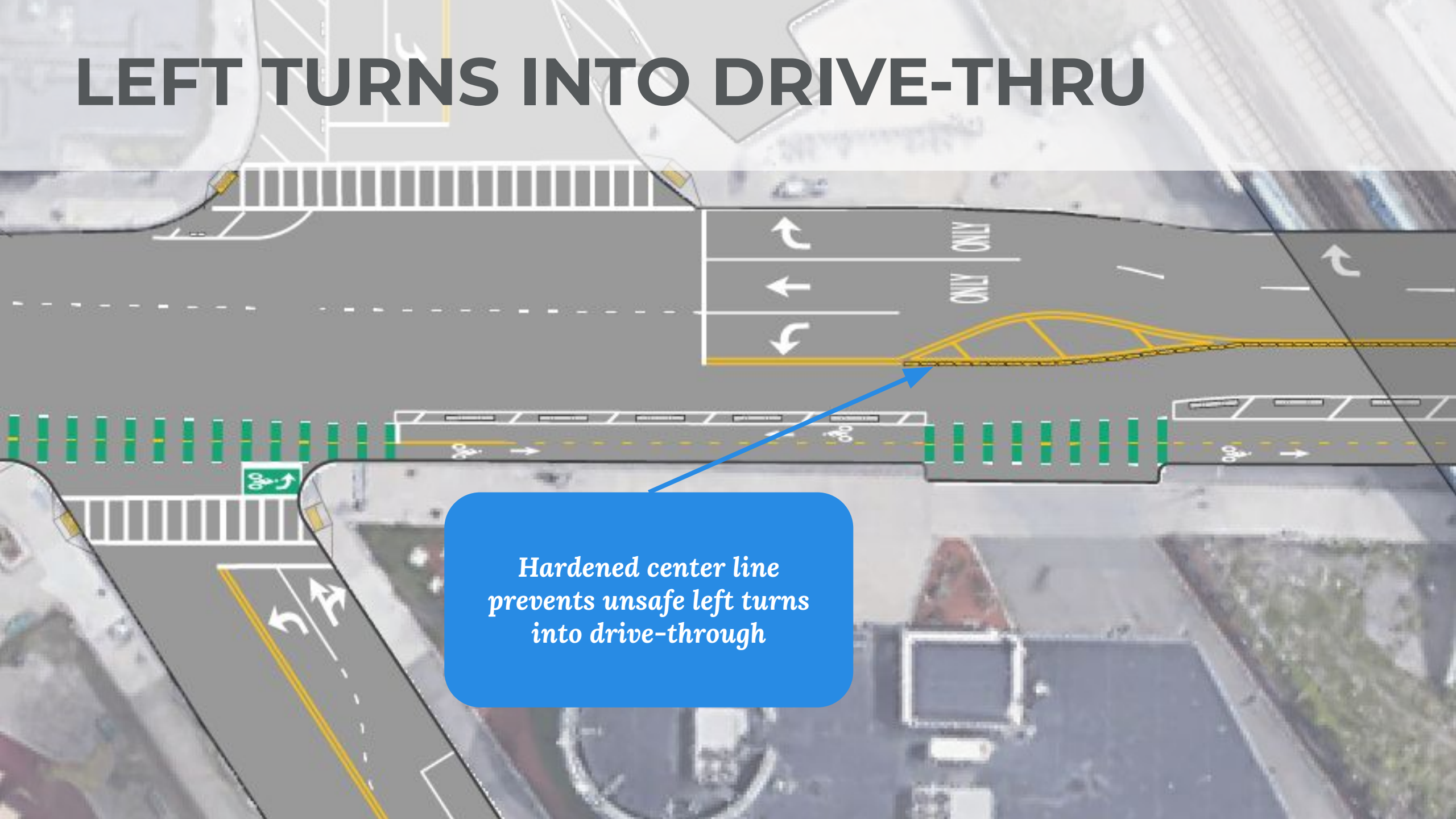
# LEFT TURNS INTO DRIVE-THRU



*This turn would remain dangerous in our design.*




# LEFT TURNS INTO DRIVE-THRU



*Hardened center line  
prevents unsafe left turns  
into drive-through*

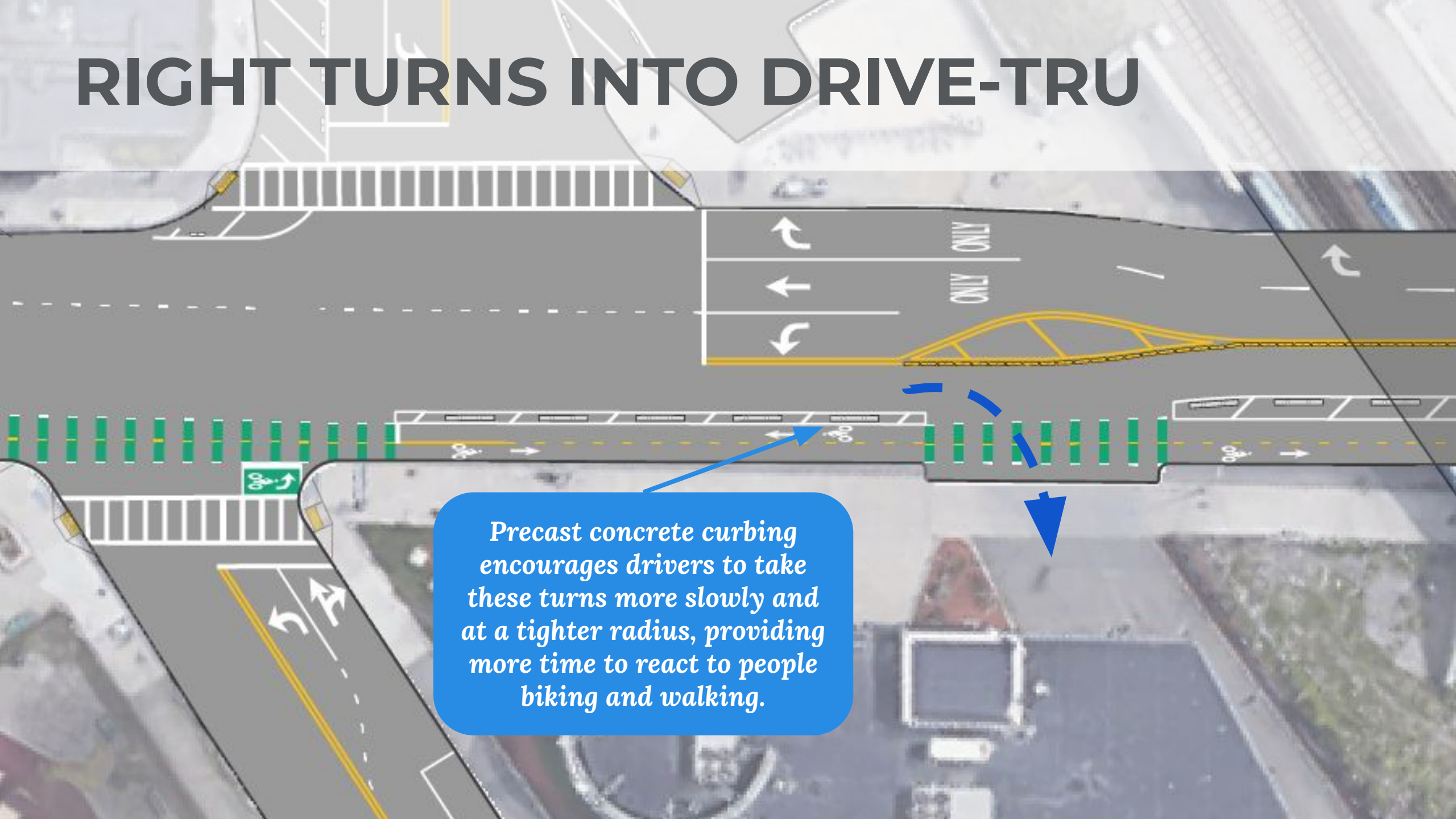
# RIGHT TURNS INTO DRIVE-THRU

An aerial photograph of a drive-thru intersection. A road with a yellow center line and white edge lines runs horizontally across the middle. A road with a white center line and white edge lines runs vertically on the left, crossing the horizontal road. A blue dashed arrow points from a blue callout box to the intersection. The callout box is a rounded rectangle with white text. The background shows a parking lot with several cars and some greenery.

*Right turns into the drive through were anticipated in the site's design. Drivers must look out for people biking and walking.*

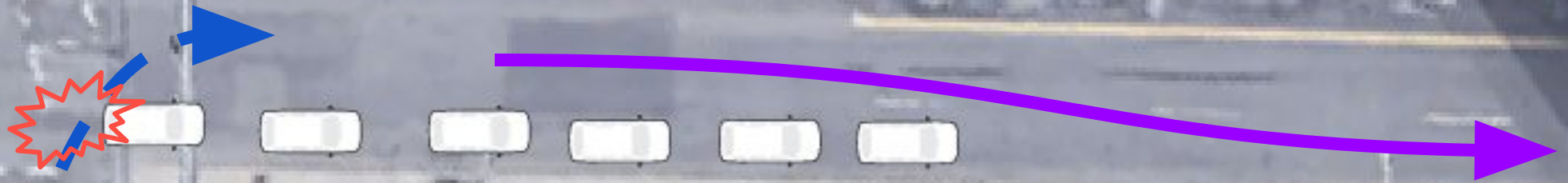


# RIGHT TURNS INTO DRIVE-TRU



*Precast concrete curbing encourages drivers to take these turns more slowly and at a tighter radius, providing more time to react to people biking and walking.*

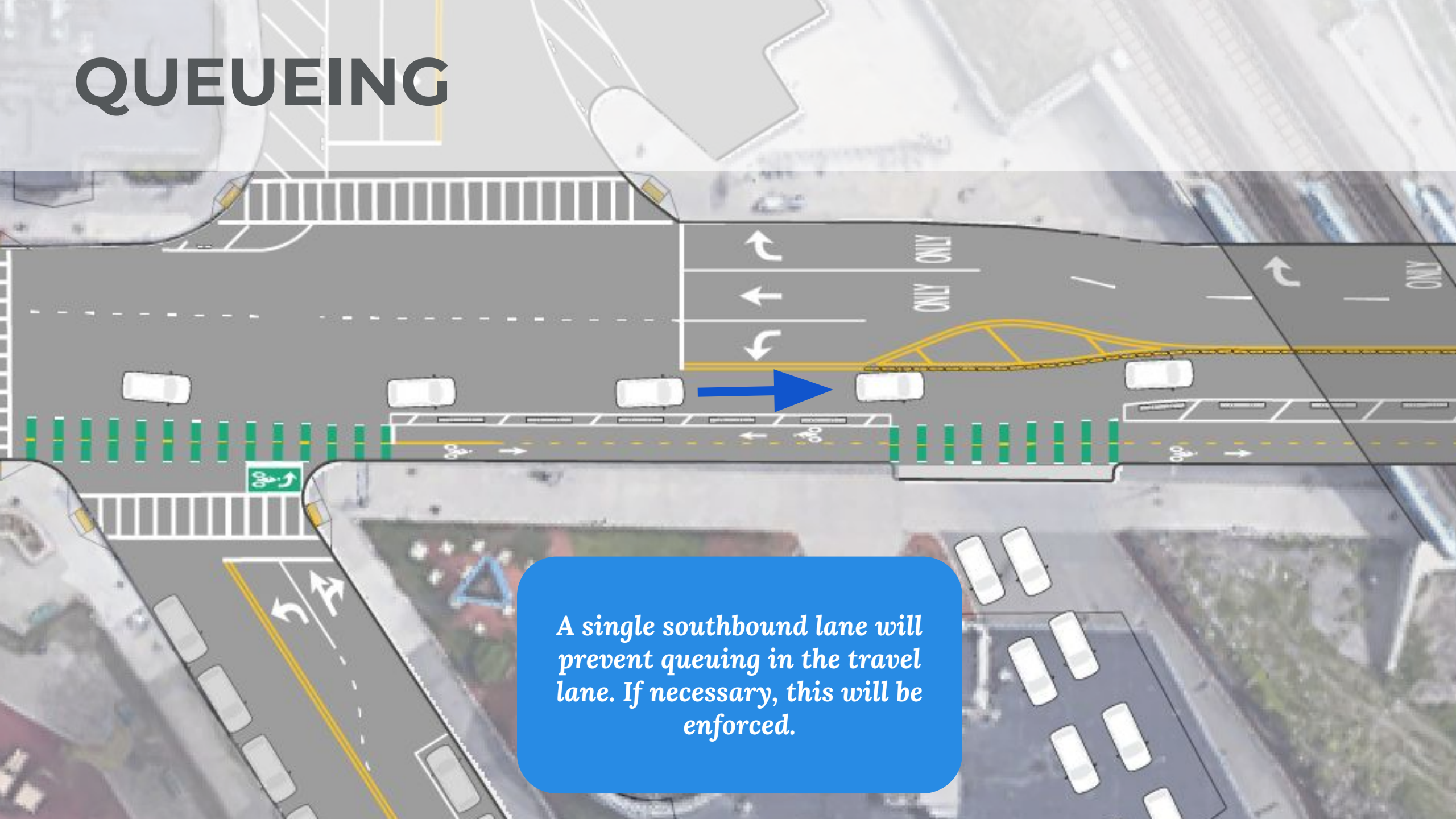
# QUEUEING



*When the drive-thru is busy, some drivers queue (and even park) on Mass Ave, rather than park in the branch lot or on the street. This is dangerous and illegal.*



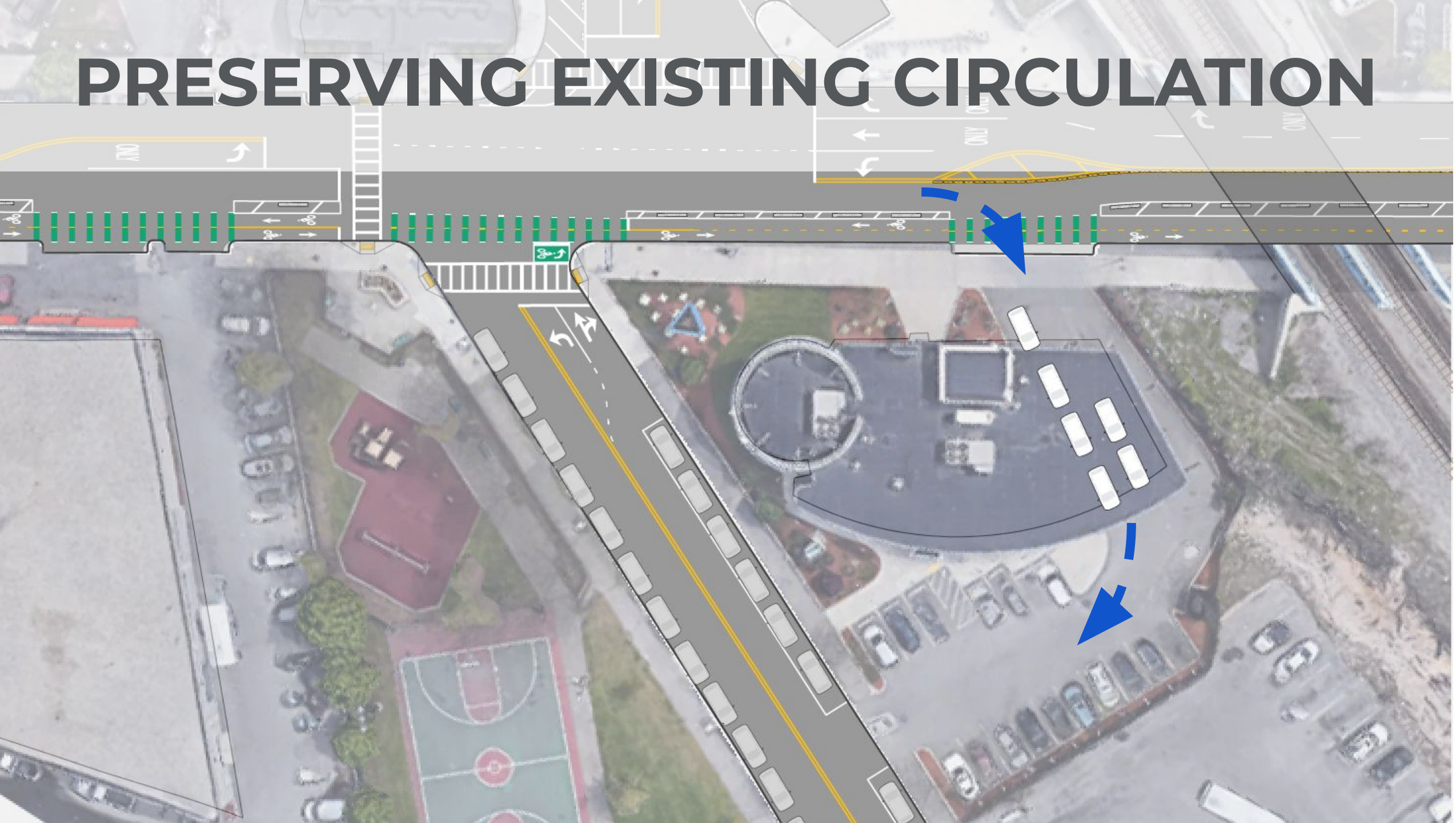
# QUEUEING



*A single southbound lane will prevent queuing in the travel lane. If necessary, this will be enforced.*

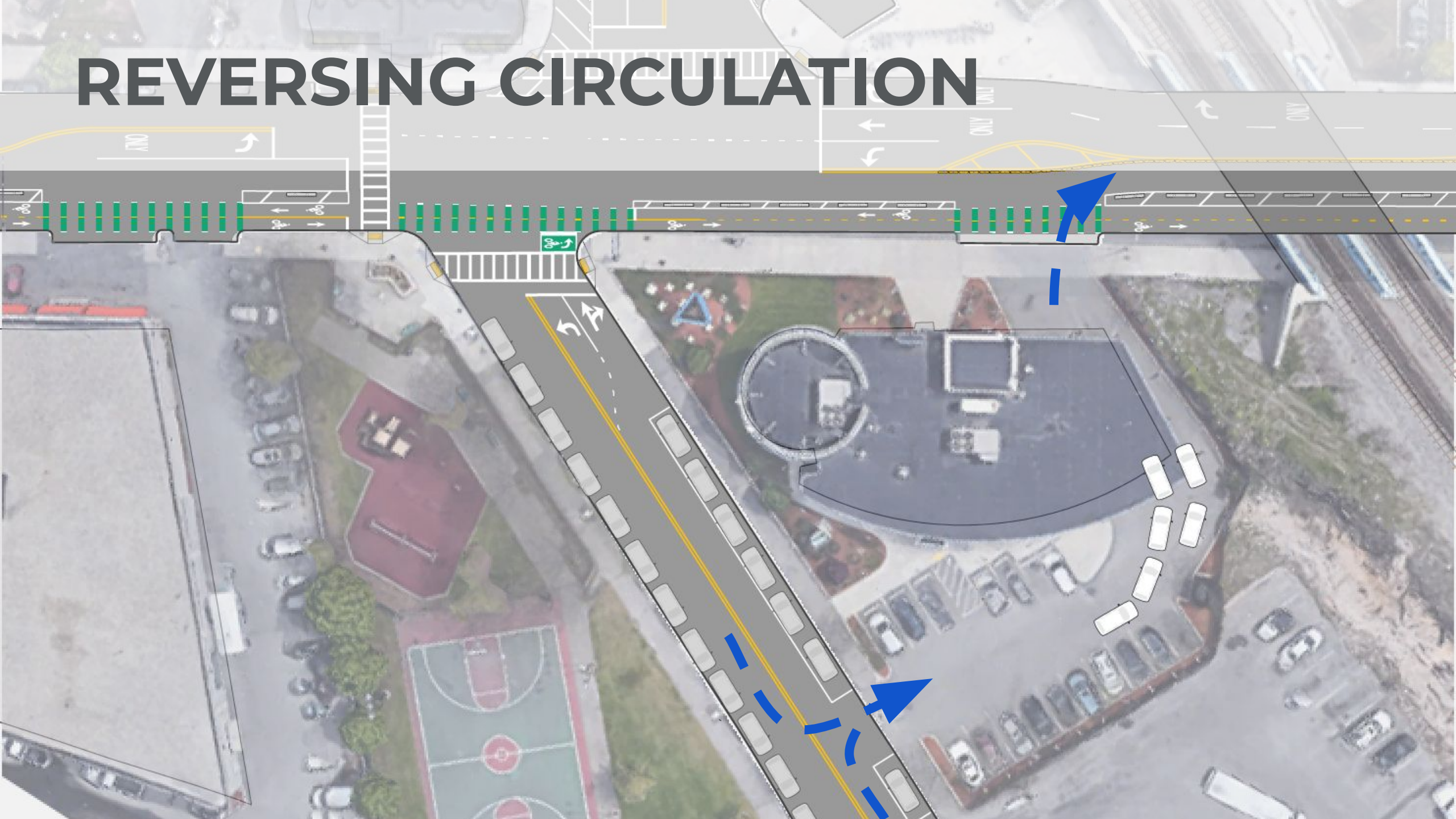


# PRESERVING EXISTING CIRCULATION





# REVERSING CIRCULATION



# REVERSING CIRCULATION

## POTENTIAL BENEFITS

- ▶ *Longer drive-thru queue possible during peak activity*
- ▶ *Easier access to drive-thru for patrons coming from Mass Ave northbound*
- ▶ *Access via Shirley Street allows patrons to avoid Shirley/Newmarket intersection*
- ▶ *Exit onto Mass Ave southbound allows patrons to avoid the Shirley/Newmarket intersection*
- ▶ *Patrons don't have to guess whether there will be a parking space available when deciding whether to use the drive-thru*

## POTENTIAL DRAWBACKS

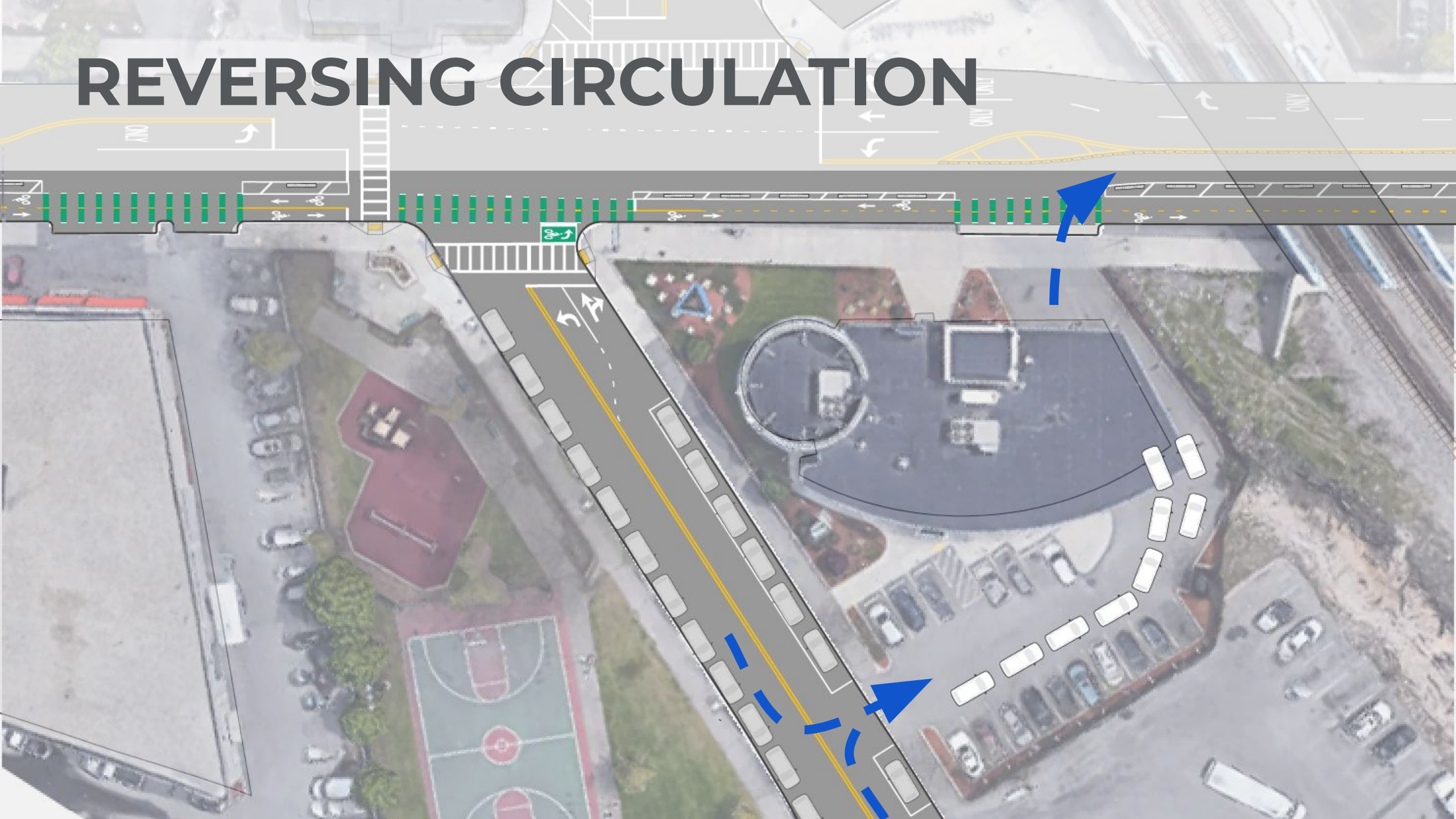
- ▶ *At peak periods, patrons leaving parking spaces may need to maneuver around vehicles waiting for the drive-thru in order to exit*
- ▶ *Patrons exiting the drive thru and wanting to head north must first head southbound on Mass Ave*

# DISCUSSION



**\*\*EXTRA SLIDES\*\***

# REVERSING CIRCULATION



# EXPLORATION OF OPTIONS



# CRITERIA FOR COMPARISON

## CRITERIA

## METRICS

- |   |   |
|---|---|
| 1. Ability of the design (lanes + signals) to process expected vehicles (by movement) | <ul style="list-style-type: none"><li>▶ Volume/Capacity (V/C)</li><li>▶ SimTraffic assessment</li></ul> |
| 2. Spill-back affecting other intersections   | <ul style="list-style-type: none"><li>▶ Queue length</li><li>▶ SimTraffic assessment</li></ul>          |
| 3. Ability of lanes to hold expected vehicles   | <ul style="list-style-type: none"><li>▶ Queue length</li><li>▶ SimTraffic assessment</li></ul>          |
| 4. Robustness to known inefficiencies   | <ul style="list-style-type: none"><li>▶ Separation of potentially conflicting movements</li></ul>       |

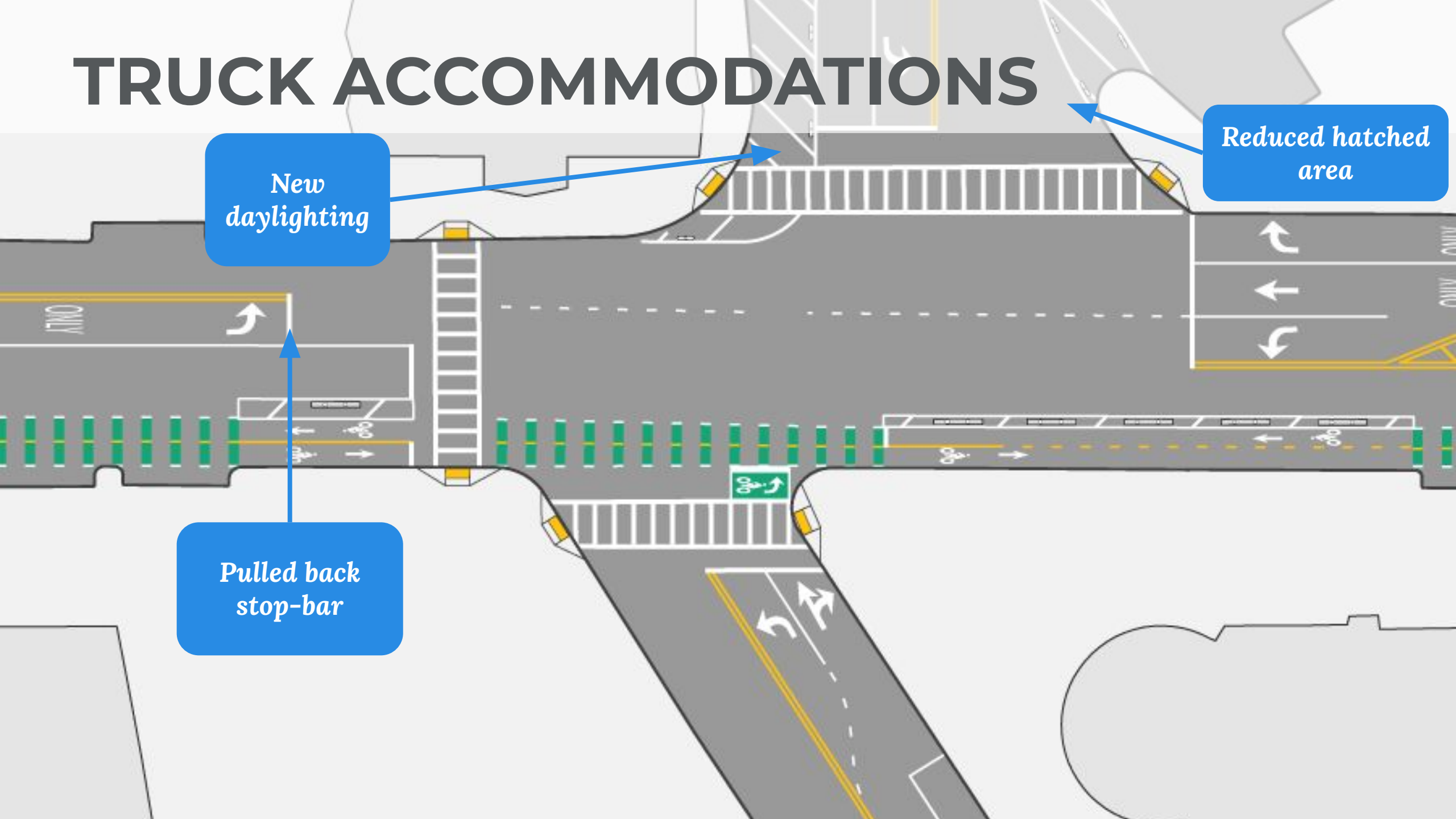
# OPTIONS THAT HELPED

# TRUCK ACCOMMODATIONS

New  
daylighting

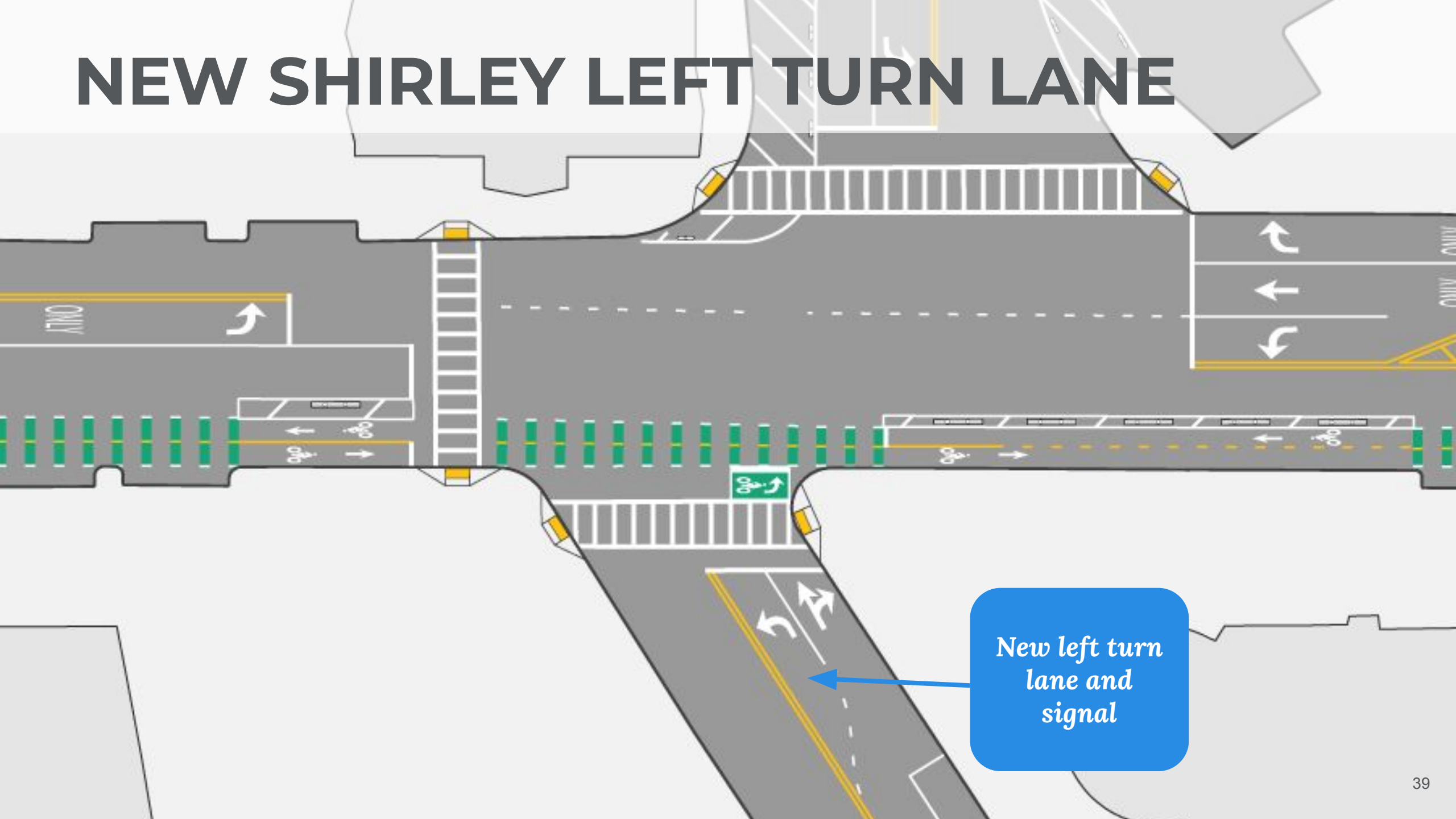
Reduced hatched  
area

Pulled back  
stop-bar



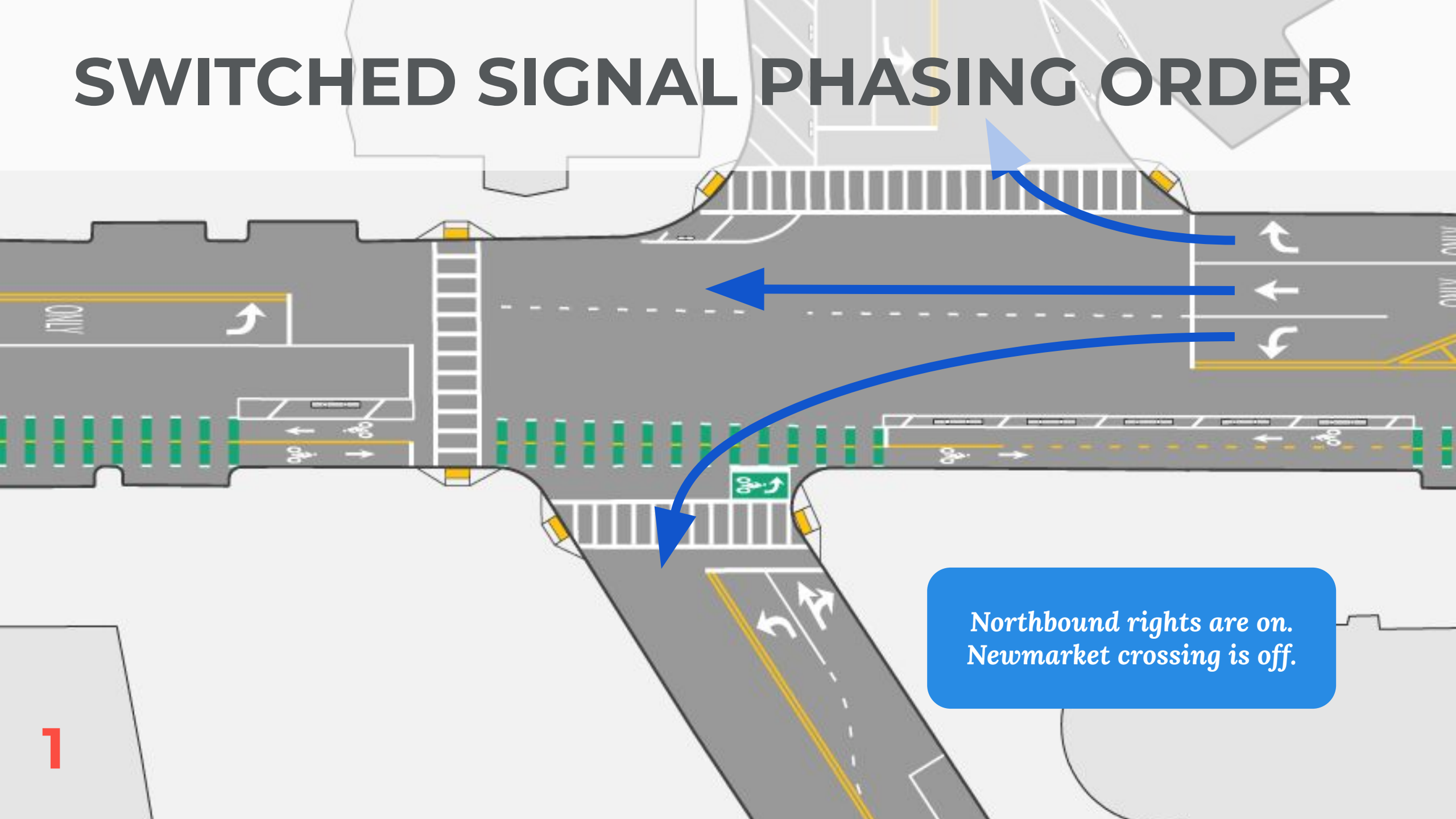


# NEW SHIRLEY LEFT TURN LANE



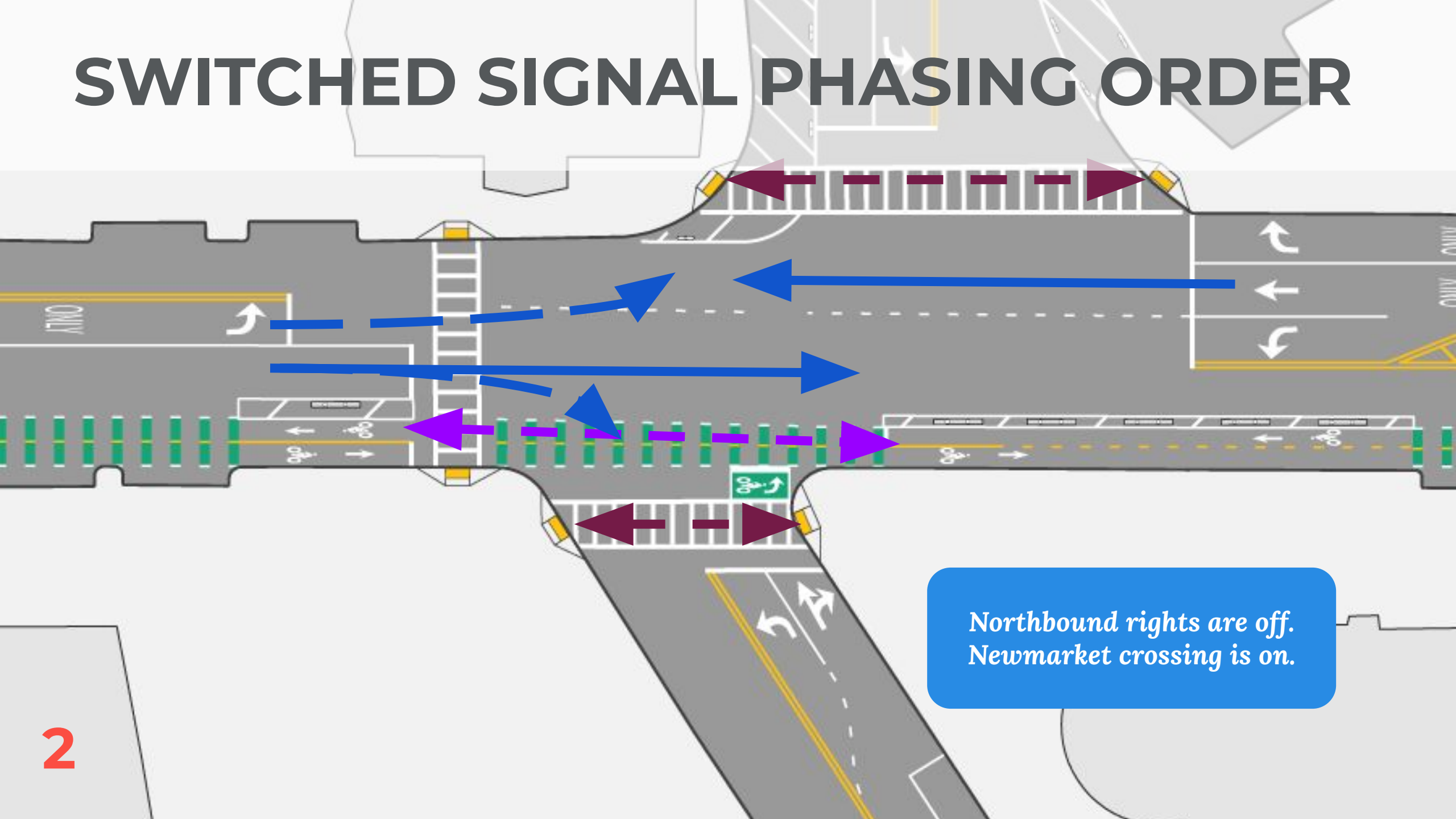
New left turn  
lane and  
signal

# SWITCHED SIGNAL PHASING ORDER



Northbound rights are on.  
Newmarket crossing is off.

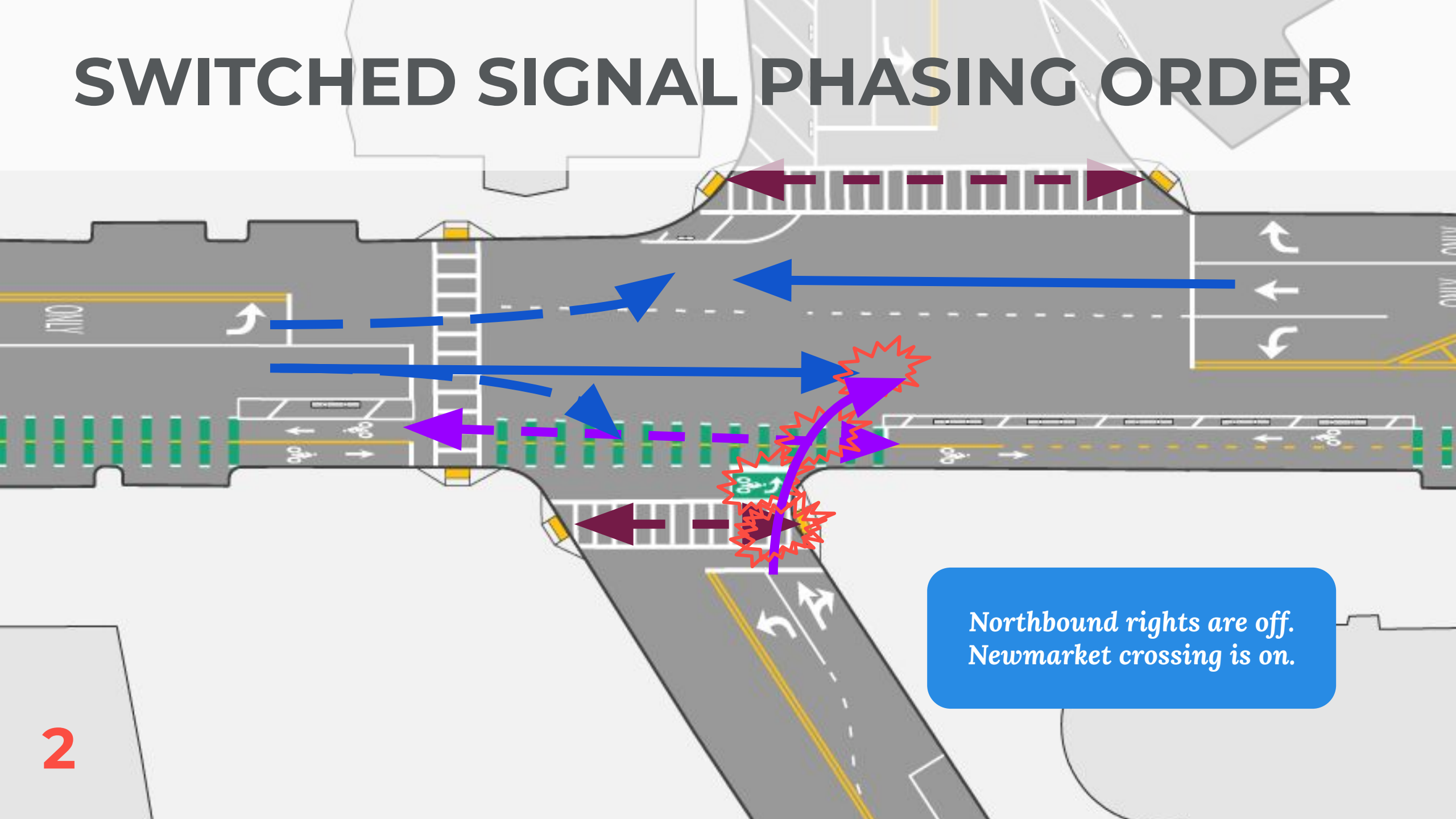
# SWITCHED SIGNAL PHASING ORDER



*Northbound rights are off.  
Newmarket crossing is on.*



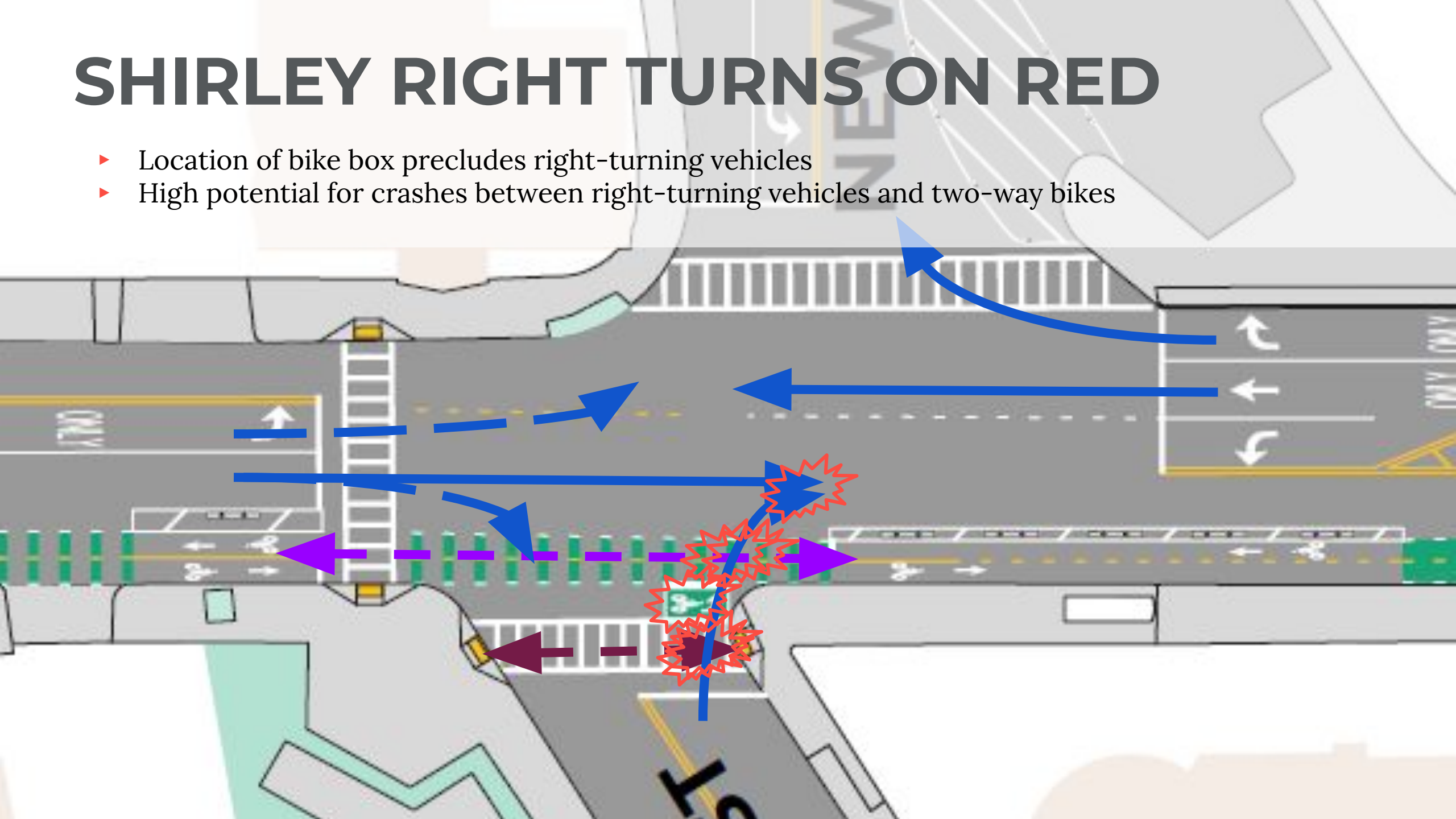
# SWITCHED SIGNAL PHASING ORDER



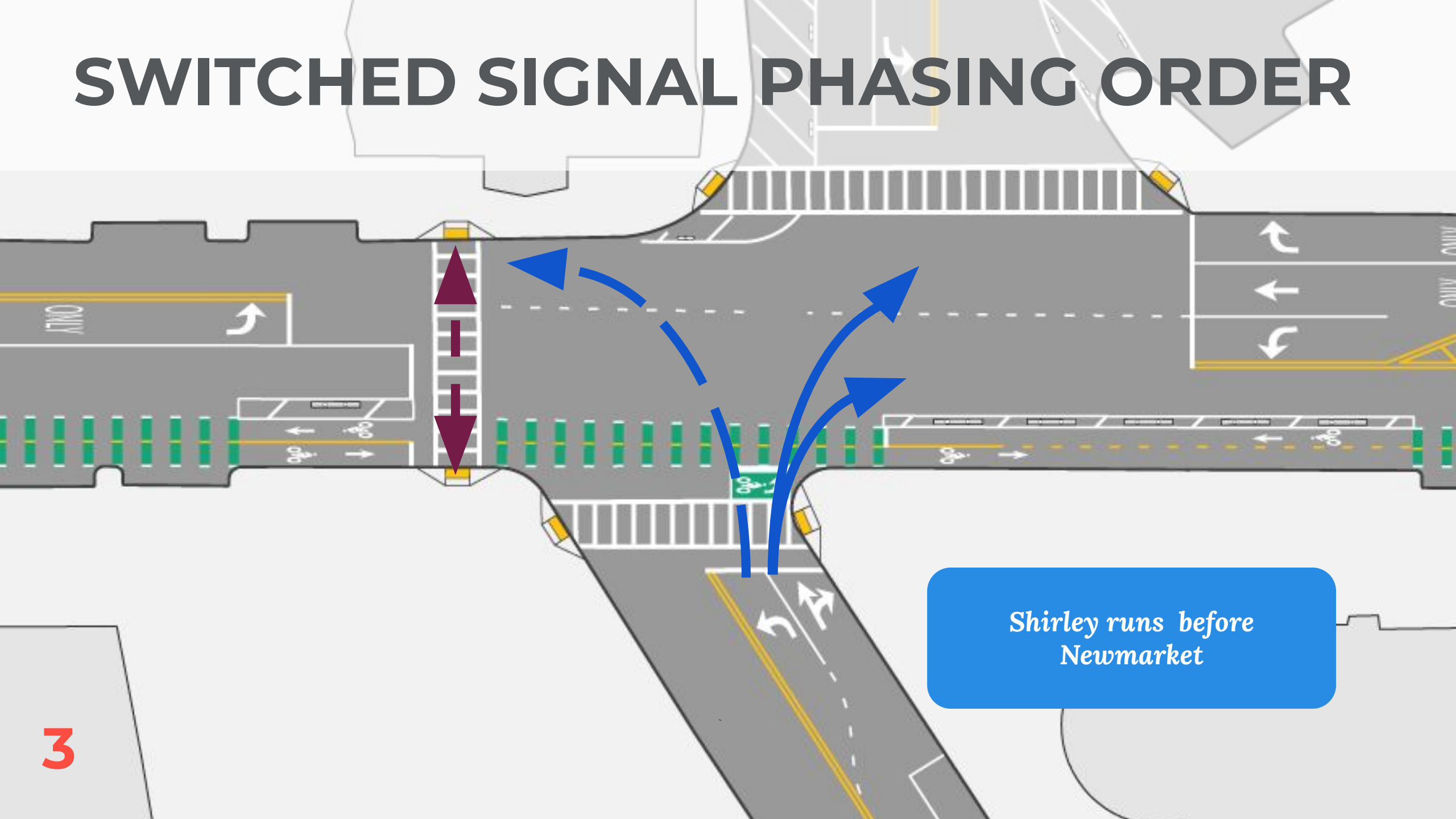
*Northbound rights are off.  
Newmarket crossing is on.*

# SHIRLEY RIGHT TURNS ON RED

- ▶ Location of bike box precludes right-turning vehicles
- ▶ High potential for crashes between right-turning vehicles and two-way bikes



# SWITCHED SIGNAL PHASING ORDER

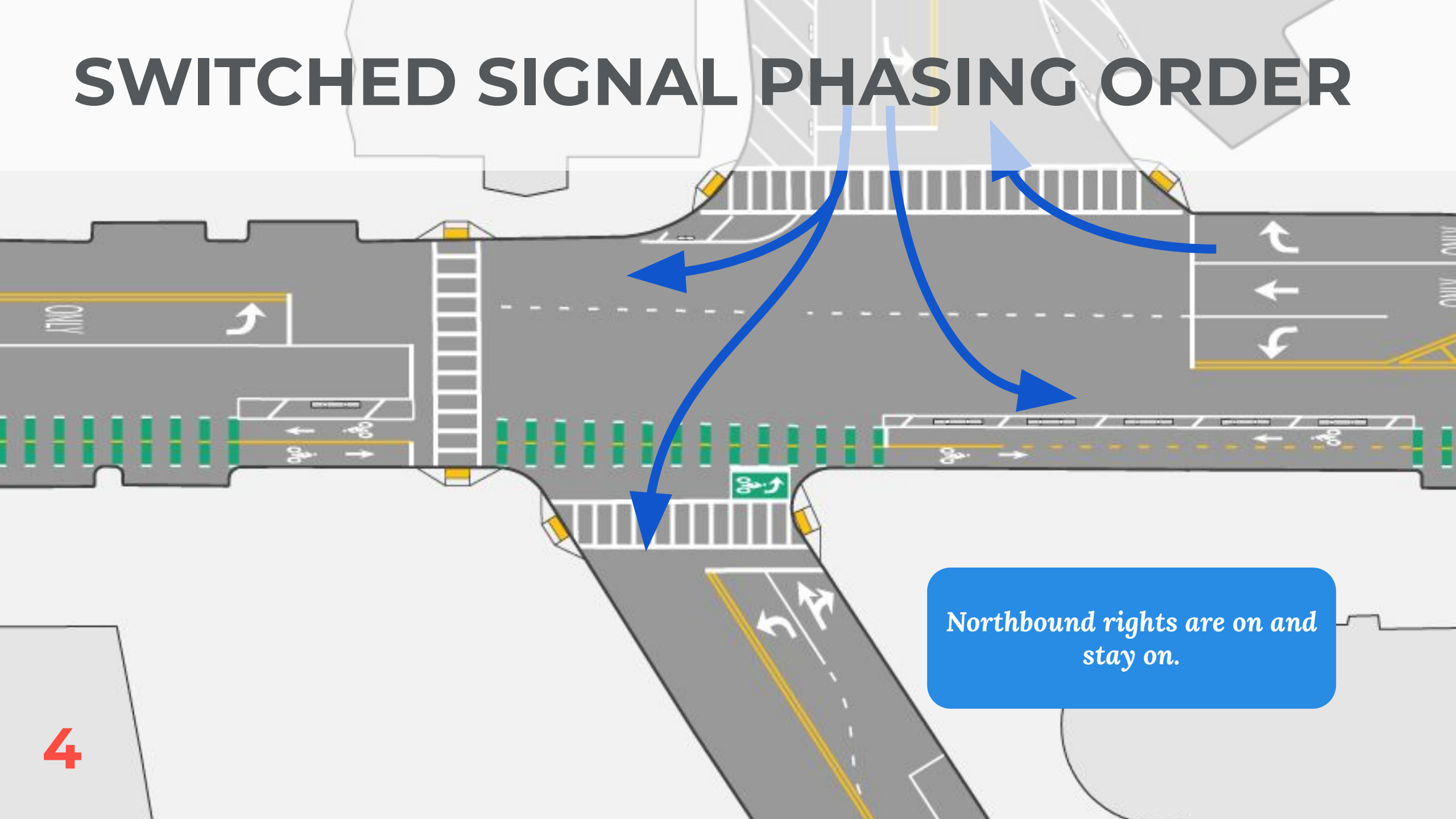


*Shirley runs before  
Newmarket*

3



# SWITCHED SIGNAL PHASING ORDER

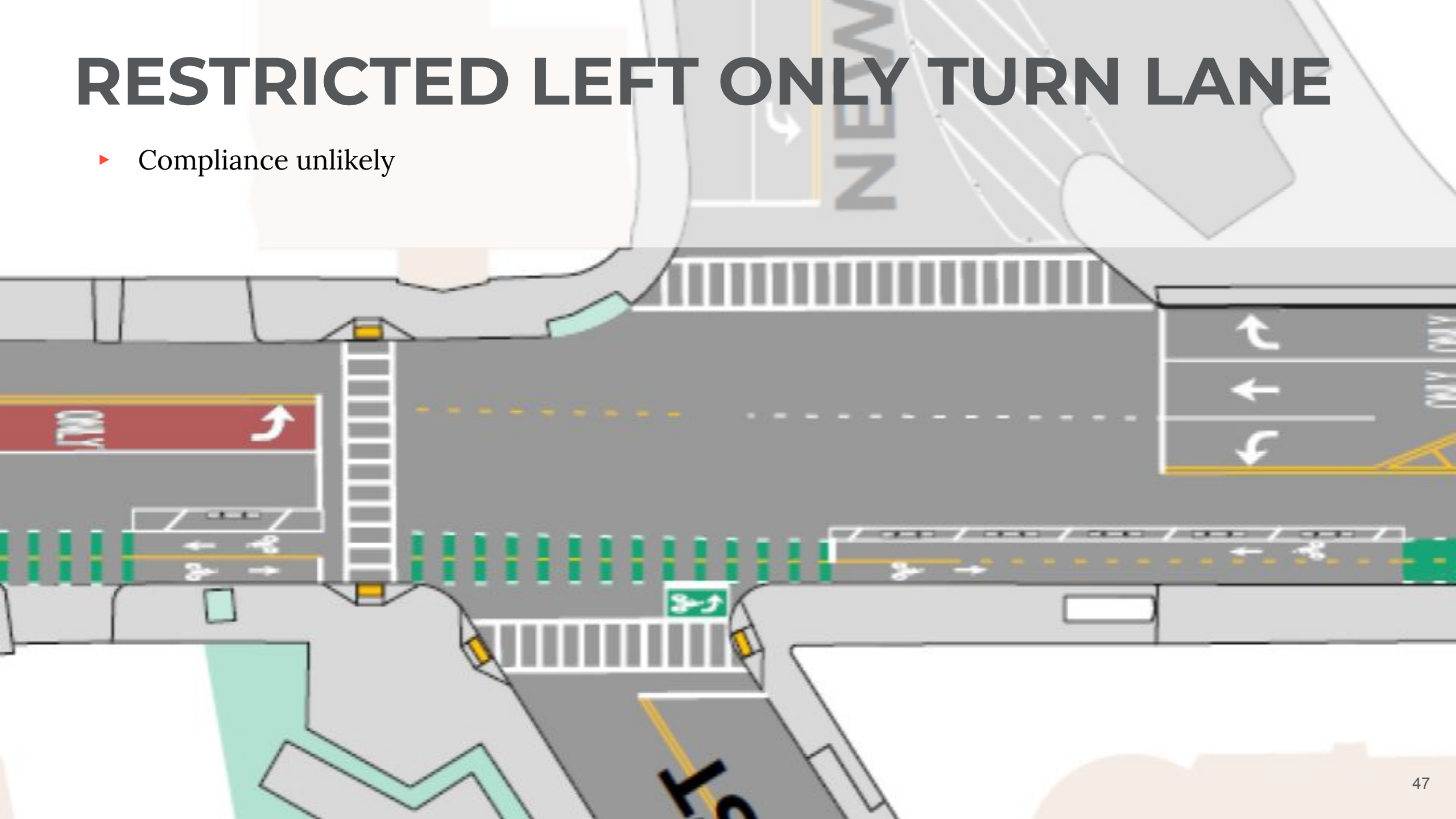


*Northbound rights are on and stay on.*

# OTHER OPTIONS WE LOOKED INTO

# RESTRICTED LEFT ONLY TURN LANE

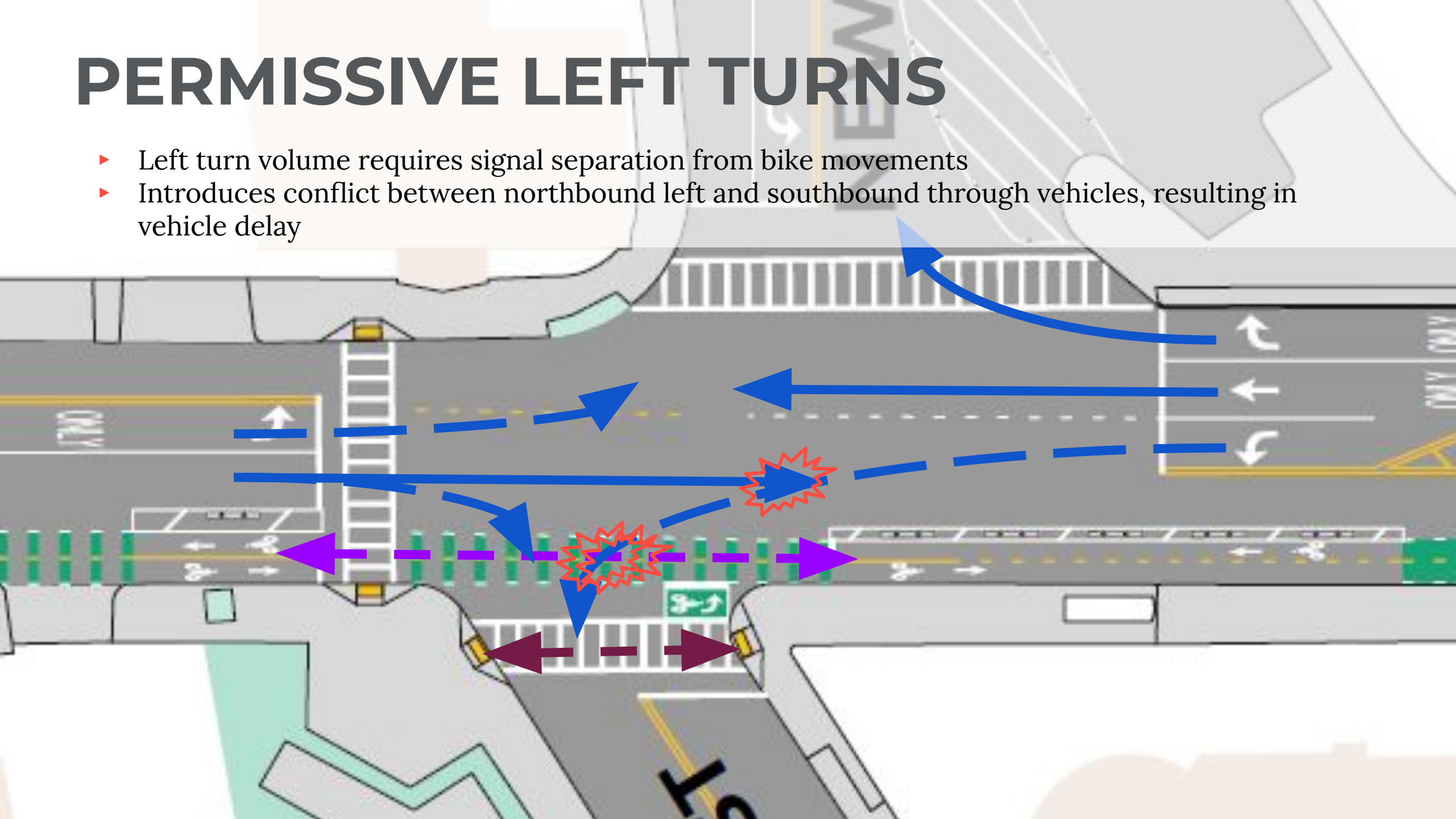
- ▶ Compliance unlikely





# PERMISSIVE LEFT TURNS

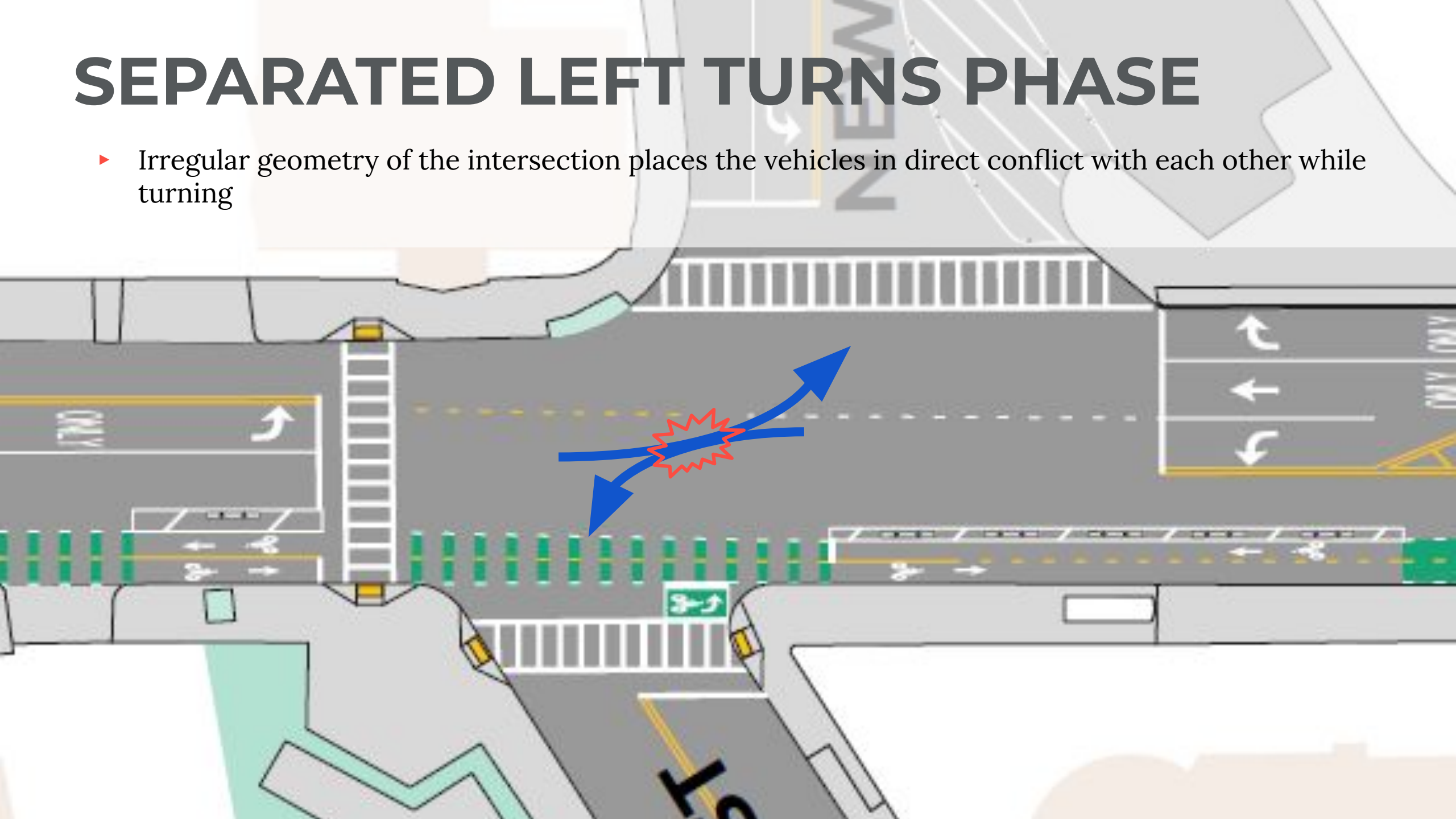
- ▶ Left turn volume requires signal separation from bike movements
- ▶ Introduces conflict between northbound left and southbound through vehicles, resulting in vehicle delay





# SEPARATED LEFT TURNS PHASE

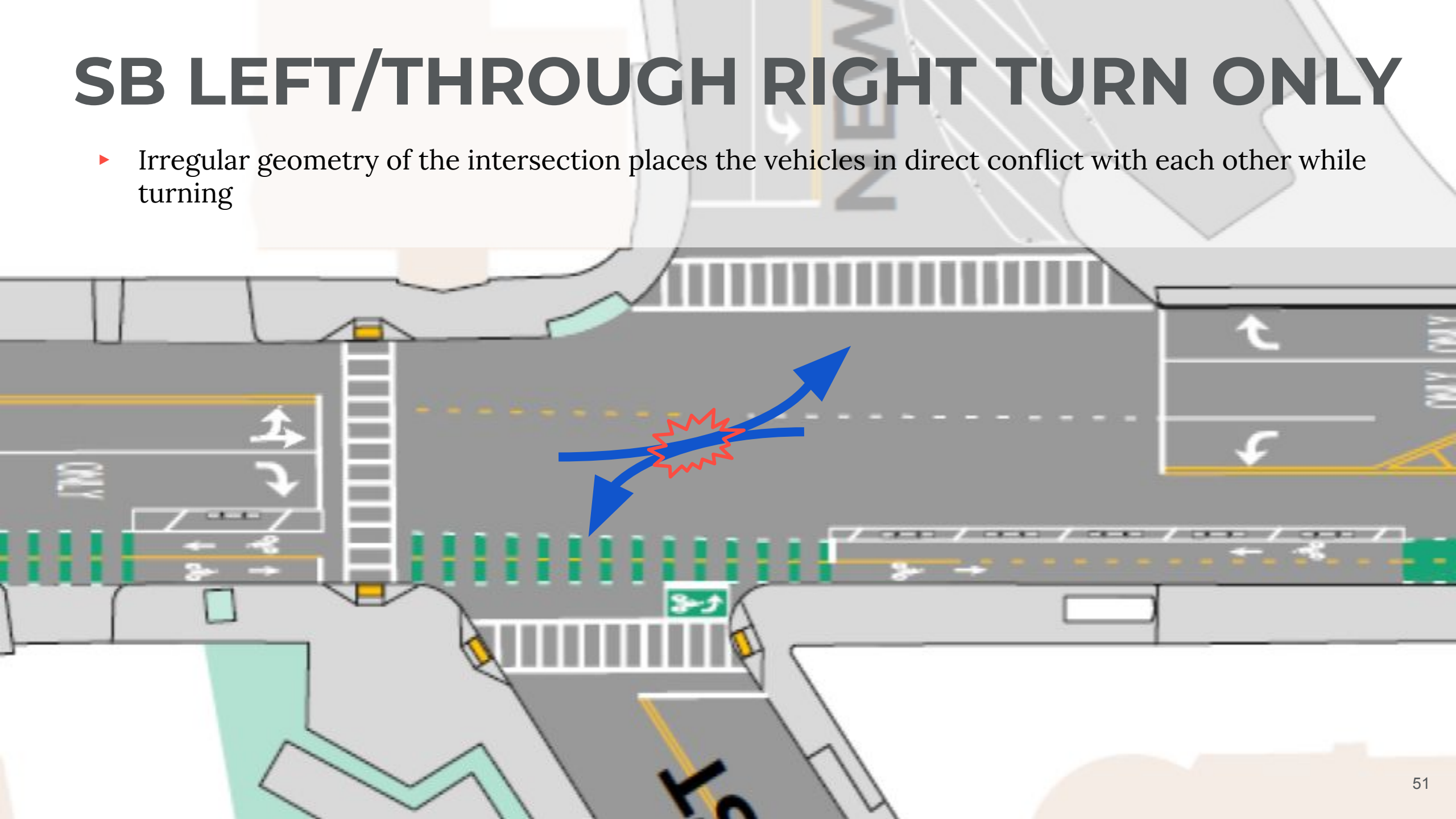
- ▶ Irregular geometry of the intersection places the vehicles in direct conflict with each other while turning





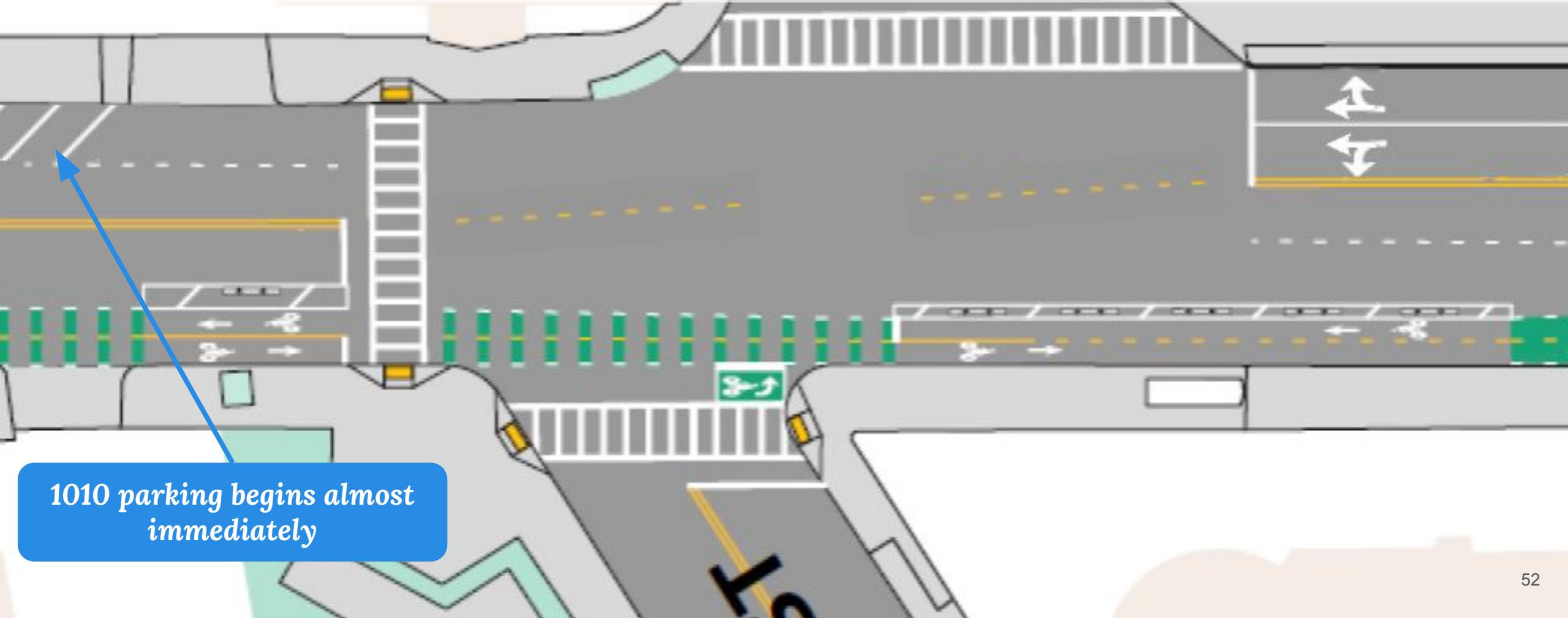
# SB LEFT/THROUGH RIGHT TURN ONLY

- ▶ Irregular geometry of the intersection places the vehicles in direct conflict with each other while turning



# NB THROUGH/LEFT THROUGH/RIGHT

- ▶ Northbound lefts block through vehicles
- ▶ Northbound through vehicles would have to merge immediately before 1010 parking
- ▶ Necessitates a full exclusive pedestrian phase



*1010 parking begins almost immediately*

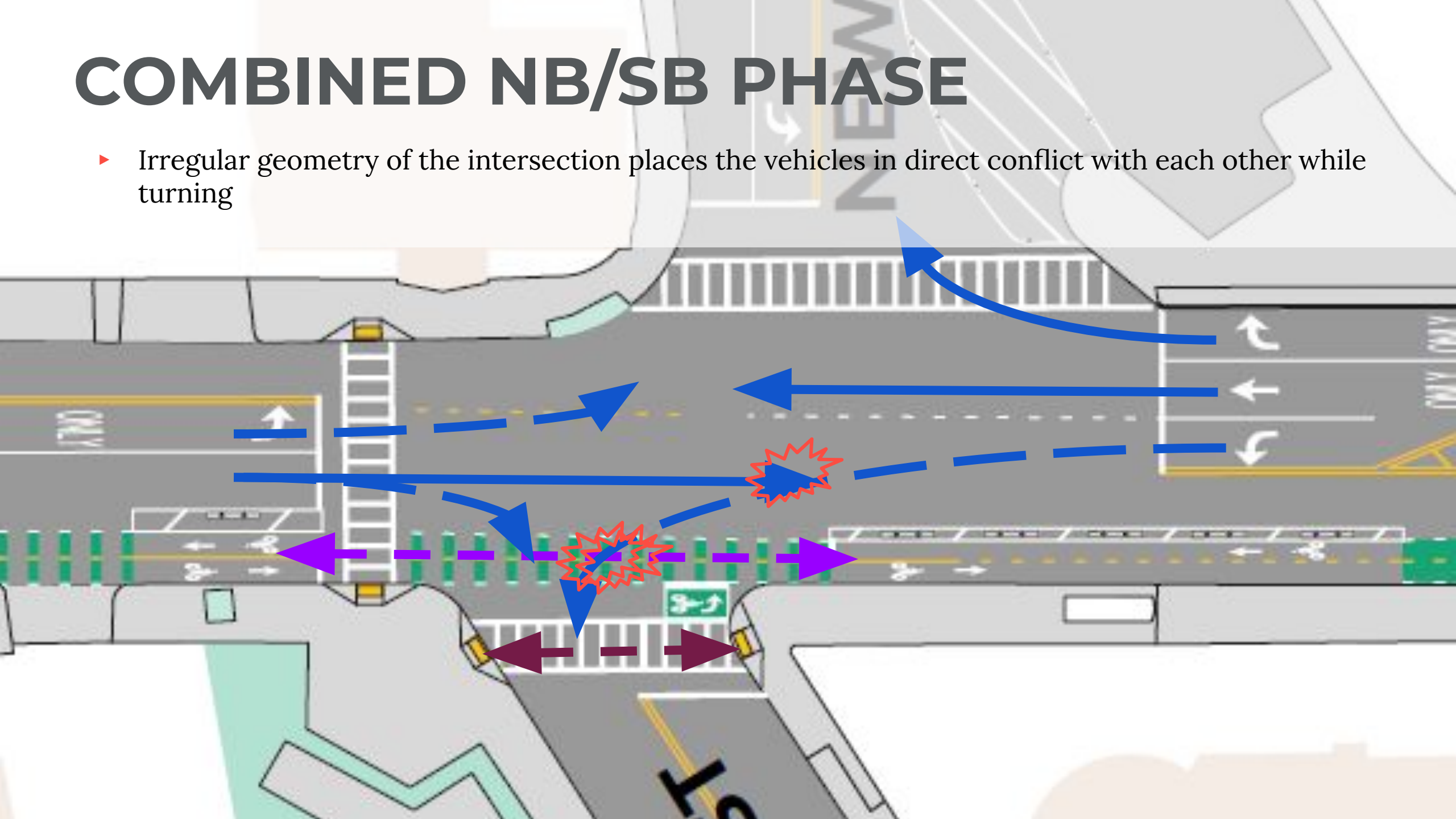






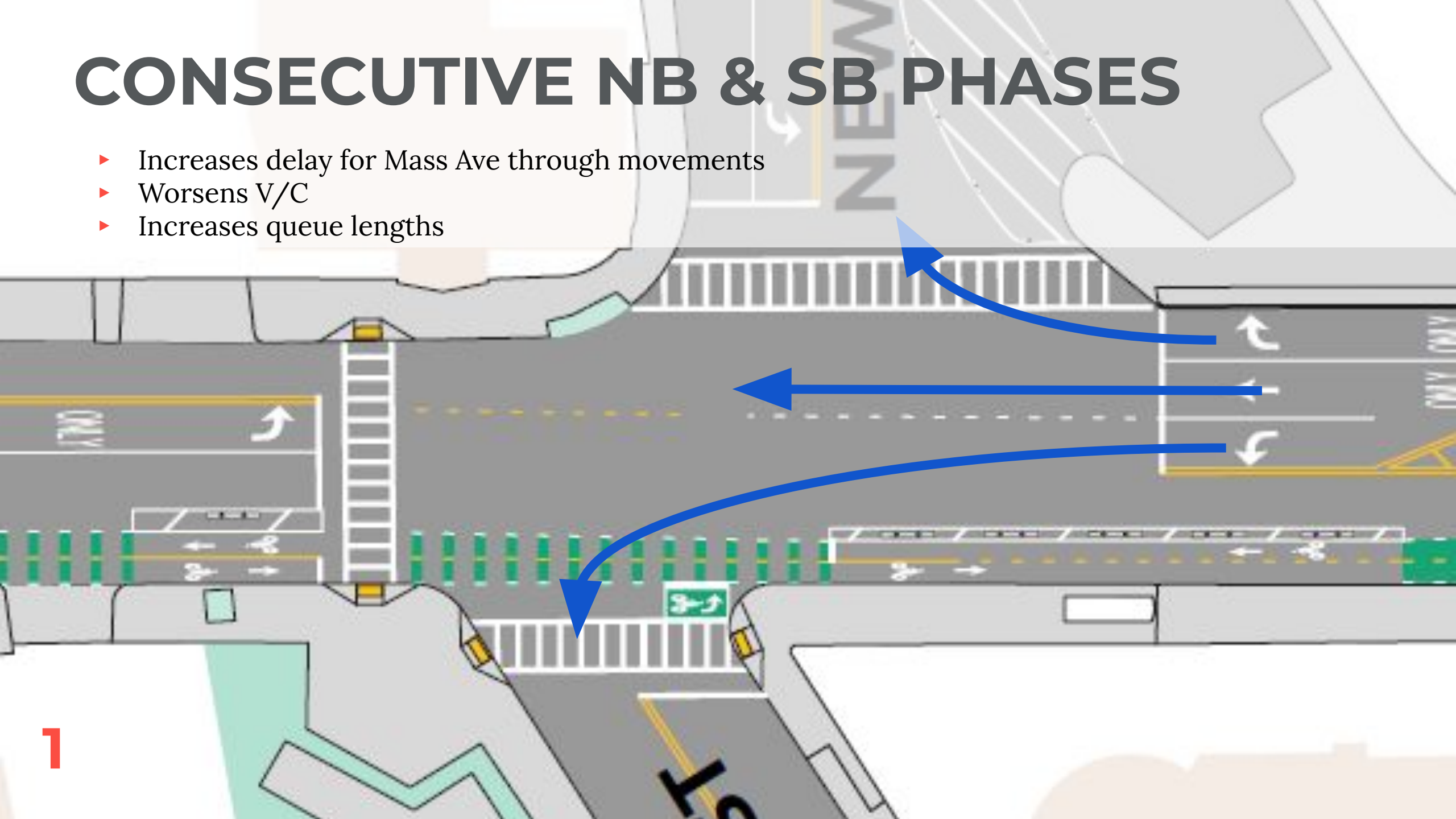
# COMBINED NB/SB PHASE

- ▶ Irregular geometry of the intersection places the vehicles in direct conflict with each other while turning



# CONSECUTIVE NB & SB PHASES

- ▶ Increases delay for Mass Ave through movements
- ▶ Worsens V/C
- ▶ Increases queue lengths



# CONSECUTIVE NB & SB PHASES

- ▶ Increases delay for Mass Ave through movements
- ▶ Worsens V/C
- ▶ Increases queue lengths

