


MEMORANDUM

No Turn on Red Regulations



DATE: July 7, 2023

TO: Streets Staff

FROM: Ricardo Olea, City Traffic Engineer 

SUBJECT: "No Turn on Red" regulations in San Francisco

This memorandum documents a new guidance that will expand the use of "No Turn on Red" regulations in San Francisco.

Background prior to 2019

Since the 1930's it has been legal to make a right turn on red in California after coming to a complete stop and yielding to all cross vehicular and pedestrian traffic. While the 1970's energy crisis led to policies that legalized no turns on red in the United States, elsewhere the practice has remained less common. Right turns on red are illegal unless allowed by signs in most of Europe, Asia, and South America. In the United States New York City is the only major American city where turns on red are illegal at all signals unless allowed by signs.

After the 1970's "No Turn on Red" policies continued to be debated by policymakers and transportation professionals. Studies in the 1980's suggested that adoption of legal turns on red in states that had not had it prior to the 1970's led to increases in right turn crashes. Some criticized those studies as not accounting for people needing time to adjust to the new rules and cities needing time to ban turns on red where it was less safe to do so. In 1994 the National Highway Traffic Safety Administration stated that "there are a relatively small number of deaths and injuries each year caused by RTOR [Right Turn on Red] crashes." Safety advocates nevertheless continued to believe that right turns on red could pose a problem for pedestrians. The Federal Highway Administration summarized the concerns with turns on red as follows:

"While the law requires motorists to come to a full stop and yield to cross street traffic and pedestrians prior to turning right on red, many motorists do not fully comply with the regulations. Motorists are so intent on looking for traffic approaching on their left that they may not be alert to pedestrians on their right. In addition motorists usually pull up into the crosswalk to wait for a gap in traffic, blocking pedestrian crossing movements. In some instances, motorists simply do not come to a full stop."

Following a rise in San Francisco pedestrian fatalities in 2000, then Supervisor Mabel Teng requested that the Department of Parking and Traffic conduct a study of No Turns on Red expansion. The study was led by then

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City Traffic Engineer Bond Yee and Senior Engineer Jack Fleck and was published in 2002 by the Journal of the Institute of Transportation Engineers. Based on analysis of a sample of San Francisco collisions and past studies Yee and Fleck argued that:

- Crashes involving vehicles turning on red made up a small percentage of reported collisions, “well under 1 percent.”
- Banning turns on red could increase the number of right turns on green, which data indicated was a more common source of pedestrian crashes, thereby potentially reducing pedestrian safety.
- California’s approach of banning right turns on red on a case-by-case basis was “sound” and “reduces unnecessary delay and frustration to motorists and transit riders.”

2020 SFMTA and Department of Public Health Turns on Red Study

In 2019-20 SFMTA and Department of Public Health conducted an extensive study of all 2014-2018 crash reports where a right or one-way left turn was made at a signal. Detailed review of 755 police collision reports revealed ambiguities in the state of the signals, violation coding errors, and collision patterns that a higher-level summary review of data would miss. The main results of the unpublished study:

1. Of the injury crashes in the time period (15,979) a total of 755 or 5 percent were eligible to be studied due to a reported signal right turn or legal left turn at the intersection of two one-way streets (which can also be made on red).
2. Of the 755 eligible turn crashes, 129 were turns on red or made when the light had just turned from red to green. The 129 crashes were slightly less than 1 percent of the total number of injury crashes in the city, similar to the findings by the Yee and Fleck study.
3. Of the 755 eligible turn crashes, 344 were turning on green, or about twice the number of crashes made on red, with the remaining crashes excluded as ambiguous or not meeting study criteria.
4. Of the 755 eligible turn crashes, 447 or 60 percent involved pedestrians.
5. Of the 129 turn on red crashes, 103 or 80 percent involved pedestrians.
6. The 103 crashes constituted about 2.5 percent of citywide pedestrian crashes.
7. About 5 percent of all signalized pedestrian crossing crashes involved turns on red.
8. All of the pedestrian no turn on red crashes happened within 1,000 feet of the High Injury Network at that time (2017 version).

While the 2020 study to some degree confirmed that turns on red are overall a small percentage of injury crashes even in a pedestrian-oriented city like San Francisco, they nevertheless constituted a significant enough percentage of pedestrian crashes at traffic signals. The study confirmed that right turns on green are a pedestrian safety concern as well, providing further support for the Agency’s already widespread adoption of leading pedestrian signal intervals. Analysis of detailed crash patterns suggested that recommendations to restrict turns on red at leading pedestrian intervals themselves had merit. Finally, even if close calls or blocked crosswalks due to vehicular turns on red did not always lead to injury crashes, they degraded the walking environment and the priority that pedestrians should have when crossing a street.

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2021 Tenderloin No Turn on Red Areawide Ban

In the Fall of 2021 the SFMTA implemented a ban of all turns on red at 50 intersections in the Tenderloin neighborhood, historically an area of concentrated pedestrian activity and the heart of the city's High Injury Network. Analysis following the changes indicated that these had been successful, at least in the pedestrian-heavy context of the Tenderloin:

1. 92 percent of drivers were complying with the regulations despite little or no enforcement
2. Vehicle blockage of crosswalks was reduced by 70 percent, one of the goals of the project (increasing walkability and pedestrian comfort)
3. No significant increase in close calls or decreased yielding during the green light.

Preliminary crash analysis indicates that right turn vehicle-pedestrian collisions at traffic signals decreased in the Tenderloin in 2022 compared to 2021, not supporting the prior concerns by the Yee and Fleck study that reducing right turns on red could increase crashes from right turns on green.

The positive reception to the Tenderloin expansion project and the 2020 study led SFMTA staff to recommend further expansion of turns on red in the downtown in 2022, obtaining funding in 2023. In 2024 the SFMTA will begin implementation of a state grant (HSIP) that will allow the installation of hundreds of new "No Turn on Red" signs in Union Square, the Financial District, parts of South of Market, and Chinatown.

Recommendations by Other Cities

Since 2022 other major cities with pedestrian densities comparable to San Francisco's have issues revised policies expanding restrictions on turns on red.

1. Washington DC conducted a study of 100 intersections and concluded that "No Turns on Red" signs "decreased overall conflicts between pedestrians and vehicles" with "overall minor impacts to traffic operations." Their City Council is now considering banning all turns on red starting in 2025.¹
2. Seattle adopted a new policy in March of 2023 to establish "broad use" of "No Turn on Red" restrictions. Seattle's approach will be to make turns on red the default signal operation unless review indicates an exception should be made. Like San Francisco Seattle plans to start their expansion downtown and then proceed to other locations as resources and projects allow.²
3. Boston announced in May of 2023 a "Safety Surge" program that included an expanded use of "No Turn on Red" regulations. Their engineering directive prioritizes the changes as follows:

¹ "Analysis of Expanding No Turn on Red Operations in Washington, DC, USA," Journal of the Institute of Transportation Engineers, [May 2022 \(vgsclib.com\)](https://www.vgsclib.com)

² "SDOT Policy for No Turn on Red," March 2, 2023. <https://seattle.gov/documents/Departments/SDOT/SDOT%20Policy%20-%20No%20turn%20on%20red%20signs%20-%20Final%20-%20signed.pdf>

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- a. “In locations that meet the criteria listed in Section 2B.54 of the MUTCD.
- b. In the Downtown Area 1, Main Street Districts 2, and Neighborhood Business Districts.
- c. Where exclusive or protected pedestrian phases are implemented, including Leading Pedestrian Interval (LPI) and Leading Through Interval (also called Delayed Turn – please see Pedestrian Protection from Right Turns section).
- d. On approaches whose right turn movement crosses a shared use path (SUP) or separated bike lane (SBL). This restriction applies both to right turns whose approach crosses a SUP/SBL and to right turns whose departure crosses a SUP/SBL.
- e. At intersections near schools, senior citizen facilities, parks, recreational areas, playgrounds, libraries, mass transit stations or stops, hospitals, or other significant pedestrian generating facilities.”³

Should Turns on Red Be Limited Citywide?

At this time SFMTA staff does not recommend establishing a citywide ban on turns on red. Under existing California law turns on red would continue to remain legal unless signed, thereby any citywide approach would require the posting of signs at each of the approaches to the San Francisco’s over 1,300 traffic signals. For now we believe city resources are better spent expanding “No Turn on Red” restrictions to areas like downtown and neighborhood commercial districts that historically have the highest number of turning vehicles and pedestrians and would therefore benefit the most from new no turn on red restrictions. Given limited traffic enforcement resources the City also needs to ensure that the public intuitively understands the rationale for these regulations so that there is voluntary compliance. “No Turn on Red” signs posted where pedestrian volumes are low or there are no documented safety conflicts could potentially have poorer compliance and lower the respect paid to all these signs in general.

Proactive No Turn on Red Program

As part of its ongoing street safety projects SFMTA will programmatically expand the use of “No Turn on Red” regulations to areas that:

1. Have a high concentration of pedestrians during most of the day, following the findings of the 2020 NTOR study and Tenderloin expansion study. Examples of high pedestrian activity areas include Downtown, areas designated as business districts, 20 MPH business district streets posted under AB 43, and other land uses that generate high pedestrian activity. High concentration of pedestrians means that during any typical daytime hour there would be at least one or more pedestrians crossing at any crosswalk during each signal cycle.

³ Boston Transportation Department Signals Operations Design Policy, May 2023. [BTD Signal Policy 03/24/2023 DRAFT \(boston.gov\)](#)

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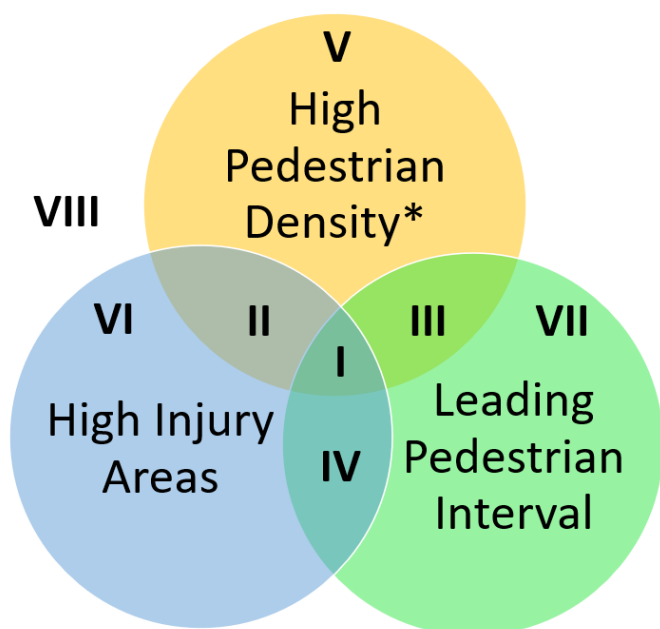
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2. Are on or adjacent to the current High Injury Network (HIN) or a high crash location for pedestrians, following the findings of the 2020 safety study that showed this is where all pedestrian turn on red crashes occur. However, since not all streets that are part of the High Injury Network have high concentration of pedestrian activity, a signal being in the latest HIN by itself should not automatically result in a “No Turn on Red” recommendation.
3. Consider whether there is a leading pedestrian leading interval (LPI), following recommendations in the professional literature and the 2020 NTOR study that suggest LPIs work better accompanied by “No Turn on Red” regulations. However, since LPI’s are now installed as a default signal parameter without regard to pedestrian activity, the mere addition of an LPI at a low pedestrian volume crosswalk should not automatically result in a “No Turn on Red” recommendation.

Prioritization

Because there are multiple factors listed above and hundreds of affected locations, SFMTA has developed this conceptual diagram to prioritize which locations will be signed first. Locations that have all three factors listed above, such as was the case with the Tenderloin and is the case with Downtown, will be upgraded first. Locations that have factors 1 and 2, or factors 1 and 3, will be part of a secondary priority review. Remaining signal approaches that only have factors 2 and 3, one, or none of these three factors will be continued to be reviewed on a case-by-case basis using engineering judgement and the general criteria in references such as the California Manual on Uniform Traffic Control Devices or the NACTO Urban Bicycle Design Guide.



Current Proactive Expansion
Section I Signalized Approaches

Future Study Areas
Sections II and III

Review Site Case by Case
Sections IV, V, VI, VII, and VIII

- * Indicators of high pedestrian activity include:
- Land uses that generate significant pedestrian traffic
 - Downtown, business or commercial districts