

DATE: August 29, 2023
TO: Mayor and Council
FROM: Jeff Bauman, City Traffic Engineer
SUBJECT: Walk by Default – Citizens Petition – September 5, 2023, Work Session

Traffic Signals alternatively assign exclusive and concurrent right of way for pedestrians, bikes, and vehicles. Assigning right of way is a balance of safety and efficiency for all users of all modes. Traffic signals must serve both operational efficiency and safety based on site specific conditions. The Manual on Uniform Traffic Control Devices provides the framework for how traffic signals are designed, constructed, and operated to achieve safety and efficiency for all users.

Traffic signals historically did not have pedestrian, bicycle or vehicle detection and were controlled by very primitive machines that ran a 'fixed time' type of control. No matter the user demand or time of day the traffic signal displayed the same order and duration of Green/Yellow/Red and Walk/Don't Walk indications. The era of fixed time control has long passed. A form of this is still used very sparingly in urbanized downtown grids, like the downtown core of Flagstaff.

At the five City operated downtown Flagstaff traffic signals fixed time traffic signal operations are still in place, this is due to the simplicity of operations, the small intersections, the consistent and low volume of vehicles and the relatively high pedestrian demand of these areas. In all other areas of Flagstaff on both City and Arizona Department of Transportation (ADOT) operated signalized intersections actuated or demand responsive control is utilized.

Demand responsive control is the most efficient and safe operation for all users. The efficiency benefits of responsive control are due to time being allocated to each user group only when demand is present. For example, a green light will not display unless a vehicle is present on that road approach, same is true for bikes and pedestrians – a walk is only displayed when users are present. This in contrast to displaying a fixed time for each user group whether they are present or not provides the service to demand balance of an efficient system. Providing service to empty crosswalks and empty vehicle lanes is inefficient because it delays transfer of service to crosswalks and vehicle lanes that do have demand. Increased wait times for all users leads to both wasted time and increased vehicle emissions. Fixed time operations are sometimes necessary when signal equipment is broken and often leads to pedestrians and drivers reporting 'broken' traffic signals to the city. This inefficient operation also has been shown to develop a sense of disrespect and disregard for traffic control devices – reduced safety.

Leading Pedestrian Intervals, or Delayed Vehicle release is a technique where vehicles are held for 3 – 5 seconds later than they would normally receive a green indication while the pedestrian walk signal is displayed. In high pedestrian use areas during the high pedestrian times of the day this has been shown in other communities to reduce the potential for pedestrian to bike/vehicle conflicts. The city is looking at this operation with the Butler at Beaver and Butler at San Francisco intersection rebuild design projects that are currently underway.