

Integrating Space and Time

How signal timing adjustments contribute to safe, multi-modal streets



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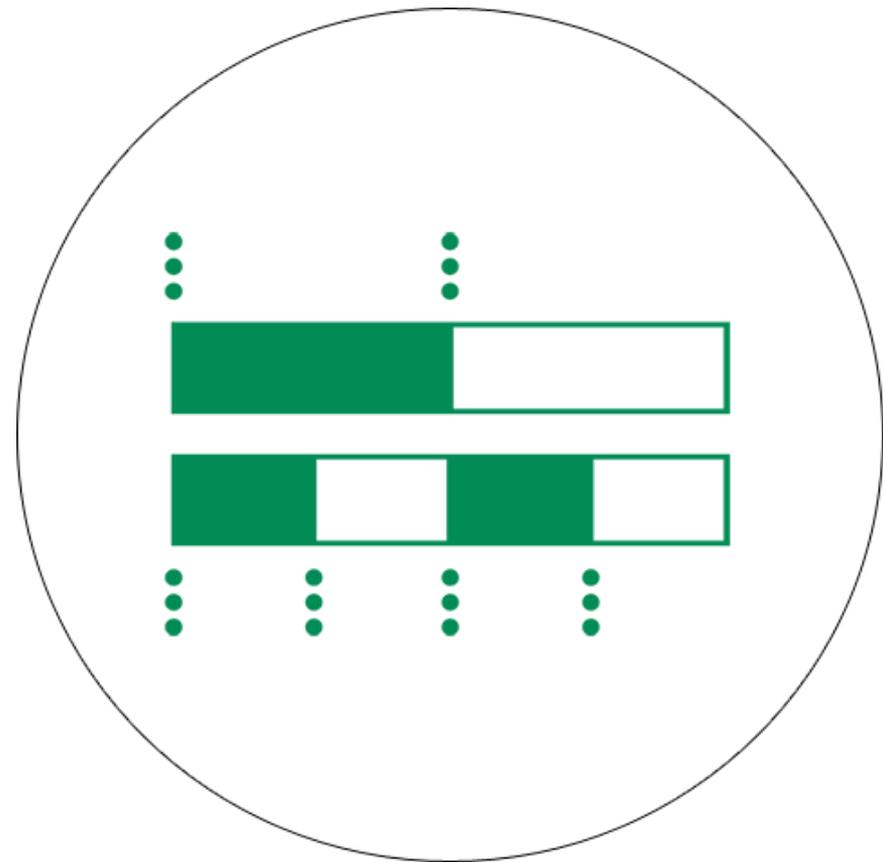
Signalization Principles

URBAN STREET DESIGN GUIDE: Intersection Design Elements

“Equally important to the allocation of space, in the form of street cross-sections and geometry, is the allocation of time performed by traffic signals. Space and time, in combination, govern how streets operate and how well they provide mobility, safety, and public space.” – USDG 2013

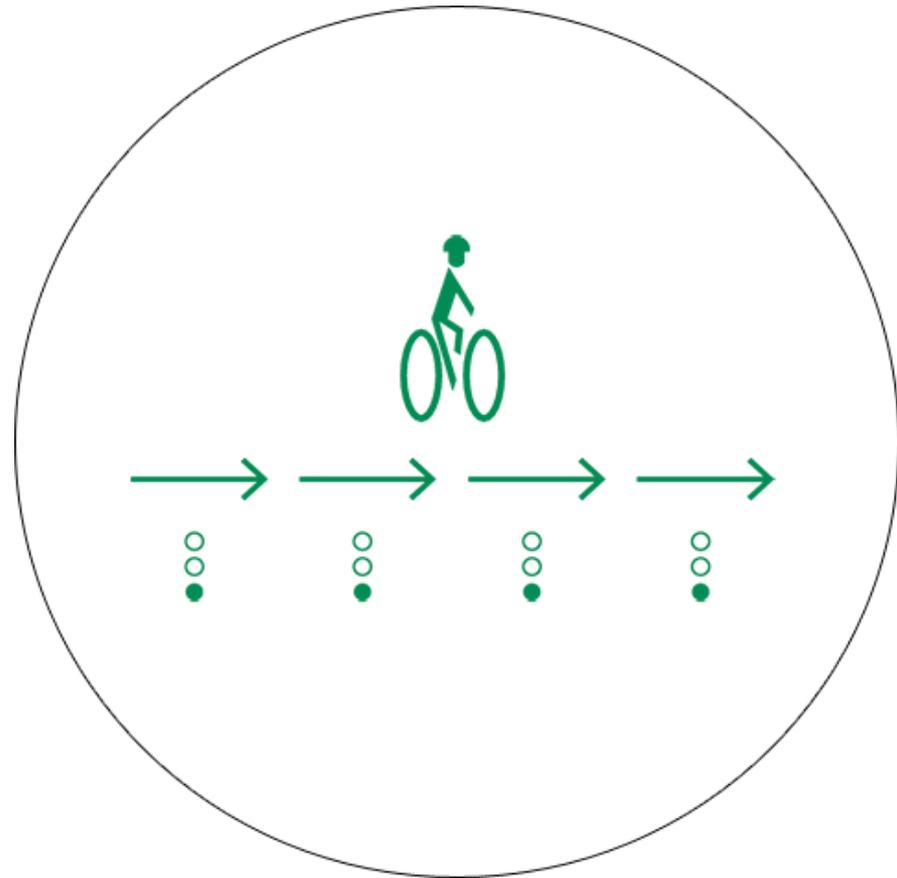
Shorten Signal Cycles to Increase Turnover

Short Signal cycle lengths minimize delay in a complex network environment, reducing wait times in all directions and creating crossing opportunities at closer intervals.



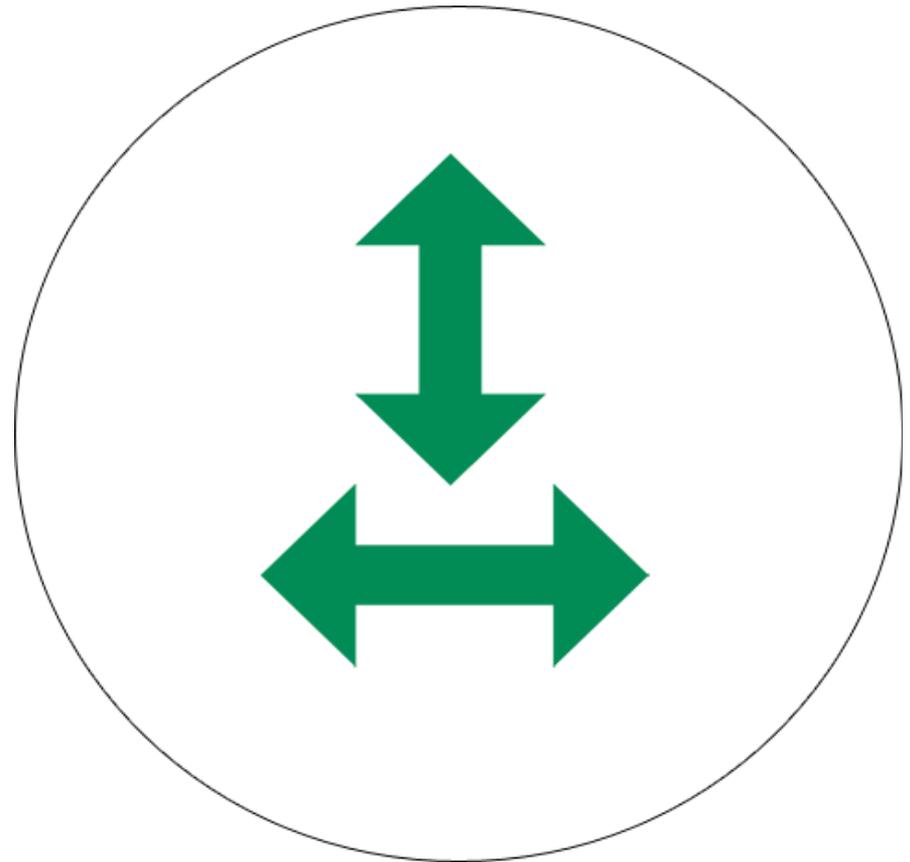
Prioritize Walking, Bicycling, & Transit

Use signal priority tools, such as leading pedestrian intervals, synchronized signals for bicycles, or transit signal priority along corridors with established or desired modal priority.



Keep the number of Signal Phases to a Minimum

While separating traffic through signal phasing may have safety benefits, additional phases increase wait times for everyone by increasing the overall length of the signal cycle.



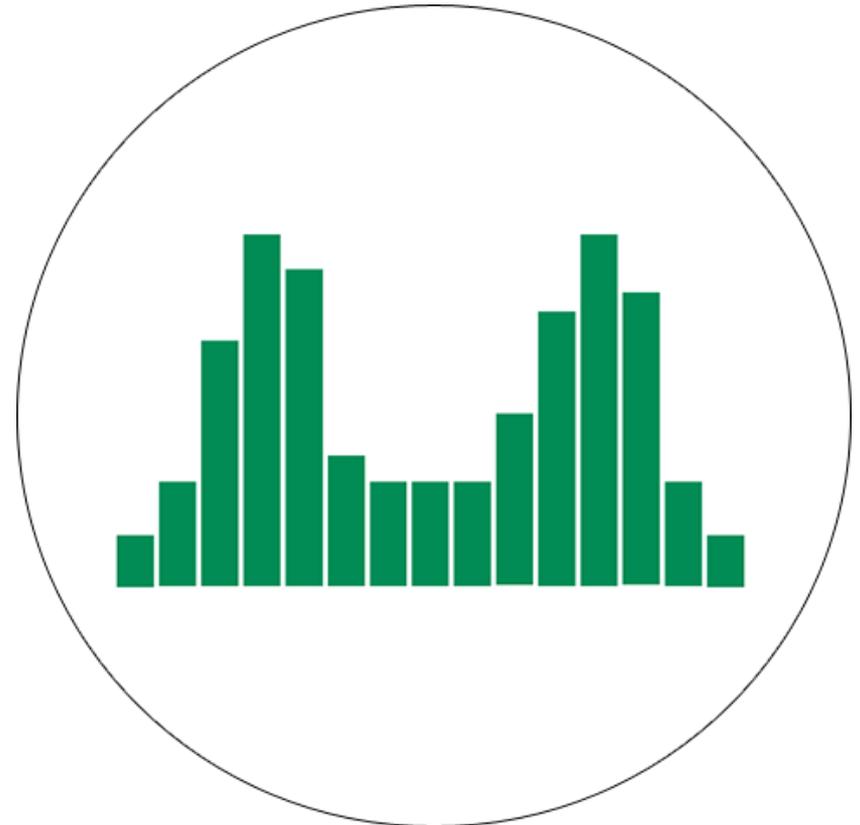
Time Signals to the Speed you Intend Traffic to Go

Synchronize signals at or below the target speed to maintain safe vehicular travel speeds and discourage speeding, especially on one-way streets.



Adjust Timing for Peak and Off-Peak Volumes

Signal timing should be managed for both peak off-peak volumes. Timing may be adjusted to meet different levels of activity throughout the day.



Use Fixed-Time Signals as Opposed to Actuated Signals

Fixed signals are preferable in urban areas to increase the predictability of the urban environment and ensure consistent opportunities for pedestrian crossings and cross traffic.



Traffic Signals – The Phoenix Experience

- New MUTCD crossing times versus distance: changed from 4 fps to 3.5 fps and created issues for existing signal timing on some arterial streets.
- Example – Standard minor arterial is 74 foot cross section with 100 sec cycle length with a sufficient walk time at 4 fps. New regulations would force a change in the citywide cycles.

Traffic Signals – The Phoenix Experience

- Leading Pedestrian Intervals
- Implemented this concept at two intersections in downtown Phoenix with heavy pedestrian traffic and light rail operations.

Traffic Signals – The Phoenix Experience

- Fixed vs. Actuated Signalization
- At many locations in the downtown area, Phoenix runs fixed time signalization but still provide audible pedestrian buttons to meet accessibility requirements.



Leading the Way
to World Class Streets

Thank You!

Questions?

Thank you for visiting Phoenix!!!