

Single-Lane Roundabouts

Implementation and Justification



Federal Highway Administration Proven Safety Countermeasures

- FHWA published guidance memorandum in 2012
 - Promoted implementation of effective safety countermeasures
 - Roundabouts listed high for reduction of fatal and injury crashes



Roundabouts



Corridor Access Management



Backplates with Retroreflective Borders



Longitudinal Rumble Strips and Stripes on Two-Lane Roads



Enhanced Delineation and Friction for Horizontal Curves



Safety Edges



Medians and Pedestrian Crossing Islands in Urban and Suburban Areas



Pedestrian Hybrid Beacon



Road Diet

What Is a Roundabout?

- A circular intersection
 - Yield control
 - Splitter islands
 - Reduced speeds



- Not a rotary

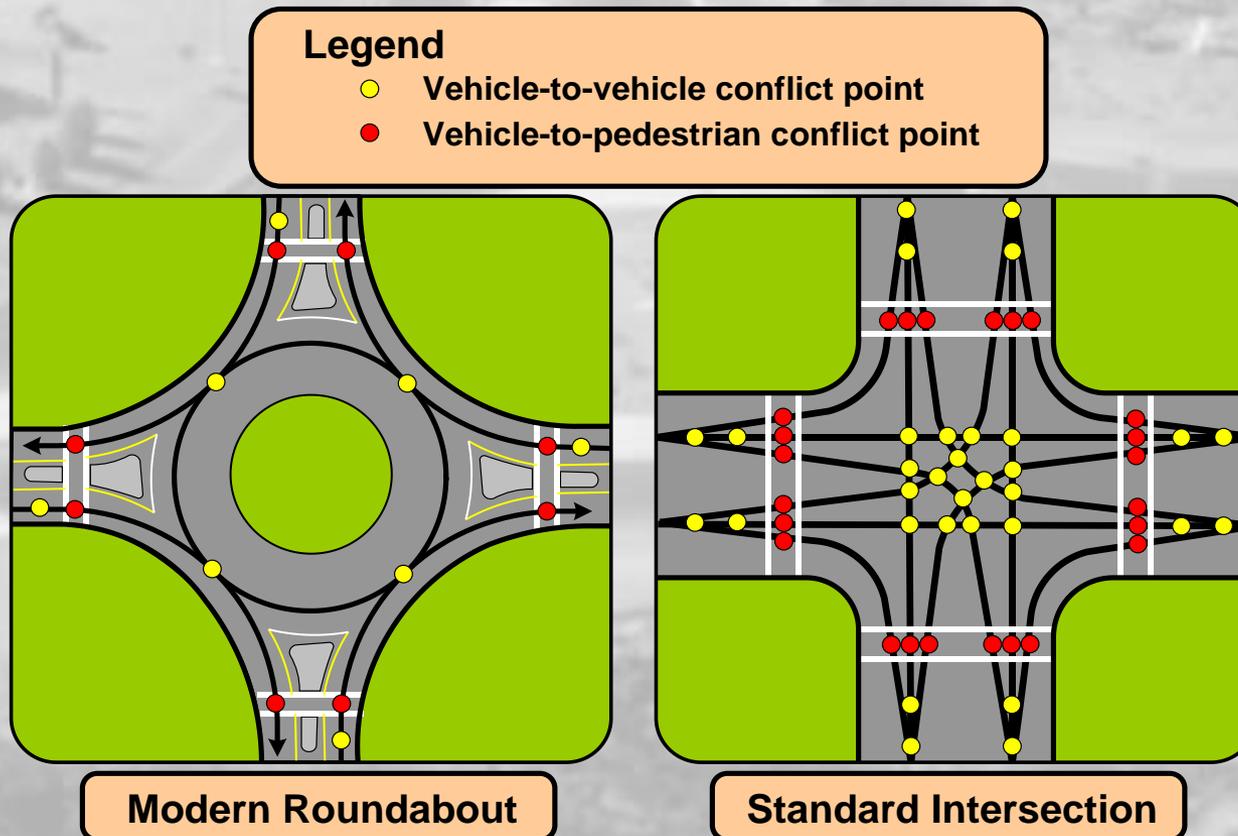


- Not a traffic circle



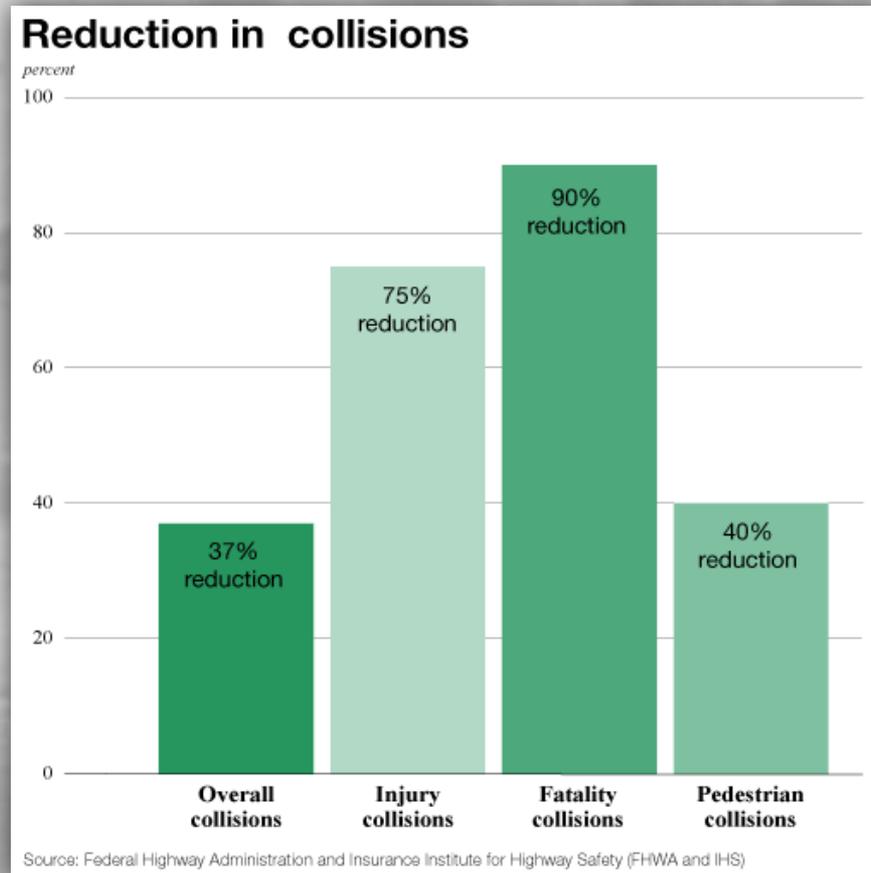
Safety Benefits

- Roundabouts eliminate 75% of conflict points
 - All crossing conflicts are eliminated



Safety Benefits

- FHWA and “Insurance Institute for Highway Safety” studies show roundabouts reduce crashes



Typical Signalized Intersection Crash Types

- Right angle
- Rear end
- Left turn
- Sideswipe
- Pedestrian/bicycle



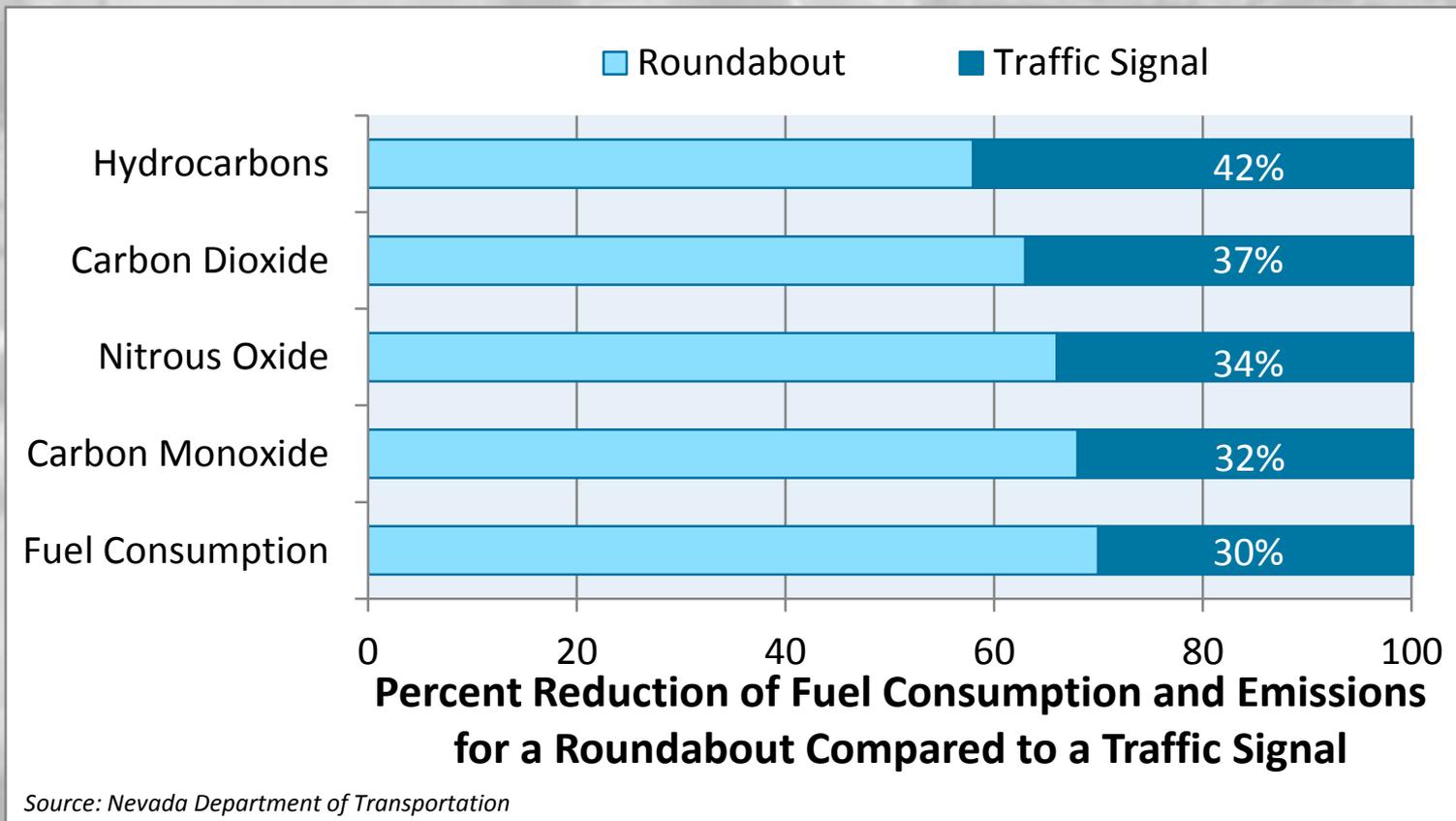
Traffic Operations Benefits

- Traffic simulations for Pima County intersections show significant delay reductions for roundabouts over all-way stops and traffic signals

AM Peak Hour	Total Cumulative Delay (Hours)		
	All-Way Stop	Traffic Signal	Roundabout
Los Reales Rd and Swan Rd	6.1	3.9	2.7
Continental Rd and Whitehouse Canyon Rd	3.3	3.2	2.3
Lambert Ln and Shannon Rd	2.6	2.6	1.6

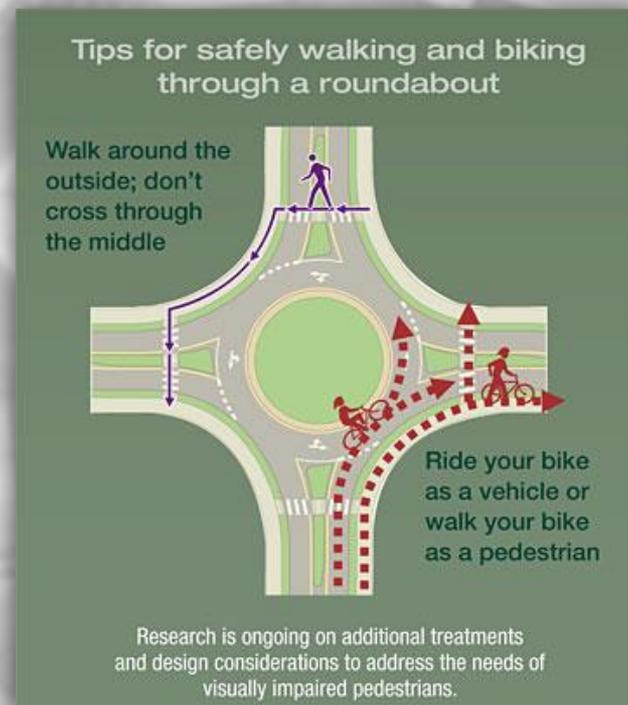
Environmental Benefits

- Limit noise pollution
- Reduce fuel consumption and emissions



Usability Benefits

- Power outages do not change the operation of a roundabout
- Roundabouts are user friendly for drivers of all ages and experience levels
- Roundabouts have high usability for pedestrians and bicyclists

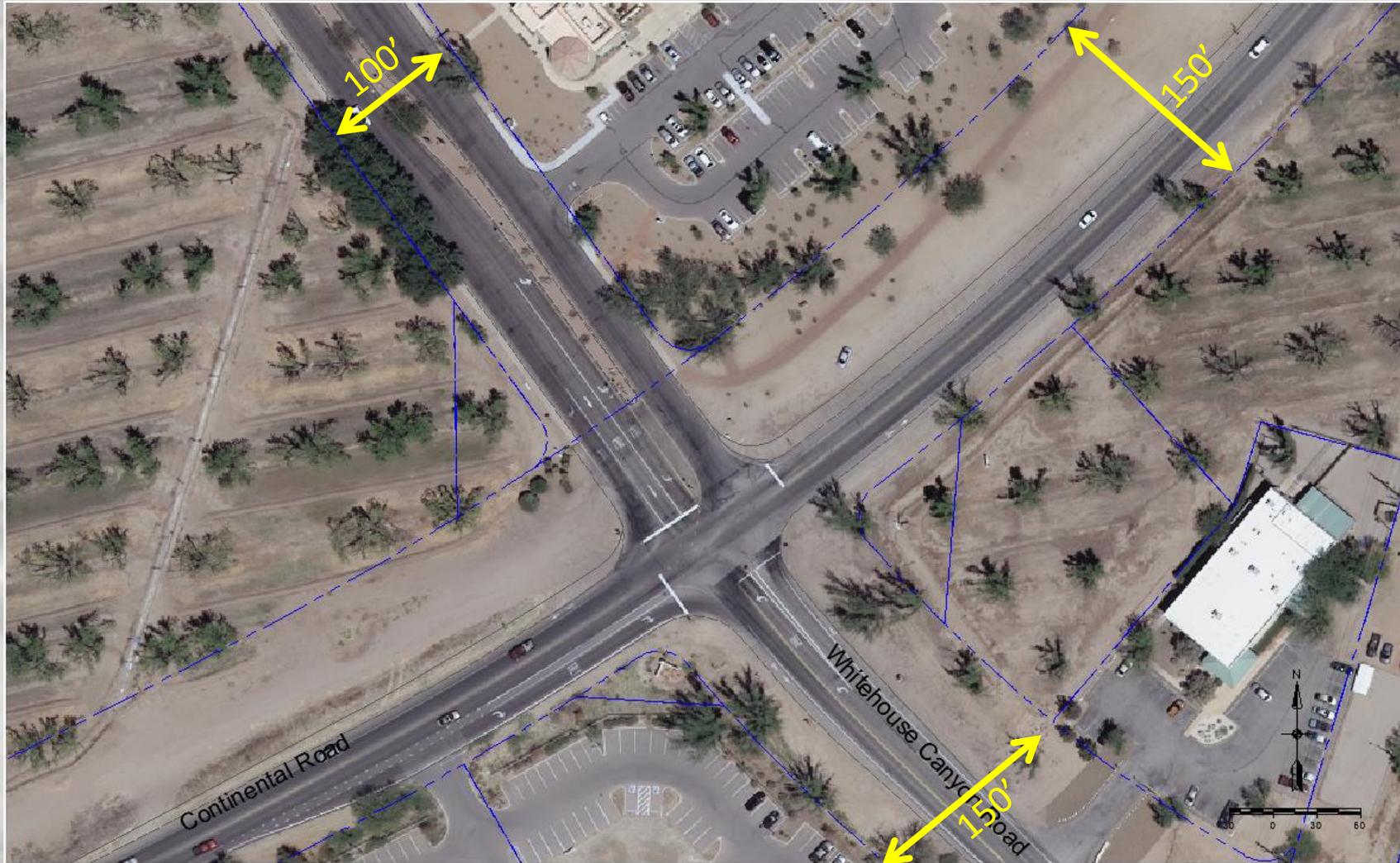


Pima County Experience

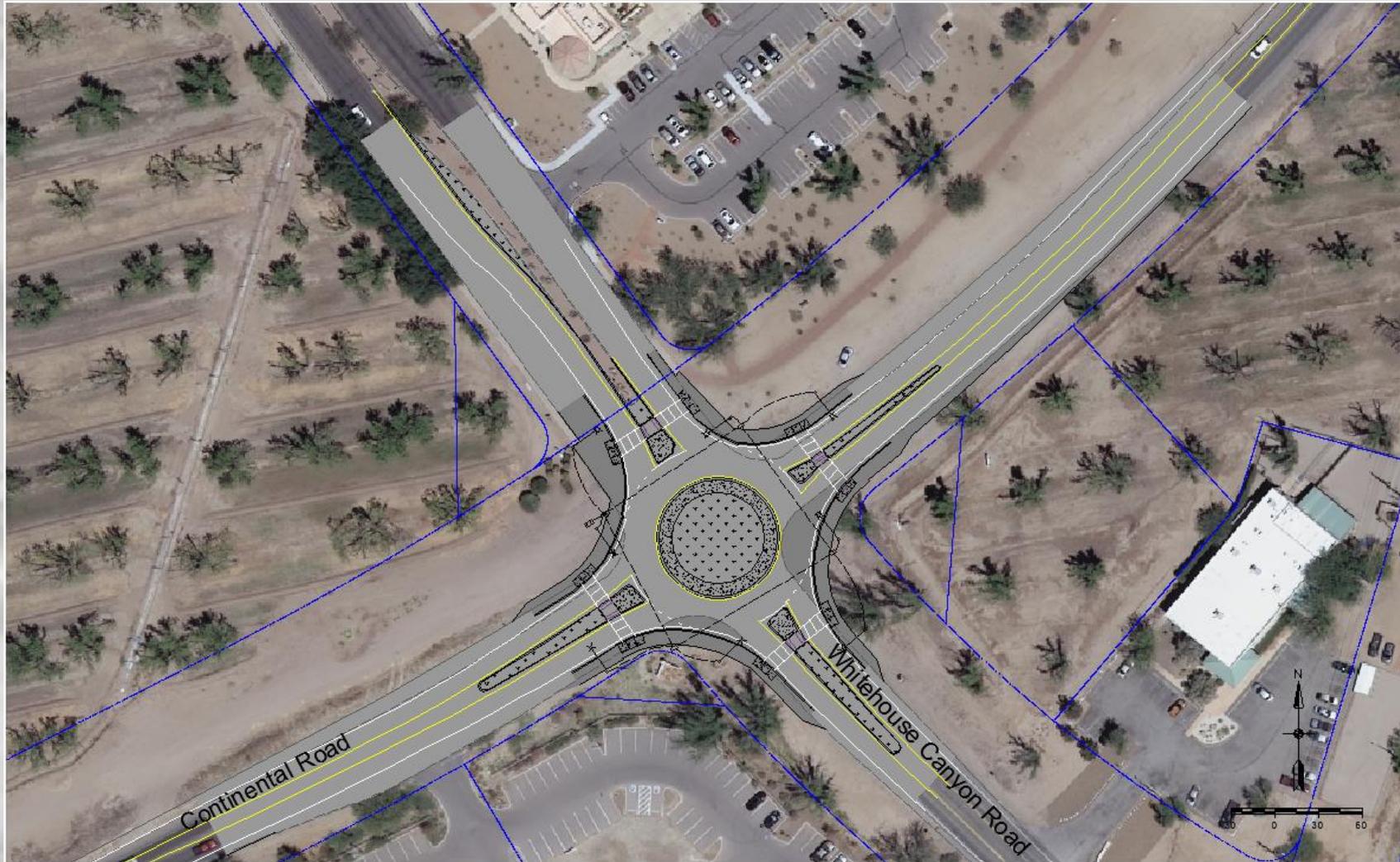
- In 2009, Pima County constructed a roundabout at Camino Del Sol and Continental Road
- Safety has improved
 - 12 crashes in five years before
 - 0 crashes in five years after
- Green Valley residents are pleased
 - Report more efficient traffic operations
 - Describe the yield control as intuitive and familiar



Roundabout Examples



Roundabout Examples



(Summary) Benefits of Single-Lane Roundabouts

- Fewer conflict points: reduce frequency and severity of crashes
- More efficient than traditional intersections
- Reduce noise pollution, emissions, and fuel consumption
- Lower lifecycle maintenance costs
- Comparable or lower construction costs versus traffic signals
- Simple to use with high driver acceptance rates
- Reduces the speed of the vehicle traveling through intersection
- Eliminates multiple-threat pedestrian crashes
- Self-regulating and durable