

Modern Roundabouts

REDUCE CONGESTION
AND IMPROVE SAFETY
ON MAIN ROADS



By reducing vehicle idling, roundabouts significantly decrease fuel consumption and emissions. They also make intersections safer, encouraging more pedestrian and bicycle traffic.

WHAT ARE MODERN ROUNDABOUTS?

A modern roundabout is a circular intersection on a higher-speed (non-residential) street. Unlike old traffic circles or rotaries, modern roundabouts are easier to navigate, environmentally friendly, attractive, and safe. Entering vehicles yield to traffic already in the roundabout, and raised islands induce drivers to slow down and provide a refuge for crossing pedestrians.¹



WHY ARE ROUNDABOUTS SAFER?

Roundabouts reduce both speed and the number of conflict points in an intersection. Converting intersections from signals to roundabouts reduces injury crashes by 80% and all crashes by 50%.² Severe injuries are rare—a study of 23 conversions found an 89% reduction in fatalities.³

While roundabouts have many benefits, they sometimes require more right of way and different signage than traditional intersections. Consult your local jurisdiction to see if roundabouts work for your situation.

ROUNDABOUTS IMPROVE TRAFFIC

Since most congestion is caused by intersections, reducing the number of stops can improve traffic flow. Unlike signals, roundabouts keep traffic moving. On La Jolla Blvd., five roundabouts allowed the City of San Diego to shrink the street and widen the sidewalks, providing outdoor dining and meeting places while continuing to provide for traffic flow.

ROUNDABOUTS AND AIR QUALITY

Roundabouts improve local air quality.

- On La Jolla Blvd., each roundabout is estimated to save 20,000 gallons of gasoline annually, avoiding 9.9 pounds of particulate pollution.⁴
- One roundabout can eliminate 189 metric tons of CO₂e emissions annually, equivalent to taking 37 cars off the road.^{4,5}

1. EPA Office of Transportation and Air Quality (2011), *Greenhouse Gas Emissions from a Typical Passenger Vehicle*; 2. FHWA, (2014) *Driver Conflict Points: Roundabout vs. Stop Sign*, safety.fhwa.dot.gov, accessed March 3, 2014; 3. Persand, B.N. et al, (2001) *Safety effect of roundabout conversions in the United States*, Transportation Research Record; 4. Silva-Send, Nilmini (2009) *Reducing Greenhouse Gases from On-Road Transportation in San Diego County*. Energy Policy Initiatives Center, USD; 5. US EPA, (2008) *Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks*



Neighborhood traffic calming circles improve air quality by reducing starts and stops, and by calming neighborhood traffic to encourage walking and bicycling.

WHAT IS A TRAFFIC CIRCLE?

Traffic circles (or mini-roundabouts) are circular intersection islands, usually installed on 2-lane streets. They encourage slower traffic while accommodating large vehicles such as buses and fire trucks.

TRAFFIC CIRCLES IMPROVE SAFETY

Studies have found traffic circles reduce intersection collisions by 70% or more^{1,2} by eliminating such dangerous crash types as head-on, left turn, and right angle crashes. They also discourage speeding. Proper signage and markings are important to ensure safety.



Image courtesy NACTO.org

ADVANTAGES OF TRAFFIC CIRCLES

Traffic circles are a relatively low-cost intervention (\$20,000³ to \$90,000,⁴ excluding costs of landscaping).² In addition to increasing safety, traffic circles provide a space for vegetation, public art, or a neighborhood identity sign. It is important, however, to consider how ongoing watering or maintenance costs will be funded.

TRAFFIC CIRCLES IMPROVE AIR QUALITY

One gallon of gas burned by the average car in San Diego produces 17.5 lb CO₂, 45.4 g CO, 11.3g NO_x, and 4.5 g VOC.⁵

1. In one study, small roundabouts were found to reduce CO by 29%, NO_x by 21% and greenhouse gases by 28%.⁶
2. Data show residents walk⁷ or bike more—replacing some vehicle trips—when cars drive slower in the neighborhood.

1. Institute of Transportation Engineers (n.d.) Traffic Calming Measures—Neighborhood Traffic Circle <http://www.ite.org/traffic/circle.asp> 2. Fehr & Peers (2010) Traffic Circles, <http://www.trafficcalming.org> 3. Seattle WA Traffic Calming Program (2017) www.seattle.gov/transportation/trafficcircles.htm 4. City of San Diego CIP Program <http://cipapp.sandiego.gov/CIPDetail.aspx?ID=B14056> accessed 7/6/2017 5. Calculated from California Air Resources Board's EMFAC2011 model 6. Insurance Institute for Highway Safety (2005) Status Report, Col. 40, No. 9, November 19, 2005. 7. America Walks(2011) National Walking Survey.