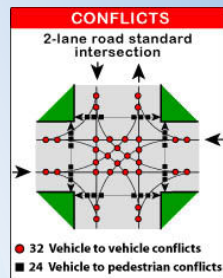


→ Safety

All vehicles travel in same direction.

Slower vehicle speeds give drivers more decision making time and pedestrians more time to cross.

Roundabouts eliminate head-on and high speed right angle collisions.



¹ Bergh, C.; Retting, R.A.; and Myers, E.J. 2005. Continued reliance on traffic signals: the cost of missed opportunities to improve traffic flow and safety at urban intersections. Arlington, VA: Insurance Institute for Highway Safety.

² Persaud, B.N.; Retting, R.A.; Garder, P.E.; and Lord, D. 2001. Safety effect of roundabout conversions in the United States: empirical Bayes observational before-after study. *Transportation Research Record* 1751:1-8.

³ Eisenman, S.; Josselyn, J.; List, G.; Persaud, B.; Lyon, C.; Robinson, B.; Blogg, M.; Waltman, E.; and Troutbeck, R. 2004. Operational and safety performance of modern roundabouts and other intersection types. Final Report, SPR Project C-01-47. Albany, NY: New York State Department of Transportation.

⁴ Mayhew, D.R.; Simpson, H.M.; and Ferguson, S.A. 2006. Collisions involving senior drivers: high-risk conditions and locations. *Traffic Injury Prevention* 7:117-24.

⁵ Várhelyi, A. 2002. The effects of small roundabouts on emissions and fuel consumption: a case study. *Transportation Research Part D: Transport and Environment* 7:65-71.

⁶ Mandavilli, S.; Russell, E.R.; and Rys, M. 2004. Modern roundabouts in United States: an efficient intersection alternative for reducing vehicular emissions. Poster presentation at the 83rd Annual Meeting of the Transportation Research Board, Washington DC.



Sustainable Green Bay Task Force

www.ci.green-bay.wi.us/SGB

→ ROUNDABOUTS

Sustainable Benefits



Roundabout in Mt. Horeb, WI

Sustainability

Economy, Equity, and Environment

Why roundabouts, when properly designed and located, are a money saving, fair, and environmentally friendly alternative to traffic signals...

What is Sustainability

You can think of **sustainability** as meeting the needs of the current generation without compromising the ability of future generations to meet their needs.

Sustainability is further defined as addressing three E's.

Economy – Something cannot be sustainable unless it makes or saves money.

Social Equity – Something cannot be sustainable unless it meets human needs fairly and efficiently.

Environment – Something cannot be sustainable if it is harmful to the natural systems that support human life and the economy.



Okemos, Michigan

Economic Benefits

Roundabouts calm traffic, making nearby business signage more visible.

Roundabouts are more pedestrian and bicycle friendly, increasing access to adjacent businesses.

The aesthetics and functionality of roundabouts can help create a revitalized atmosphere for the business community.

Roundabouts reduce traffic delays and fuel consumption which saves money.

*A study of 10 roundabout intersections in Virginia, this amounted to savings of more than 200,000 gallons of fuel per year.*¹

Roundabouts cost less than intersections with traffic signals to maintain and operate.

Social Equity Benefits

Converting intersections with traffic signals to roundabout intersections improves safety.

Studies looking at 58 intersection conversions in the U.S. have shown that fatality crashes were reduced by 90%, injury crashes were reduced by 75 to 80%, and all crashes were reduced by 37 to 40%.^{2,3}

Roundabouts calm traffic and provide shorter pedestrian crossing distances, and are thus generally safer for pedestrians than intersections with traffic signals.

The traffic calming effect of roundabouts also makes them safer than signalized intersections for bicyclists. *(continued on next panel)*

Roundabouts can improve safety for older drivers. Crash data show that drivers over 70 are involved more often than other age groups in certain types of crashes that occur in intersections. Roundabouts can eliminate many of these types of crashes.⁴

The ability of visually impaired pedestrians to cross intersections is an important concern, and roundabouts can be designed to achieve this. Features such as raised crosswalks or guide strips and "yield to pedestrian" signs, markings, or signals can provide improved accessibility.

Environmental Benefits

Roundabouts reduce traffic delays and idling, and therefore reduce vehicle emissions (including greenhouse gases) into the atmosphere. Studies of signalized intersections replaced with roundabouts have shown:^{5,6}

- Reductions in nitrous oxide emissions of 21 to 34%
- Reductions in carbon monoxide emissions of 29 to 32%
- Reductions in carbon dioxide emissions of 37%
- Reductions in hydrocarbon emissions of 42%

A roundabout intersection provides more green space than a signalized intersection with the same traffic handling capacity. This not only provides aesthetic benefits, but also aids with stormwater absorption.

Roundabouts use less energy than traffic signals – no electricity is required.