

More Affordable Roundabouts: Why Now and How to Evaluate?

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Division of Maintenance and Operations

May 29, 2024

Presentation

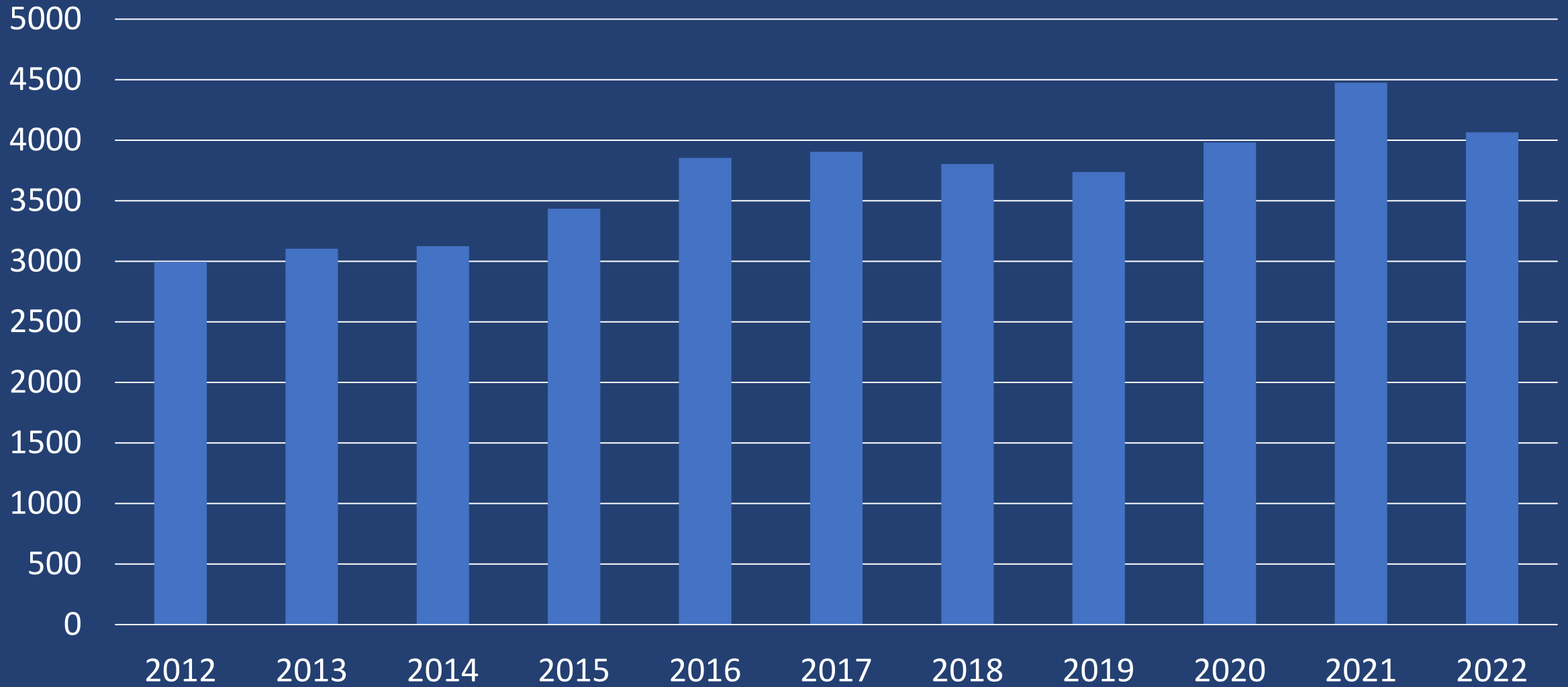
- Why the focus on safety
- Roundabouts as a proven safety countermeasure
- Need to make roundabouts more affordable
- Mini-roundabouts
- ISOAP – Intersection Safety and Operational Assessment Process

Safety

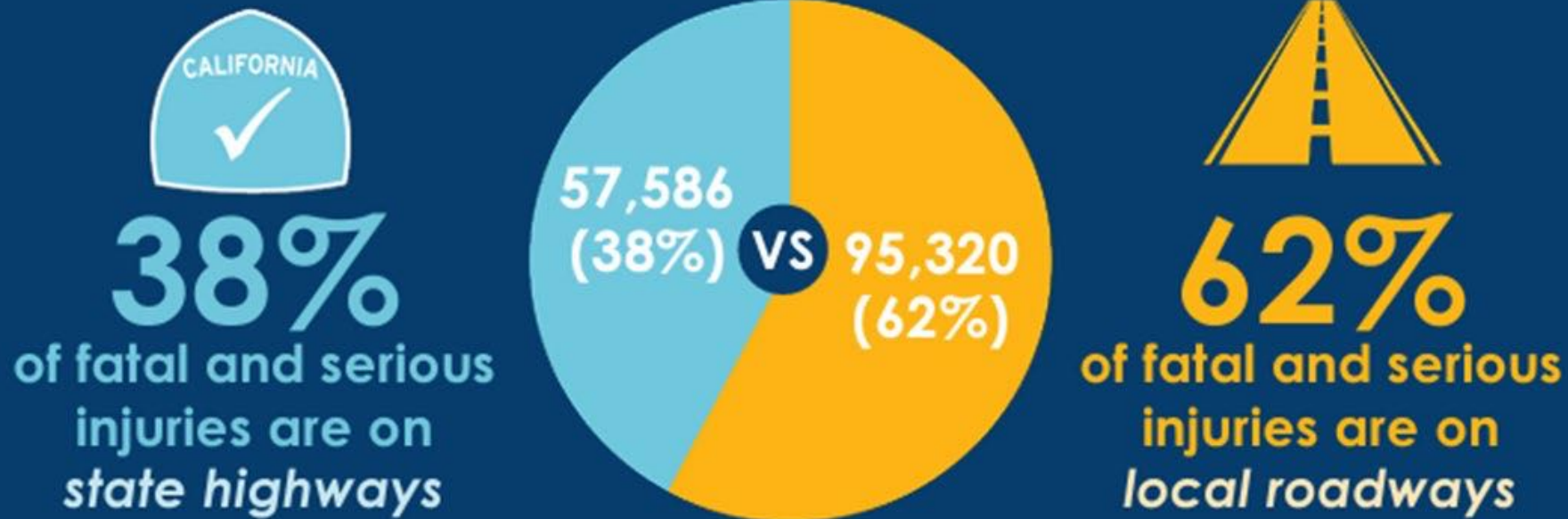
- Vision Zero – eliminate all traffic fatalities and severe injuries
- Caltrans Director’s Policy 36 on Road Safety – vision of zero fatalities and serious injuries by 2050
- Safe System Approach



Fatal Crashes in California



State Highway vs. Local System



In 2018, **local roadways** account for **45%** of California's annual vehicle miles traveled

Data Source: California Public Roads (2018) statistical information derived from the highway performance monitoring system

Intersections

- Statewide, approximately one quarter of all fatal and serious injury crashes occurs at intersections
- In Sacramento, about *two thirds* of fatal and serious injury crashes occur at intersections
- Strategic Highway Safety Plan (SHSP) Action IN.5
“provide assistance to agencies and communities to support the installation of more roundabouts”

Roundabouts

- Proven safety countermeasure
- Two-way stop control to roundabout – 82% reduction in F+I crashes
- Traffic signal to roundabout – 78% reduction in F+I crashes



Roundabouts

- Slower speeds and fewer conflict points than traditional intersections
- Enhance safety for pedestrians and bicyclists



Traditional Roundabout Cost

- Construction:
\$3 million
- Right-of-way:
\$1 million
- Support:
\$4 million
- Total:
\$8 million



Need to Reduce Roundabout Costs

- Higher cost projects increasingly more difficult to fund
- If more affordable, can be applied systemically
- Reduce right-of-way impact and complexity to expedite delivery

“Temporary” Roundabouts

- Consider interim or phased improvements
- State Route 191 and Durham-Pentz Road



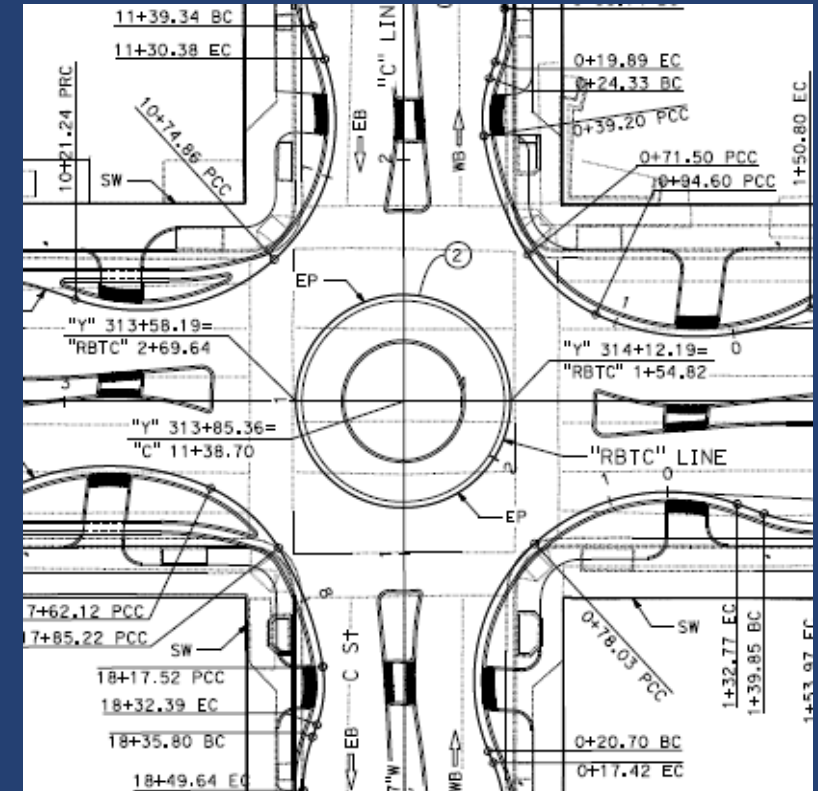
Smaller Roundabouts

- La Jolla Blvd road diet in Bird Rock neighborhood of San Diego



Smaller Roundabouts

- Proposed at SR-145 (Yosemite Avenue) at C Street in Madera



Mini-Roundabouts

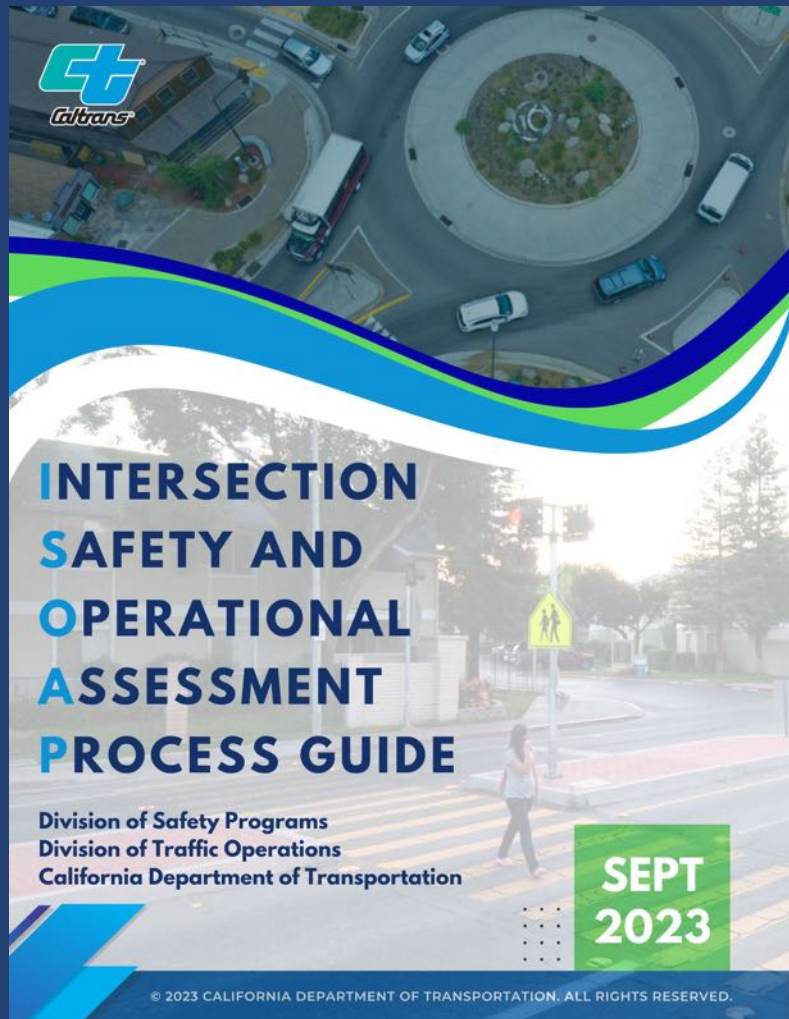
- Inscribed circle diameter (ICD) of 45 feet to 90 feet
- Traversable central island
- Splitter islands may be traversable
- Typical cost of \$50,000 to \$500,000



Mini-Roundabouts

- Traffic calming – speed management
- Typically placed on roads with a speed of 35 mph or less, but can be used on higher speed roads with speed reduction treatments
- Typical ADT of 15,000 or less, but can analyze for higher volumes

ISOAP



- Update of ICE (Intersection Control Evaluation) and renaming to ISOAP (Intersection Safety and Operational Process)
- Applies to new or expanded intersections or changes in type of control on State highways
- 2-stage process – initial screening and detailed analysis
- Emphasizes context, scalable
- Incorporates Safe System Approach

ISOAP Stages and Steps

- 1.1 Is ISOAP required?
- 1.2 Intended project outcomes, place type, design vehicle; existing data
- 1.3 Ped and bike
- 1.4 R/W and operations
- 1.5 Transit and freight
- 1.6 Initial safety assessment
- 1.7 Eliminate infeasible strategies
- 1.8 Findings and recommendation
- 2.1 Detailed safety analysis using Highway Safety Manual (HSM) if applicable
- 2.2 Detailed operations
- 2.3 Functional sketches and performance checks
- 2.4 Cost estimate
- 2.5 Benefit-cost ratio and performance-based analysis matrix
- 2.6 Findings and recommendation

ISOAP Key Changes from ICE

- More guidance as to what to include in the analysis, including bikes, peds, transit, and freight
- Standardized forms
- Required use of Highway Safety Manual in Stage 2 if applicable
- Streamlined process for certain conditions
- If short of funding, need to consider phased or interim improvements or finding additional funding
- Recommended strategy needs to support the Safe System Approach (may or may not have the highest benefit-cost ratio)
- District Traffic Safety Engineer concurrence for recommended strategy

Any Questions?

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