

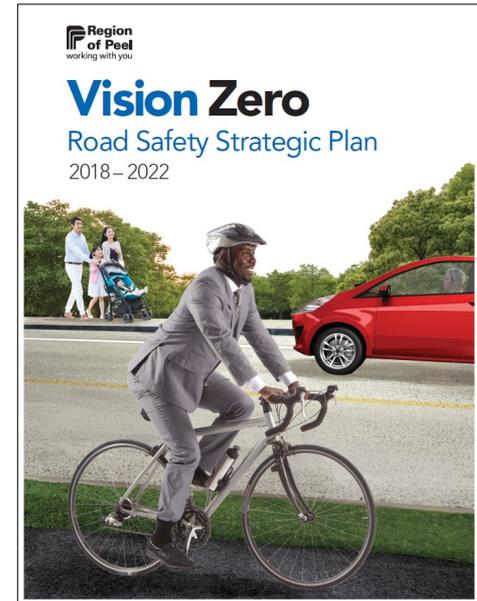
Intersection Planning for Safety based on **Vision Zero Principles**

June 10, 2021

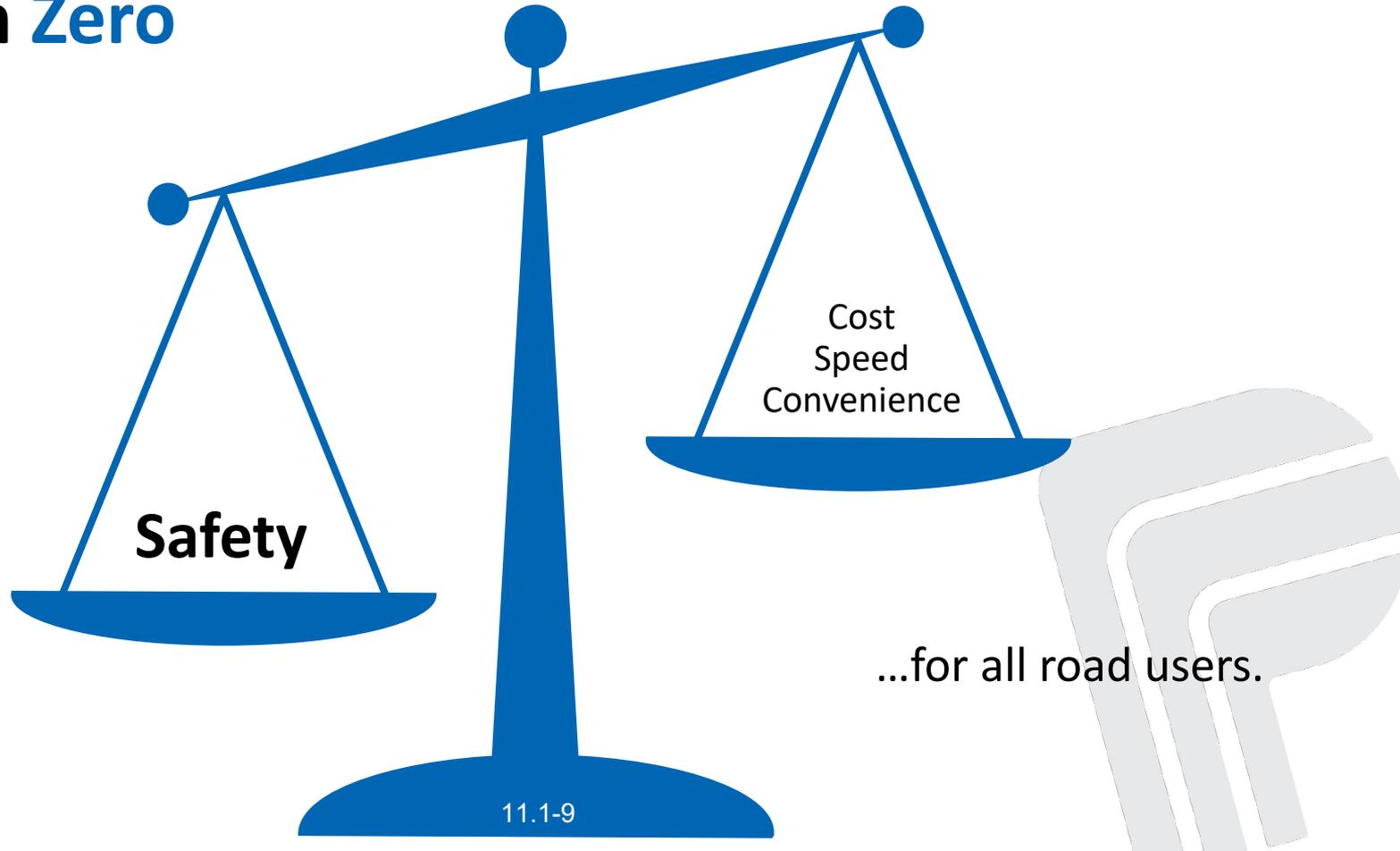
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Vision Zero

- An initiative that aims to eliminate traffic fatalities and injuries while increasing safe, healthy and equitable mobility for all.
- The Plan identifies over one hundred action items focused on six emphasis areas including:
 - intersections
 - aggressive driving
 - distracted driving
 - impaired driving
 - pedestrian collisions
 - cyclist collisions



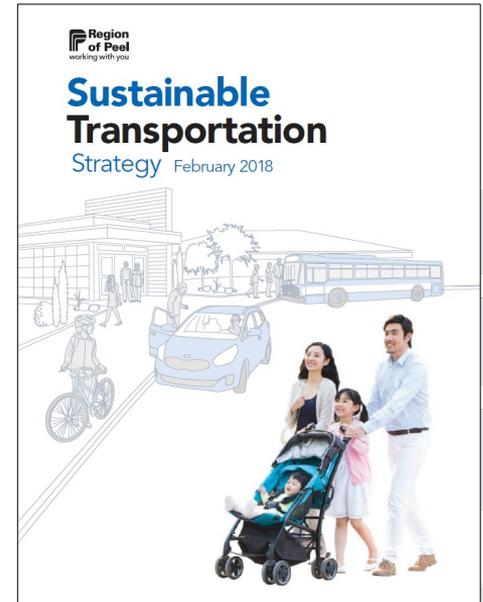
Vision Zero



...for all road users.

Sustainable Transportation

- A target for 50% of all trips to be made by sustainable transportation modes by 2041.
- Prioritizes making roads safer for vulnerable road users such as children, seniors and cyclists.
- Strengthens active transportation connections and the multimodal function of Regional roads.



Regional Approach to Multi-Modal Safety

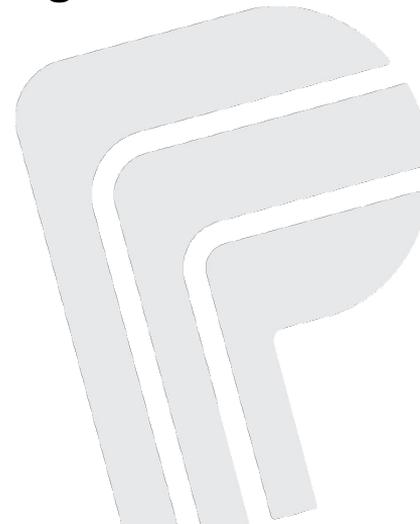
- The “4-Es” of road safety:
 - Engineering
 - Enforcement
 - Education
 - Empathy



Intersection Safety



- Intersections are the emphasis area with the highest number of collisions overall.
- More than fifty intersection safety countermeasures are identified in the Region's Vision Zero Road Safety Strategic Plan, including:
 - Fully protected left turn signals
 - Traffic signal network progression
 - Ladder crosswalks
 - Cross-rides
 - Smart channels

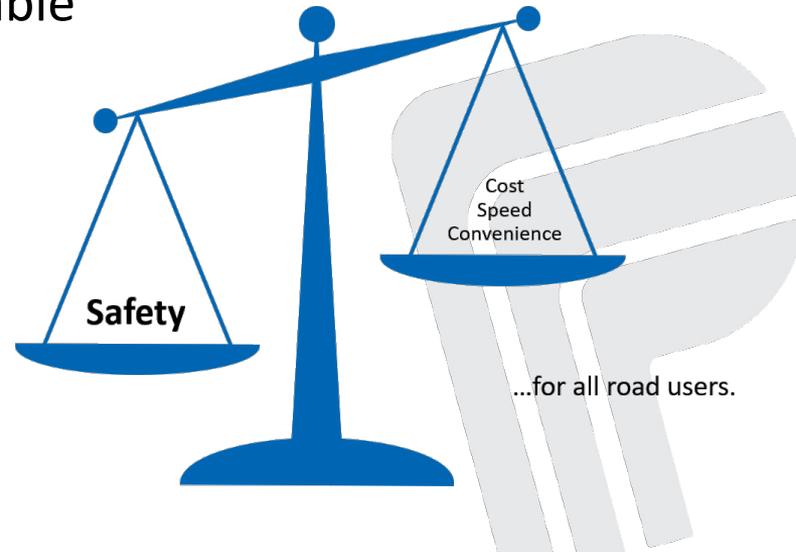


Traffic Signals & Safe Crossing Alternatives

- Traffic Signals
 - Purpose is to provide alternating right-of-way at an intersection.
 - Can reduce collisions in some situations and increase them in others.
- Vision Zero Plan countermeasures should be investigated alongside traffic signals to provide safe driving and crossing opportunities.
- Safe crossing alternatives might include:
 - Pedestrian Crossovers (PXOs)
 - Intersection Pedestrian Signals (IPS)
 - Mid-block Pedestrian Signals (MPS)

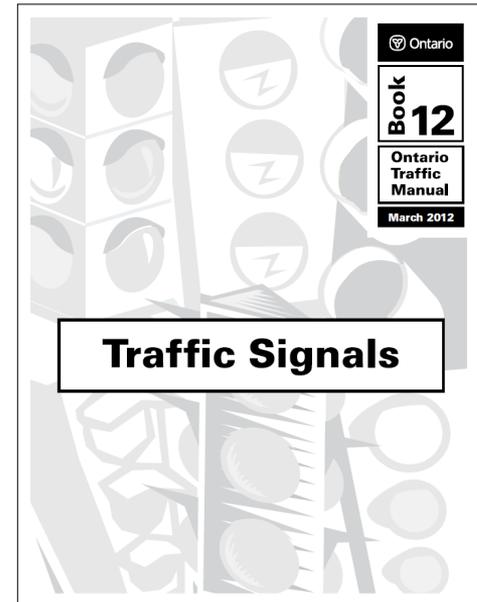
Traffic Signals & Safe Crossing Alternatives

- Left-turn Maneuvers
 - Signalization is often perceived as the only solution for intersections with minor-street left-turns that experience moderate delays.
 - Other methods of handling unacceptable left-turn delays should be considered, including restricting left-turns.



Signal Warrants

- The industry standard and Regional Council-adopted practice for placing intersection signals is the Ontario Traffic Manual (OTM) traffic signal warrant process.
 - Considers factors such as intersection configuration, vehicle/pedestrian volumes, speed limits, area population, delays, collision history and pedestrian crossing opportunities.
 - Ensures a consistent and reliable approach.



Special Circumstances

- The OTM warrant process may not indicate that signals are required; in special circumstances there may be unique factors not addressed by the OTM warrant system.
- A consistent criteria is used to identify and accommodate special or unique circumstances where justification is based on analysis of unique factors, not relaxed thresholds.
- When signals are not warranted, the best approach is to investigate alternative traffic safety countermeasures.

Risks and Financial Implications

- Safety Risks: Unwarranted traffic signals can increase the number of collisions, making the intersection and network less safe for vulnerable road users such as pedestrians and cyclists.
- Legal Risks: Deviation from the industry standard OTM warrant process has the potential to create additional liability concerns.
- Financial Implications: Permanent signalization construction can cost between \$300,000 and \$450,000 in addition to annual maintenance costs of around \$8,500.

Conclusion



- The Region's Vision Zero Plan identifies a range of countermeasures that can be used to improve intersection safety and increase opportunities for pedestrian and cycling crossings.
- Regional staff use the OTM warrant process to determine if signals will provide a net safety benefit.
 - This includes accounting for special circumstances by examining additional factors using a consistent methodology.
- Selecting the appropriate mix of engineering, enforcement, education and empathy countermeasures will help the Region to achieve its Vision Zero and sustainability goals.