Implementing the Safe System
Reducing crashes for all road users

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Roger Millar, Secretary of Transportation
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Safe System Approach

Source: FHWA-SA-20-015
WSDOT Implementation

To provide separation:

• Adopted a Sustainable Safety Policy in 2013, Practical Solutions in 2015

• To incorporate context classification and modal priority into design and operational decision making

• Allowed for reducing lane width for greater separation between walking, biking and rolling

• Lane marking, signing and channelization

Source: City of Seattle
To reduce kinetic energy:

- Roundabouts to reduce speeds at entry/exit with angles that reduce injuries.
- Road designs and operations to accommodate target speeds for the context and modes
- Applications of self explaining and enforcing roadways (Traffic calming, e.g., chicanes)
WSDOT Implementation

• Design and operate to encourage safe road user actions (Self explaining/enforcing)

• Complete Streets, with Integrated multimodal design, using the Safe System (Just passed State and Federal Legislation)

• Policy development for integrated multimodal systems and update of Sustainable Safety (now: Safe System)

• Properly evaluate, analyze and diagnosis road safety approaches: completed traffic barrier inventory, mobile lidar data collection in Summer 2022, level of traffic stress

• Initiating sidewalk, ADA, crosswalk data collection

Hierarchy of Controls for Traffic Safety
adapted from Hierarchy of Controls: National Institute of Occupational Safety (2017)
WA State Injury Minimization Speed Management Policy and Guidelines Workgroup

- Use target speed
- Use category-based target speed based on traffic mix
- Use target speed within 5 mph of operating speed
- When greater than 5 mph use iterative speed management to bring speeds down until target achieved
Safe system principles

- Death/Serious Injury is Unacceptable
- Humans Make Mistakes
- Humans Are Vulnerable
- Responsibility is Shared
- Safety is Proactive
- Redundancy is Crucial
Death and Serious Injuries are unacceptable

Focus on fatalities and serious injuries in how we identify potential projects and countermeasures to reduce crashes.
Humans make mistakes

Blame

Evolve from the perception that road user error or behavior was the cause of most crashes and nothing can be done.

Shared responsibility

Recognize in planning and engineering that there are countermeasures that we can implement.

• WSDOT roadside safety hardware that reduces crash severity even when there might be error or poor behaviors.

• Separation in space and time provides the opportunity to correct.
Limited human tolerance to crash forces

- Develop roadside systems to reduce impact forces
- Treat all road users equitably, create equity by design and operation
- Design and operate to reduce forces and consider how a safe system index might be used in decision making
Proactive versus reactive

WSDOT Systemic Safety

- Reduce crash potential before the crashes occur
- Focus on crash types and potential contributing factors (e.g., rural lane departure crashes)
- 70% allocated towards proactive safety approaches
The “Swiss Cheese Model” of redundancy creates layers of protection.

Death and serious injuries only happen when all layers fail.

Source: FHWA
Questions

For additional information on Implementing the Safe System, please contact:

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Avoiding crashes involves:

- **Separating users in space**
- **Separating users in time**
- **Increasing attentiveness and awareness**

Source: City of Seattle
Safer roads

Managing crash kinetic energy:

- Managing speed
- Manage Mass difference
- Manage crash angles
Safe Speeds

Roads designs and operations to accommodate appropriate speeds for the context and modes – target speeds

Injury minimization by reducing kinetic energy

Automated speed enforcement