

Eastern Oregon Prioritizes ITS Solutions to Improve Safety Along a Rural Interstate





*“20-Vehicle pileup
shuts down I-84 east
of Pendleton”*



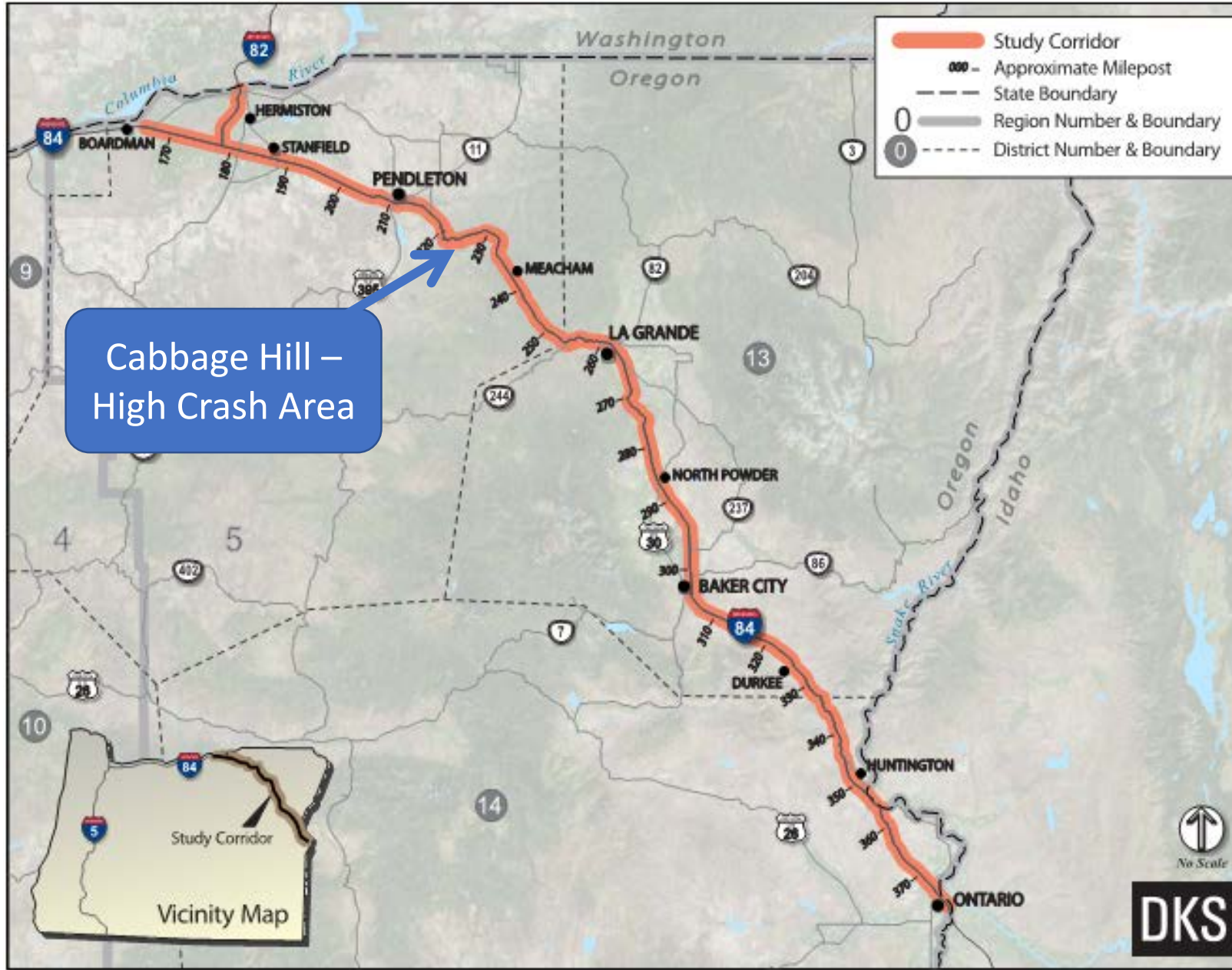
*“Nine dead, more
than 20 hurt in bus
crash on icy I-84”*

What's the Problem?

Rural and remote areas with limited cell service, power, and communications

ADT = 8,000 to 14,000

Up to 50% ADT = heavy vehicles



Varying terrain

Harsh winter weather conditions

Severe crashes and extended closures (no alternate routes)

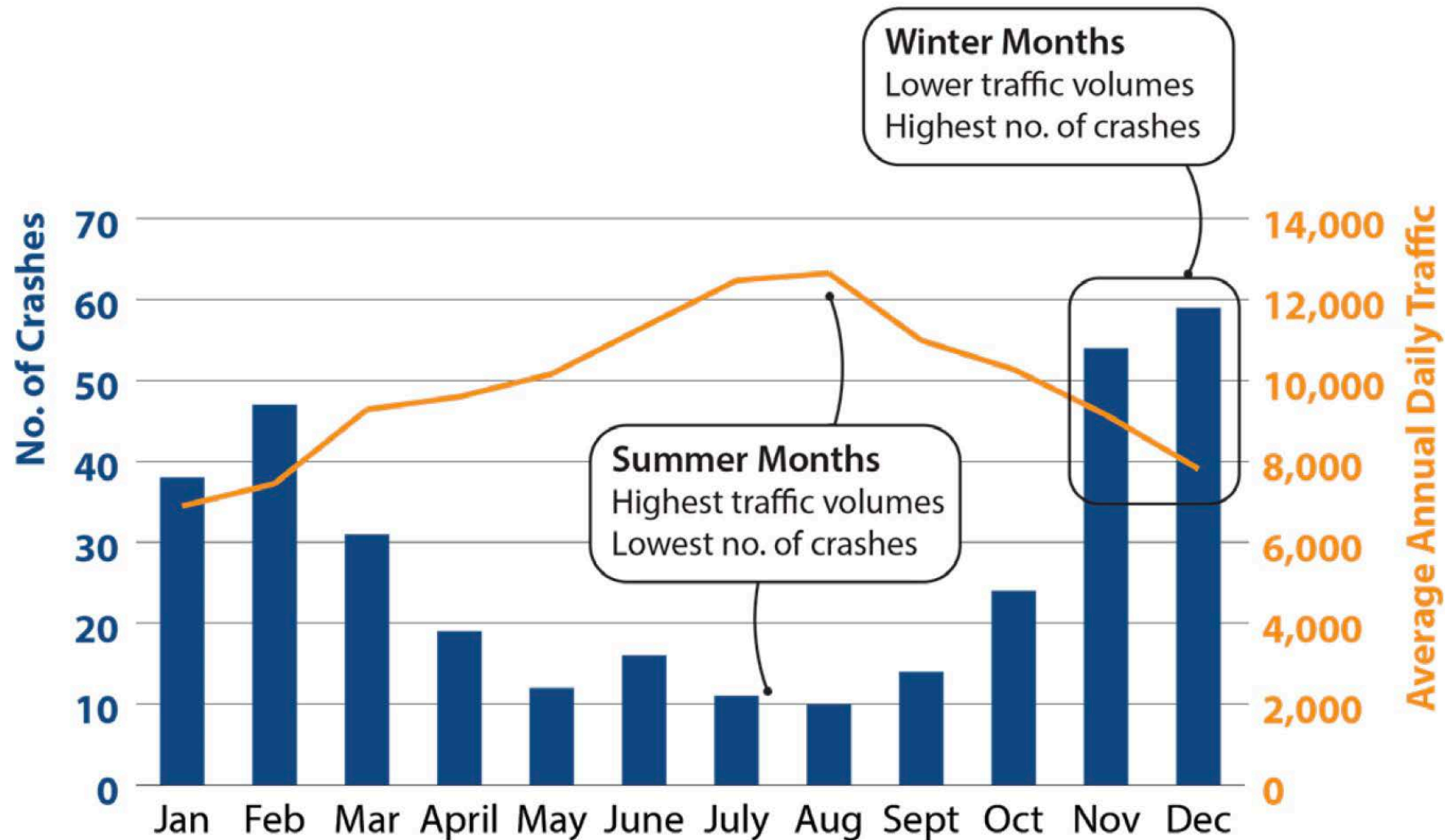
Project Process



Stakeholder Input:

- ODOT
- Oregon State Police
- Transit Agencies
- Local Businesses
- Tribal Representation
- Incident Responders
- Local School Districts
- Freight Companies
- Local Agencies
- Representatives from Elected Officials

Problem: High Crash Rate in Winter Months





33%
decrease
in traffic
volume



450%
increase
in
crashes

Problem: High Crash Rate in Winter Months







20%
reduction
in
weather
related
crashes



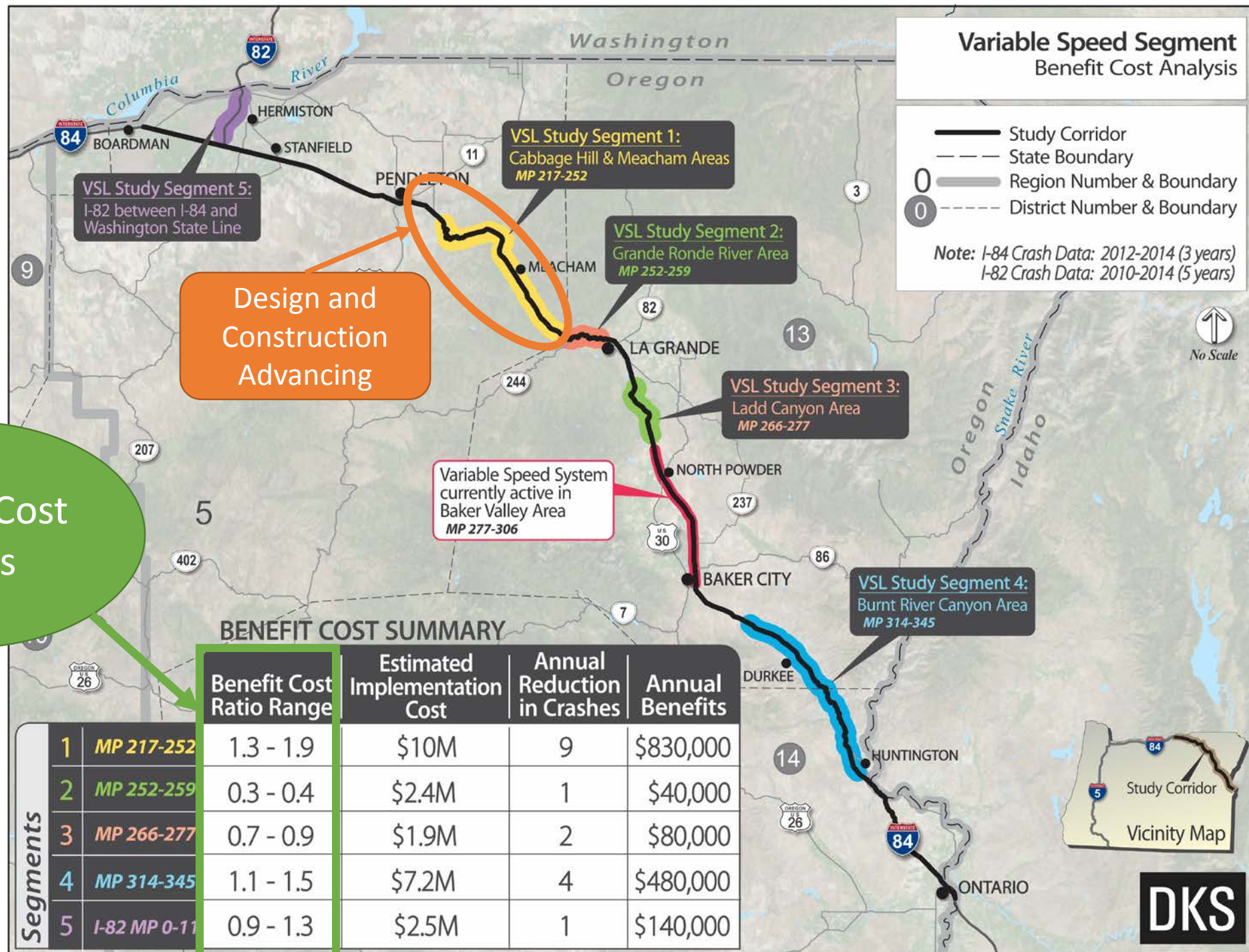
Recommendation: Weather Responsive Variable Speed System

System uses: grip factor, visibility, precipitation, and temperature

Variable Speed Segment Benefit Cost Analysis

 Study Corridor
 State Boundary
 Region Number & Boundary
 District Number & Boundary

Note: I-84 Crash Data: 2012-2014 (3 years)
 I-82 Crash Data: 2010-2014 (5 years)



Design and Construction Advancing

Benefit Cost Ratios

BENEFIT COST SUMMARY

Segments		Benefit Cost Ratio Range	Estimated Implementation Cost	Annual Reduction in Crashes	Annual Benefits
1	MP 217-252	1.3 - 1.9	\$10M	9	\$830,000
2	MP 252-259	0.3 - 0.4	\$2.4M	1	\$40,000
3	MP 266-277	0.7 - 0.9	\$1.9M	2	\$80,000
4	MP 314-345	1.1 - 1.5	\$7.2M	4	\$480,000
5	I-82 MP 0-11	0.9 - 1.3	\$2.5M	1	\$140,000





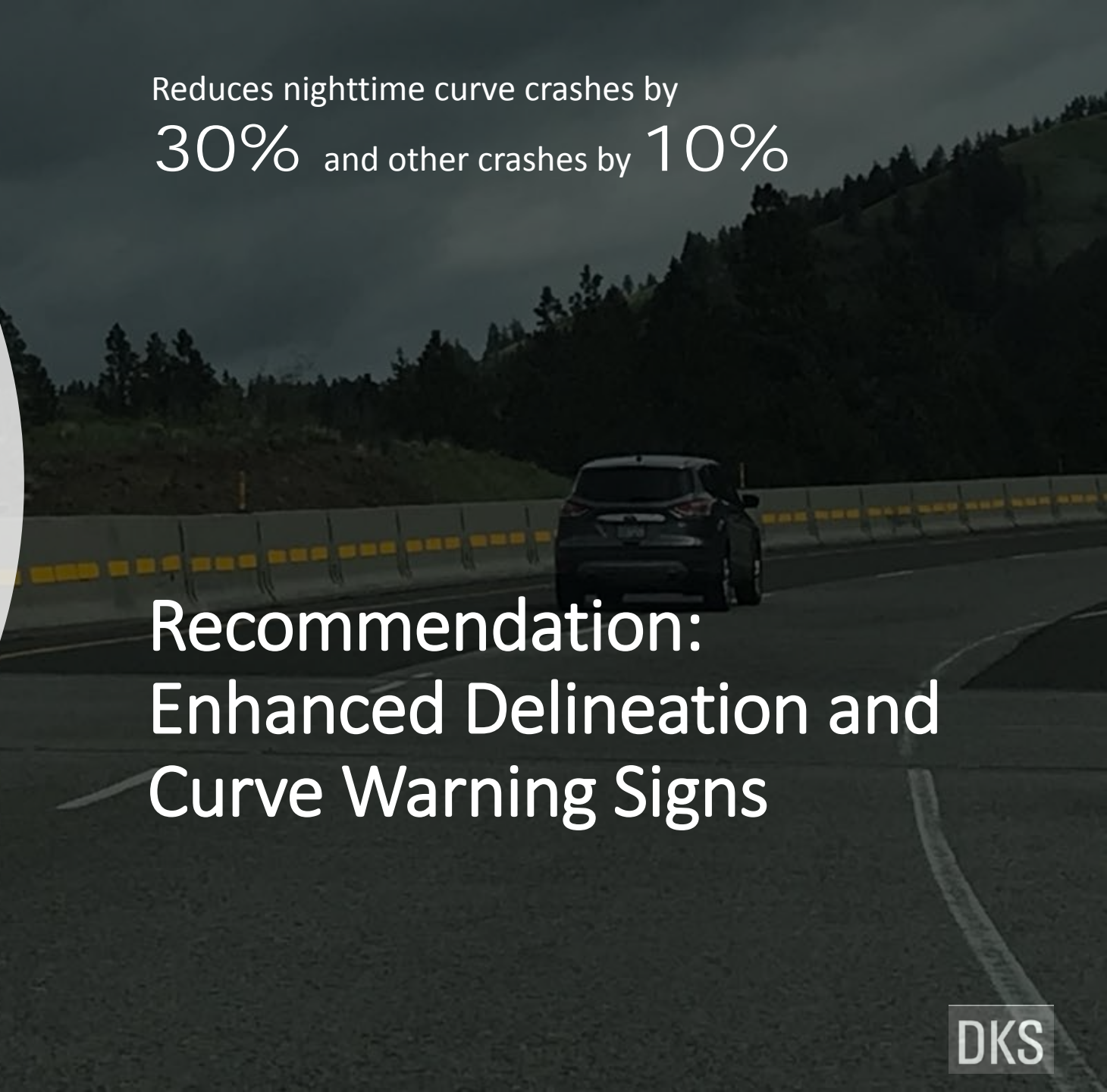
60% of crashes occur during compromised visibility conditions



Problem: High Crash Rates in Low Visibility Conditions



Reduces nighttime curve crashes by
30% and other crashes by 10%



Recommendation:
Enhanced Delineation and
Curve Warning Signs

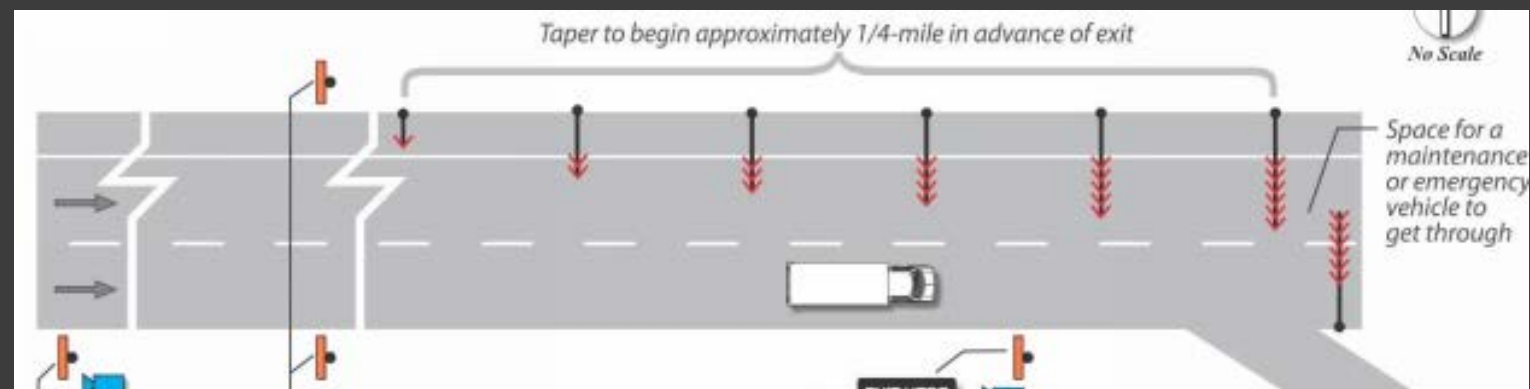
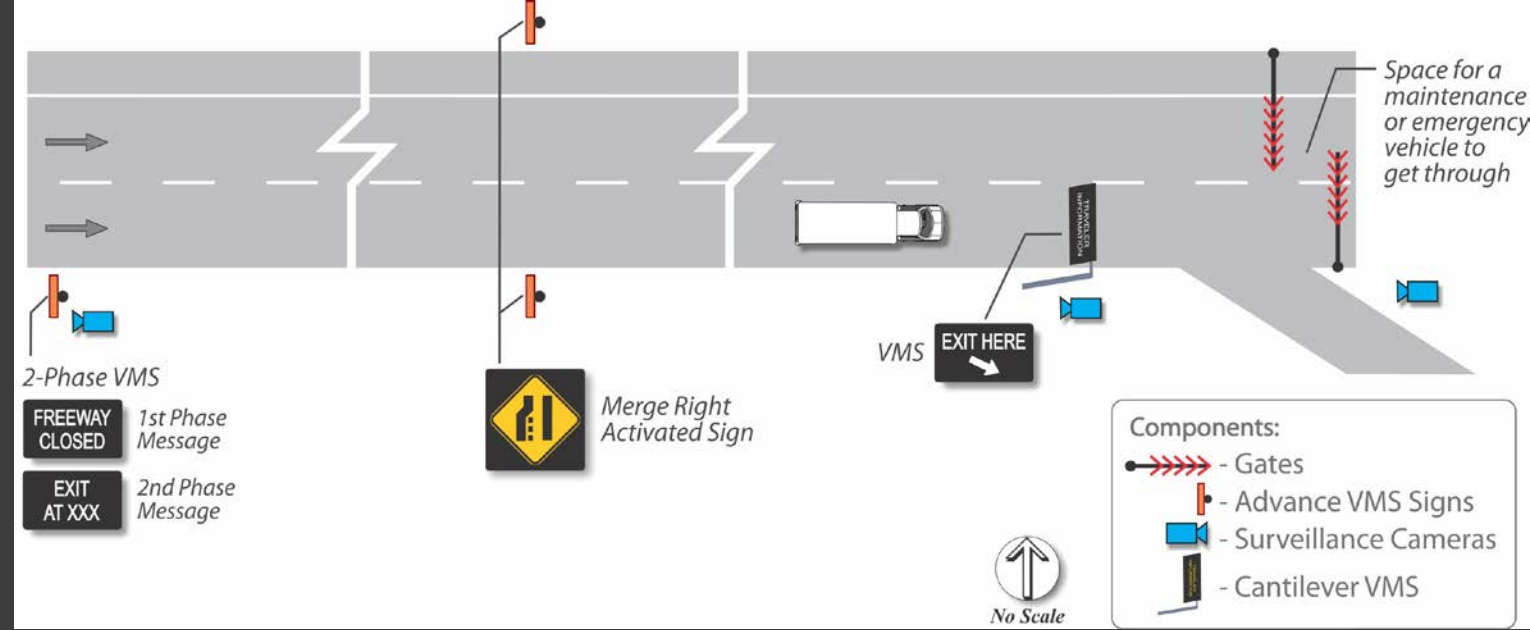


No Scale

Worker Safety:
Maintenance staff required to set cones in roadway for closure, working in hazardous conditions

Traveler Safety & Faster Re-Opening:
Less traffic entering hazardous conditions decreases the likelihood of a crash & allows

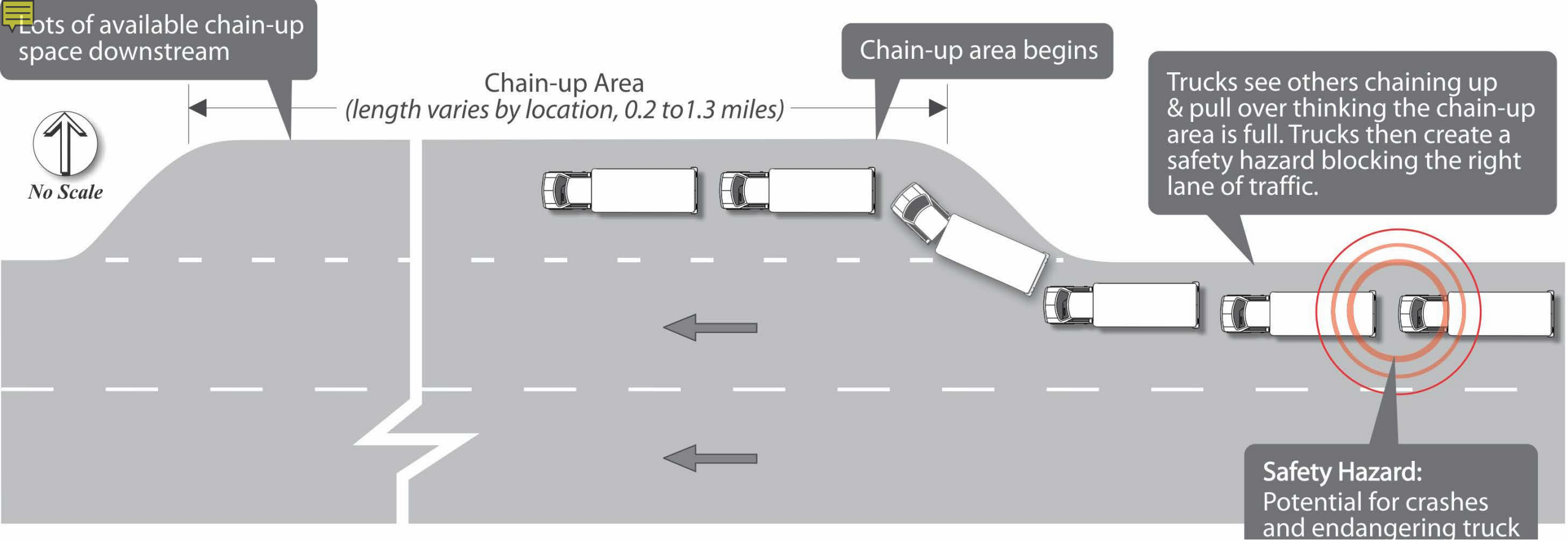
Problem: Slow to Close the Interstate During a Winter Weather Event



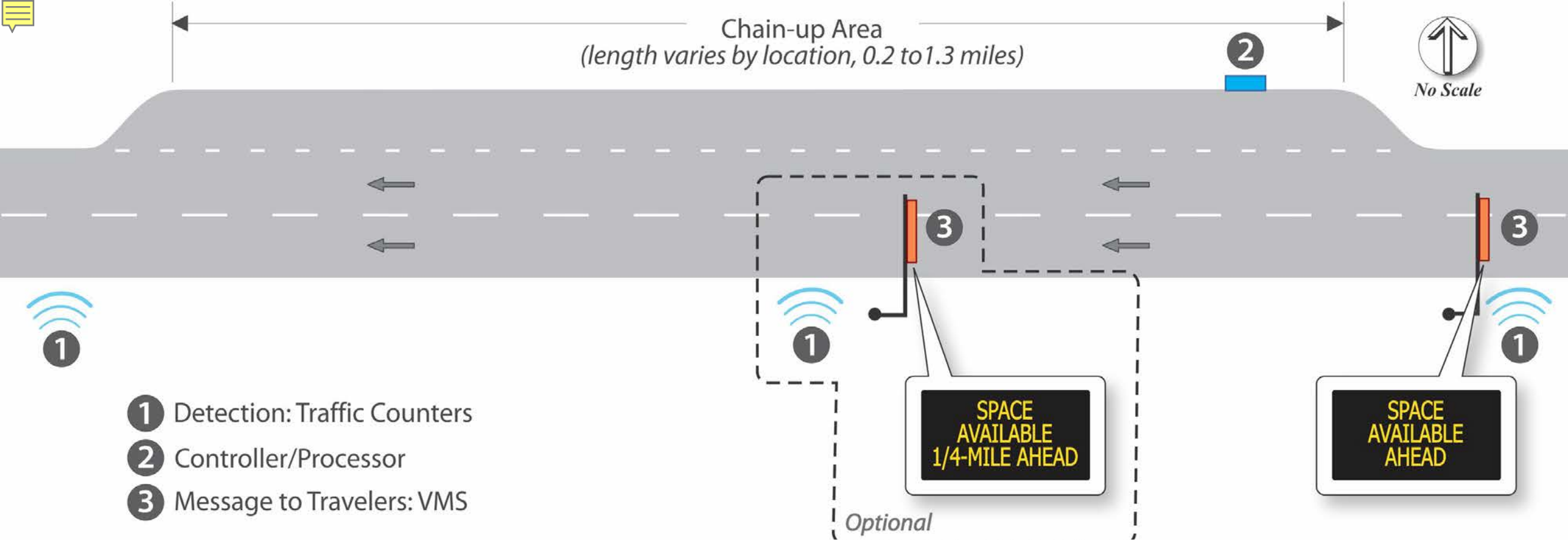
Recommendation: Remotely Operated Gates



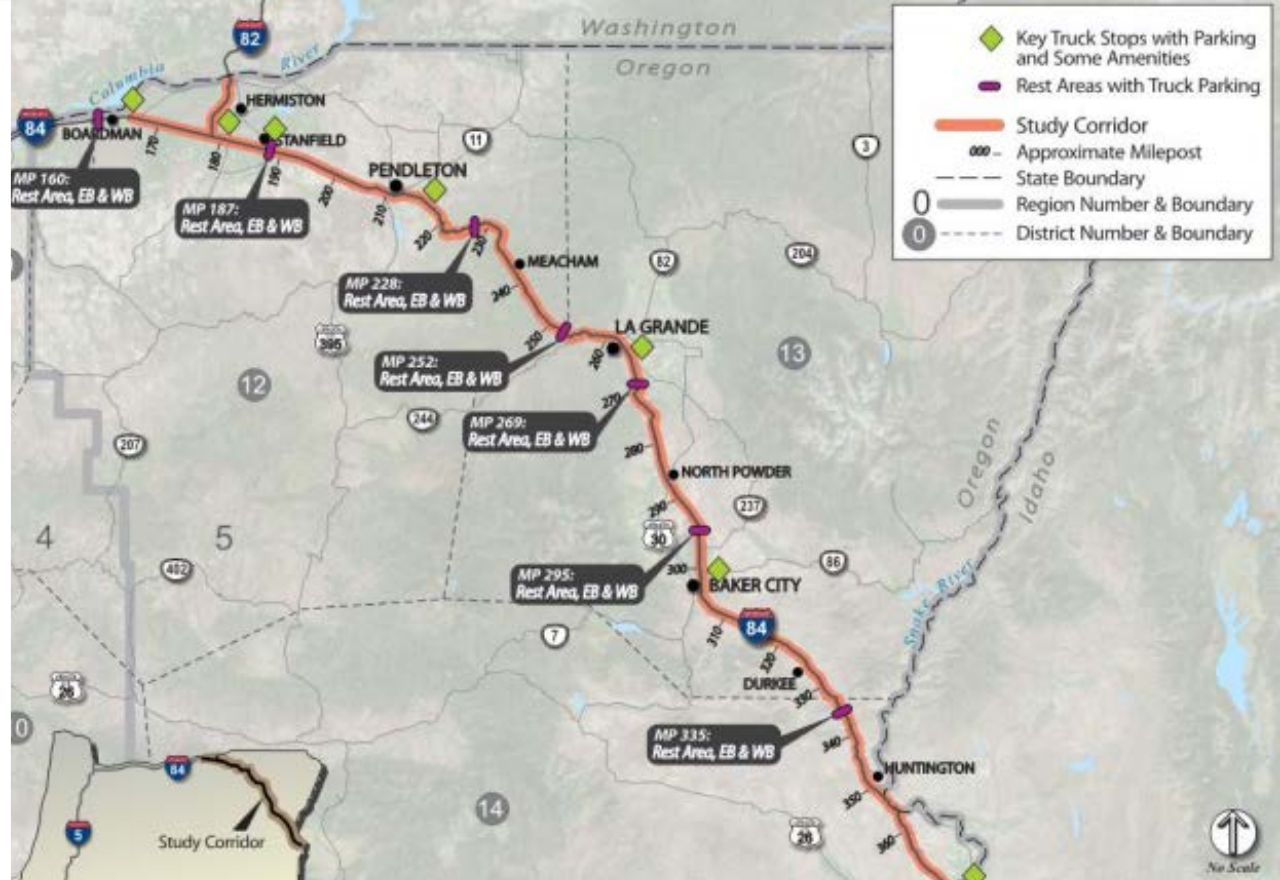
Problem: Back-up at Chain-Up Areas



Problem: Back-ups at Chain-Up Areas



Recommendation: Chain-Up Area with Real-Time Parking Information



Problem: Travelers are Frustrated During Extended Closures

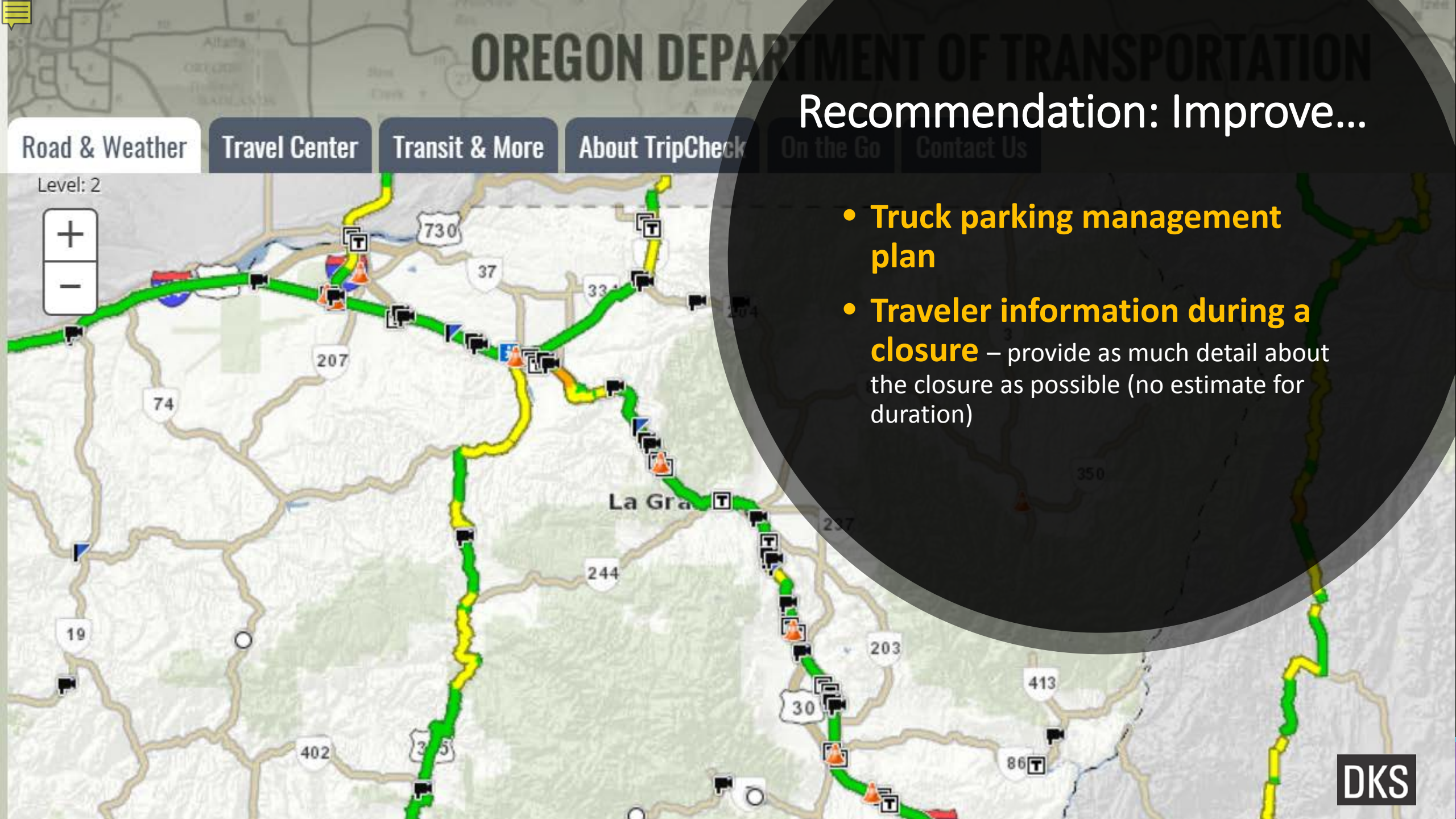
Key Issues:

Lack of truck parking – cascading closure impact

Lack of information available to travelers

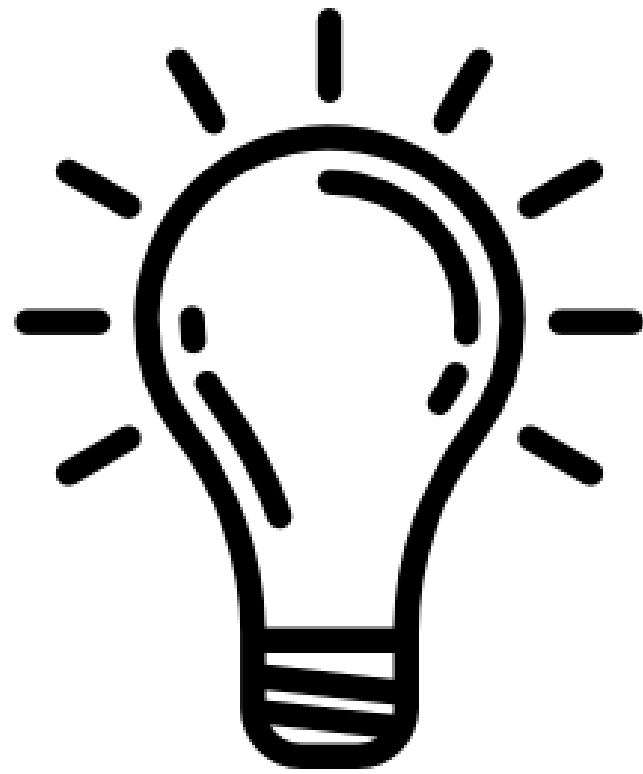
Recommendation: Improve...

- **Truck parking management plan**
- **Traveler information during a closure** – provide as much detail about the closure as possible (no estimate for duration)



How ODOT is Thinking About Connected Vehicles





Key Takeaways...

- Initial cost is high due to power and communications, but it lays the foundation to address the problem
- Systems are designed to share through the cloud
- Stakeholder input provided unique local knowledge, especially surrounding freight issues



Questions?

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