Launching an ERM

John Milton

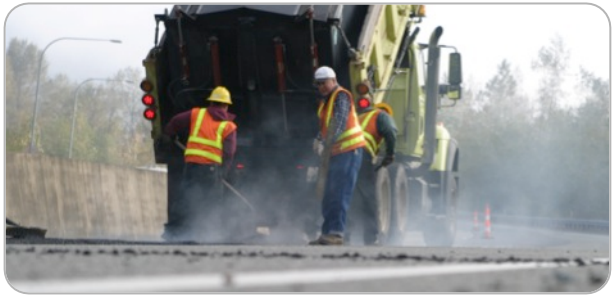
Washington DOT Experience

Launching an Enterprise Risk Management Program

Lessons learned







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Risk and Asset Management Peer Exchange

August 25, 2015
Minneapolis, Minnesota

Washington State Department of Transportation

Today's presentation

- **Enterprise Risk Management Snapshot**
- **Enterprise Risk Management Tools**
- **Examples**
- **Insurance**

- At WSDOT risks have different levels of governance.
- Each program area has performance goals. (e.g., zero fatal and serious crashes) and reporting requirements
- Tools are used to increase efficiency & effectiveness and to address risk in a proactive manner
- Examples including asset based risk assessment
- Risk transfer through insurance

Washington's transportation system is big, complex and multimodal

Comprehensive system connects roadways, airports, waterways and railways

On the state-owned system alone:

- **Highways**: 87 million vehicle miles/day (18,500 state highway lane miles)
  - 309 lane miles of the 320 miles funded for HOV systems are in place (Including transit and HOV treatments on arterials and ramps)
  - More than 3,600 bridges and structures
- **Ferries:** 23 million passengers/year (23 ferry vessels, 19 terminals in Washington, and 450 total sailings per day with 900 total sailings)
- **Aviation:** 17 WSDOT-managed airports (138 public-use airports)
- **Passenger rail:** Nearly 850,000 passengers in 2011 (partner in Amtrak *Cascades* state passenger rail)
- **Freight rail:** 3,600 miles of operated public and private freight railroads move 103 million tons of freight. (2009 data)
  - Grain Train delivers more than 1.6 million tons of grain since 1994, 100 tons per car in 2010. (The Grain Train program runs 118 cars, including 29 added in 2010.)
  - WSDOT owns 326 miles of short-line railroad. (During 2010, shipping on the Palouse-Coulee City rail system increased 20% over 2009 to 8,000 carloads)
- **Transit support**
  - Business and state partnerships in commute programs support more than 810,000 workers statewide (160 million vehicle miles traveled reduced annually)
  - Vanpool program includes more than 2,400 vans (largest public fleet in the nation)

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Source: WSDOT Strategic Assessment; Freight

Why enterprise risk management?

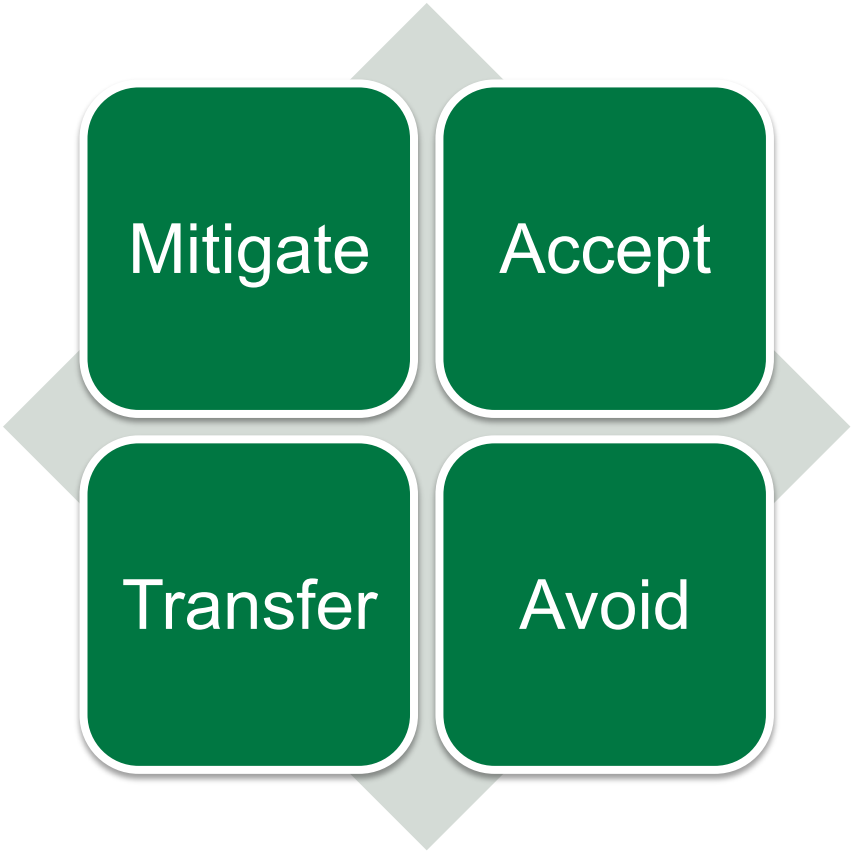
Enterprise Risk Management

Optimized decision making

Linked to strategic goals and objective

Balancing tradeoffs

Risk Portfolio



"across the enterprise"

Risk management in Practice

- Enterprise Risk Management
- Performance Management
- Project and Programs
- Asset Management

- Developed In-house tools
- Increasing maturity of ERM program
- Common understanding of risk categories and measures
- Working across boundaries
- Useful day-to-day to increase efficiency & effectiveness
- Understand and address risk in a proactive manner

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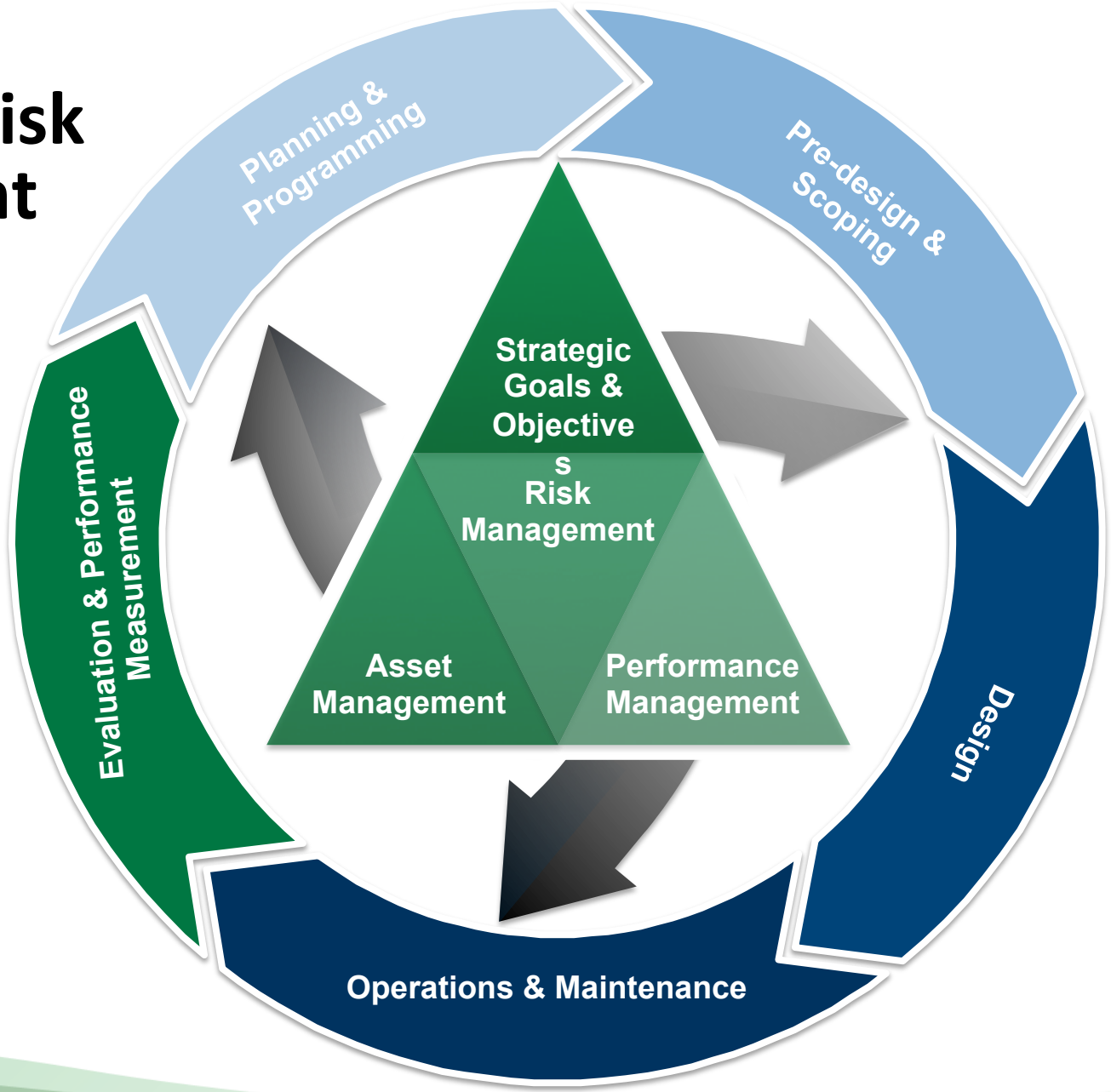
Enterprise Risk Management at WSDOT

Source: TRB International Risk Management Practices for Program Development and Project Delivery (2012)

Integrating Enterprise Risk Management at WSDOT



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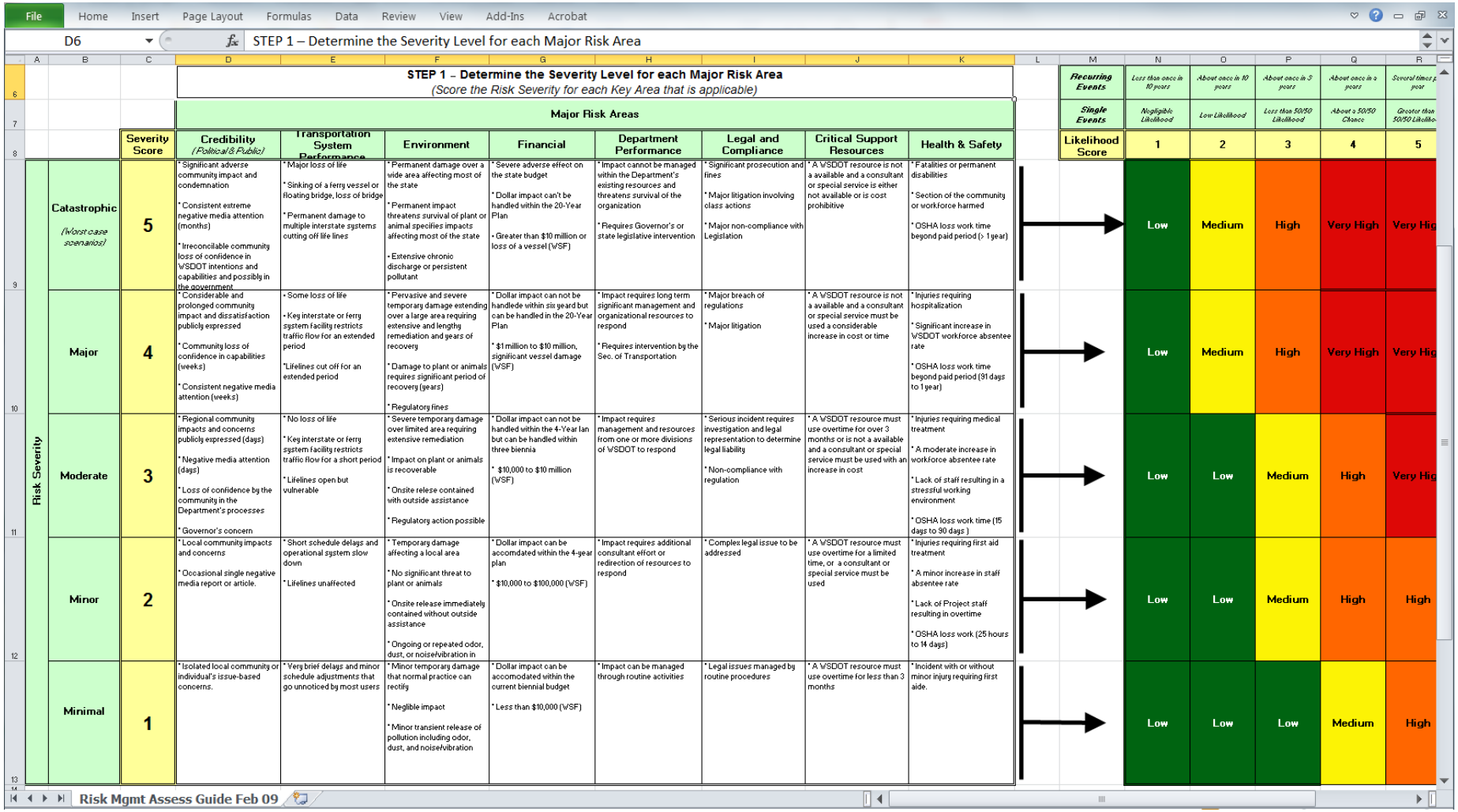
Source: Milton and Van Schalkwyk (2012)

Categorizing, assessing and mapping risks

Risk Assessment Guide



STEP 1 – Determine the Severity Level for each Major Risk Area

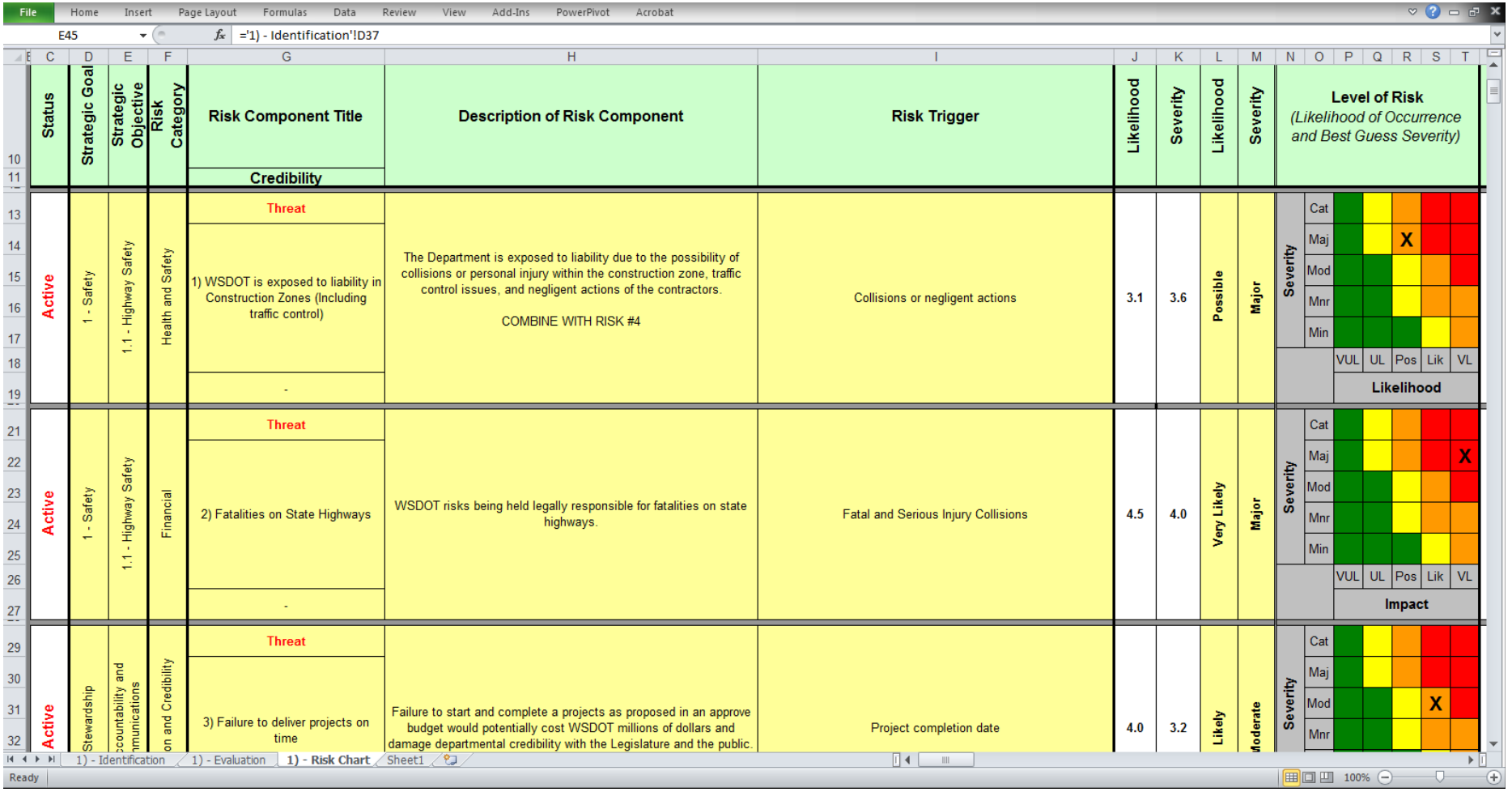
(Score the Risk Severity for each Key Area that is applicable)

Risk Severity	Severity Score	Major Risk Areas: Credibility (Political & Public)	Transportation System Performance	Environment	Financial	Department Performance	Legal and Compliance	Critical Support Resources	Health & Safety
Catastrophic *(Worst case scenarios)*	**5**	* Significant adverse community impact and condemnation * Consistent extreme negative media attention (months) * Irreconcilable community loss of confidence in WSDOT intentions and capabilities and possibly in the government	* Major loss of life * Sinking of a ferry vessel or floating bridge, loss of bridge * Permanent damage to multiple interstate systems cutting off life lines	* Permanent damage over a wide area affecting most of the state * Permanent impact threatens survival of plant or animal specifies impacts affecting most of the state • Extensive chronic discharge or persistent pollutant	* Severe adverse effect on the state budget * Dollar impact can't be handled within the 20-Year Plan • Greater than $10 million or loss of a vessel (WSF)	* Impact cannot be managed within the Department's existing resources and threatens survival of the organization * Requires Governor's or state legislative intervention	* Significant prosecution and fines * Major litigation involving class actions * Major non-compliance with Legislation	* A WSDOT resource is not a available and a consultant or special service is either not available or is cost prohibitive	* Fatalities or permanent disabilities * Section of the community or workforce harmed * OSHA loss work time begond paid period (> 1 year)
Major	**4**	* Considerable and prolonged community impact and dissatisfaction publicly expressed * Community loss of confidence in capabilities (weeks) * Consistent negative media attention (weeks)	• Some loss of life • Key interstate or ferry system facility restricts traffic flow for an extended period *Lifelines out off for an extended period	* Pervasive and severe temporary damage extending over a large area requiring extensive and lengthy remediation and years of recovery * Damage to plant or animals requires significant period of recovery (years) * Regulatory fines	* Dollar impact can not be handlede within six yeard but can be handled in the 20-Year Plan * $1 million to $10 million, significant vessel damage (WSF)	* Impact requires long term significant management and organizational resources to respond * Requires intervention by the Sec. of Transportation	* Major breach of regulations * Major litigation	* A WSDOT resource is not a available and a consultant or special service must be used a considerable increase in cost or time	* Injuries requiring hospitalization * Significant increase in WSDOT workforce absentee rate * OSHA loss work time begond paid period (91 days to 1 year)
Moderate	**3**	* Regional community impacts and concerns publicly expressed (days) * Negative media attention (days) * Loss of confidence by the community in the Department's processes * Governor's concern	* No loss of life * Key interstate or ferry system facility restricts traffic flow for a short period * Lifelines open but vulnerable	* Severe temporary damage over limited area requiring extensive remediation * Impact on plant or animals is recoverable * Onsite relese contained with outside assistance * Regulatory action possible	* Dollar impact can not be handled within the 4-Year Ian but can be handled within three biennia * $10,000 to $10 million (WSF)	* Impact requires management and resources from one or more divisions of WSDOT to respond	* Serious incident requires investigation and legal representation to determine legal liability * Non-compliance with regulation	* A WSDOT resource must use overtime for over 3 months or is not a available and a consultant or special service must be used with an increase in cost	* Injuries requiring medical treatment * A moderate increase in workforce absentee rate * Lack of staff resulting in a stressful working environment * OSHA loss work time (15 days to 90 days)
Minor	**2**	* Local community impacts and concerns * Occasional single negative media report or article.	* Short schedule delays and operational system slow down * Lifelines unaffected	* Temporary damage affecting a local area * No significant threat to plant or animals * Onsite release immediately contained without outside assistance * Ongoing or repeated odor, dust, or noise/vibration in	* Dollar impact can be accomdated within the 4-year plan * $10,000 to $100,000 (WSF)	* Impact requires additional consultant effort or redirection of resources to respond	* Complex legal issue to be addressed	* A WSDOT resource must use overtime for a limited time, or a consultant or special service must be used	* Injuries requiring first aid treatment * A minor increase in staff absentee rate * Lack of Project staff resulting in overtime * OSHA loss work (25 hours to 14 days)
Minimal	**1**	* Isolated local community or individual's issue-based concerns.	* Very brief delays and minor schedule adjustments that go unnoticed by most users	* Minor temporary damage that normal practice can rectify * Neglible impact * Minor transient release of pollution including odor, dust, and noise/vibration	* Dollar impact can be accomodated within the current biennial budget * Less than $10,000 (WSF)	* Impact can be managed through routine activities	* Legal issues managed by routine procedures	* A WSDOT resource must use overtime for less than 3 months	* Incident with or without minor injury requiring first aide.

Likelihood Score	1	2	3	4	5
Recurring Events	*Less than once in 10 years*	*About once in 10 years*	*About once in 3 years*	*About once in a years*	*Several times p year*
Single Events	*Negligible Likelihood*	*Low Likelihood*	*Less than 50/50 Likelihood*	*About a 50/50 Chance*	*Greater than 50/50 Likeliho*
Risk Severity					
Catastrophic	Low	Medium	High	Very High	Very Hig
Major	Low	Medium	High	Very High	Very Hig
Moderate	Low	Low	Medium	High	Very Hig
Minor	Low	Low	Medium	High	High
Minimal	Low	Low	Low	Medium	High

Analyzing Risks to Strategic Objectives

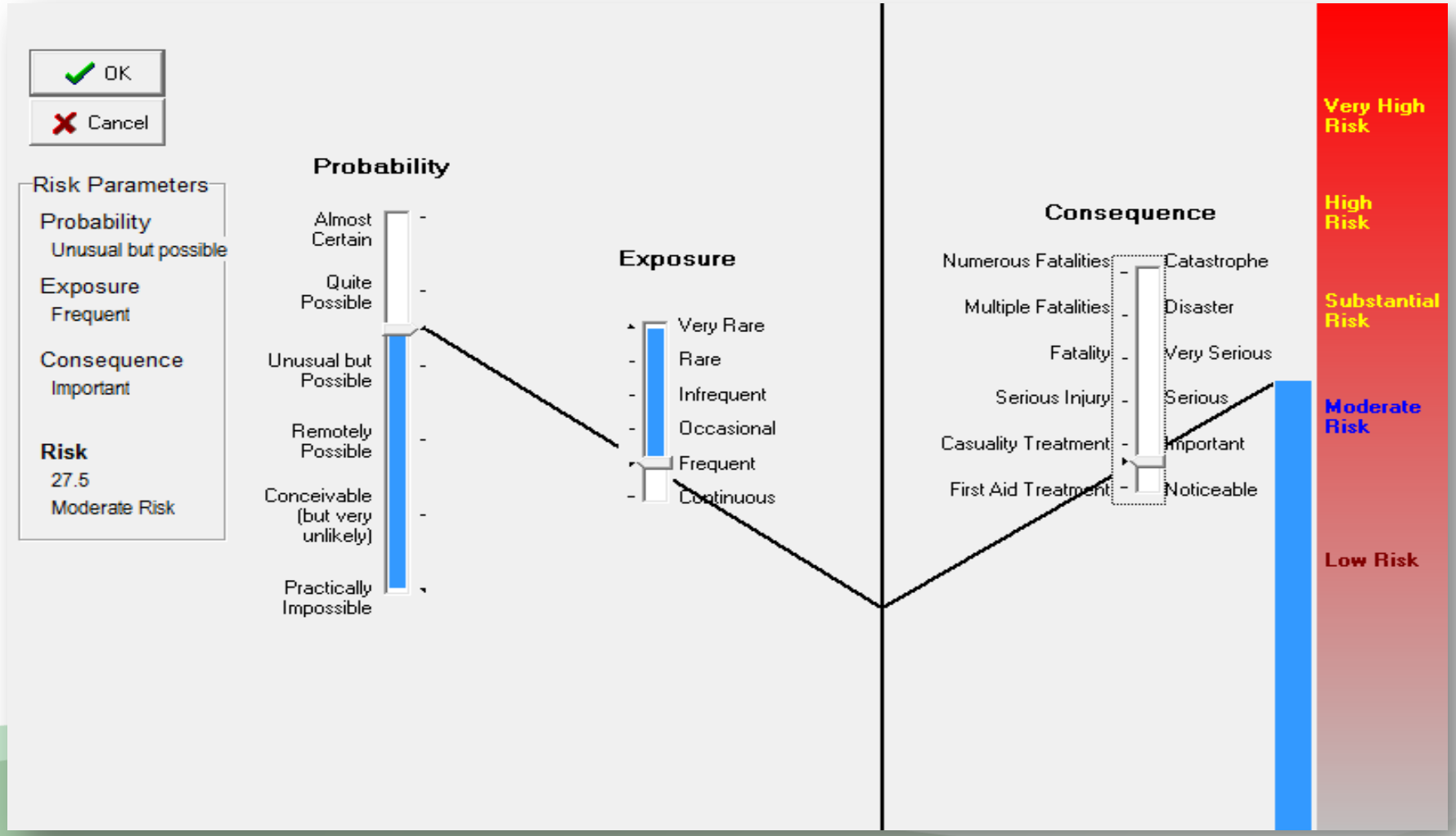
ERM Risk Examples and Tools



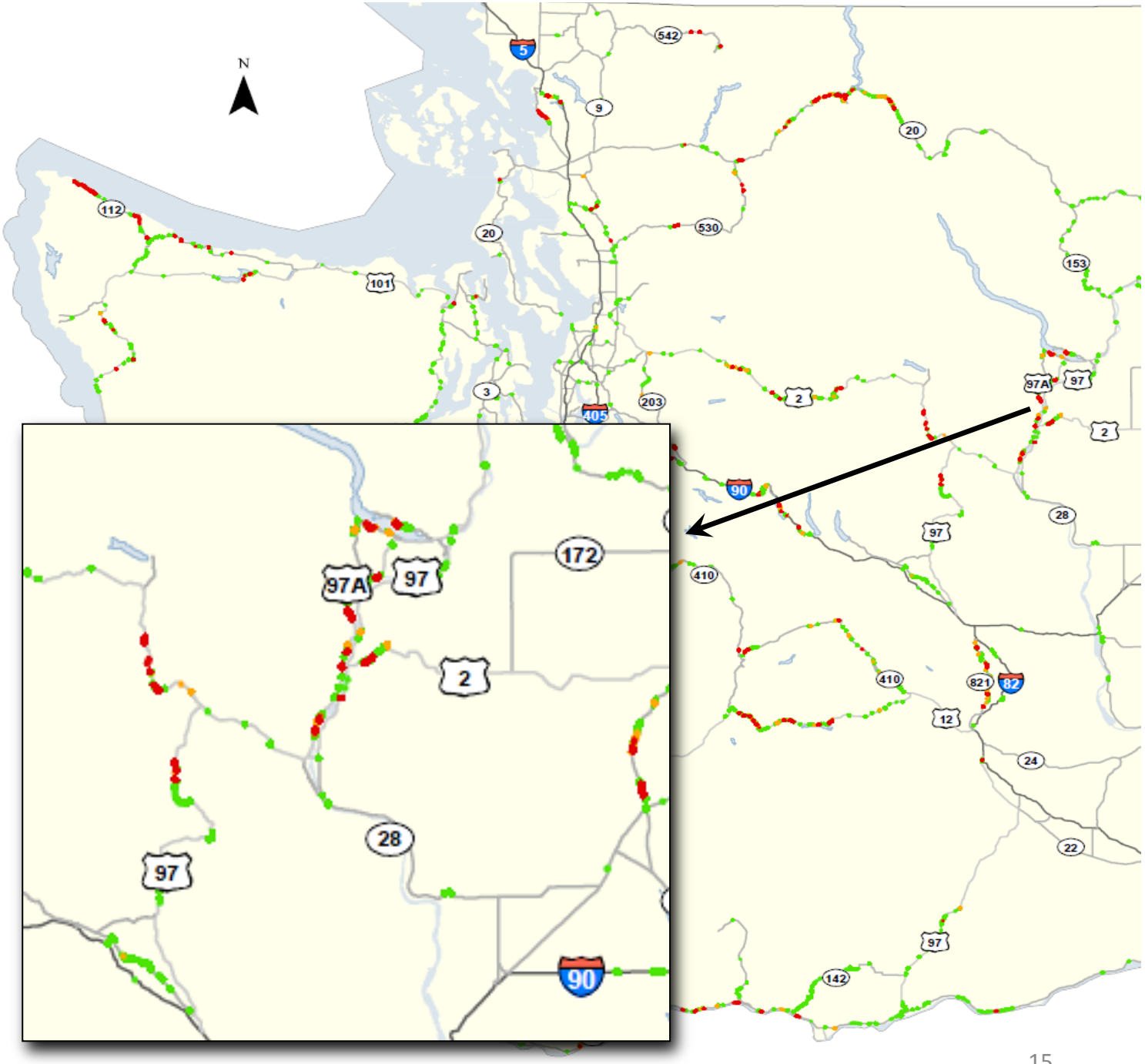
Status	Strategic Goal	Strategic Objective	Risk Category	Risk Component Title / Credibility	Description of Risk Component	Risk Trigger	Likelihood	Severity	Likelihood	Severity
Active	1 - Safety	1.1 - Highway Safety	Health and Safety	Threat 1) WSDOT is exposed to liability in Construction Zones (Including traffic control) -	The Department is exposed to liability due to the possibility of collisions or personal injury within the construction zone, traffic control issues, and negligent actions of the contractors. COMBINE WITH RISK #4	Collisions or negligent actions	3.1	3.6	Possible	Major
Active	1 - Safety	1.1 - Highway Safety	Financial	Threat 2) Fatalities on State Highways -	WSDOT risks being held legally responsible for fatalities on state highways.	Fatal and Serious Injury Collisions	4.5	4.0	Very Likely	Major
Active	Stewardship	ccountability and mmunications	on and Credibility	Threat 3) Failure to deliver projects on time	Failure to start and complete a projects as proposed in an approve budget would potentially cost WSDOT millions of dollars and damage departmental credibility with the Legislature and the public.	Project completion date	4.0	3.2	Likely	Moderate

Level of Risk (*Likelihood of Occurrence and Best Guess Severity*)

Risk ranking patron walking in cabin trips resulting in incident (Riskex software)



Visual risk assessment used for asset management purposes!



Unstable Slope

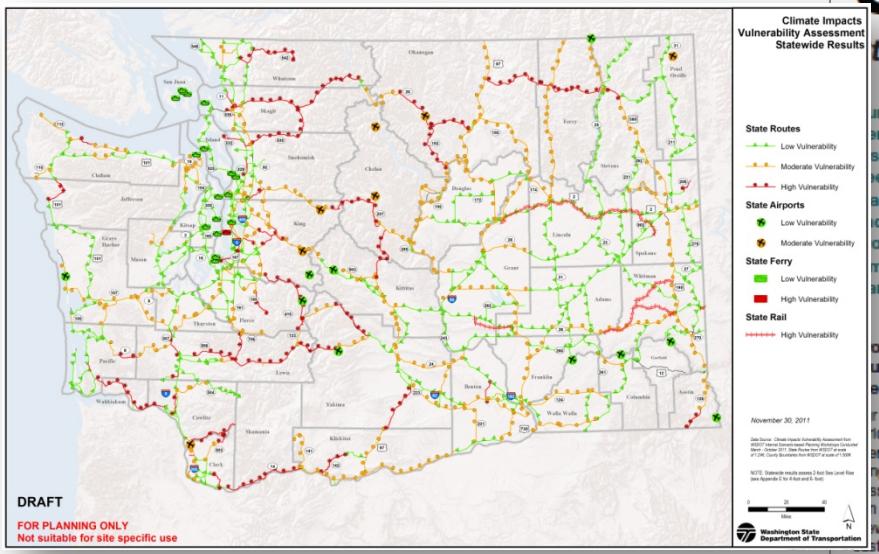
Slope Rating

- < 300
- 300 - 350
- > 350

Data Source: GIS Workbench - March 1, 2011
All Slopes Including Mitigated

Climate Change

Assessment of impacts and risks



Washington State Department of Transportation

March 2012

Adapting to a changing climate

Statewide study of climate-related infrastructure risks

Our climate is changing. Demand for transportation resources continues to grow. Keeping state-owned and managed infrastructure safe and operational is key to a growing economy and building more resilient and sustainable transportation system.

Protecting infrastructure, freight routes and keeping drivers safe for the long-haul

Our economy and quality of life can take serious hits when inclement weather floods interstates, closes critical bridges and brings relentless snow to our mountain passes. The past has shown how storms can wreak havoc on our daily lives and prevent goods and services getting to customers.

WSDOT's job is to keep the state's transportation system safe and operational. This means planning and preparing to protect and manage our vital roads, bridges, ferry terminals and other facilities that could be vulnerable to severe weather. We must be resilient and adapt to future environmental conditions. Thanks to a $189,500 Federal Highway Administration (FHWA) national pilot project grant, WSDOT was able to complete the groundwork on assessing how our state-owned and operated transportation assets may fare under extreme weather changes.

WSDOT pilots infrastructure vulnerability assessment

We conducted workshops with our field staff from across the state to assess the vulnerability of our highways, ferry terminals and other infrastructure to changes in our climate and weather extremes. We presented the participants with climate scenarios such as extreme temperatures and sea-level rise, asking "What would be the likely impact on our facilities?" The results from each workshop were used to create a series of planning-level maps.

USDOT Climate Change Policy

In addition to the federal dollars from the FHWA pilot project, United States Department of Transportation (USDOT) policy supports climate adaptation efforts. In a June 2011 policy statement, U.S. Transportation Secretary Ray LaHood directed USDOT agencies (such as the federal highway and transit administrations) to consider climate change impacts on current systems and future investments.

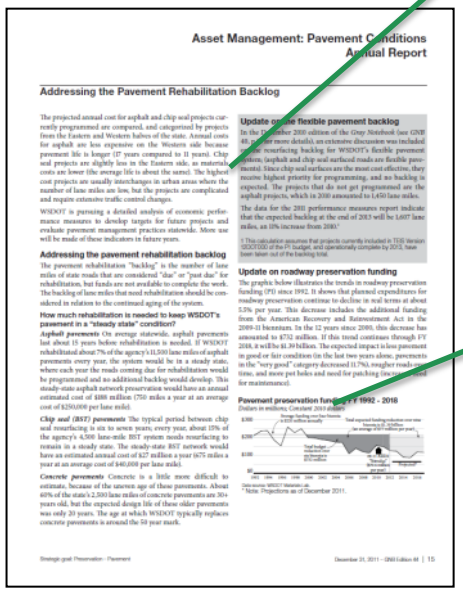
The USDOT climate change policy statement further states that "planning for climate adaptation assists State and local transportation agencies, and DOT, to identify how climate change is likely to impact their ability to achieve their mission, continue operations, and to meet policy and program objectives."

www.dot.gov/docs/climatepolicystatement.pdf

Telling the story

Pavement:

Target lowest life-cycle cost



Asset Management: Pavement Conditions Annual Report

Addressing the Pavement Rehabilitation Backlog

Update on the flexible pavement backlog

Update on roadway preservation funding

How much rehabilitation is needed to keep WSDOT's pavement in a "steady state" condition?

Addressing the pavement rehabilitation backlog

Pavement preservation funding FY 1992 - 2018

Communicating the funding crisis, while achieving pavement preservation goals

WSDOT uses graphs and charts to illustrate declining funding:

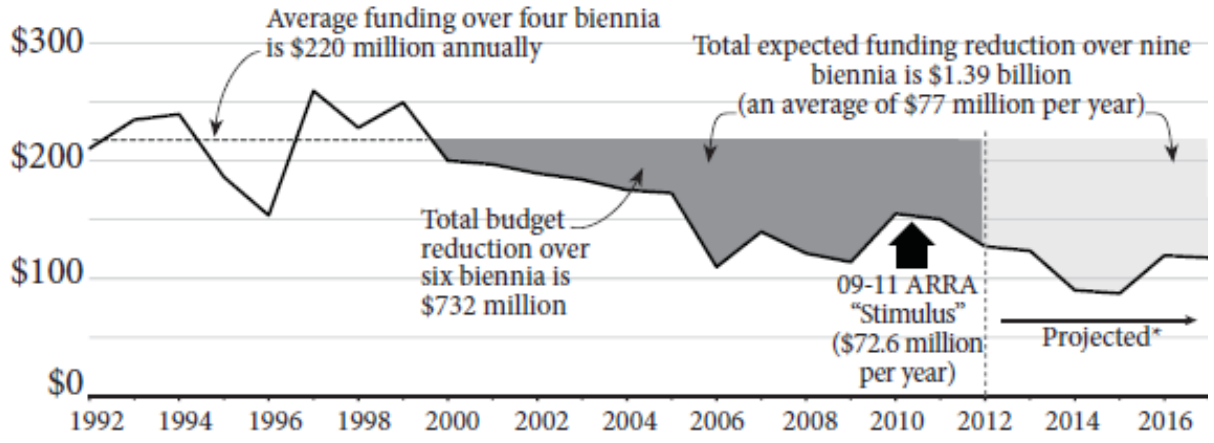
- Maintaining over 20,000 lane miles while funding dropped by $600 million in 10 years (27% reduction)

WSDOT uses performance management to create efficiencies:

- Target lowest life-cycle cost – WSDOT achieves pavement condition goals amidst funding crisis (next slide)

Pavement preservation funding FY 1992 - 2018

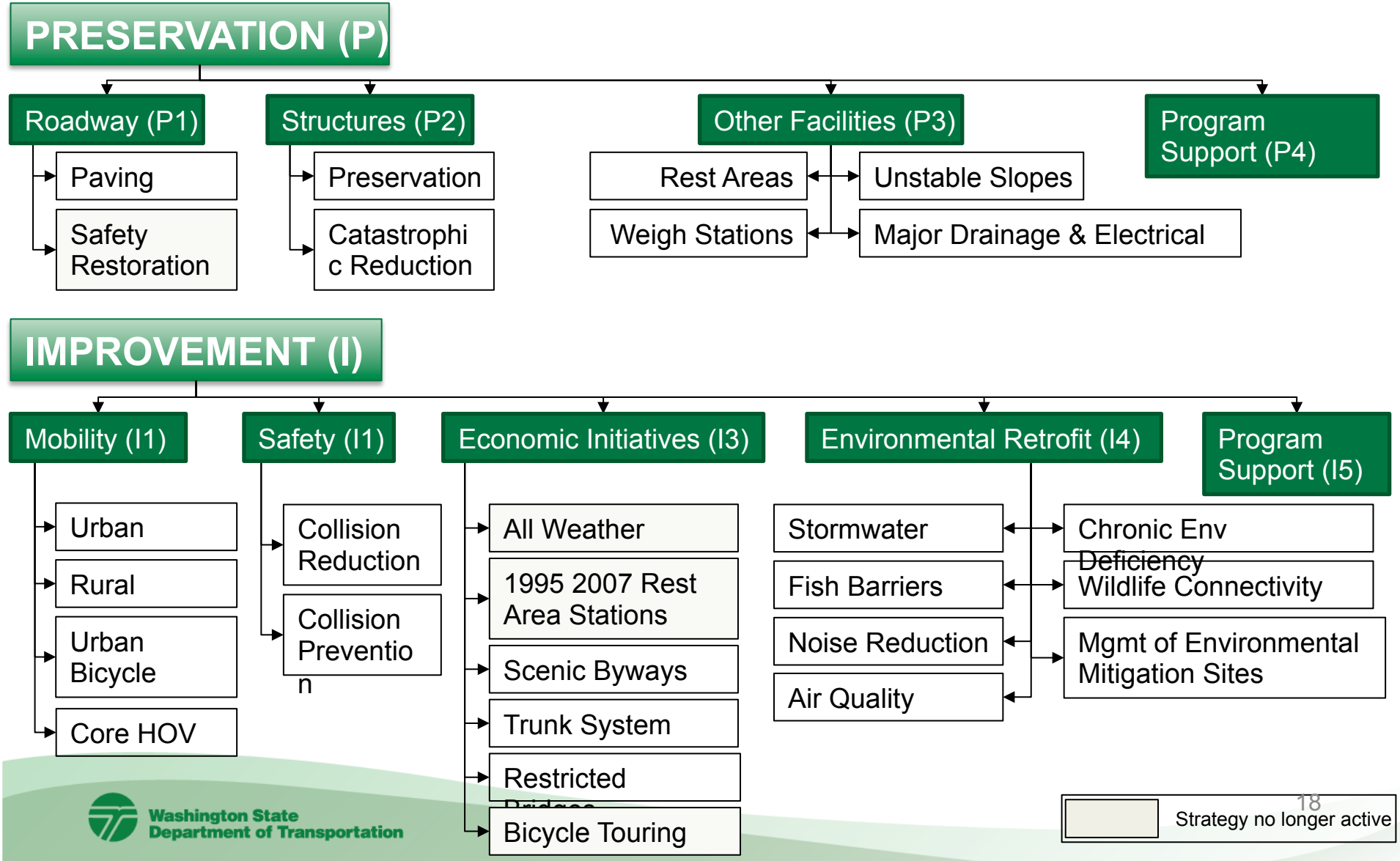
Dollars in millions; Constant 2010 dollars



Data source: WSDOT Materials Lab.

*Note: Projections as of December 2011.

Highway Construction Program



Strategic Objectives

What are the risks and opportunities to achieving our objectives

- WSDOT Business Directions
- Moving Washington
- Target Zero

Example: Hard Shoulder Running

Developed strategic and targeted approaches to added capacity

Strong performance management and measurement.

- **(Strategy):** Efficient use of system
- **(Performance Metric:** Increase LOS of facility/Lower Delay/Recurrent or Non Recurrent Congestion
- **Assets Impacted:** Pavement Shoulder, Electrical Systems, Signage, etc.
- **Competing Risks:** Hard shoulder running has the potential to create its own risks to the enterprise and programs , as an example, what if:
  - The shoulder structure fails?
  - Crashes increase due to proximity of barriers and rails?
  - Public doesn't like it?

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Legal Risk Summit

- **Allow experts and attorneys to share information**
- **Highlight potential areas of risks and continuing legal liability**
- **Share settlement and case outcomes**

- Presentation by Attorney's General on key risks from the legal perspective
- Major cases and their effects
- Torts/Jones Act/Environmental/ Right of Way
- Presentation by WSDOT on changes to major programs with discussion on risks mitigation
- Action items related to new elements of risk and next steps

Insurance

- **Self Insurance**
- **OCP/CGL for projects**
- **Property Insurance for large assets**

- WSDOT is self insured for up $10M on torts related actions
- For Owner and Contractors Protective liability on projects between $3-$10M
- For Commercial General Liability a minimum of $3M with state named as additional insured
- WSDOT insures some of its bridges and ferry boats. Policy costs and replacement values vary on assets.
- Assets are insured for property, business interruption, including earthquake, flood and terrorism

WSDOT RISK MANAGEMENT ASSESSMENT GUIDE FOR GUARDRAILS - September 2012

Note: • *This guide illustrates the range of potential consequences and likelihood that may be associated with key department risk areas.*
• *Judgment is required to assess the consequences and likelihood of a risk event (both before and after effective risk treatment action).*

STEP 1 – Determine the Severity Level for each Major Risk Area

(Score the Risk Severity for each Key Area that is applicable)

	Severity Score	Major Risk Areas for Guardrails: Type	Height	Post Condition	Terminal/Transition Type	Rail Condition
High	3	W-beam guardrail with 12-foot-6-inch post spacing or no blockouts, or both. W-Beam on concrete posts. Half moon or C-shaped rail. Cable barrier on concrete or wooden posts. Beam guardrail with steel blockouts in locations speeds over 45 mph.	Below 26"	More than (10%) of the guardrail installation has one or more of these conditions Cracked across grain, Broken, Rotted, Missing, Cracked along post bolt hole,	All BCTs on NHS routes, including ramps, BCTs with less than 3' offset on non-NHS routes with speeds over 45 mph, Terminal or Transition installation is not compliant with current WSDOT Design Manual guidance	Vertical tear of any length, Non-manufactured hole greater than 1", Any hole that intersects top or bottom edge of rail, Corrosion resulting in section loss of 10% Localized rail damage warrants repair through damaged area only.
Medium	2		26" to 27"	Less than (10%) of the guardrail installation has one or more of these conditions Cracked across grain, Broken, Rotted, Missing, Cracked along post bolt hole,	BCTs with less than 3' offset on non-NHS highways - 45 mph or lower speed	Rail flattened with a cross section height of more than 17" or less than 9", Horizontal tear greater than 12" long or greater than 1/2" wide, 1-2 holes non-manufactured with a height less than 1"
Low	1		> 27" & < 29"		BCTs on Non- NHS highways with greater than 3' offset, all speeds	

STEP 2 – Estimate the Risk Impact

	Risk Levels: Very Unlikely	Likely	Very Likely
ADT	*>0-10,000vpd*	*>10,000-25,000vpd*	*>25,000vpd*
Crashes	*Less than expected*	*at expected*	*greater than expected*
Likelihood Score	1	2	3
High	Tier 2	Tier 1	Tier 1
Medium	Tier 3	Tier 2	Tier 2
Low	Tier 3	Tier 3	Tier 3

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