Agenda

Setting Tillamook County Road Service Priorities – Risk Management Workshop

November 21, 2016 3 p.m. – 5 p.m.
BOCC Meeting Rooms A & B

Meeting Objectives

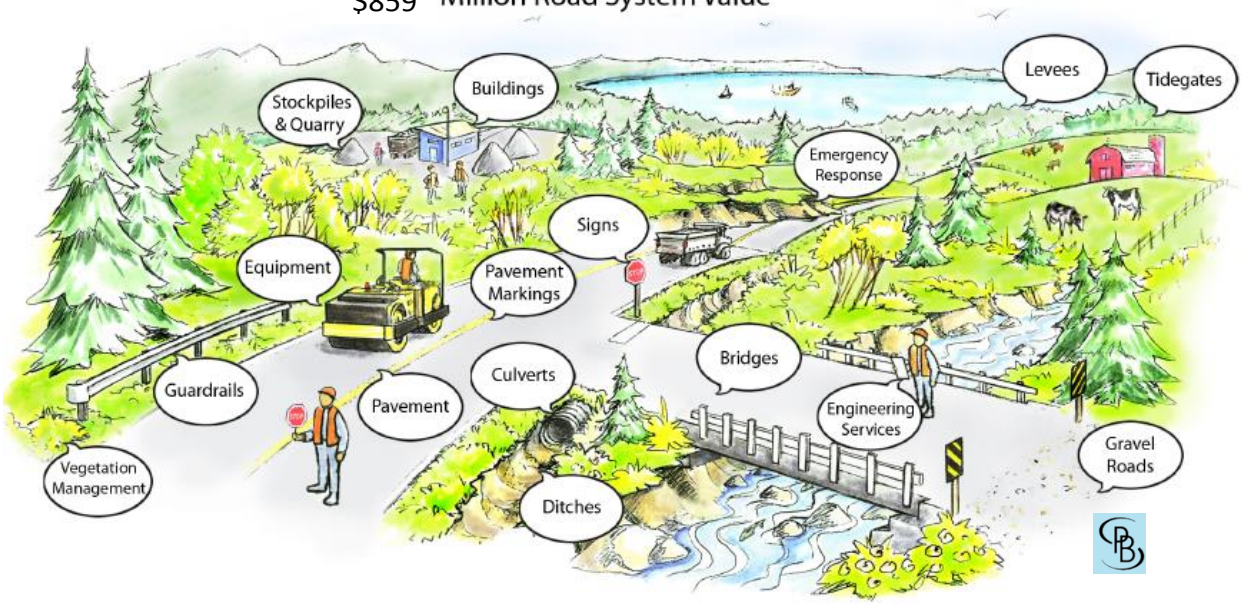
- Introduction to asset management principles & risk assessment process
- Review of Fiscal 2016 Road Services Performance
- Assess the risks associated with providing County road services
- Develop common understanding of Road Department service priorities

Agenda

1. Introductions
2. Purpose of the workshop: set Road Department priorities
3. Asset Management principles
4. Risk Assessment Process
5. Current state & trends
6. Priorities for FY 2018 Core Road Services
7. Next Steps

Your Tillamook County Road Dollars At Work

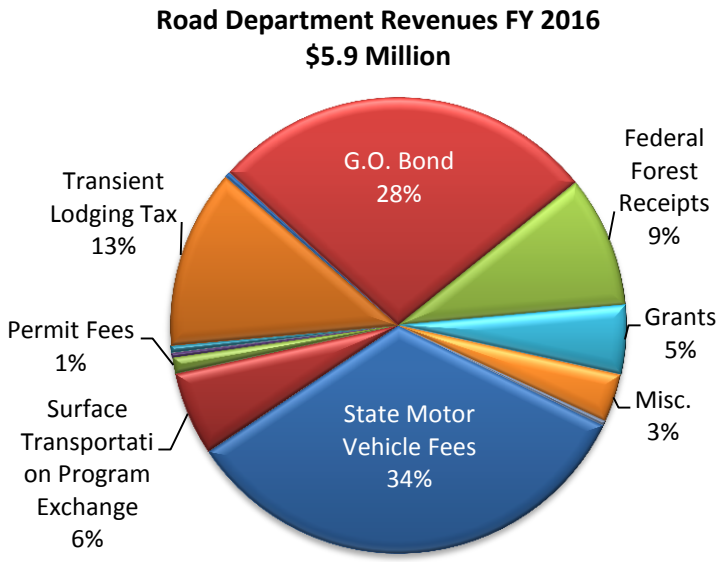
$859 Million Road System Value



TILLAMOOK COUNTY ROAD NETWORK INVENTORY, CONDITION, AND VALUE JULY 2016

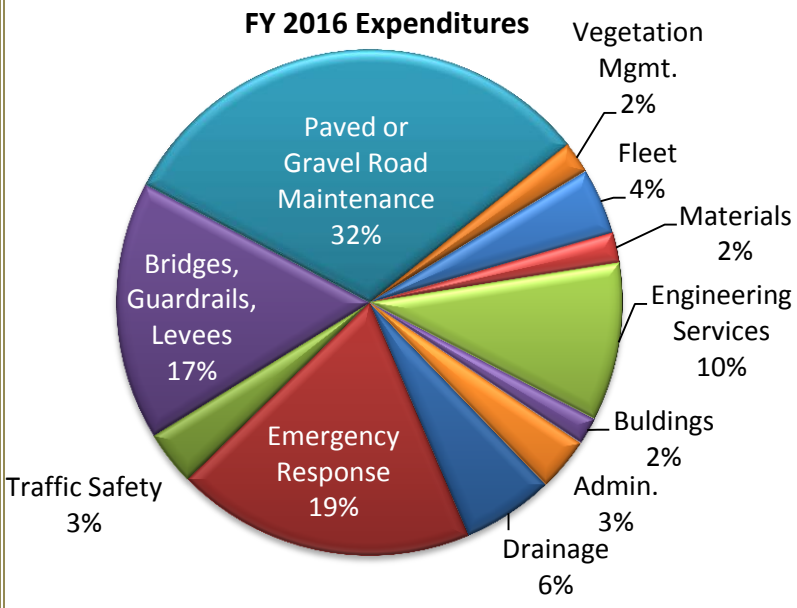
FACILITY		STATUS	REPLACEMENT VALUE	CONDITION*						KNOWN UNMET NEED**
				VG	G	F	P	VP	TBD	
PAVEMENT										
	Paved	263 centerline miles	$300,900,000		35%	21%	26%	18%		$68,460,000
	Gravel	65 centerline miles	$2,405,670						X	N/A
			$303,305,670							$68,460,000
STRUCTURES										
	Bridges	102	$262,064,000		62%	22%	10%	6%		$35,845,000
	Guardrails	10.1 miles	$1,152,385						X	TBD
	Levees	6	TBD			100%			X	TBD
			$263,216,385							$35,845,000
DRAINAGE										
	Culverts	3,200	$280,977,000	14%	25%	22%	29%	3%	6%	$4,850,000
	Tidegates	15	TBD	20%	34%			13%	33%	TBD
	Catch Basins	TBD	TBD						X	TBD
	Ditches	195 miles	TBD						X	TBD
TRAFFIC SIGNALS		1	$45,000						X	TBD
STREET SIGNS										
	Signs	5,045	$504,500	5%	15%	63%	15%	2%		TBD
	Delineators	470	$41,830						X	TBD
	Posts	4,653	$428,076						X	TBD
			$974,406							
PAVEMENT MARKINGS										
	Painted center lines miles	490	N/A							N/A
	Painted Stop Bars	532	N/A							N/A
VEHICLES & EQUIPMENT* **		97	$3,966,527						X	$540,000
BUILDINGS		15	$4,858,784	27%	20%	40%	6%	7%		$117,375
RIGHT-OF-WAY* **		2,367 acres	$1,475,557							N/A
TOTAL			$858,819,329							$109,812,375

Where does the money come from?



*Without Beginning Fund Balance of $3.4 Million

Where does the money go?



Local revenues now make up over 44% of County road funding. The Road Department also leveraged $6.8 million in projects through grants with Oregon DOT, Federal Highways Administration, the Oregon Watershed Enhancement Board, Trout Unlimited, the U.S. Forest Service, U.S. Fish and Wildlife Services.

What we cannot do

- **Drainage.** One-third of the estimated 3,200 culverts are in Poor condition. $4.9M is needed to replace 10 culverts, a small percentage of total culvert replacement needs. There are 198 miles of ditches that drain water from County roads. The condition of ditches changed dramatically after the December 2015 storm event. Ditches are cleaned on a reactive basis due to lack of staff. This continues to be one of the biggest risks to the County transportation system.
- There are insufficient funds for **bridge maintenance and bridge replacement** identified in the *Strategic Bridge Program*; there are 13 bridges in Poor condition
- There is a **lack of staff** to keep up with routine maintenance across the system (mowing, guardrails, ditching, and culvert cleaning).
- We are falling behind on **equipment maintenance** because shop staff becomes part of the crew.
- We are losing our investment in some Road Department **buildings**.
- The Public Works Director performs the roles of County Engineer, as well as oversees the County Solid Waste program. This is unsustainable. More **engineering staff** is needed.

What we have done

The road system incurred $8M in damage in the federally declared December 2015 storm. 19% of the Road Department 2016 budget was spent responding to the storm. The financial impact on our budget (10-25% match is needed to receive federal funds) reduces funds for maintenance. Work will continue for years with our federal partners to repair the damage. Safety projects for the County continue as a high priority: a new alignment for Cape Meares Loop, a 2nd access out of Neskowin, and Earthquake/Tsunami preparedness. 2016 focused expenditures on economic development routes & moved into the neighborhoods Countywide for safety and emergency response. There were 9.42 miles of County roads paved in 2016. Culverts were replaced along these routes to improve drainage. Seven bridges are scheduled for replacement. Goodspeed Bridge was repaired. Sifford culvert on Bower Creek was replaced. Bixby Road culvert was replaced with a fish passage structure. All roads received pavement markings. Replacement of regulatory and stop signs continues as a high priority throughout the County. 20% of all signs were measured for night time visibility. Six levees were inspected and deemed Minimally Acceptable. Some buildings were repaired.

Tillamook County

Public Works Road Department

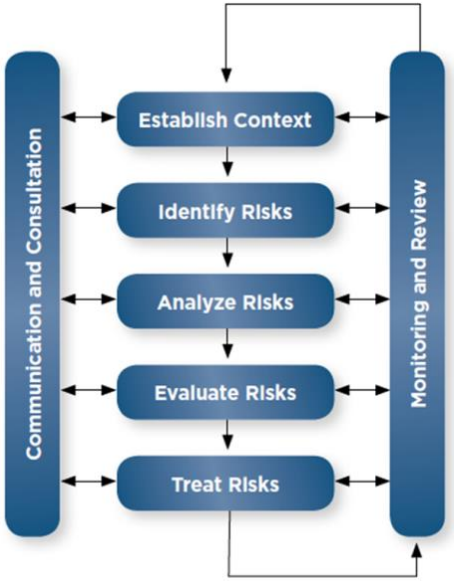
Risk Management Workshop
November 21, 2016

Effective Asset Management assesses and manages risk

- Helps identify risk, prioritize work for good decision making
- Meets statutory objectives by reducing threats to success and realizing opportunities to succeed
- Provides organizational resilience in responding to, managing and recovering from unforeseen and emergency situations
- Links long term strategic & financial plans with risk assessment & community priorities

Asset Plans align three levels of risk

1. Strategic (agency) risks to achieving the organization's longer-term (3+ years) strategic objectives such as:
   - Changing service demands (demographic or environmental shifts)
   - Inadequate or out of date strategic plan & vision
   - Changing standards or legislative mandates (e.g., FAST Act & MAP 21). These mandate federal funds be used to ensure the U.S. proactively maintains critical transportation infrastructure in a state of good repair.
   - Poor link between long term strategic plan and long term financial plan
   - Declining infrastructure condition, function or capacity
2. Operational (program) risks associated with day to day activities such as:
   - Inadequate access to information or data availability
   - Undocumented or poor data quality on high risk assets
   - Inadequate forecasting for high risk assets
   - Loss of institutional knowledge through retirements or inadequate training
3. Tactical (project or event) shorter term (1-3 years) risks of the that implement strategic objectives such as:
   - Strategy does not drive day to day work activity or project selection
   - Lack of knowledge about high risk assets or events
   - Reactive work takes priority over planned work



Risk Management Process

Assessing and managing asset and service risk is a core purpose of asset management. Asset management strategies target performance levels, minimize risks and costs so that an asset can deliver the desired level of service over its life cycle.

Risk can be defined as "the threat or probability that an action or event will adversely or beneficially affect an organization's ability to achieve its objectives." [1] By identifying the likelihood of failure and the consequence of failure a **Risk Treatment Plan** can detail a systematic and coordinated action plan that mitigates risks within resource limitations, including for non-acceptable risk: 1) Proposed Action; 2) Responsibility; 3)Resource requirement/budget; 4)Timing; and 5)Reporting and monitoring required. The acceptance of risk should match customer expectations and willingness to pay for a level of service.

Risk = Likelihood of failure x Risk Impact

Likelihood						
	5 Almost Certain	L	M	H	E	E
	4 Likely	L	M	H	H	E
	3 Moderate	L	L	M	H	H
	2 Unlikely	VL	L	L	M	M
	1 Rare	VL	VL	L	L	L
		1Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
Risk Impact						

[1] *Risk Management Principles & Guidelines*, ISO 31000:2009

Risk Impact

Factor	Score				
	Insignificant	Minor	Moderate	Major	Catastrophic
	1	2	3	4	5
Economic (damages to community, losses, additional expenditures)	Less than $5,000	$5,000-$25,000	$25,000 - $100,000	$100,000 - $250,000	Greater than $250,000
Legal compliance	County fully complies and is on course with regulators to anticipate mandates	County agrees to compliance schedule, and avoids lawsuits and fines.	County warned of compliance issues and adopts corrective action	County sued or fined for missing mandates. Expects to comply in 1 year.	County sued or fined for missing mandates. No viable plan to comply.
Community impact	Community complaints	Unplanned disruption to multiple households, firms or community services/structures	Simultaneous unplanned disruption to multiple households, firms, or community services/structures	Unplanned disruption to large number of households	Unplanned disruption to essential service (e.g., lifeline route)
Human health and safety	No injuries	Minor injuries	Serious injuries	Single fatality or multiple serious injuries	Multiple fatalities
Reputation	No adverse media (all week)	Local media criticize county for 1 week	Regional media criticizes County for 2 days	National media criticizes County for 2 days	National media criticizes County for 1 week
Environment	Short-term damage	Limited but medium-term negative effect	Major but recoverable ecological damage	Heavy ecological damage, costly restoration	Permanent, widespread ecological damage
Human Resources	Permanent staff reduction 0% to 5% per year	Permanent staff reduction 5% to 10% per year	Permanent staff reduction 10% to 15% per year	Permanent staff reduction 15% to 20% per year	Permanent staff reduction exceeds 20% per year

Risk Rating

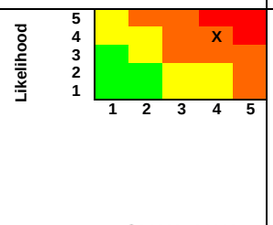
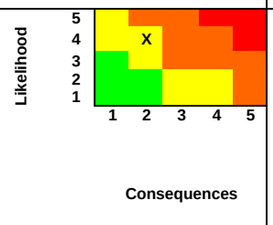
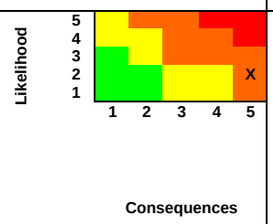
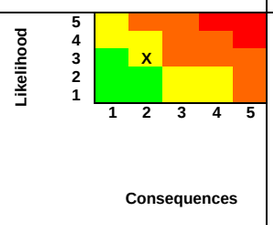
The risk rating is used to determine what action is required to manage the level of risk. Risk treatments can range from immediate corrective action for "Extreme" risks (such as stop work or prevent use of the asset) to managing 'Low' risks using routine procedures.

Risk Action	
Risk Rating	**Action**
Extreme	Immediate action required to reduce risk
High	Management attention required to manage risk
Moderate	Management responsibilities specified and risk controls reviewed
Low	Manage by routine procedures
Very Low	Manage by routine procedures

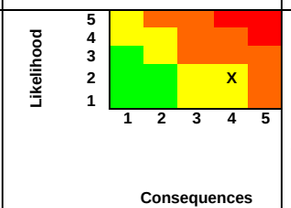
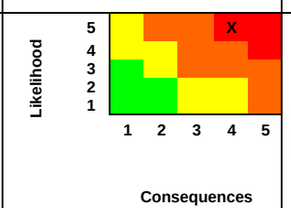
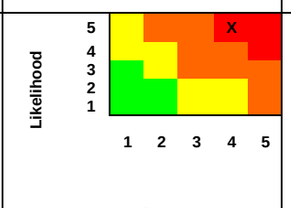
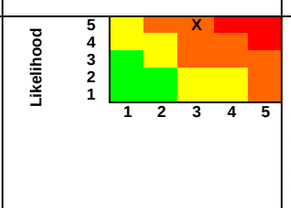
Risk treatment options include:

- **Avoid** or remove the risk completely by discontinuing the provision of the service
- **Mitigate** or reduce the risk by taking action that reduces the likelihood or the consequences of the risk
- **Transfer** the risk to another public or private entity for management
- **Accept** the risk

Risk Management Plan for Tillamook County Road Department

Risk Identification					Qualitative Risk Assessment				Management Plan					
#	Program	Risk Category	Failure Cause	Effect	Threat or Opportunity	Likelihood	Consequence	Risk Matrix	Response	Risk Contingency Response Plan	Residual Risk	Actions	Responsibility	Resources
1	Roads	Paved roads	Lack of timely maintenance Insufficient funding Poor design Wet climate/storm damage Poor drainage, utility work traffic loads, lack of enforcement, environmental regulations, inappropriate vehicle loading, vegetation impact, poor construction, inadequate contract supervision	Pot holes, shoulder deterioration, poor public image, base deterioration, overgrown vegetation, detracting from property value, increase maintenance cost, increased congestion, increase property damage, hurts industrial development & tourism, impacts public safety	Threat	4	4		Accept & Mitigate	Communicate reduced network condition in 5 years due to funding shortfall; Fill pot holes and pave based on road classification and available revenues; Transfer County roads to others as possible; Evaluate on case basis the cost/benefit of turning paved roads to gravel & consider speed signs	Risk remains.	1.1 Report to board on risk and funding need. 1.2 Implement program given funds available 1 .3 Target Pavement Management Strategies to Mix of Fixes	TCPW Director	1.1 TCPW Director 1.2 TCPWDirector & foremen & contract inspection 1.3 TCPW Director
2	Roads	Gravel roads	Lack of maintenance; Poor design; Wet climate; Poor drainage; Poor rock quality processing; Public assists but with poor steep slopes.	pot holes, shoulder deterioration, poor public image, base deterioration, overgrown vegetation, detracting from property value, increase maintenance cost, increased congestion, increase property damage, hurts industrial development & tourism	Threat	4	2		Mitigate	Grade gravel roads; Focus on higher volume roads with more residents; Transfer jurisdiction to other agencies; Consider no maintenance & signing "Limited maintenance"	Risk remains.	2.1 Define gravel road priority based on connectivity and emergency routing. 2.2 Identify roads to transfer to other jurisdictions based on above. 2.3 Review/approve Board to transfer to partner based on above. 2.4 Proceed as possible based on available resources.	TCPW Director	2.1 TCPW Director; 2.2 TCPWDirector & foremen & contract inspection
3	Structures	Bridges	Condition deteriorates to point of asset failure under normal traffic loading; Lifeline failure during natural disaster event or restricted use; Restrictions on load/dimensions of use, scour; Wet climate; Age; Material deterioration; Tide/salt/environmental impacts	Loss of life; Isolation of people; Liability, emergency response/life safety due to detours; Maintenance costs; Economic impact; Lack of accessibility, detours; County-wide, utility & intrastate communication lines interrupted; Failure of bridge shifts traffic to bridges and roadways	Threat	2	5		Mitigate	Consider abandoning or transfer bridges; Pursue federal and state money for bridges in poor condition; Inspect and post weight limits; Manage life line routes; Post poor bridges; Inform public of alternate routes; Implement 10-year Strategic Bridge Plan	Risk remains if funding not found to address bridges in poor condition or load limit signs are ignored or another major storm causes river channel change	3.1 Conduct every other year inspection; 3.2 Post weight limited bridges; 3.3 Notify industry of routes with posted bridges	Director	3.1 Bridge testing consultant; 3.2 Train staff 3.3 TCPWD Director
4	Structures	Guardrails	Condition deteriorates to point of asset failure; Asset fails during natural disaster; Asset fails due to failure of roadside slope Guardrail failure caused by poor design, landslide and vehicle impact, storm damage; Traffic accidents; Material failure (posts); Age	Guard rails sunk below road; More serious injuries; Fatalities, negative image; Safety & liability impacts	Threat	3	2		Accept	Replace dangerous guardrails	Risk remains.	4.1 Remove guardrail in poor condition with paving and bridge approach projects.	Road Foreman	4.1 Road Foreman

Risk Management Plan for Tillamook County Road Department

Risk Identification					Qualitative Risk Assessment				Management Plan					
#	Program	Risk Category	Failure Cause	Effect	Threat or Opportunity	Likelihood	Consequence	Risk Matrix	Response	Risk Contingency Response Plan	Residual Risk	Actions	Responsibility	Resources
5	Structures	Levees	Natural disaster (wind/rain, flooding, erosion) causes erosion and embankment failure and flooding	major flooding, economic impacts, fatalities, property damage, road closure	Threat	2	4		Mitigate	Inspect levees, repair within budget capabilities Look for hazard mitigation funds Access past inspection reports and develop annual inspection program Develop funding partnerships, and seek disaster prevention funds	Low when action plan done.	5.1 Develop inspection methodology and program. 5.2 Institute practice of inspecting prior to and following storm events. 5.3 Complete Emergency Access Plan. 5.4 Report to board on program needs.	TCPW Engineering staff with Core of Engineers, and foremen and Director	5.1 Engineering staff 5.2 Foremen 5.3 Eng. Staff 5.4 TCPW Director
6	Drainage	Culverts	Outdated inventory & condition assessment Lack of mapped culverts Low lying roads inundated by plugged or deteriorated culverts; Inappropriately sized outfalls beavers, undersized culverts, storm water	road washouts, flood property, road closures, traffic delays, property damage, emergency response issues, ecological impacts, negative impact on road integrity	Threat	5	4		Mitigate	Inventory and locate assets, inspect, rate condition. Develop preventive maintenance and replacement program; Seek opportunities with funding partners to target culverts with fish passage significance in need of repair or replacement	Reduced when plan done.	6.1 Develop inventory & planned inspection and cleaning program 6.2 Reduce or replace failed culverts as funding allows 6.3 Report to board on program costs & needs.	TCPW Director & foremen	6.1 Director and consulting services & foremen 6.2 Director with funding partners
7	Drainage	Ditches and Shoulders	No inventory or condition assessment Eliminated ditching crew over 20 years ago, vegetation up to road	road washouts, flood property, road closures, traffic delays, property damage, emergency response issues, ecological impacts, negative impact on road integrity, premature road deterioration, shoulder buildup of debris	Threat	5	4		Mitigate	Develop inventory and location of ditches; inspect, rate condition as a part of 2018 pavement rating contract	Risk remains. Reduced when funds and staff are available to develop proactive ditching program.	7.1 Develop inventory & planned inspection and cleaning program as budget allows; 7.2 Incorporate inventory and condition assessment in 2018 pavement contract; 7.3 Report to board on program costs & needs.	TCPW Director & foremen	7.1 Director and consulting services & foremen; 7.2 Administrative specialist & director review; 7.3 Director
8	Veg.Mgmt	Spraying & Mowing	Lack of sight distance Obstructs traffic signs Vegetation grows through pavement	builds shoulders, accidents, loss of sight distance, road deterioration, property damage, user costs, complaint volume increase; appearance not aesthetically pleasing; reactive maintenance, correcting problems after they occur; backlog of deficiencies; safety problems; higher costs when done irregularly	Threat & Opportunity	5	3		Accept & Mitigate	Increase awareness of staffing need; Continue to make a High priority for available funding.	Short term increased risk until public notified	8.1 Spray vegetation and report in accordance with DOA. 8.2 Mow vegetation as budget allows.	Staff and Director; Board approval required	8.1 Director & Foremen 8.2 Director & Foreman

Risk Management Plan for Tillamook County Road Department

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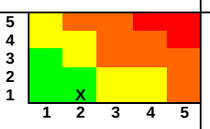
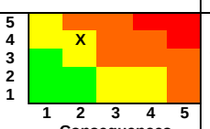
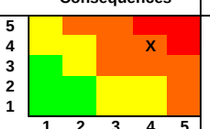
9	Traffic Safety	Signs-Regulatory (red/white, e.g. stop signs or yellow/black, e.g., yield signs)	Loss of signs in key locations; Condition (reflectivity) falls below threshold; Vandalism or graffiti; Posts knocked over from storm age deterioration	Increased accidents, complaints; possible fatality; speeding; overtime costs due to reactive maintenance	Threat	1	2		Avoid	Continue regulatory sign maintenance	Low risk when plan executed/	9.1 Continue sign maintenance program on regulatory signs only 9.2 Report sign need based on inspection	Foremen	9.1 Foremen 9.2 Sign technician
10	Traffic Safety	Signs-Other	Loss or lack of sign in key locations; Condition falls below threshold; Vandalism or graffiti; Posts knocked over from storm	Increased emergency response for down and vandalized signs; Increased citizen complaints; Increased overtime costs due to reactive maintenance	Threat	4	2		Accept	No overtime response for requests to replace non-regulatory signs down	Risk remains	10.1 Communicate decision to defer non-regulatory sign maintenance & overtime	Director & foremen	10.1 Director & sign technician
11	Traffic Safety	Pavement markings	Markings not replaced annually Poor or no visible markings	Accidents	Threat	1	2		Avoid	Maintain annual pavement marking contract using Marion County services	Low risk when markings replaced annually.	11.1 Manage annual pavement marking contract;	Administrative Specialist & Director	11.1 Administration Specialist initiates and manages contract costs; 11.2 Director monitors budget impact
12	Equipment	Fleet & Equipment	Inadequate preventive maintenance; Vehicles exceed useful life/ performance; Vehicles outdated or unsafe for job	Accidents; Time loss at work; Increased reactive repairs and costs	Threat	4	4		Mitigate	Reduce fleet by auctioning underutilized vehicles and equipment; Prioritize needs and work with partners to purchase used, critical vehicles and equipment; Monitor Level 1 (preventive maintenance) ; increase field employees so Shop Foreman can focus on fleet services	Risk remains until staff is increased and older, and failing vehicles and equipment replaced	12.1 Continue tracking time and hours of performance & maintenance cost per vehicle; 12.2 Auction underutilized and high cost vehicles and equipment; 12.3 Acquire used, critical fleet; 12.4 Report on need	TCPW Director & Shop Foreman	12.1 Shop foreman; 12.2 & 12.3 Shop Foreman and Administrative Specialist; 12.4 Shop Foreman and Director

Risk Management Plan for Tillamook County Road Department

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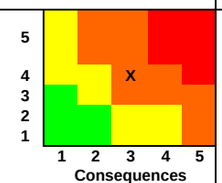
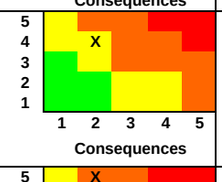
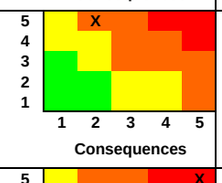
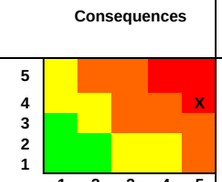
13	Facilities	Maintenance Yards	Buildings not to code Buildings functionally inadequate Buildings in poor condition	Worker safety; Poor employee morale; Costly reactive maintenance; Loss of investment	Threat	4	3		Mitigate	Annual inspection program Update inspection and condition rating; Provide critical maintenance and repair	Risk remains	13.1 Conduct annual inspection of buildings; 13.2 Provide critical building maintenance and repairs as budget allows; 13.3 Report on need	County staff & TCPWD Director	13.1 & 13.2 Admin. Specialist hires building inspector to update condition and perform repairs; 13.3 TCPW Director
14	Materials Mgmt.	Quarries	Inadequate crushed rock Threat of selling quarries	Buy more costly materials that don't meet job needs Slower delivery of materials	Threat	4	2		Mitigate	Develop Quarry Development Plan; crush rock and organize quarries	Lowers risk when plan executed & quarries retained.	14.1 Maintain quarries and provide high quality and efficiently organized quarry materials for County road jobs. 14.2 Modify DOGMI Permit	TCPW Director	14.1 Foremen; 14.2 Director
15	Engineering	Engineering Staff	Staff inadequate for volume of permits and capital projects; Qualified staff resigns or retires	Slow permit review; Threat that mandated review cycle not met; Higher costs to developers, utilities and citizens; Poor morale; Accelerated employee turnover and loss of corporate knowledge	Threat	5	2		Mitigate	Delegate more capital project management from Director to Engineering staff	Risk remains until additional staff hired	15.1 Manage efficiency of engineering staff; 15.2 Report to Board and identify if revenues can be used to hire additional staff	Eng. Staff and Director	15.1 Engineering staff & Director; 15.2 TCPW Director
16	Admin. Services	Department Employees	Inadequate staffing; Inadequate compensation; Inadequate technical training; Insufficient funding to hire, train employees	Poor employee morale; Poor public image; Slower response to public requests for service Accelerated employee turnover & loss of corporate knowledge	Threat	5	5		Mitigate	Develop a succession plan; hire more staff; revise compensation plan	Risk remains	16.1 Conduct risk workshop to set priorities; 16.2 Communicate need; 16.3 Continue performance reviews & ensure market rate compensation for staff	TCPW Director & County Board	16.1-3 TCPW Director & County Board
17	Emrgcy. Mgmt.	Roads Bridges Culverts Ditches Signs Levees Department Employees	Natural disasters; Extreme weather events; Failed roads, bridges, drainage systems and levees	Closed routes for emergency services; Increased demands and risk to private property and life; Flooding due to failed levees or culverts or flooded roads	Threat	4	5		Mitigate	Focus on Extreme and High risk services (see above)	Risk remains	17.1 Participate in emergency drills 17.2 Further coordinate with Umatilla County as a Sister Community 17.3 Develop Emergency Response Plan; 17.4 Ensure TCPWD staff have emergency plans for families.	TCPW Director	17.1 -4 Director and staff

Tillamook County

Public Works Road Department

Tillamook County

Setting Road Service Priorities

Community Risk Workshop

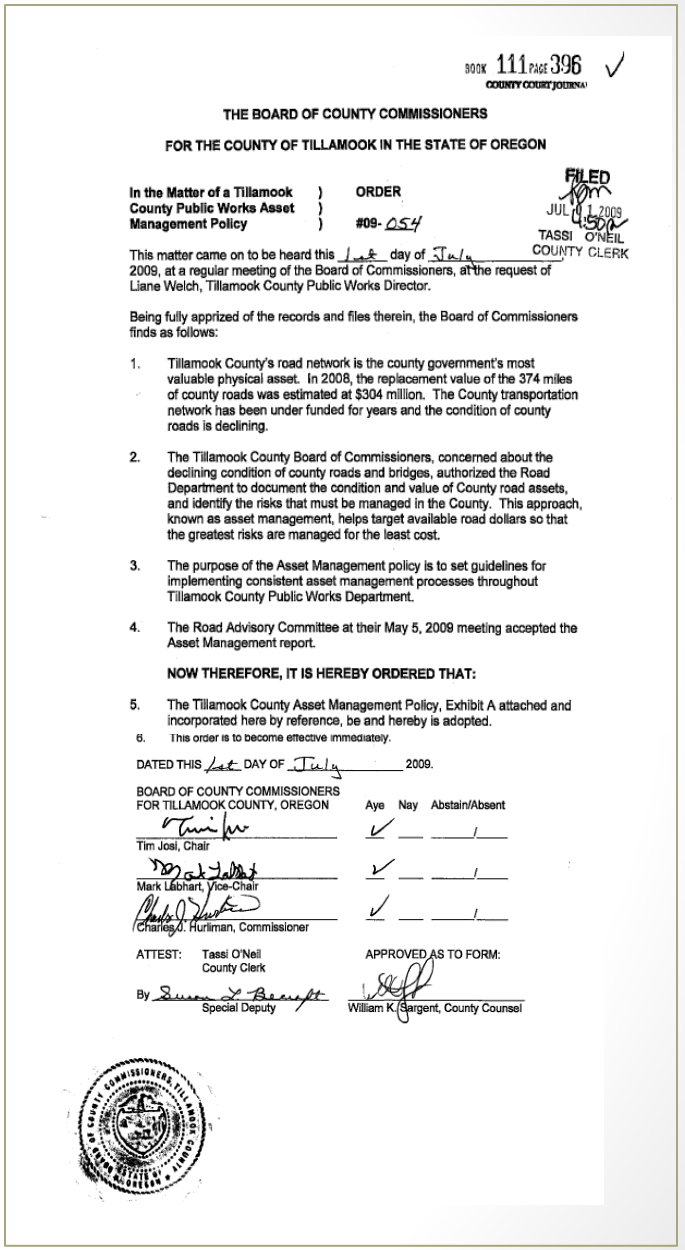
November 21, 2016, 3-5 p.m.

Workshop Objectives

- Introductions
- Purpose of the workshop: set Road Department priorities
- Asset Management principles
- Risk Assessment Process
- Current state & trends
- Priorities for FY 2018 Budgeting Road Services
- Next Steps

The Road Dept. looks to asset management to guide solutions

- Policy driven
- Performance based
- Options evaluated that manage risks
- Decisions based on quality information
- Clear accountability
- Asset management standards were adopted as ISO 55000 (2014)
- FAST (Fixing America's Surface Transportation) Act allocates federal funds and requires state agencies to have a risk-based asset management plan (2015)



BOOK 111 PAGE 396
COUNTY COURT JOURNAL

THE BOARD OF COUNTY COMMISSIONERS

FOR THE COUNTY OF TILLAMOOK IN THE STATE OF OREGON

FILED
JUL 01 2009
4:30
TASSI O'NEIL
COUNTY CLERK

In the Matter of a Tillamook County Public Works Asset Management Policy) ORDER #09-054

This matter came on to be heard this 1st day of July 2009, at a regular meeting of the Board of Commissioners, at the request of Liane Welch, Tillamook County Public Works Director.

Being fully apprized of the records and files therein, the Board of Commissioners finds as follows:

1. Tillamook County's road network is the county government's most valuable physical asset. In 2008, the replacement value of the 374 miles of county roads was estimated at $304 million. The County transportation network has been under funded for years and the condition of county roads is declining.
2. The Tillamook County Board of Commissioners, concerned about the declining condition of county roads and bridges, authorized the Road Department to document the condition and value of County road assets, and identify the risks that must be managed in the County. This approach, known as asset management, helps target available road dollars so that the greatest risks are managed for the least cost.
3. The purpose of the Asset Management policy is to set guidelines for implementing consistent asset management processes throughout Tillamook County Public Works Department.
4. The Road Advisory Committee at their May 5, 2009 meeting accepted the Asset Management report.

NOW THEREFORE, IT IS HEREBY ORDERED THAT:

5. The Tillamook County Asset Management Policy, Exhibit A attached and incorporated here by reference, be and hereby is adopted.
6. This order is to become effective immediately.

DATED THIS 1st DAY OF July 2009.

BOARD OF COUNTY COMMISSIONERS FOR TILLAMOOK COUNTY, OREGON — Aye Nay Abstain/Absent

Tim Josi, Chair — ✓

Mark Labhart, Vice-Chair — ✓

Charles J. Hurliman, Commissioner — ✓

ATTEST: Tassi O'Neil, County Clerk

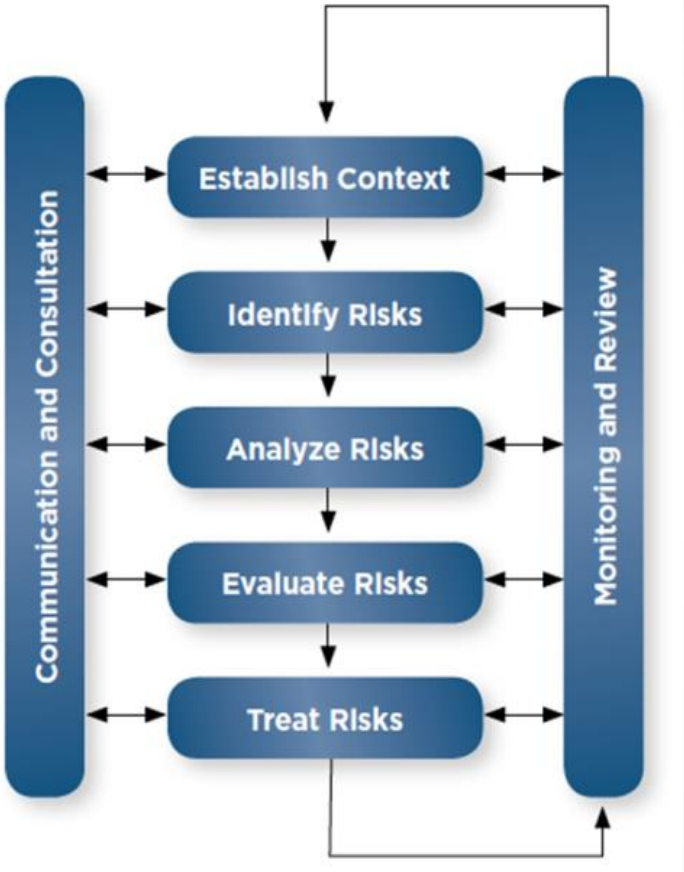
By Special Deputy

APPROVED AS TO FORM: William K. Sargent, County Counsel

County Asset Management Policy – 2009

Risk management is at the core of Asset Management

- Inventory what we own
- Continuously evaluate condition, cost & performance of assets and services
- Identify strategic risks
- Evaluate options that manage risks
- Communicate what can and cannot be done given resources



Risk Management Principles & Guidelines, ISO 31000:2009

Risk is the likelihood of an event and its consequence if it happens

Risk Rating = Likelihood x consequence

Table 1. Likelihood Ranking

Ranking	Likelihood	Frequency	Description	Ranking
Almost Certain or Very High	Near Certainty (90%)	9 out of 10 years	The threat can be expected to occur or a very poor state of knowledge has been established on the threat	5
Likely or High	Highly Likely (70%)	7 out of 10 years	The threat will quite commonly occur or a poor state of knowledge has been established on the threat.	4
Moderate	Likely (50%)	Every 5 out of every 10 years	The threat may occur occasionally or a moderate state of knowledge has been established on the threat.	3
Unlikely or Low	Unlikely (20-30%)	Once per 2 or 3 years out of 10 years	The threat could infrequently occur or a good state of knowledge has been established on the threat.	2
Rare or Very Low	Remote (10%)	Once per 10+ years.	The threat may occur in exceptional circumstances or a very good state of knowledge has been established on the threat.	1

Handout

Risk Criteria to Judge Consequences

- Economic
- Legal compliance
- Community impact (service reduction or elimination)
- Human health and safety
- Reputation
- Environment
- Human resources

Consequences of Risk					
	Score				
	Insignificant	Minor	Moderate	Major	Catastrophic
Factor	1	2	3	4	5
Economic (damages to community, losses, additional expenditures)	Less than $5,000	$5,000-$25,000	$25,000 -$100,000	$100,000 - $250,000	Greater than $250,000
Legal compliance	County fully complies and is on course with regulators to anticipate mandates	County agrees to compliance schedule, and avoids lawsuits and fines.	County warned of compliance issues and adopts corrective action	County sued or fined for missing mandates. Expects to comply in 1	County sued or fined for missing mandates. No viable plan to comply.
Community impact	Community complaints	Unplanned disruption to multiple households, firms or community services/structures	Simultaneous unplanned disruption to multiple households, firms, or community services/structures	Unplanned disruption to large number of households	Unplanned disruption to essential service (e.g., lifeline route)
Human health and safety	No injuries	Minor injuries	Serious injuries	Single fatality or multiple serious injuries	Multiple fatalities
Reputation	No adverse media (all week)	Local media criticize county for 1 week	Regional media criticizes County for 2 days	National media criticizes County for 2 days	National media criticizes County for 1 week
Environment	Short-term damage	Limited but medium-term negative effect	Major but recoverable ecological damage	Heavy ecological damage, costly restoration	Permanent, widespread ecological damage
Human Resources (Reduction in staff; Employee safety, overtime & workload; Emergency response)	0	0	1	2	3

Handout

Rating Risk

Risk Rating = Likelihood of Failure x Consequence of failure

Likelihood	Consequence				
	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
5 Almost Certain	M	H	H	E	E
4 Likely	M	M	H	H	E
3 Moderate	L	M	H	H	H
2 Unlikely	L	L	M	M	H
1 Rare	L	L	M	M	H

Handout

Rating & Managing Risk

- The risk rating is used to determine what action is required to manage the level of risk

Risk Rating		Action Required
E	Extreme Risk	Immediate action required to reduce risk
H	High Risk	Management attention required to manage risk
M	Medium Risk	Management responsibilities specified and risk controls reviewed
L	Low Risk	Manage by routine procedures

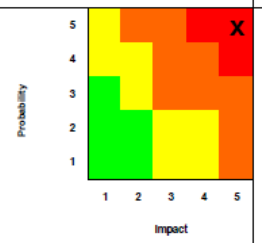
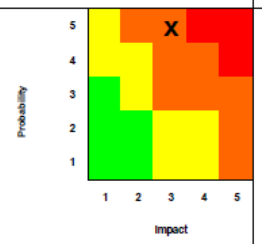
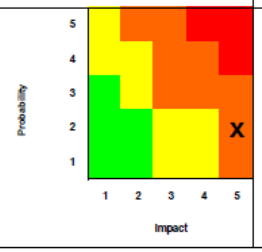
Risk Treatment Options

- **Avoid** or remove the risk completely by discontinuing the provision of the service
- **Mitigate** or reduce risk by taking action that reduces the likelihood and/or the consequences of the risk
- **Transfer** the risk to another public or private entity for management
- **Accept** the risk

Handout

Risk Assessment & Treatment Plan spells out risk level and how it will be managed

Risk Management Plan for Tillamook County Public Works Department

Risk Identification						Qualitative Risk Assessment			Management Plan	
#	Program	Risk Category	Failure Cause	Effect	Threat or Opportunity	Probability	Impact	Risk Matrix	Response	Risk Contingency Response Plan
1	Roads	Arterial & collector paved roads	Lack of timely maintenance Insufficient funding Poor design Wet climate/storm damage Poor drainage, utility work traffic loads, lack of enforcement, environmental regulations, inappropriate vehicle loading, vegetation impact, poor construction, implements o f husbandry, inadequate contract supervision	pot holes, shoulder deterioration, poor public image, base deterioration, overgrown vegetation, detracting from property value, increase maintenance cost, increased congestion, increase property damage, hurts industrial development & tourism, impacts public safety	Threat	5	5		Mitigate & Transfer	Communicate reduced level of service; Fill pot holes and pave based on road classification and available revenues; Transfer County roads to others as possible; Evaluate on case basis the cost/benefit of turning paved roads to gravel & consider speed signs
2	Roads	Gravel roads	Lack of maintenance; Poor design; Wet climate; Poor drainage; Poor rock quality processing; Well-meaning public with unintentional consequences;	pot holes, shoulder deterioration, poor public image, base deterioration, overgrown vegetation, detracting from property value, increase maintenance cost, increased congestion, increase property damage, hurts industrial development & tourism	Threat	5	3		Accept & Mitigate	Grade gravel roads; Focus on higher volume roads with more residents; Transfer jurisdiction to other agencies; Consider no maintenance & signing "Limited maintenance"
3	Structures	Bridges	Condition deteriorates to point of asset failure under normal traffic loading; Lifeline failure during natural disaster event or restricted use; Restrictions on load/dimensions of use, scour; Wet climate; Age; Material deterioration; Tide/salt/environmental impacts	Loss of life; Isolation of people; Liability, emergency response/life safety due to detours; Maintenance costs; Economic impact; Lack of accessibility, detours; County-wide, utility & intrastate communication lines interrupted; Failure of bridge shifts traffic to others inventory	Threat	2	5		Mitigate & Transfer	Consider abandoning or transfer bridges (Whalen Island Bridge); Pursue federal and state money for bridges in poor condition; Inspect and post weight limits; Manage life line routes; Post poor bridges; Inform public of alternate routes

Handout

County Public Works Mission

We take pride in serving the public by

- providing, maintaining, and preserving a safe and efficient county road network, and
- quickly responding to weather events and hazards.

We protect the public's investment by

- working with our partners and
- targeting resources to minimize long term costs while
- providing the best possible service given available resources.

Risk Management Strategy – Mix of Fixes

- Do preventive pavement maintenance
- Increase bridge maintenance
- Increase drainage maintenance
- Increase culvert inventory, levee assessment and building maintenance programs
- Continue to do reactive maintenance with focus on safety
- Slow system deterioration; stabilize the rate of failure
- Identify additional funding through partnership & grants
- Continue to communicate critical failures with the Board and community

Our County Road Management Strategy

Ensure roads are safe to travel on throughout the County by slowing long term deterioration.

- ✓ Year 1 (2014) Provide small patches Countywide to hold the system together.
- ✓ Year 2 (2015) Focus expenditures on high speed, high volume roads and those that provide economic value to the community.
- ✓ **Year 3 (2016) Focus on economic development route & move into the neighborhoods Countywide for safety and emergency response.**

Climate = Wet

- 90 inches average rainfall
- 5 rivers empty into Tillamook Bay

December 2015 Storm

Recent severe weather events:

- November 2006 – 50 year flood
- December 2006 – 10 year wind event
- January 2007 – 20 year snow event
- December 2007 – hurricane-force winds & flood
- Winter 2008-09 – 3 floods
- January 2011 – Federally declared flood
- November 2012 – Federally declared storm
- December 2015 - Federally declared storm

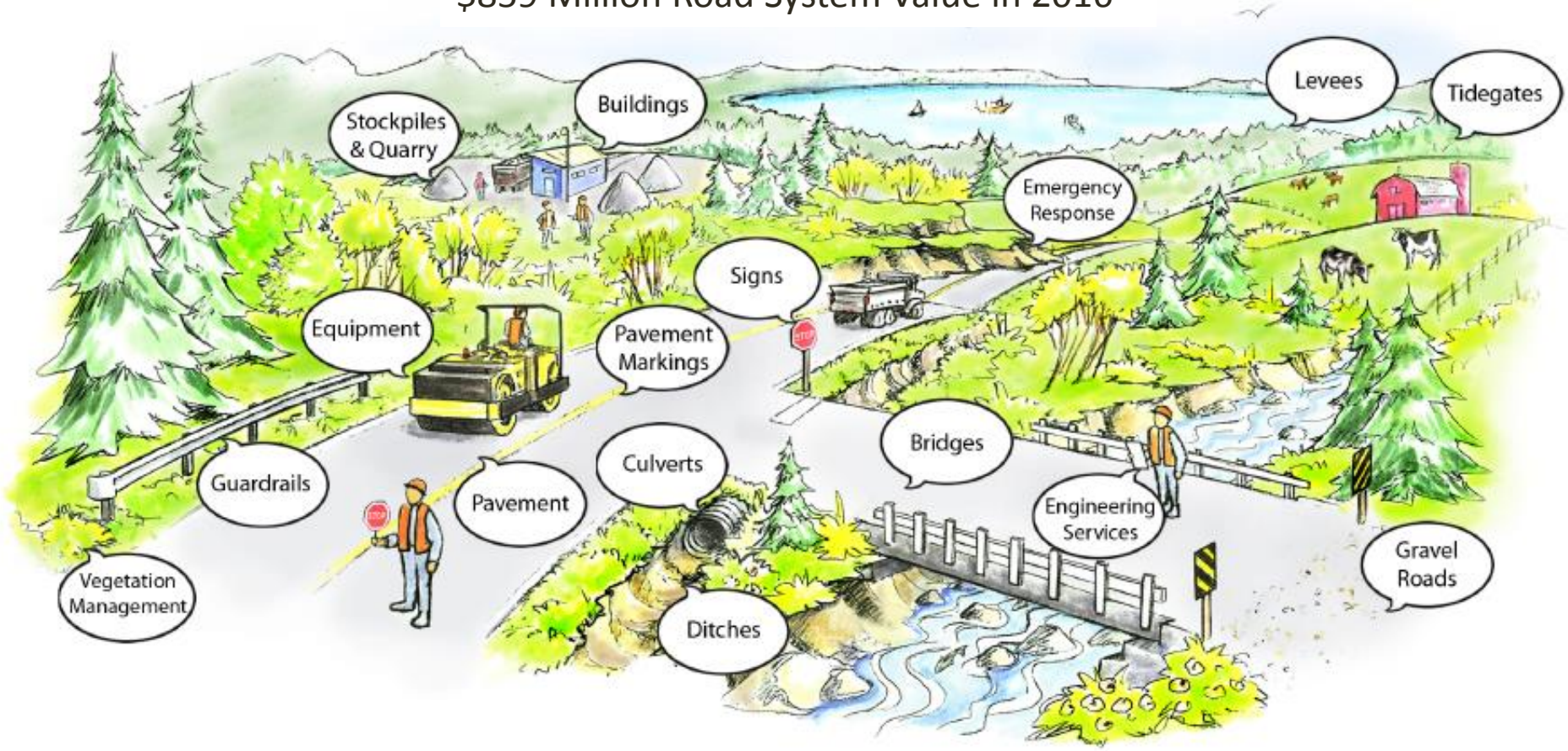
Weather prediction – More of the same

"Frequency and magnitude of coastal flooding events may continue to increase. "

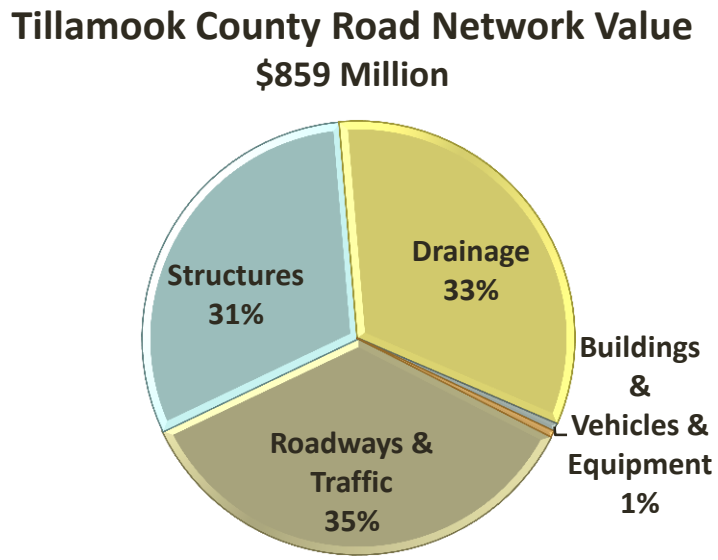
Oregon Climate Change Research Institute Report, November 30, 2010

Your Tillamook County Road Dollars At Work

$859 Million Road System Value in 2016

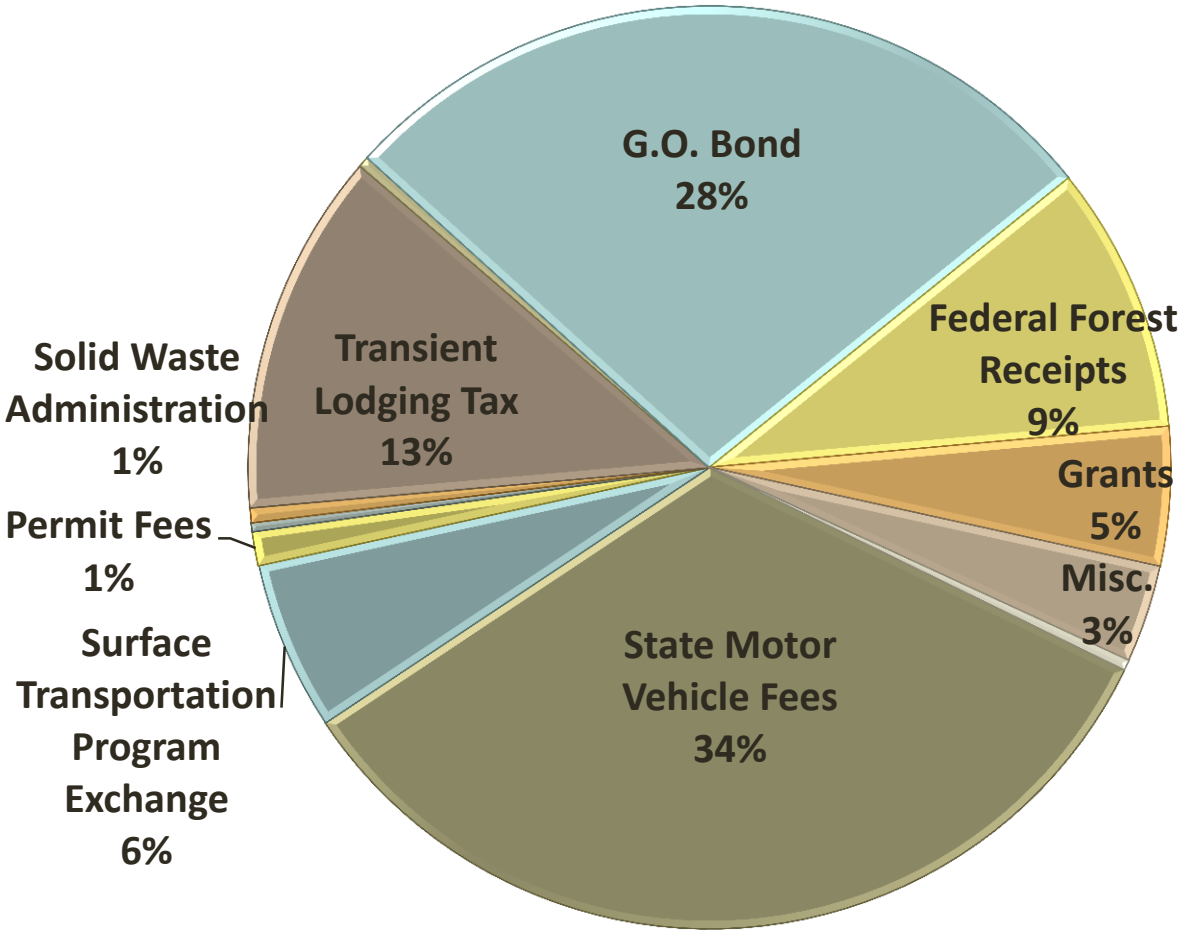


Road Network Value-$859M



County Road Services	
Assets	Services
263 paved miles	Vegetation Management
65 miles gravel roads	Traffic Safety
102 bridges	Materials/Stock Piles
3,200 culverts	Service Request management
6 levees	Emergency Response
5,045 signs	Engineering Services (permits & capital projects)
392 miles pavement markings	Fleet Management
10 miles guardrails	15 buildings

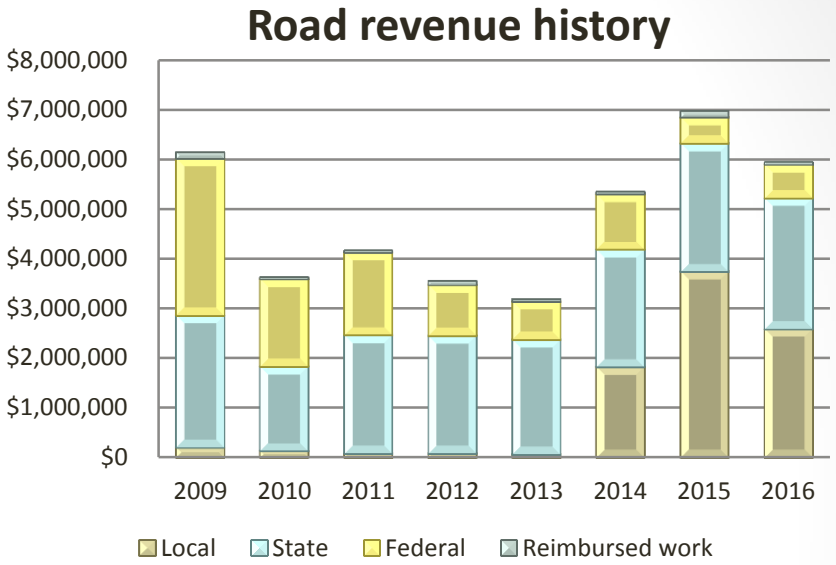
Road Department FY 16 Revenues $5.9 Million

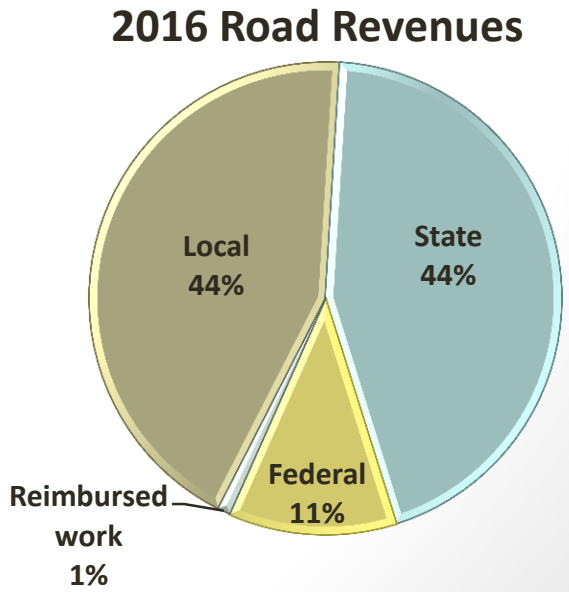


*Without Beginning Fund Balance of $3.4 Million

Local Revenues make up 44% of Road Revenues

- Local revenues (Bond, Transient Lodging Tax, permits) are 44% of Road Funds in 2016
- Local revenues were approved by voters in fall 2013
- Local revenues are making a difference but are not enough to meet all needs





There will be fewer revenues over the next 5 years

- $22M is needed annually over the next 10 years to replace 14 bridges, bring paved roads to Good condition & replace 10 culverts
- There are only 10% of revenues to meet identified pavement, bridge, culvert and fleet needs *

Five Year Revenue Projections 2017-2021

	Actual	Projected	Projected	Projected	Projected	Projected
Revenue	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
GO Bond	$ 1,634,371	$ 721,000	$ 575,000	$ 2,100,000	$ 2,100,000	$ 2,100,000
Road Budget	$ 2,999,492	$ 3,918,000	$ 2,470,260	$ 2,555,843	$ 2,593,928	$ 2,857,365
Secure Rural School	$ 557,998	$ 200	$ -	$ -	$ -	$ -
Transient Lodging Tax	$ 756,034	$ 740,000	$ 740,000	$ 740,000	$ 740,000	$ 740,000
Total	**$ 5,947,896**	**$ 5,379,200**	**$ 3,785,260**	**$ 5,395,843**	**$ 5,433,928**	**$ 5,697,365**

*5-year pavement needs to achieve 84 PCI (2016 est.) and 10-year estimated bridge replacement costs (2014 est.) , replace 10 culverts and vehicles in Poor condition (2016)

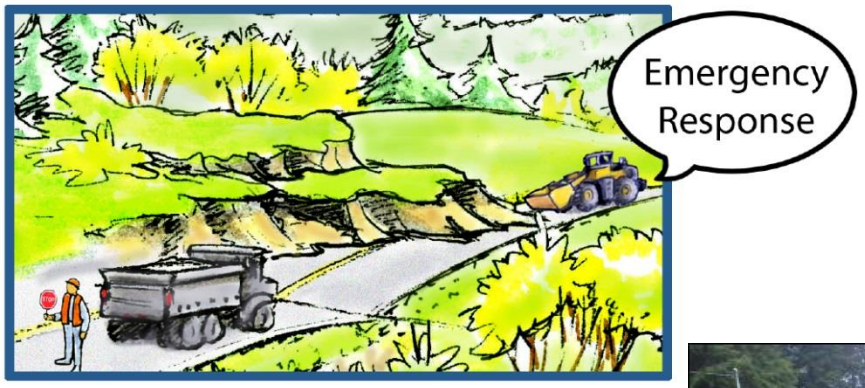
An additional $6.8M was funded by ODOT & Partners for County Projects in FY 2016

State and Federal Funded Projects on County Roads in 2016		
Cape Meares Loop	Geotechnical Study	$1,006
Lommen Bridge	Bridge construction	$4,703,870
Emergency Relief - Resort Drive MP 1.3 (FHWA)	Slope failure design	$204,665
Emergency Relief - Resort MP 2.1 (FHWA)	Slope failure design	$203,669
Wyss Bridge	Bridge construction	$904,515
Sand Lake Road 10.5	Culvert replacement	$149,423
Whalen Island Bridge	Bridge replacement design	$413,330
	Subtotal	$6,580,477
Other partners' funds for County Projects in FY 16*		
Bower Creek	Culvert replacement with fish passage	$136,619
Moon Creek	Culvert replacement with fish passage	$103,316
Boulder Creek on Blankenship Road	Culvert design with bridge fish passage	$25,000
	Subtotal	$264,935
	Total Partner Funded Projects	**$6,845,412**

**OWEB, Siuslaw Stewardship, Trout Unlimited, USFS, USFWS, and Whole Water Restoration Initiative

Lommen Bridge- Before

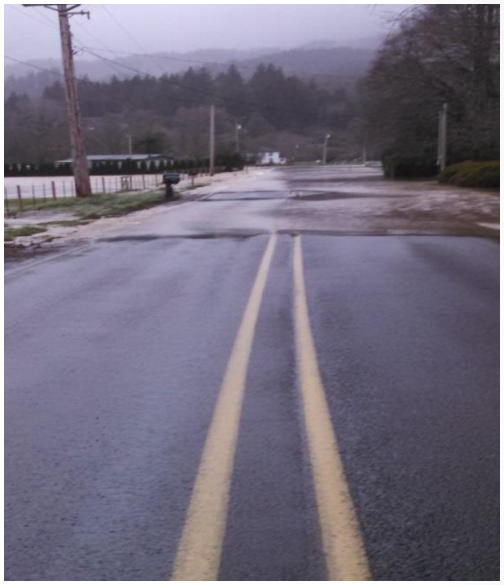
Lommen Bridge Replacement - During



Public Safety is our highest priority

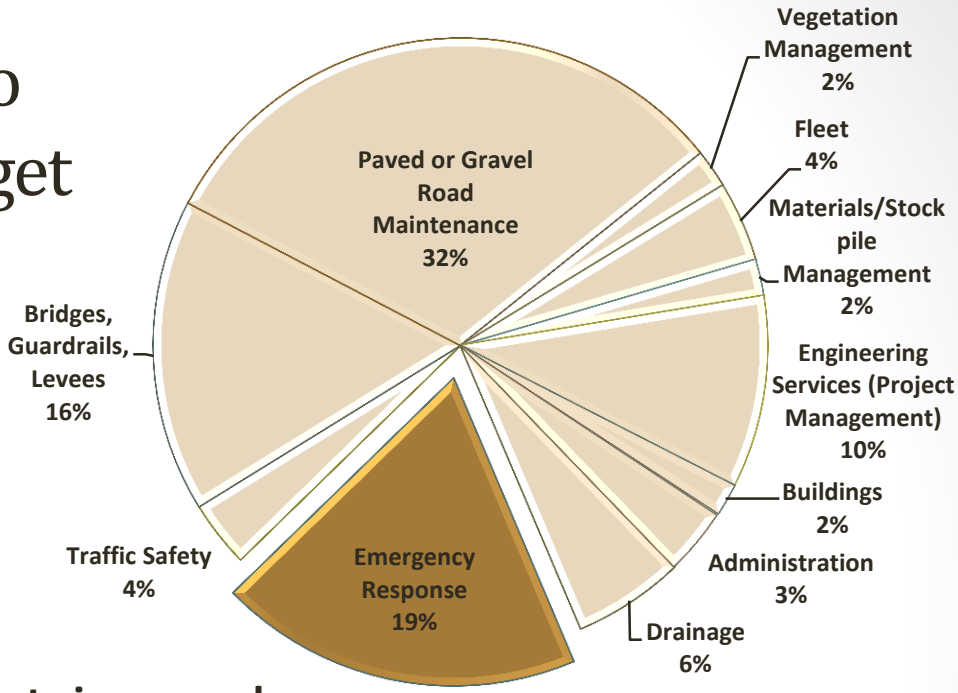
- ✓Storm response
- ✓Response to landslides and 911 callouts
- ✓Emergency preparedness

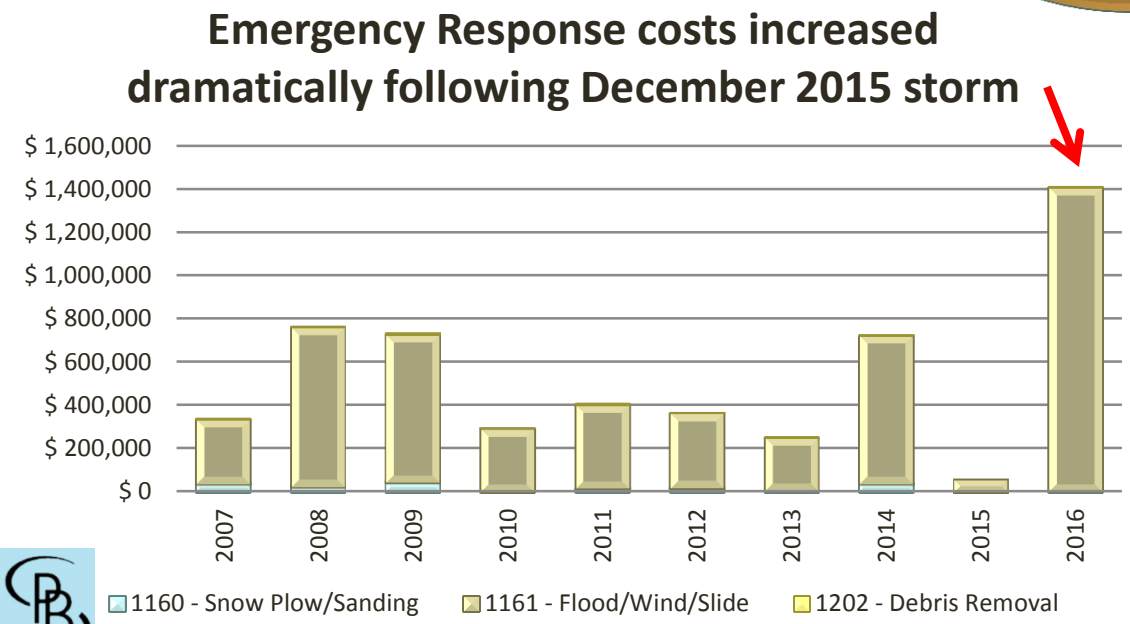
Typhoon Songda
Culvert wash out October 2016



Wilson River Loop road (N-S)
High Water December 2015

Storm response is hard to predict, impacts the budget and wreaks havoc on an already fragile drainage system





Following the December 2015 storm, we built three temporary bridges in 7 days

Bayocean Road

Before

After

- $8M damage (requires local match which has a significant impact on the budget & staff)
- Timing for completion of State and Federal process unknown
- Permanent recovery & repairs are ongoing as funding allows

Harbor View Drive

Before

After

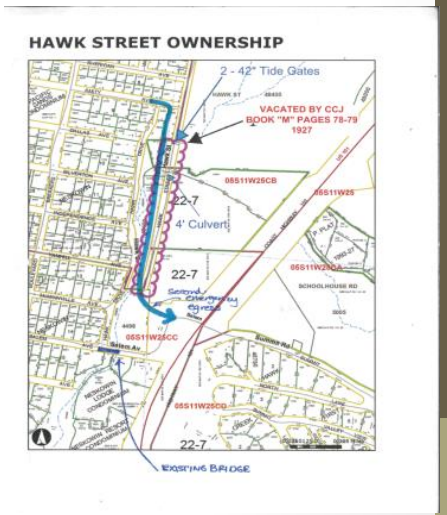
Sollie Smith Bridge

Before

After

To assist in future winter storm events we're committed to

- Cape Meares Loop alternate route
- Working on emergency evacuation routes - Neskowin 2nd Ingress/Egress
  - 30% design done
  - No money for construction
- Building Sister Community Partnership with Umatilla County Public Works (Eastern Oregon)



Emergency Response - Extreme

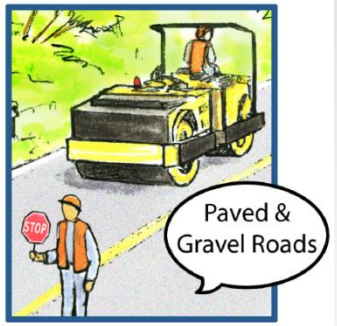
Risks

- Wet climate/storm damage reduces asset life, increases life cycle costs and diverts planned maintenance and renewal funds to reactive storm damage repairs
- Insufficient funding for road resurfacing will allow water to enter the pavement resulting in pavement failures and avoidable and expensive reconstruction.
- Roads inundated by plugged or deteriorated culverts
- Community isolation and economic impact

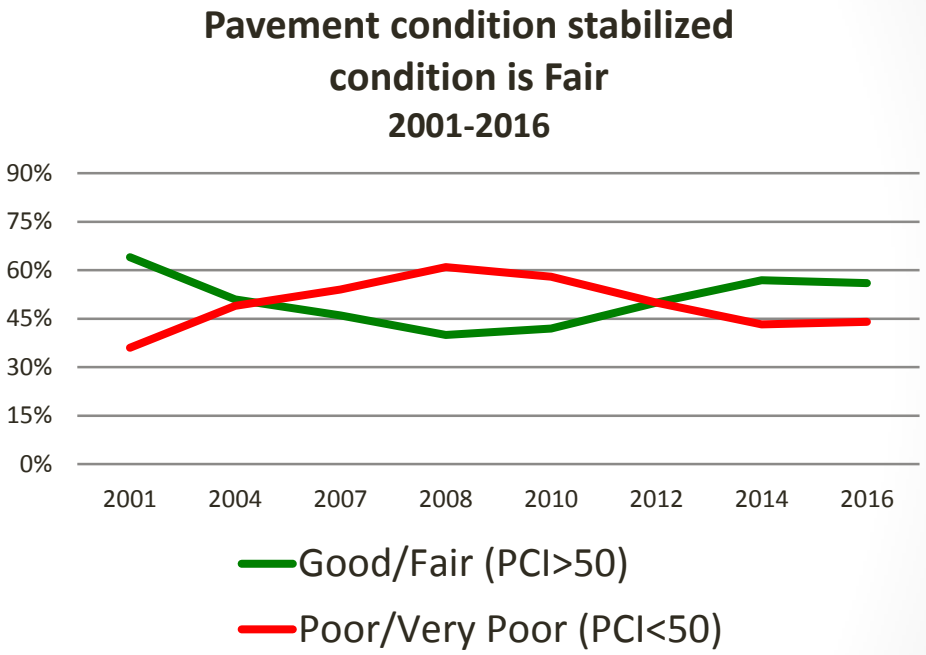
Risk Response

- Develop and regularly review appropriate emergency response capability
- Target key emergency response vehicle (e.g., snow plows) for safety, maintenance and repair
- Respond to storms
- Respond to landslides and 911 callouts
- Participate in statewide emergency preparedness initiative for the Cascadia earthquake "Filling the Void of Leadership"
- Design Neskowin emergency egress route
- Seek federal reimbursement for Federally Declared storm damage

Roadways & Traffic



- Local funding used to stabilize pavement condition is still not Good
- We inspect and assess the condition of paved roads every other year

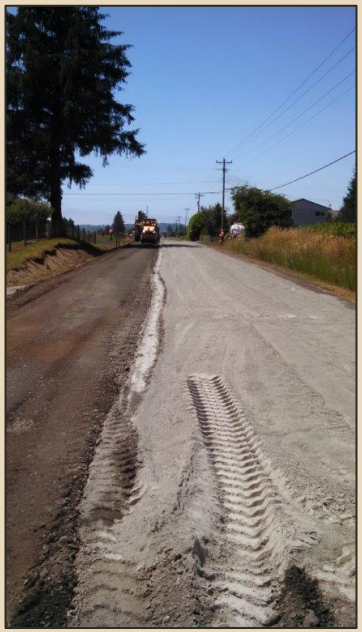


Confidence in Data:
HIGH
MEDIUM
LOW

We focused on economic development routes & moved into the neighborhoods Countywide for safety and emergency response

9.42 road miles were paved Countywide	
Long Prairie Road	5th Street
Slab Creek Road, Paving	6th Street
Foss Road	Neahkahnie Road
Miami River Road	Necarney City Road
N. Fork Road	South Prairie Road
Lommen Overpass Bridge	Circle Drive
Nehalem Road	Hodgdon
The Promenade	3rd Street/Olsen/Fairview
Hillcrest	Whiskey Creek Road
Indian Gap	Deer Road
2nd Street	5th Street Loop
4th Street	

Cape Kiwanda Solar Pedestrian Lights



Rehabilitating Long Prairie

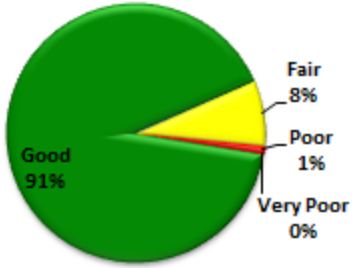
Over 5 years pavement condition will decline

- Current funding is not sufficient to maintain pavement condition
- By 2021 the average pavement condition will be Poor

Pavement Condition in 2016

Current Funding $6.1M
Pavement Condition in 2021

Address needs - $68.5M
Pavement Condition in 2021



Source: Pavement Management Program Budget Options Report, October 2016

Traffic Safety – Low

- Regulatory signs (stop & warning) are a high priority and are in Good condition
- Reflectivity for 20% of signs were measured in 2016
- Pavement markings are re-painted each year

Trask River Road - Signing and Striping

Roadway & Traffic Risks - High

Risks

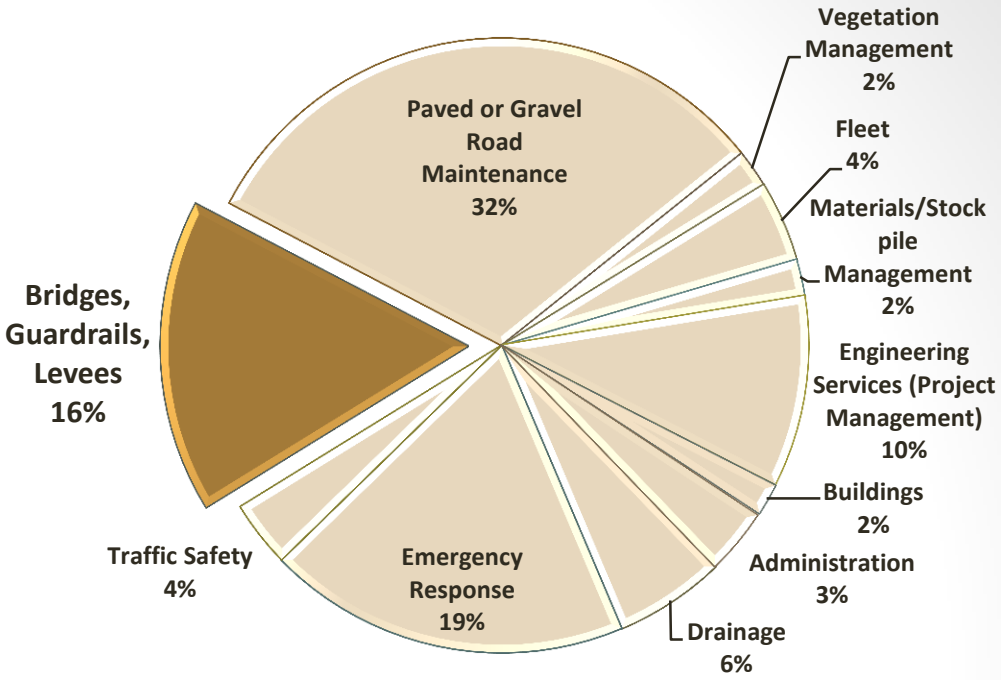
- Insufficient funding
- Poor historical construction standards
- Lack of timely maintenance
- Wet climate/storms
- Poor drainage
- Insufficient construction inspection
- Increased traffic loads
- Vegetation impact

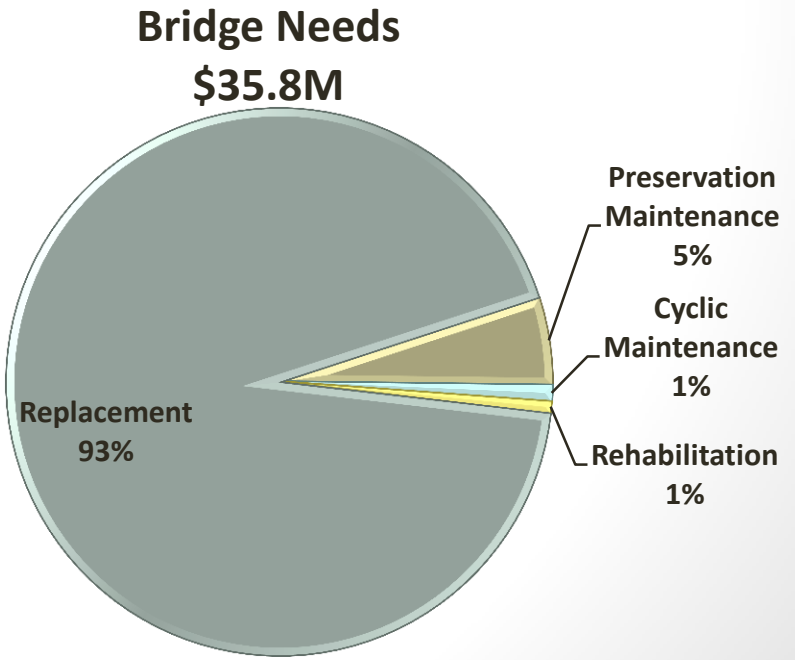
Risk Management strategy

- Mix of Fixes: preventative to rehabilitation
- Focus on economic development routes & moved into the neighborhoods Countywide for safety and emergency response
- Rate condition every other year and respond to service requests
- Reduce the road inventory through jurisdictional transfer where possible
- Improve road drainage
- Improve workmanship and equipment
- Partner with other Counties for traffic marking services and share equipment if possible.

Structures

We are implementing a 10-year bridge management strategy focused on deferred maintenance, repair and replacement of our bridges



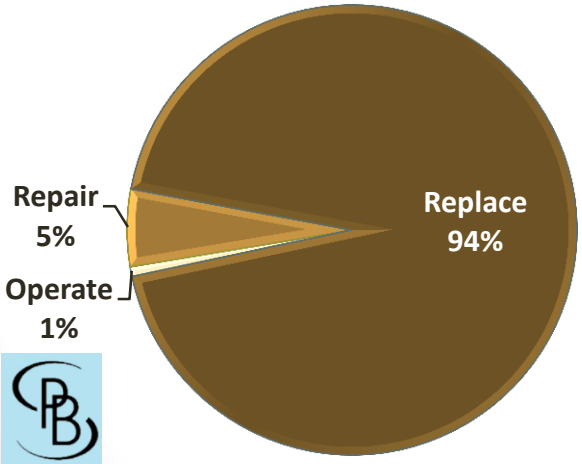


We're replacing 7 bridges and repairing bridges

Seven Bridges Scheduled for Replacement
Lommen Bridge
Wyss Bridge
Cedar Creek Bridge
S. Fork Trask River Bridge (MP 13)
Holgate Bridge
Whalen Island Bridge
East Beaver Creek*
Curl Bridge (engineering approved for design in 2020)
Bridges Repaired in 2016
Goodspeed Bridge

*Bridge currently closed due to landslide; plan to remove from inventory and salvage material.

2016 bridge expenditures

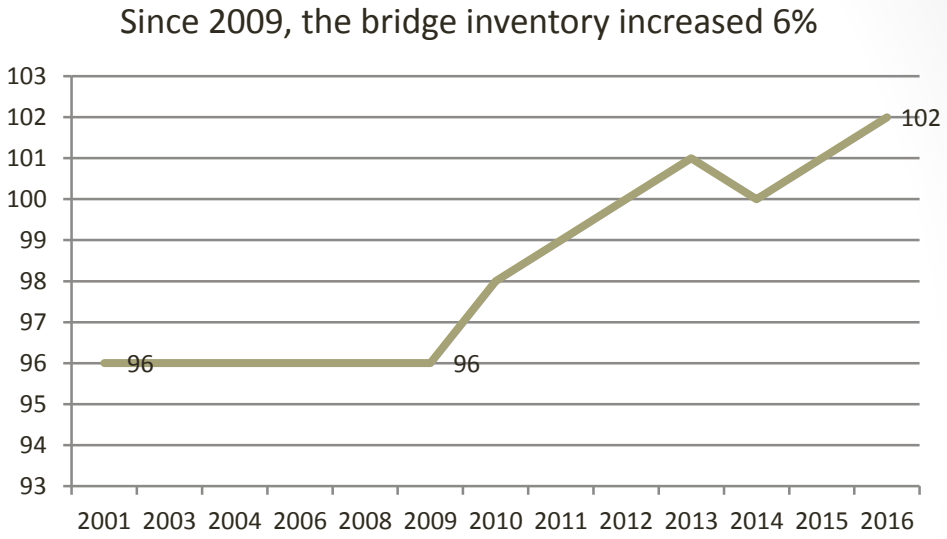


Lommen Bridge – Reconstruction almost completed

Goodspeed Bridge Rehabilitation

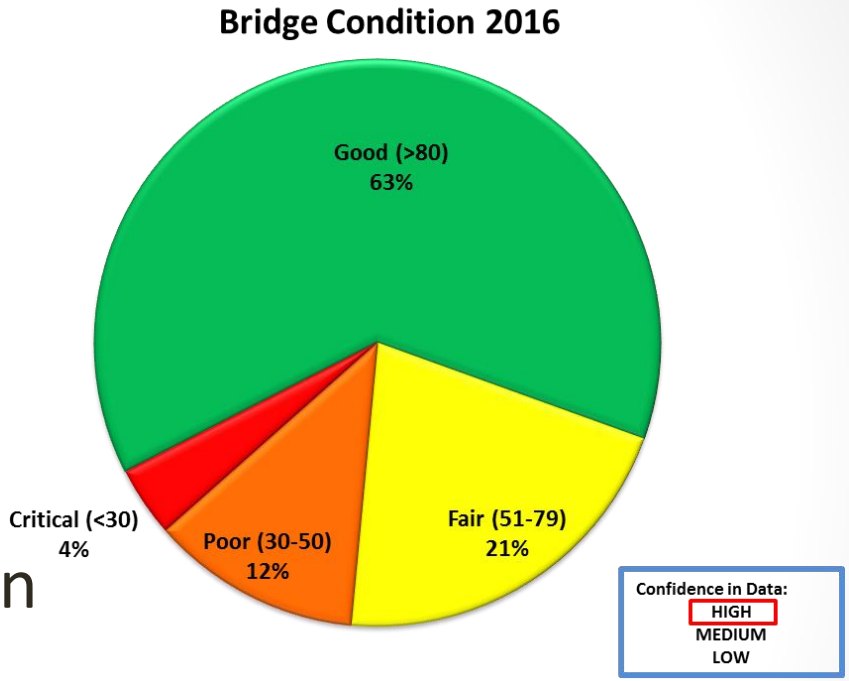
We're adding to the bridge inventory

- Bridges are being added as culverts are being replaced, which adds to the bridge inventory - George Bridge in 2015, Sifford Bridge in 2016



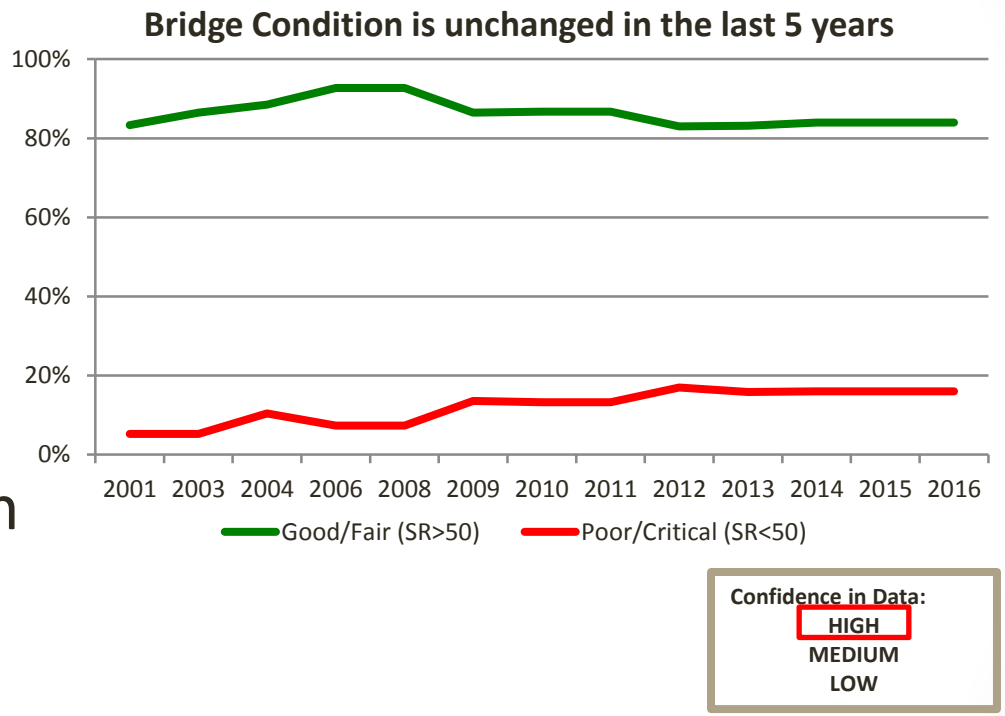
Sifford Bridge replaces a culvert

- 16% of County bridges are in Poor or Critical condition
- There are 9 bridges that are load limited or require a special review permit
- Bridge structure, function and capacity are inspected biannually



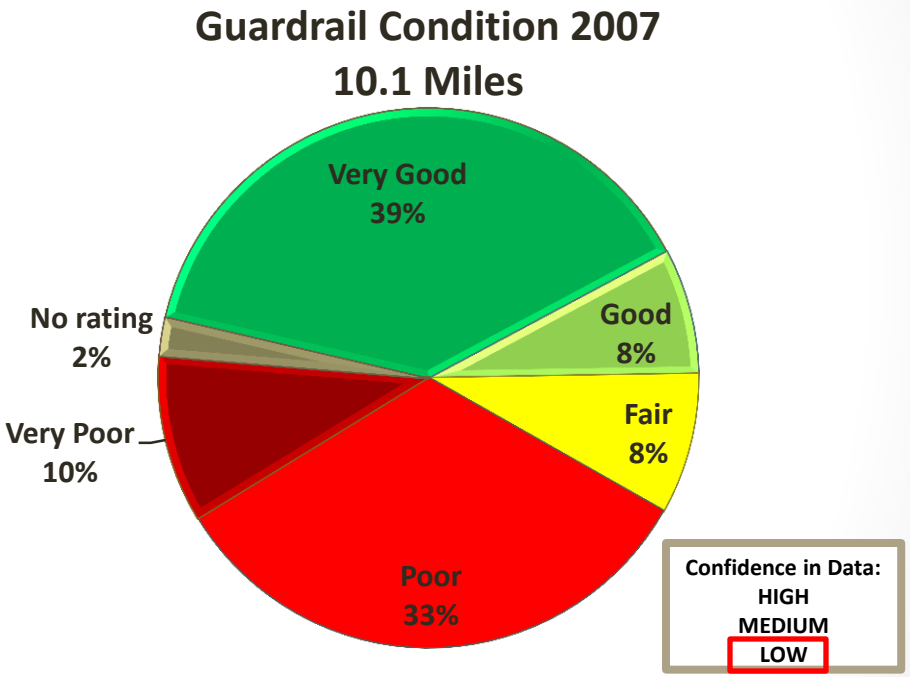
Bridge condition has stabilized but will decline given 5-year funding

- Bridge condition has stabilized
- However funding is insufficient to implement the *Strategic Bridge Plan*
- There are not enough staff to perform bridge maintenance or funds to match grants



There is insufficient staff and resources to inspect and replace guardrail

- Almost half of the County's 10 miles of guardrail are in Poor/Very Poor condition
- Guardrails are replaced after crashes and insurance reimbursement collected and as a part of bridge projects



County levees are critical to managing flooding from frequent and intense weather events

- 6 County levees have a combined length of 1.3 miles
- All levees are in Minimally Acceptable (Fair) condition
- Over ½ mile of vegetation removal is needed on levee revetments (2016)
- Levees are inspected by the Corp of Engineers and the County every 2 years

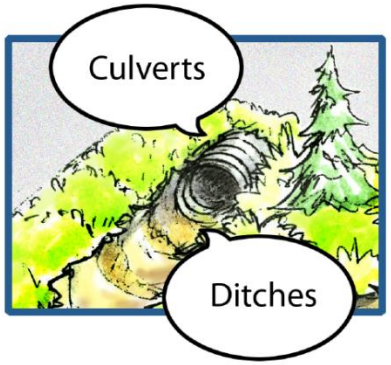
Structures Risk - High

Risks

- Unable to keep pace with the *Strategic Bridge Plan* recommendations
- Condition deteriorates
- Failure during natural disaster event or restricted use
- Restrictions on load/dimensions of use
- Guardrail failure caused by poor design, landslide and vehicle impact, storm damage
- Levee failure causes erosion, embankment failure and flooding

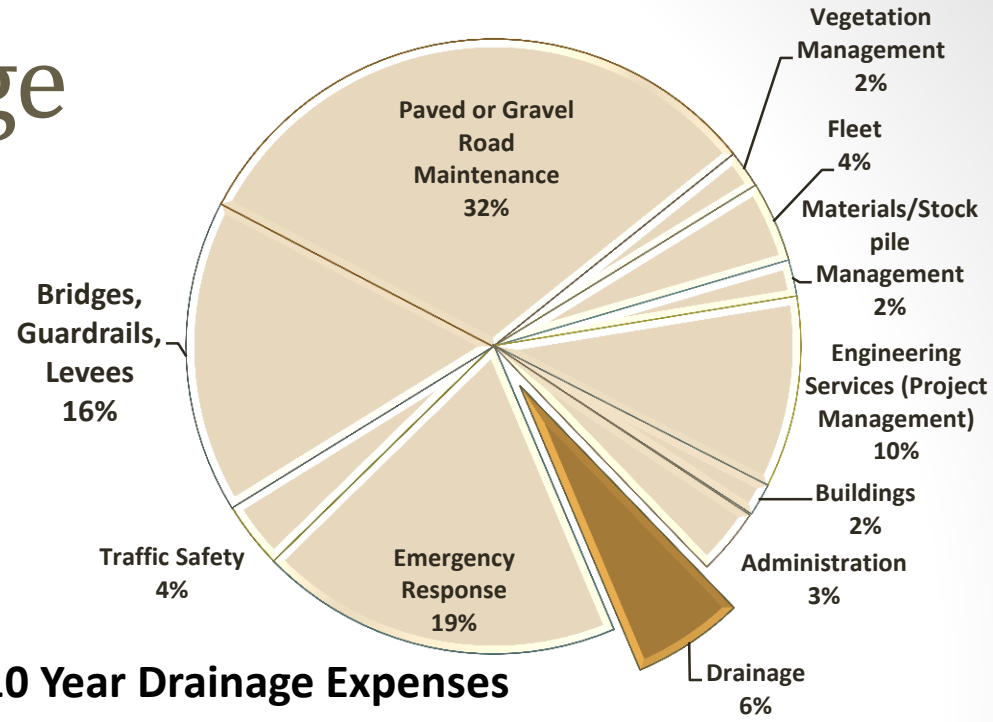
Risk Management strategy

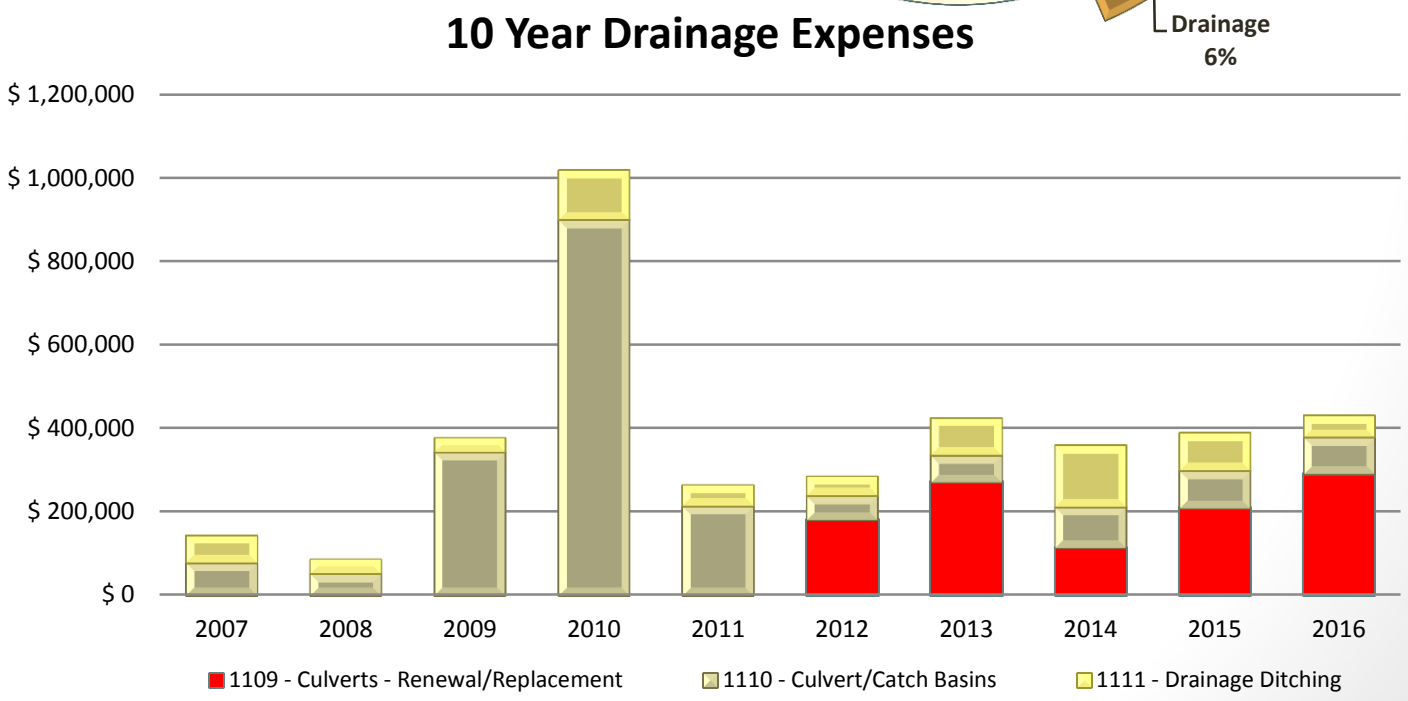
- Implement the *Strategic Bridge Plan* as resources allow
- Pursue federal and state money for bridges in Poor condition
- Perform bridge maintenance as funding allows
- Inspect and post weight limits
- Manage life line routes
- Inspect levees, repair within budget capabilities
- Access past levee inspection reports and develop annual inspection program
- Develop funding partnerships, and seek disaster relief funding



Drainage

- Culverts
- Catch Basins
- Drainage Ditching
- Tidegates





Drainage on county roads is critical given the wet environment and increasing frequency and severity of weather events

- Culverts are replaced when we pave a road as needed, or as they fail
- We replace culverts as funding partnerships are found in places with fish passage significance (Bixby Road & Sifford Culvert on Bower Creek)

Sifford Culvert removed on Bower Creek - Before

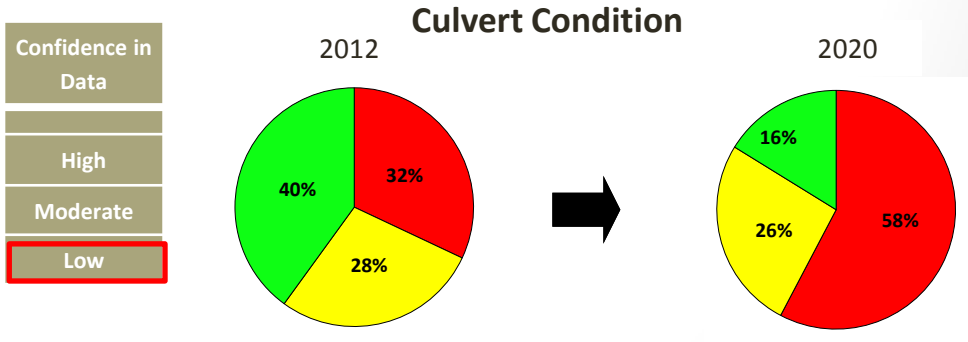
Sifford Bridge on Bower Creek - After

Bixby Road culvert replaced

We are not able to keep up with culvert replacement needs

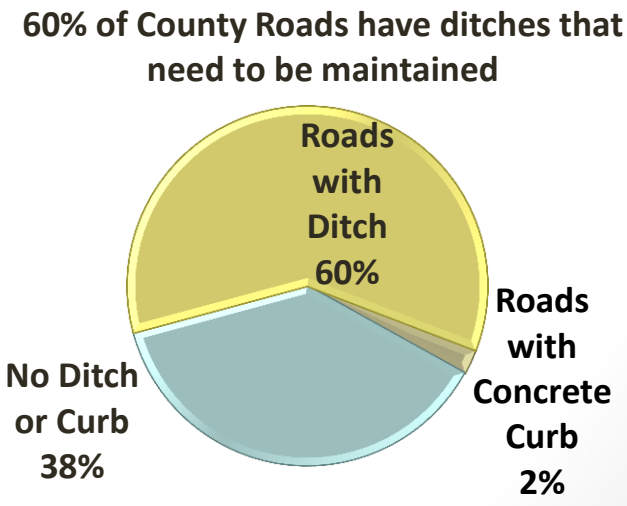
- By 2020, we estimate about 2/3 of culverts will be in Poor Condition
- We repaired or replaced 718 feet of culverts, or 1% of the system
- 22% more culverts were inspected and their condition rated in 2016

Known Failing Culverts	Estimated Cost
Hobsonville Road	$150,000
Miami River Road MP 7.6 - Dry creek	$800,000
Miami River Road MP 8.8 - Crystal Creek	$800,000
Bay Ocean Road MP 2 - Dick Creek	$500,000
Trask River Road (fish passage)	$500,000
Sandlake Road-Jewel Creek	$700,000
Sandlake Road – Reneke Creek	$500,000
Cape Lookout Road	$100,000
Miami River Road	$300,000
North Fork Road (fish passage)	$500,000
Total	**$4,850,000**



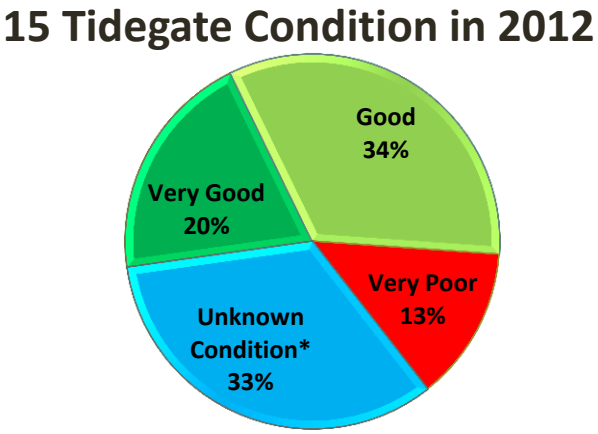
We still lack staff to have an active ditch cleaning program. We continue to repair ditches in a reactive mode.

- 60% of all County roads have ditches that require some ditching maintenance
- We will update ditch inventory and assess condition in 2018 as a part of the pavement inspection contract



There are 15 tidegates that manage water levels along County roads

- There are insufficient funds & staff to replace tidegates in Poor condition

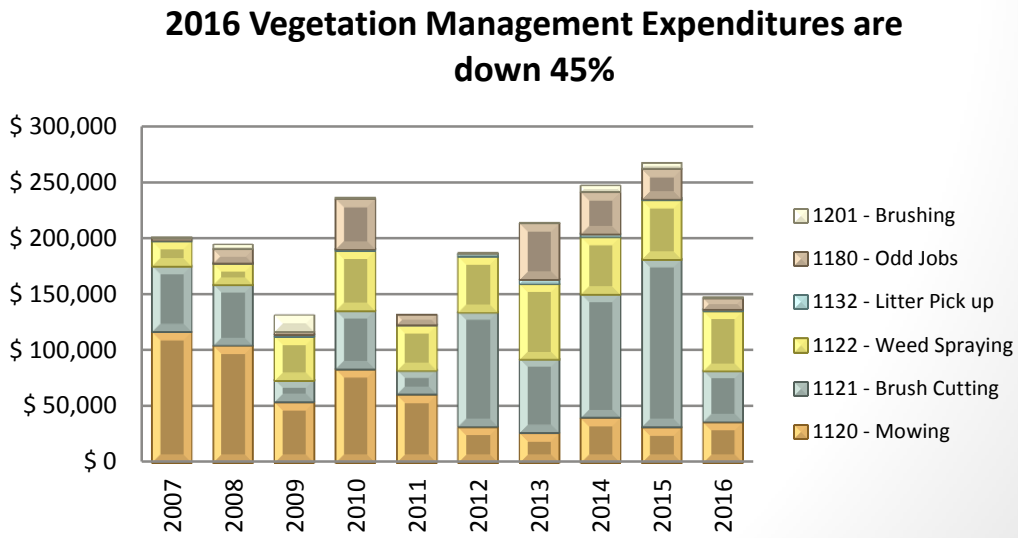


* Responsibility of adjoining property

Known Tidegates in Poor Condition				
ROAD NAME	ROAD #	MP	SIZE	CONDITION
Burton Fraser	748	0.465	12"	Very Poor
Burton Fraser	748	1.495	36"	Very Poor

Brush cutting and mowing needs aren't met

- There are too few employees to meet all needs
- 10% of all complaints are about brush and mowing needs
- Jail crews do some brushing and mowing paid the Road budget



Drainage Risks - Extreme

Risks

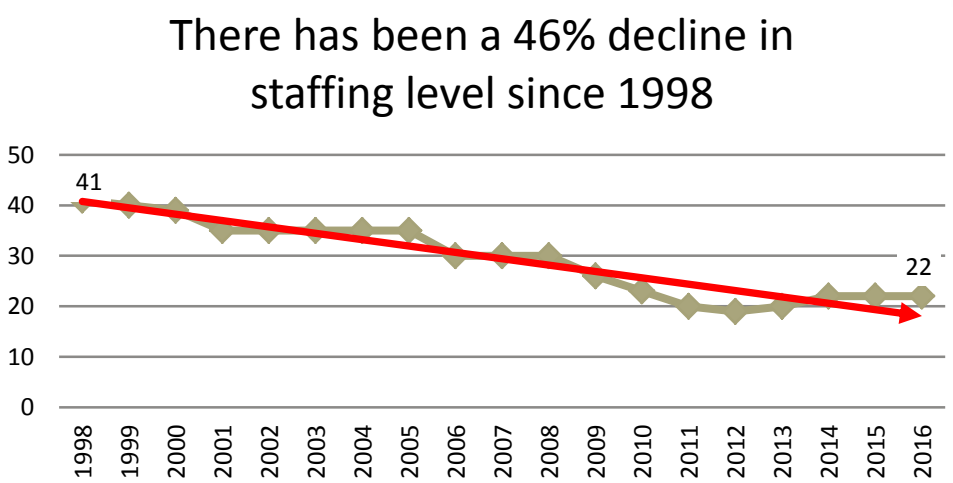
- Outdated inventory & condition assessment
- Roads inundated by plugged or deteriorated culverts
- Undersized culverts, beavers, marine environment/salt
- Inadequate staffing
- Changing environmental regulations
- Ecological impacts
- Failure due to age
- Poor construction techniques
- Heavy vehicle loads
- Inadequate funding to address critical culvert replacement
- No active ditching program

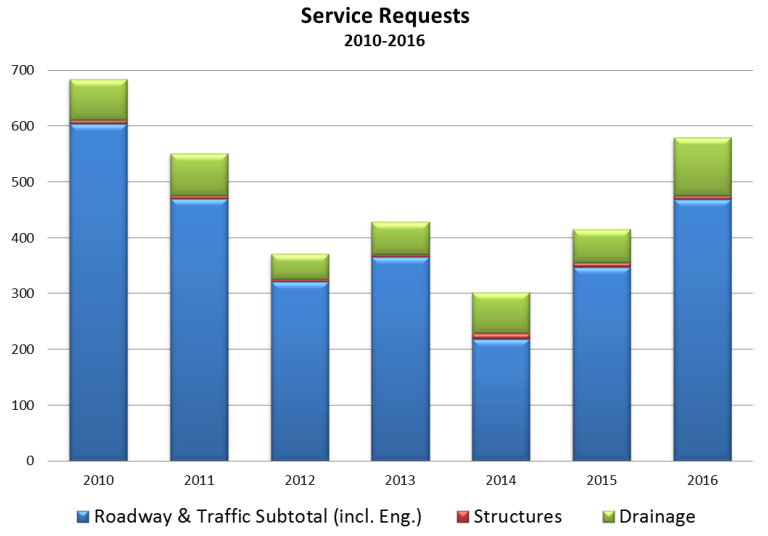
Risk Response

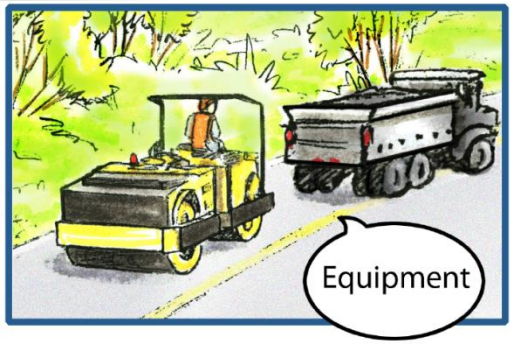
- Replace culverts prior to paving as needed
- Seek additional funding and partner with other agencies on high priority fish passage culvert replacements
- Inspect additional portion of culvert inventory in FY 2016
- Perform vegetation mowing and brush cutting as funding allows
- Inventory & inspect condition of ditches in 2018 as a part of the pavement inspection contract
- Report to Board on program costs & needs

Staffing Levels– Extreme Risk

- There are not enough staff to meet critical needs
- Losing ability to know about system condition
- The Shop Foreman and crew are assigned to field work making equipment maintenance difficult
- Director acts as Public Works Director, Solid Waste Administrator & County engineer
- More field staff & a succession plan needed that ensure we have adequately trained staff as we look at many retirements in the next couple of years



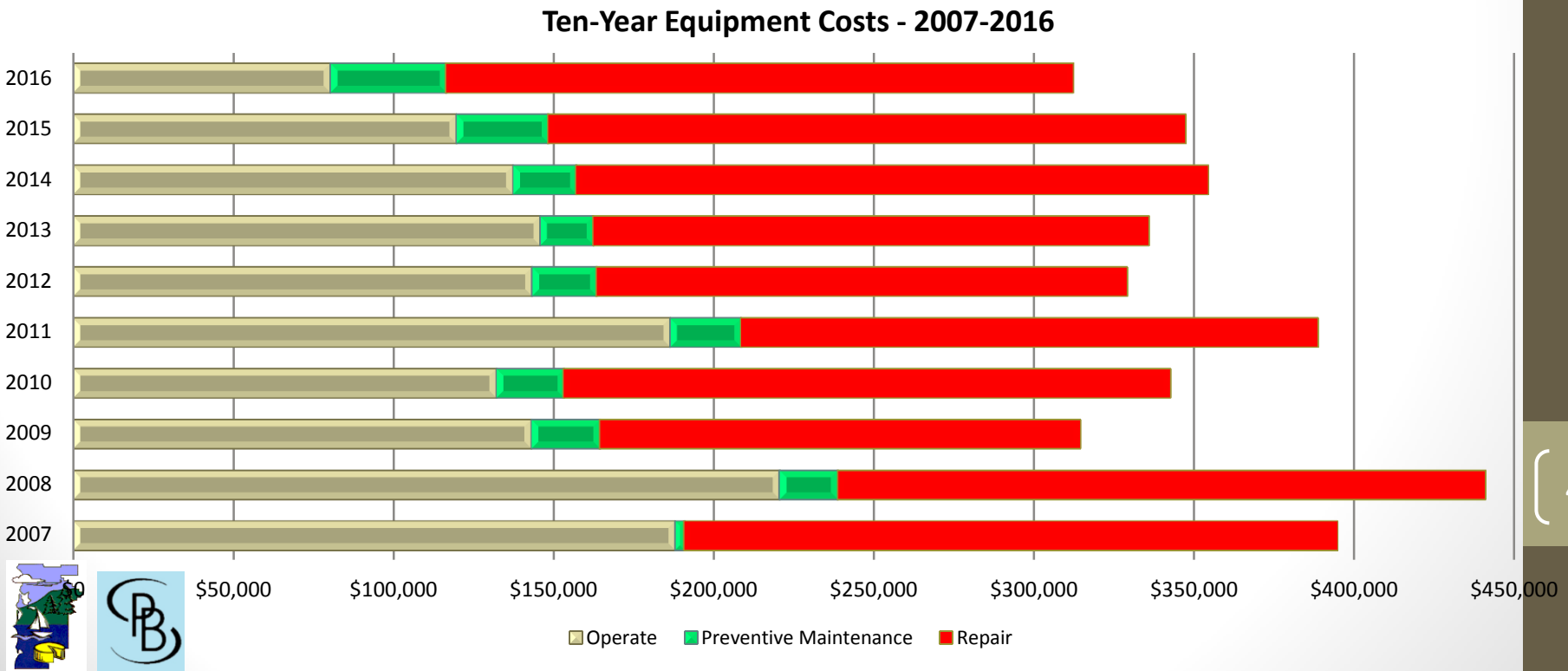




Vehicles & Equipment

We are falling behind on equipment maintenance because shop staff become part of the crew. 77% of the fleet received Level A maintenance in 2016.

Two-thirds of all Shop expenses are for vehicle repair.



Equipment – Moderate Risk

Risks

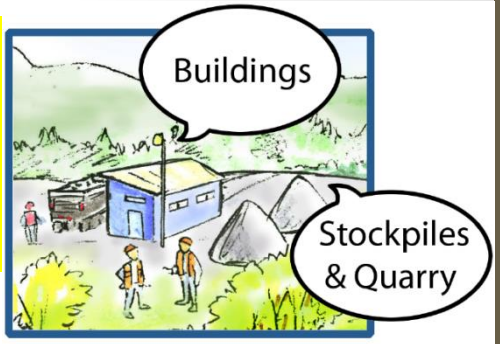
- We are falling behind on equipment maintenance
- Shop Foreman and staff become part of the field crew
- Nearly 75% exceed the County's adopted useful life for vehicles
- 57% of all Shop expenses are for vehicle repair
- Equipment reliability and safety is an increasing concern
- 77% of the County fleet receive preventive maintenance
- Equipment may not be appropriate for all job requirements

Risk Response

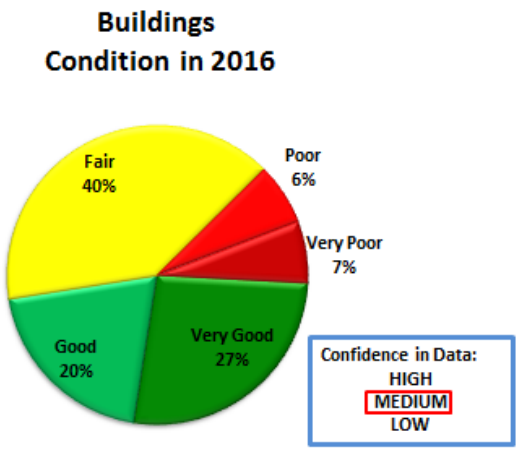
- Continue tracking time and hours of performance & maintenance cost per vehicle
- Target critical pieces of equipment for replacement
- Procure used vehicles and equipment that increases work efficiency and effectiveness
- Auction vehicles not in use or with high maintenance costs in 2016/2017
- Report to the Board on need

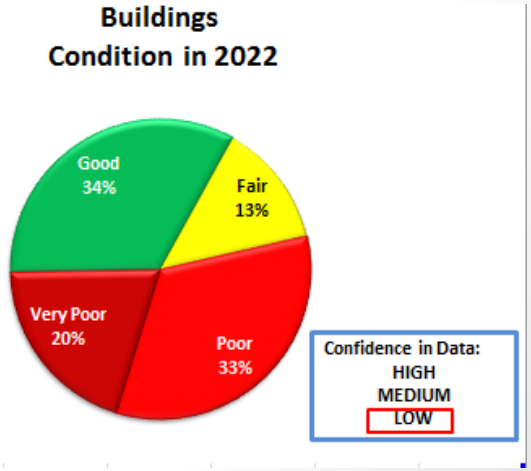
A used bulldozer was bought from the State

Buildings – Moderate Risk



- In spite of some repairs, we're losing our investment in some buildings
- 13% are in Poor condition today
- By 2022, 50% will be in Poor condition
- 15 buildings are inspected quarterly for safety code violations





Quarries – Medium Risk

- We crushed rock in 2015 and cleaned up the quarry in 2016 to ensure good quality rock is used



Opportunities Going Forward

- The 2017 Legislation will introduce Transportation package (not sure what this will look like)
- If $300M passed, $750k will come to Tillamook County Road Department
  - Increase staffing to address Extreme risks of staffing needs
  - Succession Plan is critical

We're committed to excellence in serving the community we live in and work for

2016 Oregon Chapter of APWA Project of the Year Award for Structures Less than $5 million

2016 Oregon Emergency Management (OEMA) Sister Community Partnership Award

Celebrating the Salmon Super Highway & Five Fin West Coast Pilsner