



**Road Services Division
2019 – 2020 Line of Business Plan
EXECUTIVE PROPOSED**

September 20, 2018



King County

Department of Transportation

Roads Division
King Street Center, KSC-TR-0313
201 S Jackson St
Seattle, WA 98104
206-296-6590
www.kingcounty.gov/roads

Alternative Formats Available
206-296-6590 TTY Relay: 711

Contents

| | |
|--|-----------|
| CHAPTER 1. OVERVIEW OF THE ROAD SERVICES DIVISION | 2 |
| 1.1 INTRODUCTION..... | 2 |
| 1.2 ABOUT THE DIVISION | 3 |
| 1.3 LOCAL SERVICES INITIATIVE | 3 |
| 1.4 ROADS PRODUCTS/ASSETS | 3 |
| 1.5 CUSTOMERS | 6 |
| 1.6 VALUE STREAM | 6 |
| 1.7 STRATEGIC CONTEXT..... | 8 |
| 1.8 ROADS LEGAL, POLICY, AND PLANNING FRAMEWORK | 9 |
| 1.9 ABOUT THE 2019 - 2020 LINE OF BUSINESS PLAN..... | 10 |
| CHAPTER 2. STRATEGIC FOCUS AREAS | 12 |
| 2.1 FINANCIAL AND OPERATIONAL SUSTAINABILITY..... | 12 |
| 2.2 FOCUSING ON SAFETY | 19 |
| 2.3 WORKFORCE..... | 23 |
| 2.4 WATER | 26 |
| 2.5 MAINTENANCE FACILITIES..... | 28 |
| CHAPTER 3. LINKAGE TO EXECUTIVE INITIATIVES | 31 |
| 3.1 BEST RUN GOVERNMENT | 31 |
| 3.2 EQUITY AND SOCIAL JUSTICE | 34 |
| 3.3 CLIMATE AND SUSTAINABILITY..... | 35 |
| CHAPTER 4. IMPLEMENTATION PLAN..... | 37 |
| 4.1 CAPITAL INVESTMENT | 37 |
| 4.2 ONGOING MAINTENANCE AND OPERATIONAL ACTIVITIES..... | 40 |
| APPENDIX A. ROADS PRODUCT CATALOG | 42 |

Chapter 1. Overview of the Road Services Division

1.1 Introduction

The Road Services Division is holding steady on the course set by the adopted Strategic Plan for Road Services and mapped in the Line of Business Plan for the last biennium.

Critical safety work remains the top priority for 2019-2020. With insufficient funds for a full preservation program or timely replacement of infrastructure, available revenues are focused on reacting to the higher risks associated with the deteriorating road system.

King County continues to experience a roads funding crisis, due to municipal annexations, the 2008 recession, declines in gas tax revenues, the effects of voter initiatives, and an aging bridge and road system. The lack of revenue is significantly impacting the county's ability to maintain and improve roads.

In King County, 12 percent of the total population pays for the approximately 1,500 mile unincorporated area road system that supports over a million trips per day. This is because King County is the only county to have so completely implemented the state's Growth Management Act, which calls for small, dense, urban areas of high-value properties to be annexed into cities. The system for funding county roads didn't contemplate growth management, and it doesn't leave sufficient revenues to keep the roads functioning even at current levels.

It has been more than a decade since a new capacity project has been funded, and preservation projects have been limited or associated with one-time funding. The six-year capital improvement program is significantly diminished from past years and is focused on addressing deterioration rather than planned preservation and maintenance. The division anticipates the need to continue to focus available resources on unplanned failures and system deterioration and recognizes that not all of these needs will be met and assets will be restricted or closed.

In response to the funding crisis, in 2015 the County Executive and Councilmember Lambert invited a panel of regional leaders and community members to meet and explore solutions for maintaining and preserving the aging bridge and road system in unincorporated King County. The Bridges and Roads Task Force was established and membership included neighbors, representatives from agriculture and recreation organizations, road experts and public policy leaders. The Task Force reviewed the background, history, and the analysis of an independent consultant that identified a funding gap of \$250 million to \$400 million a year to maintain, replace, and improve county bridges and roads. In January 2016, the Task Force presented several findings and recommendations, which the County continues to pursue. More information is provided in Chapter 2.

One of the recommendations of the Task Force was to work closely with the cities regarding the regional road and street network. In 2017, the Regional Transportation System Initiative (RTSI) was convened for jurisdictions to share challenges and partnering opportunities to solve problems on the regional road network. King County, Sound Cities Association, and Puget Sound Regional Council (PSRC) invited all agencies with roads in the County to discuss declining funding and the long-term regional road network needs. This year-long initiative resulted in a commitment from local agencies to work together to find solutions for the large, long-term, unmet needs associated with the regional road network. More information can be found in Chapter 2.

1.2 About the Division

Roads is currently one of five divisions in the King County Department of Transportation. It is responsible for all county-owned roads, bridges, and related infrastructure in the unincorporated areas of the county, and must meet the road-related transportation needs of a very large and diverse service area. The county's many bridges are an integral part of the road system, as are other components such as sidewalks and pathways, bike lanes, guardrails, drainage and water quality facilities, traffic control equipment, and traffic cameras.

The division's organizational structure consists of the Director's Office and three sections: Maintenance, Engineering Services, and Strategic Business Operations. Overall, the division is organized to focus on key functions and skill sets that best meet the strategic plan goals of safety and regulatory compliance, and to ensure that the proper resources are available to respond to unplanned failures and emergencies.

1.3 Local Services Initiative

Launched in the fall of 2017, the Local Services Initiative explored ways to enhance the services provided in unincorporated King County. After thorough analysis, the initiative team developed several recommendations, including the creation of the proposed Department of Local Services, which would become the single point of Executive-branch contact for residents and would be accountable for the services provided in unincorporated King County.

As part of that recommendation, Roads will be incorporated into the proposed Department of Local Services. This integration provides Roads with the opportunity to work directly with the proposed Director of Local Services to develop new and better ways to serve the unincorporated areas of King County. Roads will work closely with the proposed Department of Local Services to monitor the performance of the following products and services delivered.

1.4 Roads Products/Assets

Due to an extraordinary level of outreach to stakeholders and partners in recent years, the division has a solid understanding of its customers, the products it delivers to them, and the business processes that contribute to the desired attributes of those products. Roads worked closely with senior county leadership and the Office of Performance, Strategy and Budget to articulate a product oriented approach to process management. Consistent with the division's

If the road miles of unincorporated King County were laid end-to-end they would stretch from Mexico to the Canadian border and beyond.

asset management framework, Roads organizes its assets into five product families: roadway, bridges/structures, drainage, traffic control/safety, and roadside. These product families, and the attributes customers expect to receive from them, are shown in Figure 1. A more detailed overview of the division's products is located in Appendix A, Roads Product Catalog.

This approach provides a systematic way to analyze and articulate what Roads does, and why and how the division does it. It provides a framework for evaluating costs and impacts on value provided to customers. That understanding has allowed the division to undertake the continuous improvement processes needed to identify and focus on activities that provide the most value to customers and reduce or eliminate activities that add less value.

The unincorporated-area road system owned and managed by Roads includes the following asset inventory (numbers are approximate):¹

- 1,466 miles of roadways
- 182 bridges, including several jointly owned with cities
- Over 47,000 traffic control signs
- 80 traffic signals
- 114 miles of protective guardrail
- 54 traffic cameras
- 4.7 million feet of drainage ditch
- 3 million feet of drainage pipe

The county road network enables travel between cities and other counties. County roads are necessary links for the movement of people, utilities and goods throughout the most urban and dense county in the state. These roads—built generations ago—are failing and there is insufficient funding to maintain and replace them. Regional and local connectedness hinges not just on high-profile arterials, but on many miles of ordinary and unremarkable roads, culverts, and bridges that travelers mostly take for granted. The Bridges and Roads Task Force identified a need for a regional funding source so the county can continue to provide these vital connections between communities.



The average age of county arterials is over 90 years and local roads over 50 years.

Roads in the county's rural area are some of the oldest in the system and are the most vulnerable to falling trees, slides and debris, floods, and snow storms, as these roads run alongside rivers and streams, through heavily wooded areas, and at higher elevations.

¹ Based on best available data from spring 2018 Roads inventory data. Data represents a point in time and can change slightly throughout the year.

Figure 1. Road Services Division Product Families



1.5 Customers

More than one million trips are taken on King County's unincorporated road network each day. In addition to unincorporated residents, more than a quarter of a million other people also use the same roads and bridges to commute to school, work, and recreational activities, to move goods from farm to market, and as routes for freight and businesses.

Public service providers, such as police, fire, emergency medical responders, and Metro Transit, are also key customers of the county's unincorporated-area road system. In addition, the road right-of-way serves as a pathway for delivery of utilities and services including: water, sewer, stormwater, energy, and communication utilities. All of these users expect effective and reliable access to and through the county right-of-way.

Roads' customers include:

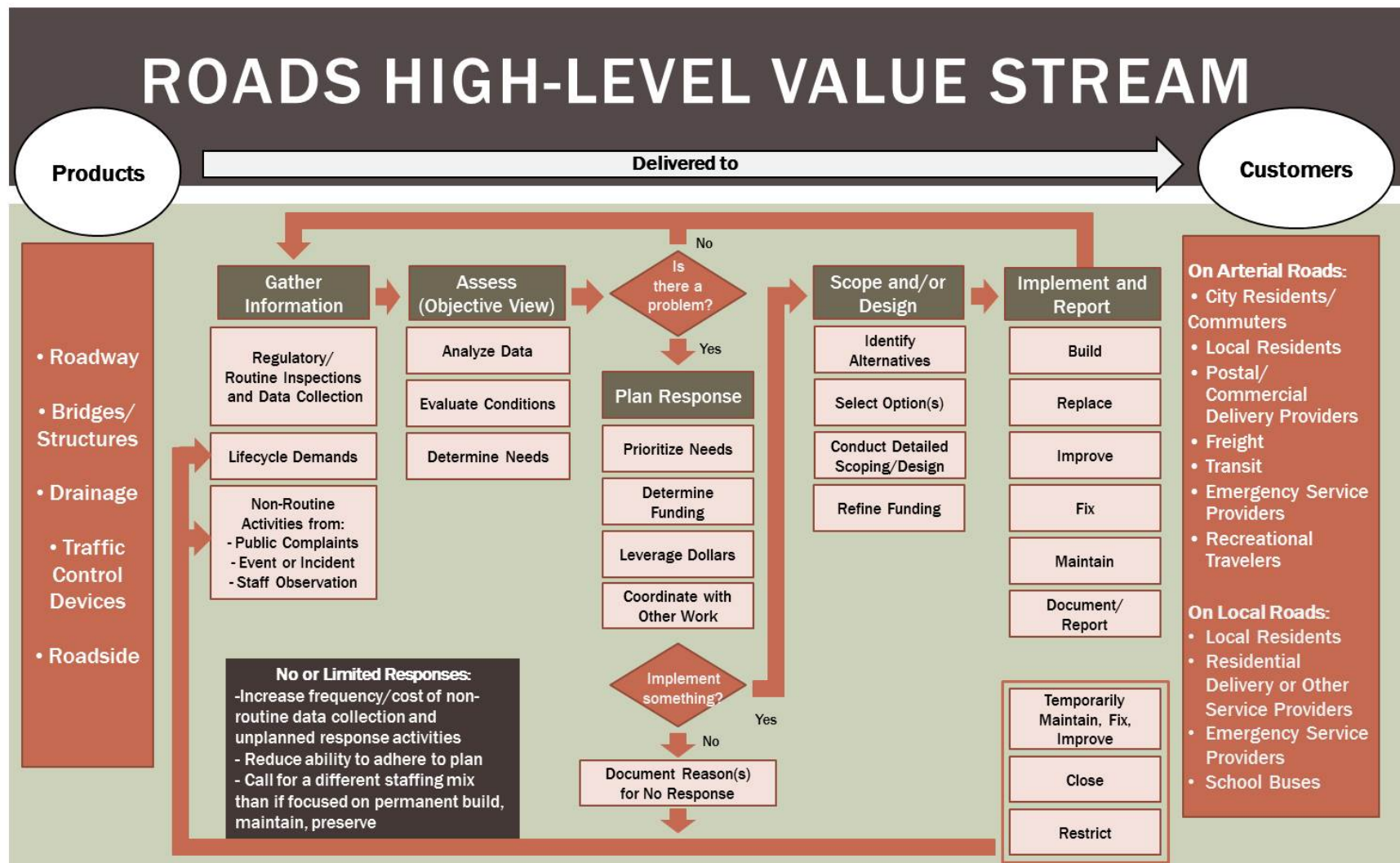
- *Commuters*
 - *Local residents*
 - *Freight*
 - *Transit*
 - *School buses*
 - *Emergency service providers*
 - *Recreational travelers*
 - *Utilities and other public service providers*
 - *Residential delivery services*
 - *Jurisdictions/agencies that purchase road-related services from the division*
-

Another group of Roads' customers are cities and other county agencies that purchase services, such as traffic maintenance and bridge inspection. When cities first incorporated or annexed territory, the division performed a large amount of work for these customers. Many of those newer cities have grown and now operate their own public works departments. In response, Roads has eliminated or reduced commitments to others to perform general road maintenance and traffic engineering work, in order to focus on maintenance of the county's unincorporated road system. However, the division continues to provide services to cities for more technically complex work such as bridge inspection, materials testing, and traffic signal maintenance. This work is appropriate for a regional service provider such as Roads, because smaller agencies cannot support the specialized staff or equipment needed for occasional specialized work, and these types of services are typically less available through the private sector. Roads avoids work for other agencies that presents seasonal or other conflicts with essential county work, and will continue as a regional provider for work that is less time sensitive and supports economies of scale, such as expert bridge inspectors.

1.6 Value Stream

A value stream map is a visual representation of the major processes and activities involved in bringing a product or service to the customer from demand to delivery. Roads has analyzed its primary business processes as depicted in Figure 2.

Figure 2



1.7 Strategic Context

In July 2014, the council approved an update to the Strategic Plan for Road Services. That plan, which includes a funding and needs analysis, policy framework, goals and strategies, alternate service delivery scenarios, and facilities planning guidance, serves as the strategic context for this Line of Business plan and informs ongoing division decision-making.

Roads mission and vision are as follows:

Mission

Manage the unincorporated King County road system through focused investment of available resources to facilitate the movement of people, goods and services, and respond to emergencies.

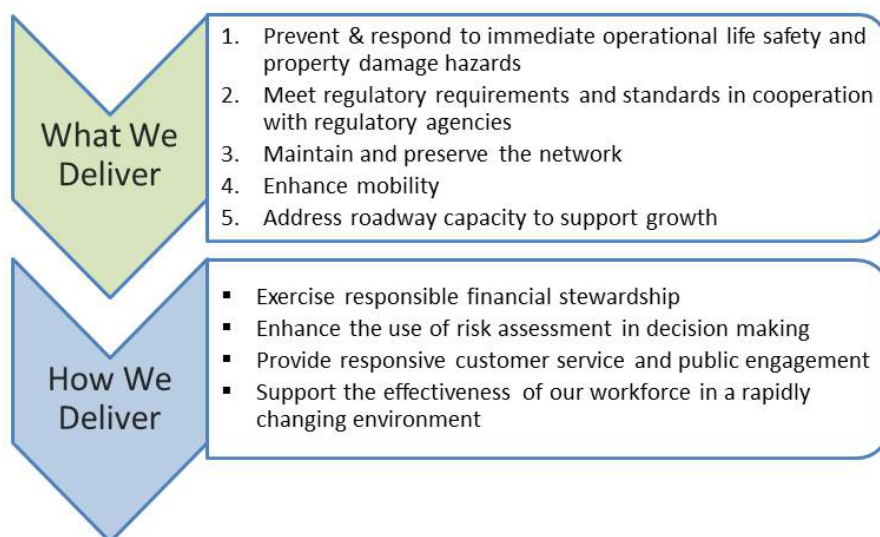
Aspirational Vision

A resilient, sustainably funded, unincorporated urban and rural road system that supports our communities and the economy by connecting people to employment, education, commerce and recreation, and is well-integrated with the regional transportation network. This is achieved through a lowest-lifecycle-cost approach to effective infrastructure maintenance, preservation, and improvement.

The strategic plan responds to the dilemma of significantly constrained resources by setting clear priorities to guide the division as it manages the road system. The plan outlines two types of goals as shown in Figure 3. “What we deliver” goals articulate, in priority order, what the division intends to accomplish, and “how we deliver” goals articulate how the division intends to conduct its work. In general, “what” goals relate to the products and services provided to the public, and “how” goals speak to the internal aspects of services (such as cost-efficiency).

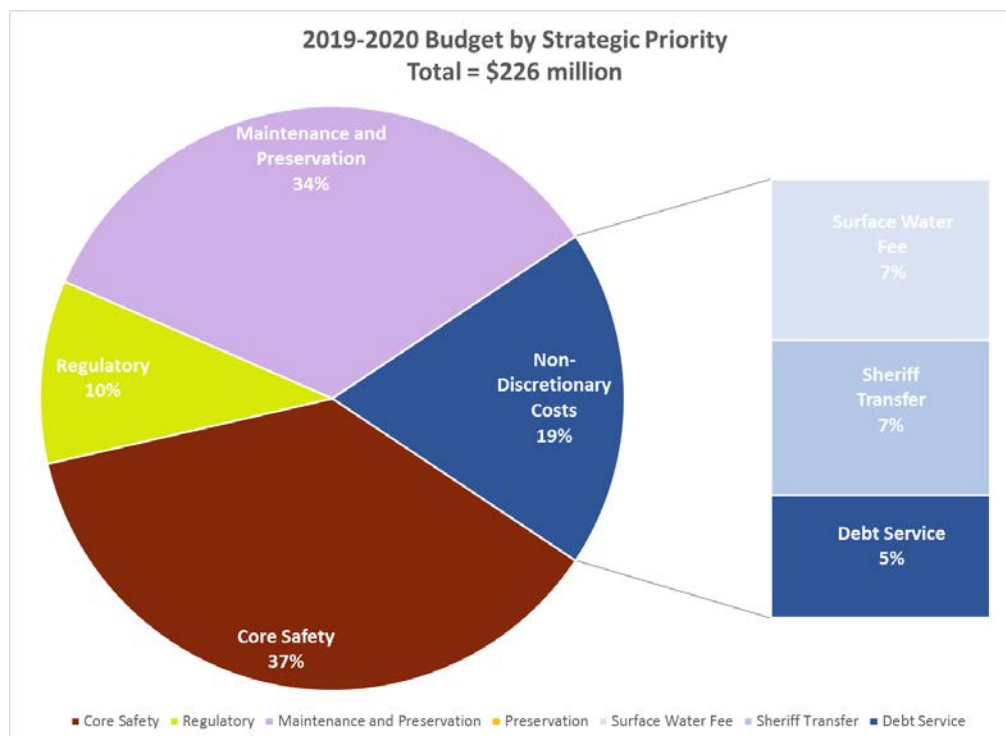
Figure 3

Strategic Plan Goals



Roads used these goals and priorities to build its biennial budget and six-year capital improvement program, which results in funding safety and regulatory work first and then, due to revenue constraints, a limited amount of preservation and maintenance activities. The division is unable to fund roadway capacity improvements and only a very small amount of mobility work associated with regional partnerships. Figure 4 provides an overview of the alignment of the 2019-2020 budget and capital improvement program with strategic plan priorities.

Figure 4



1.8 Roads Legal, Policy, and Planning Framework

In addition to its strategic plan, Roads operates within a complex legal, policy, and planning framework that includes the following:

- Federal law and policy
- Federal road and bridge standards
- State and federal grant fund requirements
- Washington laws
- Washington State Growth Management Act
- Washington State Department of Transportation Local Agency Guidelines Manual
- Puget Sound Regional Council's Transportation 2040 (metropolitan transportation plan)
- King County Charter and Code
- King County Countywide Planning Policies
- King County Comprehensive Plan
- King County Strategic Plan 2010-2014
- King County Equity and Social Justice Ordinance

- King County Transportation Needs Report
- King County Transportation Concurrency Management Program
- King County Mitigation Payment System
- King County Road Design and Construction Standards
- King County Green Building Ordinance
- King County Strategic Climate Action Plan
- King County Energy Plan
- County Road Administration Board requirements
- King County Executive Policies and Procedures

1.9 About the 2019 - 2020 Line of Business Plan

Roads has produced business plans for over a decade, and this is the third plan to incorporate the Line of Business approach from the county's performance management model. This plan uses the division's product-oriented framework to look at the division's business, both over the next biennium and 10 years into the future. It includes a catalog of the products, or infrastructure assets, and illustrates how the proposed 2019-2020 budget investments align with those products and Roads strategic focus areas. This approach allows Roads to better link the budget to its adopted strategic priorities and asset management framework. It also provides a powerful tool to communicate to elected officials and the public about what current resources are "purchasing" and why specific resource allocation choices were made.

This plan is consistent with and supports the King County Strategic Plan, helps to implement the road-related elements of the King County Comprehensive Plan, and demonstrates Roads alignment with Executive priorities - equity and social justice, climate change, best run government, and regional mobility. The business plan is structured around the division's five strategic focus areas for the next biennium, along with associated risks and issues. The plan also addresses the division's approach to advancing the King County Executive's strategic priorities. A product catalog is provided as an appendix (Appendix A) to provide a high level overview of Roads product families.

*A **Line of Business** is defined as the processes that produce a highly-related family of products that, when combined, fulfill a business or customer need. A Line of Business may cross existing organizational boundaries to serve a common purpose.*

Lines of Business are the high-level units for which King County leaders "check" operational performance and problem-solve. Strategic plans are implemented operationally through Lines of Business.

Roads Strategic Focus Areas for 2019–2020

Roads has identified five strategic focus areas specifically for the upcoming biennium:

- *Financial and operational sustainability*
- *Safety*
- *Workforce*
- *Water/drainage*
- *Maintenance facilities*

These, in addition to the Strategic Plan for Road Services goals, have guided budget development and form the framework for performance reporting. Progress will be communicated through several means including visual management systems, such as performance boards.

This plan is structured to present each strategic focus area with its key challenges and connect to the related 2019-2020 budget initiatives.

Text boxes like this one throughout the document highlight key challenges associated with each focus area.

Chapter 2. Strategic Focus Areas

2.1 Financial and operational sustainability

Strategic Focus Area #1

Financial and operational sustainability

Key Challenge:

Insufficient funding results in deterioration of the road system

- Current funding levels do not support needed levels of service for road assets.
- Infrastructure is aging and deteriorating or failing in many locations and funds are not available for corrective actions.
- Regional collaboration is required to develop a new county-wide revenue tool that provides sustainable funding for the transportation infrastructure needs of the county and cities.

Budget environment past and future

As noted earlier, King County continues to experience a roads funding crisis, due to municipal annexations, the 2008 recession, declines in gas tax revenues, the effects of voter initiatives, and an aging bridge and road system. The lack of revenue is significantly impacting the county's capacity to maintain and improve roads.

The county receives revenues for roads primarily from three sources; a dedicated property tax on unincorporated properties, gas tax, and federal and state grants. The dedicated property and gas taxes provide the largest portion of Roads revenue in the 2019 – 2020 biennial budget (property tax 79%, gas tax 12%).

The property tax is tied to the assessed value of properties in unincorporated King County. During the recession, property values in unincorporated King County dropped sharply. While the regional economy has been recovering, future growth in tax revenues is significantly limited by state law, which restricts the growth of property taxes generally to one percent per year plus new construction. Inflation alone, even during the recession, was often greater than one percent. In addition, there is only a modest amount of new construction occurring outside of cities.

Property tax revenues for county roads are not predicted to recover in real terms during the horizon of this plan. Gas tax revenues do not grow with inflation, face further erosion from increasingly fuel-efficient and alternative fuel vehicles, and cannot be increased without the approval of the state Legislature and the governor. The combined end result for King County is a tax base that does not support the cost of addressing the existing and future road system needs.

As in the last biennium, in 2019-2020, the county will continue to have limited capacity to deliver road services. Conditions on the road system will continue to deteriorate, and resources must be focused on critical safety needs. In order to ensure that the highest priority immediate operational safety activities are addressed, other maintenance and preservation activities have been reduced or cut. Reduced service levels result in a growing backlog of infrastructure maintenance, preservation and replacement needs. For example, weight restricted bridges, failing or undersized road drainage systems, roads in need of reconstruction, and other deteriorating road conditions.

The Klahanie annexation that occurred in 2016 removed \$4.8 million in revenue or 6 percent of total property tax revenue. However, only 27 road miles, or 1.8 percent of the total mileage left the county road system.

Events of the last decade have had profound impacts on the county road system. Over the past twenty plus years, cities have formed and annexed the urbanized, denser areas of the county consistent with the Growth Management Act and county policy. Several large geographic areas – with their associated tax base – left the county road system. The amount of funding lost, versus the number of bridges and road miles transferred to other jurisdictions in annexations, was often not proportional.

In the early 2000's, voter initiatives, followed by state legislation, eliminated the local vehicle license fee and limited the amount of road levy funds that can be collected. These changes resulted in a significant decline in revenue, and a reduction in maintenance, operations, and capital improvements. The financial impacts continued to grow and compound in subsequent years and the road system deterioration is accelerating as a result.

Funding gap - needs vs. revenues

A financial consultant engaged by the county estimated it would cost upwards of \$400 million to \$500 million annually—for a period of more than ten years—to fully address the current backlog of road system needs, embark on an asset management program that produces the lowest life cycle costs and brings the system to a state of good repair, address future maintenance facility needs, and the road capacity, mobility, and non-motorized needs identified in the Transportation Needs Report.

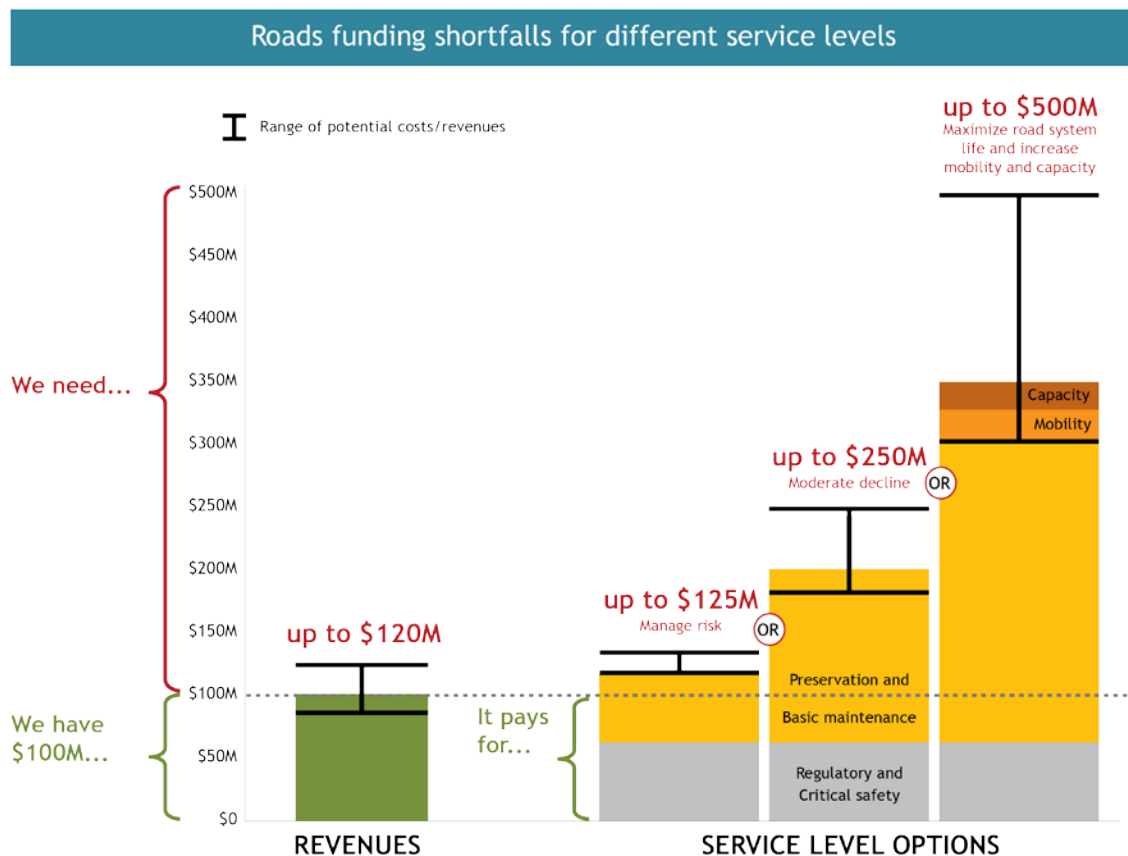
Based upon information and forecasts provided by the Office of Economic and Financial Analysis for property tax and the Washington State Department of Transportation for gas tax, the division estimates that the average revenue for the next ten years is just over \$100 million annually – less than half of the estimated \$220 million needed just to moderate the decline of the system and to minimize risk. Under these financial constraints, the 2019-2020 biennial budget focuses limited resources on delivering the most critical services. However, the reduced ability to care for infrastructure assets will lead to further deterioration of county roadways. Eventually, the lack of preservation and maintenance will force speed and weight limitations, bridge and road closures, detours, and longer travel times.

Planning-Level Estimates
The expected costs based on average project or unit costs, as opposed to a specific design. Planning level estimates do not account for site-specific issues that may come up in individual project design and implementation.

As part of the Bridges and Roads Task Force effort, BERK Consulting was hired in 2015 to conduct a review of Roads' methods, assumptions, data, and documentation used to create the Strategic Plan for Road Services financial need estimates associated with three level of service scenarios: (1) Manage risk in a declining system, (2) Moderate the decline in asset condition, and (3) Maximize road system life and increase mobility and capacity. BERK found that Roads' need estimates were based on reasonable methods and assumptions appropriate for planning and policy discussions. They also concluded that there is a significant level of uncertainty around many of the key assumptions and available data guiding the estimates of need, and recommended framing the needs estimates for each service level in terms of a dollar range rather than a single number.

A range of costs better describes the actual funding challenge because a single number suggests a precision that is not appropriate for planning-level estimates and runs the risk of understating what it could take to achieve some of the policy goals in each scenario. BERK produced revised cost estimates based on risks and variations in underlying assumptions and used this information to generate an overall range of funding need for each of the three service level scenarios. At its existing level of funding, Roads is currently operating at the "Manage risk in a declining system" service level scenario. Figure 5 presents Road Services Division's original strategic plan estimates with BERK's refinements presented as range bars, and highlights the funding shortfall for each service level scenario.

Figure 5



Six Year Capital Program

The county is losing significant ground in its battle to preserve aged infrastructure and to modernize and provide efficient functioning of its heavily used road system. The Roads Capital Improvement Program is no longer able to keep pace with or make a net gain in the growing backlog of infrastructure needs. With insufficient revenues, maintenance, repairs, and replacement are deferred and the backlog expands. This deferral will lead to an exponential increase in the cost to repair and sustain these roads in the future. According to the American Association of State Highway and Transportation Officials, every dollar spent to keep a road in good condition avoids six to fourteen dollars needed later to rebuild the same road once it has deteriorated prematurely. Essentially, the infrastructure experiences a shorter lifecycle, and therefore, a higher lifecycle cost.

The 2019 - 2024 Capital Improvement Program reflects an ongoing and evolving response to significant structural funding challenges that are affecting the county's ability to preserve and maintain the roadways in unincorporated areas. The proposed six year Capital Improvement Program totals \$150 million, significantly less than historic levels (Figure 6). The majority of the expenditures are identified for critical safety needs, preservation programs such as pavement overlay/chip seal and replacement of critical bridges, and repair to failing drainage assets.

Roads has a legal funding cap that limits revenue growth to a rate well below the rate of inflation and the growth in operating costs. Over time, the increasing cost of current service levels will result in decreasing funds available for the capital program. If no new sustainable funding sources become available, Roads will reach a point within the next decade or so where no funds remain to support a capital program (Figure 7). Subsequent to this, not only will there be no resources for a capital program, but Roads will be forced to reduce basic maintenance and operations services in order to operate within available revenues.

Figure 6

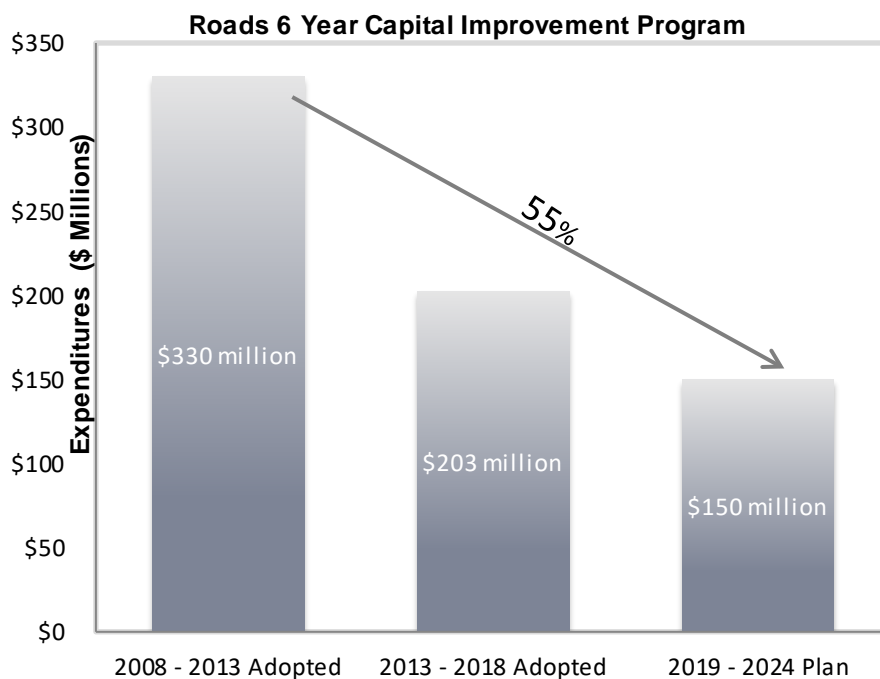
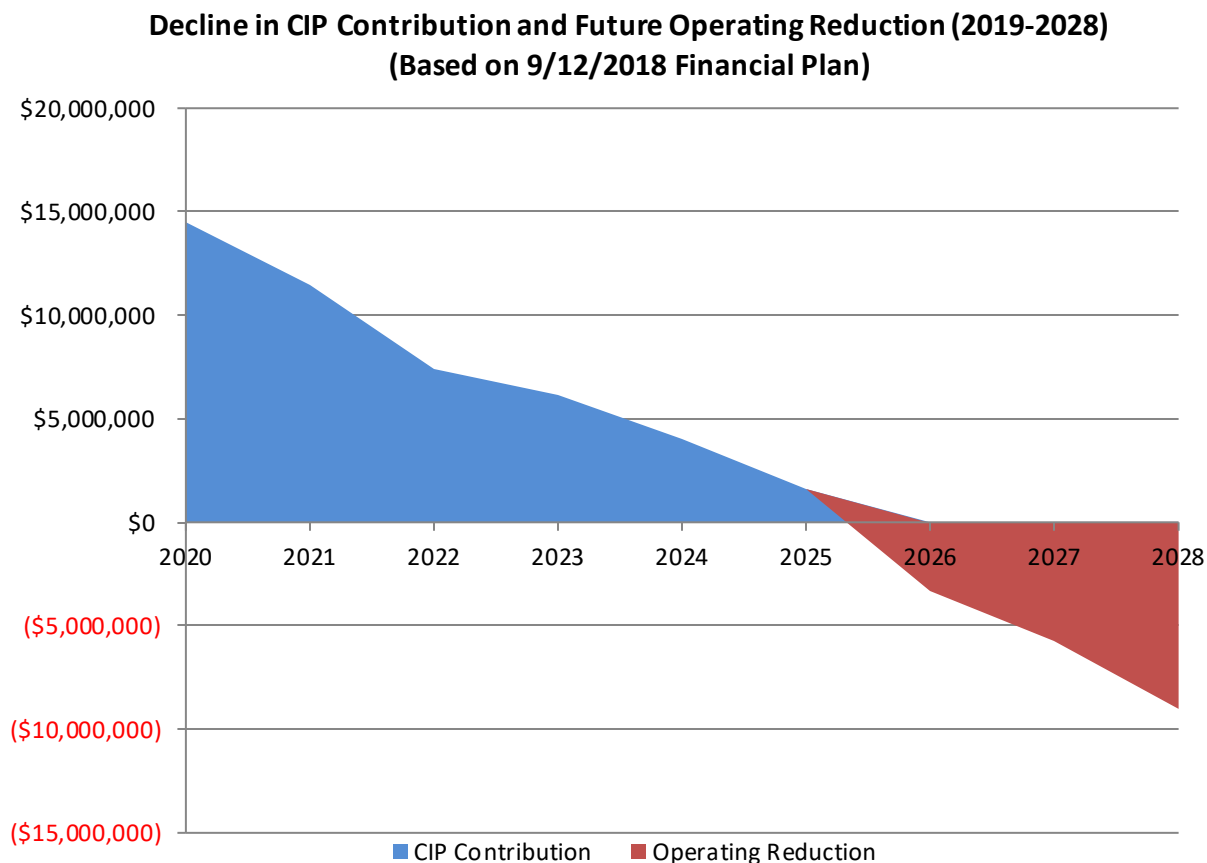


Figure 7



Consequences of the funding gap

Despite the best efforts of the division to maintain the road system, the structural funding challenges will continue to negatively impact the condition of the county's roads and bridges. Failure events may be weather related (for example landslides, washouts, or flooding), or a result of necessary reductions in preventative maintenance, repairs, or replacements (for example, sink holes or pipe collapse associated with aged and deteriorated drainage assets).

As outlined in the division's strategic plan, without significant increases in funding, 35 bridges are at risk of closure over the next 25 years and over 70 miles of roadway could be restricted or closed. Roads expects the pace of infrastructure deterioration to accelerate in the coming years and result in more frequent road failures and closures. As of 2018, three bridges have been closed (one of which was permanently removed), over twenty are weight or height restricted, and over half dozen road segments are closed or restricted.

The county's arterial road system will be subject to considerable deterioration over the next ten years due to insufficient revenue for pavement maintenance or reconstruction. Portions of the system may be subject to speed limitations or partial or complete closure in the future.

While it is expected that there will be an increase in road system deterioration and more frequent road failures, it is difficult to predict which specific assets will fail or when. This unpredictability poses a unique challenge for the division and means operating in a more reactive service model. To address this issue, Roads allocates funds in a program called Quick Response to respond to unanticipated failure events. In addition to flexible resources that can be used to respond to emergencies, this model requires a critical focus on key skill sets that can respond nimbly to asset failures.

Seeking regional solutions to financial and operational sustainability

In January 2016, the Bridges and Roads Task Force made several findings and recommendations. Key recommendations included:

- **Revenue:** The county needs new authority from the state legislature for a fair, non-regressive countywide revenue tool that is tied to inflation, is sustainable over the long-term, and provides a benefit to both cities and the county.
- **Infrastructure:** The county should work to transfer urban road segments that are orphaned, islands of roads within a city or cities, and Potential Annexation Areas (PAAs) within the growth boundaries of cities into those jurisdictions. This may require additional authority from the state legislature and support for recipient cities.
- **Further Study:** The county should study other funding options that would directly tax utilization and address the overall decline in gas tax revenues caused by fuel efficiency gains and reduced fuel consumption. These alternatives could include taxes or fees based on various road pricing options including vehicle miles travelled, congestion pricing, and/or tolling.
- **Outreach:** The county should expand outreach to all stakeholders to increase awareness of the problems Roads faces.

Following the Task Force recommendations, King County proposed state legislation that would allow the King County Council to transfer orphan roads to the appropriate city. Additionally, it incorporated other Task Force ideas including language to modernize the functions of the county road engineer and the division's record keeping, and allowed for a consideration of nonmonetary compensation and public benefit to allow for the vacation and transfer of unnecessary right-of-way. The legislature removed the request to transfer orphan roads but adopted the remaining provisions. The division incorporated the new law into county code and is actively working to integrate it into county practices.

One of the recommendations of the Task Force was to work closely with the cities regarding the regional road and street network. Regional Transportation System Initiative was convened in 2017 for jurisdictions to share challenges and partnering opportunities to solve problems on the regional road network. King County, Sound Cities Association, and Puget Sound Regional Council (PSRC) invited all agencies with roads in the county to discuss declining funding and the long-term regional road network needs.

A technical committee of public works directors, engineers, transportation planners, and city managers met throughout 2017 to identify key roads that connect communities, quantify the revenue shortfall for maintaining these roads and accommodating increased traffic, and identify potential revenue sources. An Elected Officials Committee, comprised of mayors and councilmembers from most cities in King County, reviewed and approved the work of the Technical Committee. The Puget Sound Regional Council provided critical data and information used by both committees.

Through the Regional Transportation System Initiative, King County, jurisdictions in King County, and the Puget Sound Regional Council accomplished the following:

- 1) Defined the regional road network in King County.
- 2) Identified costs and the unmet financial needs for roads on the regional network.
- 3) Considered and discussed several revenue options and other ideas for addressing regional road network needs.

Going forward, local agencies have committed to work together to find solutions for the large, long term unmet needs for the regional road network. The information from this collaboration will be valuable for participating agencies and for the Washington State Legislature's consideration of next steps for the critical unfunded needs on local roads.

2.2 Focusing on safety

Strategic Focus Area #2

Safety

Key challenge:

Managing safety risks associated with hazardous and changing conditions

- Emerging high-collision locations need to be fixed.
- Emergent hazards require prompt response.
- New federal requirements for calculating the weight a bridge can safely carry are resulting in an increased number of load restricted county bridges and associated impacts.
- Staff resources insufficient to respond to all needs during county-wide snow and ice events.

As established in the adopted Strategic Plan for Road Services, safety is the number one priority for the management of county roads. This priority drives the agency's budget, business plan proposals, and daily operations. The 2019-2020 proposed budget includes systematic approaches to assessing and addressing the safety of the road network and uses a risk-based strategy for determining where to allocate limited funding. The division's priorities are based upon state and Federal Highway Administration adopted American Association of State Highway and Transportation Officials design standards that provide a guide for safety investments. Using standardized criteria and rigorous technical analysis, projects are given priority rankings, and efforts are selected and scheduled based upon these rankings and available funding.

Critical daily maintenance

Daily maintenance activities are critical to keeping roads and bridges safe for the traveling public. Foremost are efforts to address immediate life safety hazards and risks to roads assets and property. These include conditions that, if not addressed, have the potential to imminently result in injuries or death. Property damage hazards involve road conditions or defects that may result in substantial damage to road system assets and public or private property. Some examples of prevention and response include:

- Removing obstructions in the traveled roadway (trees, animal carcasses, auto parts, spilled materials)
- Addressing hazardous vegetation that is blocking signs and signals, visibility, pedestrian walkways or that is extending from road shoulders into traveled ways
- Replacing failed road striping and markings so lanes and traffic directions are visible to drivers
- Plowing, sanding, or de-icing lifeline routes that serve emergency responders, hospitals and public safety facilities

- Repairing significant pavement defects in heavily traveled locations including sinkholes, deep potholes, and displaced panels
- Replacing damaged or missing traffic control signs (like stop signs) or repairing malfunctioning traffic signals
- Repairing broken guardrails and bridge damage
- Clearing blocked culverts in order to direct water away from traveled roads
- Removing debris and inspecting infrastructure after a weather event such as flooding or landslide, or a natural disaster such as an earthquake

Crews and equipment are located throughout the county and perform critical safety activities 24/7, as needed, on almost 1,500 miles of roadways. When not responding to immediate life safety hazards, work is focused on asset preservation and less critical repairs.

Identifying risks and safety improvements

Identification of risks and the associated safety improvement needs is an ongoing component of the division's safety program. The county uses national guidelines like the Federal Highway Administration *Road Safety Information Analysis, A Manual for Local Rural Road Owners* to identify risks to life safety.

The division conducts an extensive study of multi-year county collision data as well as a review of the latest national studies on the effectiveness of different designs, materials, and traffic control measures in specific conditions and locations. The most recent county study, the 2016 High Collision Location/High Collision Rate study was finalized in August 2016. It identifies and analyzes statistically significant collision locations and recommends appropriate countermeasures, including associated cost estimates, for inclusion in a priority array.

County data as well as national trends indicate that roadway departure crashes (when vehicles leave the traveled roadway) pose the highest risk to human life. For example, nationally, 53 percent of fatal crashes in rural areas were caused by roadway departure crashes. Prevention of roadway departure crashes is a national priority and a focus of recent federal grant funding programs. The response to this report is a major focus of the county's 2019-2020 budget proposals.

Roads follows national guidance such as the *Federal Highway Administration Roadway Departure Safety, A Manual for local Rural Road Owners* to develop appropriate countermeasures for roadway departure crash risks. These include activities such as guardrail construction/preservation, application of high friction pavement surface treatments, and keeping the clear zone (at least 10 feet from the edge of the traveled roadway) free of obstacles.

Safety funding strategy

Because it is not financially or logistically feasible to address all known safety-related needs simultaneously, the proposed budget includes improvements selected from scored and ranked projects in priority arrays, with the inclusion of some projects that are also eligible for federal grant opportunities in order to further stretch resources. The proposed budget prioritizes funding for maintenance safety programs and basic repair activities.

The High Collision Location/High Collision Rate report is based on crash data for the unincorporated road network and is reactive in nature to the changes in traffic patterns, traffic volumes and changes in driver behavior (like new issues with distracted driving). All of the identified needs/countermeasures identified in the 2016 report are anticipated to be completed by the end of the current biennium. A new three year High Collision Location Report will be prepared in 2019 with implementation of identified actions to begin

in the upcoming biennium. Other standard safety programs are ongoing, including the run-off-the-road and school zone safety programs. The run-off-the-road program identifies problem areas and implements solutions like installing new guardrail, retrofitting old and substandard guardrail, and removing or mitigating some hazards in the clear zone.

Traffic safety program countermeasures may include: high friction surface treatments, Intelligent Traffic System solutions (traffic lights and electronic traffic management) and driver alert systems like rumble strips. Roads uses its safety studies and priority lists, based on detailed technical engineering analyses, as the basis for identifying the highest priority needs within each category.

Proposed Bridge Safety Program

A significant, new road system safety issue came to the forefront in 2017. Following bridge collapses and a decision to allow heavier trucks on roadways, the Federal Highway Administration developed new calculations for determining the weight that a bridge can safely carry. Federal, state and local governments are evaluating publicly-owned vehicular bridges using these new criteria and formulas, and are determining whether additional weight restrictions must be placed on bridges. King County owns and maintains 178 vehicular bridges and, as mandated, is evaluating each of them using current bridge condition information and the new federal standards to calculate bridge weight carrying capacity, between now and the federal deadline of 2022.

As of spring 2018, the division has evaluated 57 bridges and determined new vehicle weight restrictions are necessary for 21 of those bridges. Some bridges are restricted from transporting certain types of fire apparatus, garbage trucks, cement trucks, freight trucks, and other heavy vehicles. It is anticipated that the number of weight-restricted bridges will grow as the analysis of all county bridges is completed by 2022.

One immediate impact from load limiting these bridges is that heavier vehicles may have long detours and be forced onto roads less appropriate for heavy vehicle traffic, for example, through residential areas or onto narrow, winding, or steep roads. Another concern is that emergency responders may be delayed if certain types of fire apparatus are unable to cross a bridge on the most direct route. There is also the risk that, despite the County's best efforts to enforce the weight restrictions, some overweight trucks will not comply with posted weight restrictions and cross these bridges, resulting in structural damage or even a potential bridge collapse.

Structural damage from violations of the weight restrictions could lead to unsafe conditions for travelers and/or the need to close bridges indefinitely to all traffic, resulting in significant consequences for communities and the transportation system. To reduce risks to public safety and regional mobility, it is imperative that the county initiate a bridge replacement program as soon as possible.

Due to significant declines in revenue, no new standalone bridge replacement projects have been constructed since 2014. The bridge construction program was discontinued and related staff were reduced when Road Services necessarily refocused limited funding on daily safety work and basic maintenance and preservation activities. The proposed 2019-2020 Bridge Safety Program will create the capacity necessary to move forward in addressing critical bridge replacements.

The restricted bridges were evaluated and prioritized using criteria including the type of restricted vehicles, impact on traffic flow, alternative routes for heavier vehicles, and impacts on communities. Based on this analysis, a 2018 Bridge Safety Program to alleviate these impacts was proposed through a supplemental budget ordinance. Although Ordinance 18744 was approved in June 2018, the council vote was not unanimous as required by the Washington State County Road Administration Board rules in the

Washington Administrative Code at 136-16-042 for votes that occur outside of the regular budget cycle. Therefore, the bridge program was not able to move forward in 2018, and is being proposed for reconsideration in the 2019-2020 budget process.

In addition to the four bridges proposed for the Bridge Safety Program in 2018, one additional bridge, Baring Bridge, has been added to the 2019-2020 program proposal, for a total of five. All bridges selected for replacement rank highly using the King County priority process for bridge replacement that was approved by the King County Council in 1994 (Ordinance 11693).

The five bridges include:

- Ames Lake Trestle Bridge (#1320A) – arterial with Average Daily Traffic of 1,800 vehicles per day
- Coal Creek Bridge (#3035A) – sole access to approximately 70 homes in the Walker Lake neighborhood
- S 277th Street Bridge (#3126) – arterial with Average Daily Traffic of 23,000 vehicles per day
- Upper Tokul Creek Bridge (#271B) – sole access for approximately 50 homes and access for logging operations
- Baring Bridge (#509A) – sole access to approximately 45 homes in the Baring community.

2.3 Workforce

Strategic Focus Area #3

Workforce

Key challenge:

Maintaining a skilled, engaged, and nimble workforce in an ever changing business environment

- A significant portion of the workforce will be eligible for retirement within the next biennium
- Roads has encountered some difficulties attracting and retaining qualified, skilled staff in the current economic climate.
- While Roads' staffing level has been stabilized following the reductions of the past, morale has been affected by many years of change and uncertainty.
- Recent employee engagement surveys show that career growth and development is one of the top interests of Roads staff.

Staffing

Creating stability in the workforce has been essential to supporting Roads' productivity and effectiveness. Following a period of intense change and disruption, including nine layoff processes between 2008 – 2015 that resulted in more than 40 percent reduction in staff, Roads began adjusting staffing to sustainable levels in the 2015 - 2016 biennium, based on available revenue projections over the 6 year planning horizon. With a smaller, but stable and focused workforce Roads has aligned all work efforts with the division priorities identified in the adopted Strategic Plan for Road Services and the Line of Business Plan. Staff work programs were adjusted and realigned to best deploy existing resources to meet the top priorities of immediate operational safety, regulatory compliance, and a constrained amount of maintenance and preservation.

In 2019 - 2020, Roads proposes a staffing level of 396 FTE, which is less than two thirds the number (615) the division had in 2009. The staffing proposal for the biennium includes a modest staff increase (9 FTE) from 2018 levels, which is related to direct service provision, such as the Road Rangers responsive maintenance program, school zone safety, customer service, and capital project delivery.

In 2019 – 2020, approximately 20% of Roads current staff will be eligible for retirement because they have either reached the age of 65 or have completed 30 years of service. Succession planning, targeted recruitment to fill key positions, and ongoing professional development to grow existing staff will be workforce focuses during the upcoming biennium. Of particular importance to succession planning efforts is the documentation of, and cross training on, standard work processes to prevent the loss of crucial institutional memory when employees retire or otherwise depart the agency.

With the vibrant regional economy, Roads has experienced some challenges recruiting and retaining skilled staff. Trades and crafts, as well as engineering positions, face competition related to the booming construction industry. Other types of jobs, such business systems analysts, face competition from the robust technology sector. Many competing job opportunities in the region have higher pay and additional benefits not available through county employment. To stay competitive as an employer Roads will need to continue creative recruitment efforts, meaningful employee engagement activities, full participation in the county's new Investing in You program, and also advocate for other human resources initiatives, such as salary compensation studies.

Employee engagement

Roads has embraced the employee survey and engagement action planning process. All work units, over two dozen in total, have employee engagement action plans in progress, with wide ranging goals such as facilitating team building, fostering career development, and increasing interaction and trust between staff and management.

Roads also continues to distribute a quarterly employee newsletter to all staff. The newsletter is produced by staff, for staff, and numerous employees at all levels of the organization contribute to writing articles and submitting photos.

Annual meetings between the division's senior leadership team and all staff work units are another ongoing employee engagement activity. Seven meetings at various location throughout the county were organized in fall 2017. A new, open house style format with displays about current work efforts and issues, including equity and social justice, was implemented and was well received by staff.

Employee development

Training is an important component of supporting a skilled and effective staff in a smaller agency, particularly where significant job compression has occurred. Employee roles and job duties have changed and evolved rapidly since 2009. Work that was once done by several people is now the responsibility of far fewer individuals and people must be adept at multiple roles and in different areas of expertise. In addition to these changes, over the past few years many experienced staff members have retired or voluntarily left county employment for other opportunities, decreasing the organization's knowledge base and skill sets. Consistent with these circumstances, the past three employee surveys clearly identified training and professional growth as targets for enhancement.

Roads budget continues to include a modest amount of resources for staff training to support required licensing and certification, technical/professional skill requirements, and other job-related staff development needs. In addition to supporting individualized training needs, in 2017 - 2018, Roads partnered with Human Resources Division's Career Support Services to pilot a Career Development Academy workshop series for staff with an interest in career planning, charting their professional path, and taking charge of their careers. Forty seven staff participated in this four-class career development series. The series was offered in two locations to increase accessibility to all employees, including field staff. Due to the success of this initiative, Roads plans to offer an additional workshop series in the fall/winter of 2018. Roads also continues to provide special duty opportunities and other options for employees to grow within the agency.

Employee safety

In 2017-2018, Roads has benefited from the addition of a safety program coordinator. The division's enhanced safety program has focused on the following:

- Improved, more frequent and innovative safety trainings and compliance with personal protective equipment requirements.
- Continuously improving a structured and centralized safety program, including a revitalized employee safety committee.
- Embracing a proactive approach to health and safety rather than a reactive approach.
- Improved employee injury reporting and return to work processes, with a focus on increasing light duty work opportunities.

These types of efforts will continue in the next biennium.

2.4 Water

Strategic Focus Area #4

Water

Key challenge:

Water is a Risk to Roads

- Water that is not managed can damage or destroy roads.
- Some roads are located in vulnerable, chronically flooded locations.
- A shifting climate is projected to increase flooding and surface water impacts to the roads system.
- There are insufficient resources to address drainage assets that are at risk of failure or already failing.
- Funding resources are needed to address culverts in the right-of-way that may be impeding fish passage.

Risks and Needs

Water that is not sufficiently managed can damage or destroy roads. A large portion of the county's road-related drainage assets, including culverts, pipes, ditches, and catch basins, are old and at risk for failure, or already failing. Some assets are also undersized for current and/or projected water flows. Drainage infrastructure failure can result in collapse of the roadway, landslides, flooding, damage to public or private property, and associated risks to life safety. Many county roads are also located in vulnerable, frequently flooded locations, which increases risk of failure and results in intermittent roadway closures during storm events.

Historically, development in the county occurred without systematic stormwater flow control or water quality treatment facilities. Most of the conveyance system that does exist runs under the road network. When drainage assets reach the end of their life cycle, they need to be replaced with new infrastructure designed to current standards, which mitigate risk and provide appropriate drainage functionality. Culverts and other infrastructure that are not designed to be fish passable may also block access to important upstream habitat necessary for the sustainability of fish species. This can also be addressed during replacement.

King County must comply with its National Pollutant Discharge Elimination System (NPDES) permit requirements established by the Department of Ecology to comply with the federal Clean Water Act. The county has a Surface Water Management (SWM) utility and fee to fund programs to maintain stormwater infrastructure, reduce flooding, and address stormwater related water quality impairments. Studies illustrate that the cost of addressing stormwater runoff in King County, and more broadly in the Puget Sound region, far exceed the funds available from existing Surface Water Management fees and other funding sources. In particular, the County Road Fund, the primary funding source for road-related

drainage needs within unincorporated King County, is significantly underfunded to adequately maintain the infrastructure of the road network.

Interagency collaboration

Within King County government, all agencies are responsible for the management of stormwater on their assets. Historically, each agency has managed stormwater independently with overall regulatory responsibility held in the Water and Land Resources Division (WLRD). With the growing financial challenges facing Roads, the division will not be able to adequately maintain/preserve stormwater infrastructure in the road right-of-way. In response to this challenge, Roads and WLRD have expanded their collaborative efforts, in recent years, to identify joint projects that address both mutual and division specific priorities, including the following:

- Protect public safety
- Maintain existing infrastructure
- Support mobility of people and goods (Roads)
- Support water quality and fish passage (Water and Land Resources Division)
- Protect private property/infrastructure

Roads has extensive expertise in project delivery, including contract management and permitting, and manages most jointly identified drainage capital projects as well as maintenance activities on drainage assets.

In 2019 – 2020, Roads is proposing a new Culvert Replacement and Fish Passage Programmatic Project to increase the safety and condition of the road system and enhance fish passage by replacing culverts in poor or failing condition, or undersized, with new culverts of fish passable design. This project, developed collaboratively with WLRD, supports both Roads' drainage asset management need to replace culverts at the end of their lifecycle as well as Executive Constantine's Clean Water and Healthy Habitat agenda. It is a component of the Executive's broader county fish passage program (led by WLRD), which will complement the county's ongoing collaboration with tribal governments and long-standing support for watershed-based salmon recovery efforts. Originally conceived in late 2017, the program took on greater meaning and urgency following a June 2018 U.S. Supreme Court ruling that required the state of Washington to fix state-owned fish passage barriers within the Puget Sound area in order to avoid violating tribal treaty rights.

The revenue supporting the proposed Culvert Replacement and Fish Passage Programmatic Project is generated as a result of WLRD's proposed Surface Water Management, SWM, fee 20% increase. Additional outside funds, such as grants, are also anticipated to be necessary to fully implement the culvert program. WLRD and Roads will continue to work together to refine the prioritization of fish-passable culvert design and construction and to strategically pursue additional funding sources.

The two divisions also continue to partner to identify ways to improve effectiveness and drive efficiencies. For example, the divisions make joint programmatic and project level decisions as informed by a shared drainage asset inventory database. In addition, Roads uses a geographically based asset management information system, and Water and Land Resources Division is investing in the same system using common standards and procedures for data collection and management.

In addition to the efforts with WLRD, Roads also continues to collaborate with the King County Flood Control District on capital improvement projects of mutual interest that reduce flooding of roads and local communities.

2.5 Maintenance Facilities

Strategic Focus Area #5

Maintenance facilities

Key challenge: ***Maintenance facilities do not support efficient service delivery***

- Some facilities are outdated, undersized, deteriorated and do not support contemporary approaches to maintenance work and environmental compliance.
- Some sites lack adequate facilities to support staff needs for restrooms, heat, changing areas, etc.

Background

Road maintenance facilities are critical to support the division's mission. Maintenance activities keep the county's road-related assets in working condition to maximize the public's investment and provide for the safety of users. A significant number of environmental and regulatory compliance activities are also associated with road maintenance. Adequate maintenance facilities located in the right places and in good condition are necessary to support the efficient provision of vital services to the traveling public.

Road crews are public safety first responders, working as needed twenty-four hours a day, seven days a week, to respond to road condition issues or collisions, and operating around the clock during severe weather or other emergencies. The ability to respond to incidents and emergencies 24/7 is an important part of operating a road network. Emergency response capability helps to keep the road system safe and operational during snow, ice and wind storms, flooding, and after earthquakes or other events.

Examples of emergency response activities include: responding to significant accidents that impede travel; sanding, plowing and ice prevention on snowy or icy roads; removing downed trees and clearing other debris caused by landslides, storms or flooding; managing flood-related or other types of emergency road closures; and completing storm-related repairs to roadways and other assets such as drainage systems, shoulders, and adjacent slopes. Inspecting bridges and other infrastructure after earthquakes or other events is also a critical emergency response function.

Facilities Assessment

The location and functionality of maintenance facilities is critical for both emergency response and efficient ongoing operations. Facilities require adequate space and features to support staff, equipment storage, and operational activities. It is also necessary to have adequate heat to keep equipment from freezing, and weather-tight structures to keep equipment and supplies from suffering rain damage. These facilities need adequate systems to ensure there is power so that staff are safe and can get warm. The division's 2014 strategic plan update process included an extensive evaluation of Roads' maintenance

facilities. An outcome of this evaluation was the identified need to deliver maintenance services more efficiently, consolidate facilities, and to complete priority facility repairs.

Travel time is a significant factor in service delivery, and therefore, having facilities centrally located is an important efficiency and public safety strategy. Some maintenance facilities have been surrounded by urban growth, and with the change in service areas, no longer allow for efficient and time sensitive service delivery. Dense urban areas in the western part of the county have annexed into cities, and as a result, the county's long term service area has shifted farther to the east. In 2014, Roads consolidated facilities and redrew maintenance district boundaries. Roads moved out of three facilities and staff were consolidated in the remaining six facilities.

Two maintenance facilities were also identified for replacement in new locations. The Vashon Island facility is very old, significantly undersized, and the facilities are failing. The Cadman facility in northeast King County is in the wrong location for current and future needs, and since it is within the City of Redmond, the area is likely to be rezoned for denser development in the future. In 2017, the *King County Road Services Regional Maintenance Facility Siting Assessment* identified candidate site alternatives to replace these two maintenance facilities.

Facility Replacement

In the 2019-2020 biennium, Roads proposes to acquire one of the recommended Vashon Island site alternative properties. The Vashon facility has failed buildings that don't address critical crew needs, and the site has inadequate space for safely storing and maneuvering equipment and materials used for emergency response and regular maintenance activities. The facility is old and deteriorated, and the site is severely undersized at just two acres. The building that houses the crew room is covered in corrugated metal panels with a corrugated metal roof that show signs of rust and wear and is past its useful life. In addition, the building envelope risks water intrusion and damage as it fails. The building and rooms are inadequately heated and temperatures often alternate between excessively cold or hot. Crews working in extreme weather need facilities to dry off and where they can warm or cool depending upon the season. A crew size of about a dozen men and women are sharing one toilet. There is inadequate yard space to efficiently and safely move equipment or store tools and materials. Materials are uncovered, risking leaching into the environment, degradation of the material, and delays, like when frozen salt and sand must be broken up by hand before loading into snowplows.

There are a limited number of suitable land parcels on Vashon Island in terms of size, location, allowable zoning, and site conditions; it is important to pursue acquisition of one of these sites, from the few identified as viable in the 2017 siting assessment study, before there are no options left for replacing the failing facilities on the island. Design of the new facility is anticipated to occur in 2021-2022 and construction in 2023-2024.

In the out years of Roads six year CIP (2021-2024) Roads is proposing to acquire land and construct a new, centrally located maintenance facility to serve northeastern King County, replacing the existing Cadman facility that is currently mislocated within the City of Redmond. This project would construct a new facility at a more centrally-located site in the rural area and include adequate space for crews, vehicles and multiple pieces of equipment, and materials storage and stockpiling, as well as functions such as waste disposal, truck washing and other similar activities.

Also in out years, Roads is proposing to complete the buildout of the Preston Maintenance Facility s. That project will include water system upgrades to allow full use and occupation of the facility, and completion of site development and buildings and other structures that support staff, equipment, materials and operations. Once the project is complete, additional functions can be moved from the existing Fall City

facility to Preston. The Fall City location is comprised of failing facilities that are undersized, including an old barn without any heat or cooling that serves as a locker room. In addition, the site is impacted by flooding.

Consistent with county financial policies, Roads plans to use the proceeds of property sales to fund facility replacement activities.

Facility Rehabilitation

In response to the critical maintenance facility repair needs identified as part of the 2014 maintenance facility evaluation process, during the last biennium, Roads initiated an upgrade to a portion of its Renton campus. This building renovation project is implementing several key recommendations, including: replacement of failing roofs, siding, windows, heating, ventilation, and air conditioning (HVAC), systems, conversion of lights to LED as well as minor repairs. The procurement phase for this project has been challenged by an exceptionally active and competitive construction market for buildings/facilities, higher labor rates and escalating material costs. As a result, the county received bids that are significantly higher than engineer's estimates of the likely labor and materials costs that were estimated for the project budget. A proposed budget request for the upcoming biennium will complement the existing project and support completion of the overall maintenance facility repair project.

Sustainability

During the upcoming biennium, a Fund to Reduce Energy Demand (FRED) loan has been requested to support completion of 100% LED conversion for Renton and all other county owned maintenance facilities by 2020, include both interior and exterior lighting.

Chapter 3. Linkage to Executive Initiatives

3.1 Best Run Government

Innovations, improvements and efficiencies

In response to its ongoing funding crisis and consistent with the Executive's Best Run Government initiative, Roads has been involved in an ongoing effort to evaluate all aspects of its business, work locations, tools, equipment and materials to continually innovate and achieve efficiencies. The interest in process improvement continues to grow at all levels of the organization, and Roads has embraced the use of continuous improvement/Lean methods and tools. Many key improvements have already been achieved, and more are underway.

Between 2010 and 2016, Roads pursued a business “reset” strategy that included the strategies below. Additional information regarding these accomplishments was detailed in the 2017-2018 Roads Line of Business Plan. Many of these improvements are ongoing, continuous improvement efforts:

- **Focused on core services** - Reduced contract work to other agencies/cities, eliminated less essential services, and focused on critical needs of county roads.
- **Reduced and reorganized staff** - Reduced workforce by over 40% by 2014, realigned teams, adjusted job classifications, reduced management positions, worked with unions for efficiencies, adjusted work schedules, and provided critical training to remaining staff.
- **Consolidated facilities** - Developed facilities plan, reorganized maintenance division boundaries, closed three facilities and consolidated into remaining six, reduced energy consumption associated with field operations, started improving facilities to increase operational efficiency, sold surplus properties.
- **Decreased overhead** - Consolidated office space, reduced fleet by 20%, reduced computers, phones, and radios, and converted street lighting to LED.
- **Leveraged technology** - Implemented a state-of-the-industry asset management and work order system, implemented phase one of automatic vehicle location technology for more efficient dispatch, better fleet management, and more efficient data collection, and standardized software systems for more efficiency and reliability.
- **Implemented process improvements** – For example, maximized asset data collection capabilities by centralizing approach and staffing, consolidated maintenance clearing and grading permits from three to one, started converting existing signal technology to allow automated traffic counting, and improved the My Commute web map and road closure alert process for more timely and accurate data for the public.
- **Formed partnerships** – Collaborated with Washington State Department of Transportation, King County Water and Land Resources and Solid Waste divisions, and labor unions to identify and implement efficiencies.
- **Reduced road system inventory** – Started transferring orphaned road segments to cities, vacating unneeded road rights-of-way, and limiting roads being transferred to county responsibility.

Roads continues to innovate, improve and achieve efficiencies. A few key examples from 2018 and planned activities for 2019-2020 are highlighted below.

- **County code modernization** - Completed a once in a generation modernization of the primary county legislation (Titles 14 and 46) that govern road infrastructure and behavior on roadways, guiding most of the mission of Roads.
- **Customer service** - Consolidated multiple public contact phone numbers and email addresses to one centralized agency phone and email point of entry for inquiries, feedback, and service requests. This streamlined and enhanced the customer experience by making it easier to contact the county about roadways and ensures that inquiries are promptly routed to the right work unit. This also reduced redundant response efforts due to customers sending the same request to multiple contacts. Used Lean tools to improve procedures and staff training, implemented response templates for common issues resulting in higher quality responses, and enhanced tracking to ensure timely follow-up to customer inquiries and feedback.
- **Employee safety** - Improved the on-the-job injury reporting process and return to work process after an injury. Faster injury reporting helps employees get services and support more quickly, so they can recover and return to work sooner. Roads is continuing to work on Lean process improvements to speed employees return to work after injuries, with a focus on light duty opportunities.
- **Capital project delivery** - Established a capital project delivery office for expanded internal monitoring, project oversight, and improved efficiency. Enhanced scope, schedule and budget tracking, introduced detailed project controls meetings, supported project managers in problem-solving, increased procurement coordination, and revamped consultant strategy for project design work. Also introduced visual management tools for improved project/program management.
- **Inclement weather response** - Improved preparedness for snow and ice response through construction of sand/salt shelters in strategic locations. Six sand and salt shelters were added in 2017 to Roads maintenance sites across the county to support enhanced responses to inclement weather. These shelters keep sand from freezing and road salt dry, so crews can more quickly load trucks for snow and ice response. An additional shelter is planned for 2018. Locations for the shelters were chosen based on historical response needs.
- **Mobile technology for field staff** - Increased use of mobile devices and geospatial databases, in the field, to process work orders, record asset condition data, improve access to information, and automate routine tasks.
- **Business systems** – Replacing and modernizing critical, end of lifecycle division software systems for business continuity, efficiency, and reliability.
- **Asset management** - Continuing to expand the division's data driven asset management and work order system to add business functions. Most recently, bridge maintenance, drainage repairs, and environmental functions were added to the Roadworks system. Catch basin inspection/cleaning for National Pollutant Discharge Elimination System permit compliance is another function planned in the near future.

- **Surplus properties** – Continuing to sell surplus properties that carry risk but do not add value to the delivery of road services. Sale of maintenance facility properties in particular will be used to fund rehabilitation or replacement of aging, undersized, or inconveniently located facilities.
- **Labor** - Working with labor to increase flexibility in maintenance staff job opportunities as well as work efficiencies. Examples include: negotiated a training and succession planning program that allows utility workers to train to obtain Commercial Driver's Licenses that allow them greater opportunities to advance to positions like equipment operator and truck driver; agreed to process for bringing in additional truck drivers during inclement weather to plow snow or address flooding and storm debris.
- **Continuous improvement** – Process improvements at Roads is supported by five staff trained as skilled Lean facilitators, as well as numerous staff who have completed basic or intermediate Lean training and incorporate continuous improvement tools/principles into their work.

Partnerships

Roads continues to maintain productive partnerships with many King County and other agencies, including but not limited to:

- Sound Cities Association and the Puget Sound Regional Council recently engaged to partner in convening the Regional Transportation System Initiative, to explore regional road needs, funding gaps, and potential legislative solutions.
- Fleet Administration Division to advance the use of automatic vehicle location (AVL) technology and reduce fleet costs.
- Water and Land Resources Division (WLRD) to assess the condition of regional drainage systems in the right-of-way and continued inter-departmental coordination with Water and Land Resources Division to ensure Surface Water Management funds allocated to Roads right-of-way drainage projects sufficiently address safety and stormwater issues.
- King County Parks and Recreation Division, Public Health and Metro Transit in support of a regional approach for pedestrians, cyclists and other modes of active transportation.
- Washington State Department of Transportation to share maintenance facilities at Star Lake, Skykomish and Preston, as well as materials storage sites.
- City of Issaquah on joint study on the Issaquah-Hobart Road from Interstate 90 to State Route 18 and potential improvements to address Issaquah-Hobart Road congestion issues.
- Cities within the county that include or are adjacent to orphaned road segments, islands of streets, and potential urban annexation areas that should not be part of the long term unincorporated road system. As of 2018, four miles of road segments were transferred to cities, others are pending, and the division will continue this important work during the upcoming biennium.

3.2 Equity and Social Justice

Roads' maintenance, operations, and capital activities are consistent with the goals of the 2016 King County Equity and Social Justice (ESJ) Plan. The division includes pro-equity considerations in many facets of its business, including the following.

- **Prioritize emergency snow and ice response along Metro's highest priority transit snow routes**, since these may be the only source of transportation available to lower-income residents. Roads has had to scale back snow and ice response for budget reasons, but these routes remain a priority. An agreement with the City of Seattle under which they plow certain city boundary roads and critical routes between cities also helps sustain service in ESJ communities.
- **Promote equal access to, and availability of, information and services** for all county residents by designing communications and public engagement processes that are culturally relevant for diverse communities, including communities whose residents have limited English proficiency.
- **Utilize partnerships with other King County or external agencies, community groups, and non-profit organizations** to better understand community needs and obtain community input and involvement.
- **As funding or grant opportunities permit, provide road-related capital improvements** that serve the needs of communities whose residents are low-income, racially/ethnically diverse, or have limited English proficiency. Nonmotorized improvements are emphasized in particular because they both help to support active, healthy lifestyles and also facilitate mobility for people with disabilities, those who cannot drive or unable to afford a car. Applications for nonmotorized grant funds are prioritized to communities with historically disadvantaged populations. Roads is currently working on two such grant-funded projects:
 - Construct missing links of sidewalk on Renton Avenue South between 68th Avenue South northward to South 112th Street, a community with significant low income, limited English speaking, and racially diverse populations.
 - Plan and construct sidewalk, intersection, and school zone safety improvements in the White Center area, which is also a community with significant low income, limited English speaking, and racially diverse populations.
- **Provide school pathway projects.** The 2019 – 2020 budget proposal includes three school zone pathway projects located in southwest King County (Federal Way School District). Each serves schools with a high percentage of students receiving free and reduced lunch.
- **Provide sidewalk repairs in high-need communities.** In the upcoming biennium, Roads is proposing a pilot project to repair approximately 3,000 lineal feet of sidewalk segments that contain uneven surfaces and other hazards. These sidewalks are located within the communities of North Highline and Skyway and have been the subject of over 100 requests for repairs by community members.
- **Perform equity review of division actions.** Roads evaluates division projects and programs using census data and other relevant demographic and community data, to better understand socio-economic context and inform pro-equity strategies. For example, when selecting bridge

replacements for the proposed Bridge Safety Program, Roads staff used a pro-equity project scoring methodology developed by King County Parks.

- **Improve internal processes to encourage diversity and expand opportunity.** Roads strives to attract larger applicant pools and ultimately a diverse and competitive work force. For example, the job recruitment and application process was simplified for trades and crafts openings. Job announcements only contain necessary minimum qualifications to lessen the likelihood of presenting artificial barriers for otherwise qualified candidates. Job postings include the following statement to create a culture that actively seeks to increase diversity in the workforce: “King County values diverse perspectives and life experiences. The Department of Transportation encourages people of all backgrounds to apply, including people of color, immigrants, refugees, women, LGBTQ, people with disabilities, and veterans.”
- **Provide multiple ESJ training opportunities.** All Roads staff and management are provided with basic ESJ training to promote a culture that understands and values diversity in the workplace. Advanced ESJ training is also available and encouraged. In addition, customized Roads ESJ training will be available to Roads capital project teams, starting in 2019, to ensure consistent and substantive responses to the nine additional ESJ questions that are being incorporated into the Green Building Report’s Sustainable Infrastructure Scorecard. Roads has also added books on ESJ topics to work group professional libraries. The division’s ESJ coordinator, green building technical staff, and other designated representatives, help support Roads’ ESJ training and reporting efforts and activities.
- **Explore contracting and procurement opportunities.** The Roads Project Control Officer is exploring potential opportunities, consistent with county, state, and federal procurement rules and requirements, to enhance the use of small, minority owned/women-owned/veteran-owned businesses.

3.3 Climate and Sustainability

The 2015 King County Strategic Climate Action Plan (SCAP) provides guidance for how the region will achieve an equitable, sustainable, and clean energy future.

Future shifts in climate are anticipated to increase the volume of water within King County’s waterways as well as the county’s system of stormwater pipes, culverts, ditches and other drainage assets. To accommodate future projected water volumes, when drainage assets need replacement, Roads installs larger sized culverts and pipes. Ancillary habitat benefits of these larger sized conveyances may also include improved fish passage, and in some cases, upsized wildlife movement corridors, under the roadway, during dry periods. Roads projects often incorporate native plants and bio-swales, which improve water infiltration and water quality. When feasible, projects are also designed to increase overall tree cover and habitat complexity within the project area.

Roads has a long history of incorporating principles of sustainability into its delivery of capital projects and programs. Capital projects are reviewed to identify opportunities to achieve sustainable infrastructure score card requirements for energy, greenhouse gas emissions, stormwater management, materials selection, and construction/demolition materials diversion. Coordinated waste reduction strategies result in re-use of materials on site when possible, salvaging of materials offsite, disposal of hazardous waste (if applicable), and recycling. For example, generated vector solids and road sweepings are used as daily

cover at the Cedar Hills landfill and recycled road concrete was used for the Dockton seawall on Vashon Maury Island.

In 2017, Roads completed 48 projects and programs that were required to be scored using the Green Building Sustainable Infrastructure Scorecard; 100% of these projects achieved platinum scores. All of Roads capital projects benefit from a check-in early in the project delivery cycle, to identify opportunities to improve efficiencies, enhance sustainability, and to maximize alignment with the Strategic Climate Action Plan. Some of Roads projects exceed green building ordinance requirements. For example, the Skykomish River Bridge project, completed in 2017, had one of the highest construction and demolition (C&D) diversion rates across all projects completed by county agencies. This project diverted nearly 100% of its construction and demolition materials from landfills and received a special recognition from the county executive.

In the upcoming biennium, Roads will receive a Fund to Reduce Energy Demand (FRED) loan to complete conversion of all maintenance facility lights to light-emitting diodes (LEDs) by 2020. This project will upgrade approximately 2000 internal and external lights and fixtures, resulting in a net energy savings for the county over time.

Chapter 4. Implementation Plan

Linkage to 2019-2020 Budget Proposal

Highlights of the proposed biennium budget for capital and ongoing maintenance and operational activities are provided below. Consistent with the division's strategic priorities, these investments focus primarily on safety and infrastructure preservation.

4.1 Capital Investment

Consistent with strategic plan direction, in 2019-2020 Roads will undertake the following key initiatives to direct limited resources to address immediate operational safety issues and help keep the most critical components of the road system in a state of good repair, to minimize service disruptions resulting from structural degradation and safety-related road or bridge closures.

Key capital investments in the proposed 2019-2020 biennium budget include the following:

Roadway Preservation - \$9.7 Million

During the biennium, \$6.7 million is planned for contracted overlay work and \$2 million is planned for spot treatment of high-risk areas in an effort to prolong the useful life of the road and improve safety for the traveling public. Roads that receive overlay and spot treatment will be selected based upon an assessment of their current surface and sub-surface conditions, functional designation (such as major or minor arterial), and other considerations. In addition, \$1 million is allocated in the biennium for the design of one federally funded roadway project, 218th Avenue SE Reconstruction, with construction scheduled in the next biennium. This project is funded almost entirely by grant awards.

Drainage Preservation - \$6.8 Million

Water is the enemy of roadways; the drainage system in the county is aged and failing. Failed drainage can cause sinkholes and road collapse, landslides and damage to public and private property. There is a backlog of drainage projects and new failures/needs are routinely identified. These repairs will address previously identified projects as well as some emergent issues, but available funds are insufficient to address more than a limited number of the top priority projects in the backlog. Work to be accomplished in this program may include new infrastructure, repairs of failing systems, ditches, and shoulders (which help water properly drain off roads), or other drainage features. \$3.7 million of this program is funded through the Water and Land Resources Division's Surface Water Utility Fee.

Culvert Replacement and Fish Passage - \$4.5 Million

This program supports the Road Services Division's drainage asset management need to replace culverts at end of lifecycle and King County Executive Dow Constantine's Clean Water and Healthy Habitat agenda. Culverts that are in poor condition or undersized pose a risk of failure that can result in collapse of the roadway, landslides, flooding, damage to public and private property, and associated risks to life safety. When culverts reach the end of their life cycle they need to be replaced with new infrastructure designed to current standards in order to mitigate risk and provide appropriate drainage functionality. Culverts that are not designed to be fish passable block access to important upstream habitat necessary for the sustainability of fish species. Roads' proposed Culvert Replacement and Fish Passage project is one component of the county's broader fish passage program (led by the Water and Land Resources Division), which complements the county's collaboration with tribal governments and

longstanding support for watershed-based salmon recovery efforts. The county is initiating work with federal, state, and tribal officials to develop a fish passage program for watersheds within its jurisdiction. Originally conceived in late 2017, the program took on greater meaning following a June 2018 U.S. Supreme Court ruling that required the state of Washington to fix state-owned fish passage barriers within the Puget Sound area in order to avoid violating tribal treaty rights.

Quick Response - \$3 Million

Given the current financial situation and the accelerating rate of decline of the road and bridge system condition, the division is by necessity becoming more reactive rather than proactive. The Quick Response master project will supply funds for sub-projects that arise during the biennium and require immediate attention. Projects can include emergency repairs associated with storm damage or other infrastructure deterioration or damage, unanticipated pedestrian or vehicle safety needs, or other emerging issues. Since portions of the county's rural road network run through steep terrain or along rivers that migrate, every year, landslides and flooding damage roadways that provide critical connections between communities or on roads that comprise the sole access to properties. Immediate repairs are often necessary to resolve emergency road closures.

Guardrail Preservation - \$3 Million

This program will refurbish and upgrade existing guardrail to current standards. The program will improve the safety of roads by upgrading existing guardrail and guardrail end terminals and raising guardrail to current standard height. Federal standards for guardrail type and construction have evolved with information from collision data, and it is important to replace older infrastructure and comply with the latest best practices.

High Collision Safety - \$100,000

This program will improve the safety of roads by making improvements aimed at reducing the occurrence of collisions at locations or on road segments identified in the High Collision Locations and High Collision Road Segments report. The current report was produced in 2016 and the next report is planned for 2019. In addition, funding is also included to begin sightline improvements at the intersection of SE Covington Sawyer Road and 164th Place SE. In addition to this 2019-2020 proposed funding there is planned carryover capital funding from the last biennium that will be invested in the safety of road network.

Guardrail Construction - \$800,000

This program will design and construct new guardrail systems to improve the safety of the roadways. Barriers will be installed in warranted locations as a countermeasure to reduce the number and severity of "run off the road" collisions. The division has developed a guardrail priority array based on factors such as the number of collisions, average daily traffic volume, and geometric design of the road.

Bridge Priority Maintenance - \$1.7 Million

This program performs high priority preservation and maintenance projects to address safety issues related to bridge deterioration, and provides for some rehabilitation and maintenance to extend the life of bridges. Between 1950 and 1959, there was a spike in federal funding, and 47 of the county's bridges were built or replaced. Many of the bridges built in that period have about a 50 year life span, and have reached an age where they need to be substantially renovated or replaced.

School Zone Safety - \$561,000

King County has a decades-long program that collaborates with school districts and local communities to improve safety in the vicinity of schools within unincorporated portions of the county. Successful school safety improvements are designed and implemented to reflect the unique characteristics and site specific conditions of each school and related traffic patterns. The county currently uses many different traffic calming measures that studies show are effective in school zones, including beacons, radar speed signs, chokers, chicanes, lateral road shifts, rectangular rapid flashing beacons, high-intensity activated crosswalk beacons, as well as street pedestrian signs and raised crosswalks. The 2019 – 2020 budget proposal will fund three school zone pathway projects located in southwest King County (Federal Way School District) as well as a variety of other safety improvements in the vicinity of schools within unincorporated King County.

Stand-alone Grant Projects - \$1.1 Million

Two stand-alone grant projects are programmed, funded from Washington State transportation funds: a study for design of Covington Way SE intersection improvements and the Redmond Ridge Drive NE roundabout.

Facilities LED Conversion - \$900,000

Roads is requesting a Fund to Reduce Energy Demand (FRED) loan to complete conversion of all maintenance facility lights to light-emitting diodes (LEDs) by 2020. This program will upgrade approximately 2,000 interior and exterior light fixtures, lamps and sensors across four Roads Maintenance facility campuses to LED technology. Energy-efficient LED lighting significantly conserves energy and reduces greenhouse gas emissions. According to the U.S. Department of Energy, LED bulbs use 75 percent less energy and last 25 times longer than incandescent bulbs. A primary impact of this investment will be energy conservation and efficiency at Roads maintenance facilities. Secondly, this investment contributes to achieving a countywide goal of LED conversion by 2020.

Obsolete Information Technology System Replacement - \$1.2 million

This project will evaluate five obsolete business systems applications, determine the best option for replacing each, and then implement the proposed solutions. These critical applications are built on old technology no longer supported by the King County Information Technology, making them difficult and expensive to support and increasing business risk. Further, they are not able to be integrated with other Roads or county systems, cannot leverage geospatial capabilities, and lack modern functionality needed by the business. The state of these applications results in decreased productivity and efficiency, requires manual processes, and causes staff to spend time detecting and correcting errors. There is also an ongoing system risk of system failure and loss of business continuity.

4.2 Ongoing maintenance and operational activities

In addition to capital project and program investments, Roads continues to dedicate significant budget resources to a wide variety of high priority maintenance and operational activities that prevent or address safety hazards and preserve the most critical infrastructure. Some key examples are highlighted below.

Small Pavement Surface Repairs - \$6 million

Includes pothole filling; square cut, skin surface and grinder patching; acute pavement surface repair; crack sealing and pouring; curb and gutter replacement and repair, and gravel roadway grading and patching.

General Roadway Maintenance - \$4 million

Includes routine as well as safety and environmental compliance work, such as sweeping and dust control to remove leaves, rocks, and debris from the roadway, helping to keep it safe. Prompt cleaning also prevents dirty sediments from flowing into creeks and streams, polluting them and endangering salmon and water quality.

Storm Response - \$3 million

Includes snow and ice control and work associated with unanticipated damage and emergency repairs related to storm events, landslides, or washouts.

Traffic Control Device - \$2.5 million

Includes maintenance for: signals, flashers, street lighting, and all associated components such as controllers, lights, mast arms, timers, cameras, cabinets, and loop detectors.

Signs - \$3 million

Includes replacement and installation, fabrication, inspection, cleaning, and responding to constituent service requests.

Pavement Marking Maintenance - \$3 million

Includes replacement of pavement markings such as striping, thermoplastic, and buttons.

Intelligent Transportation System (ITS) Equipment - \$1 million

ITS equipment promotes safety and efficiency and can enhance transit speed and reliability by enabling the orderly movement of all road users on streets and highways. This equipment also provides real-time traffic information to King County traffic operators, the media, and the traveling public.

Vegetation Management - \$14 million

Includes mowing and maintaining trees, brush, and natural areas on the roadside to provide clear sightlines for drivers, improve drainage, and to keep traffic control signs, wayfinding signs, and traffic signals from being obscured. Overgrown vegetation on sidewalks, shoulders, and other walkways can lead to pedestrians walking in the roadway, and dangerous or downed trees can block roadways. Noxious weed control and shoulder/roadside spraying is also employed.

Shoulder Cleaning and Restoration - \$3 million

Activities that maintain a road's gravel shoulders, including gravel patching, grading and restoration as well as landscape maintenance. Maintaining shoulders prevents standing water that is a risk to drivers and reduces deterioration of the roadway.

Minor Roadside Features Maintenance - \$1 million

Includes repair or replacement of rock walls, retaining walls and fences, and removal of hazardous material and roadside debris.

Drainage System - \$2.5 million

Cleaning of pipe and catch basins, as well as the vacuoring of sediment.

Ditch Maintenance - \$4 million

Includes cleaning of roadside ditches to ensure proper drainage.

Minor Repair (drainage) - \$2 million

Includes minor repair to pipes, catch basins, and other associated infrastructure.

Stormwater Pond Maintenance - \$1 million

Includes mowing, brush removal, and cleaning to preserve water quality and capacity to retain flows and prevent minor flooding.

Minor Bridge Maintenance - \$.5 million

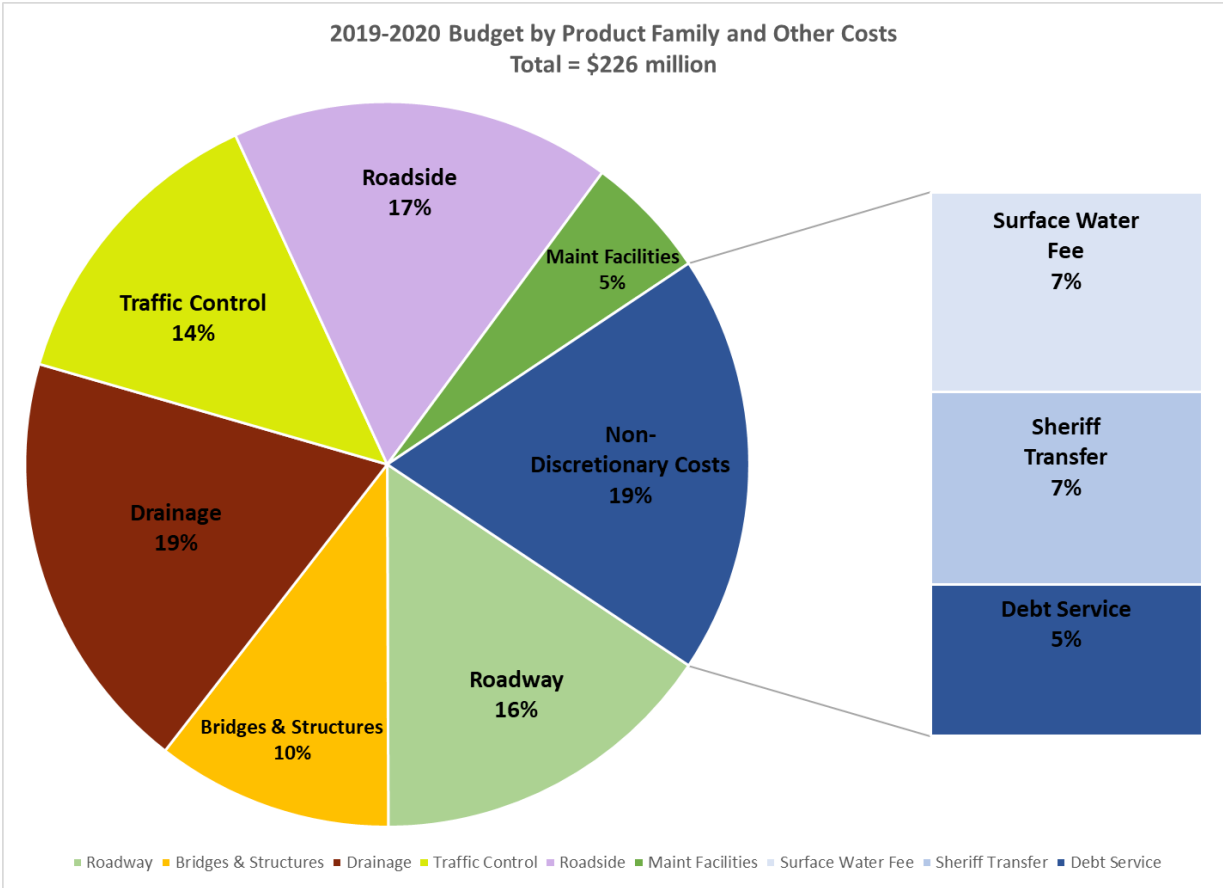
Includes small repairs, debris removal, surface cleaning, and graffiti removal from bridges.

Routine Inspections - \$1 million

Includes ratings and other analyses used to inform the need for minor (as well as major) maintenance and repair of structures.

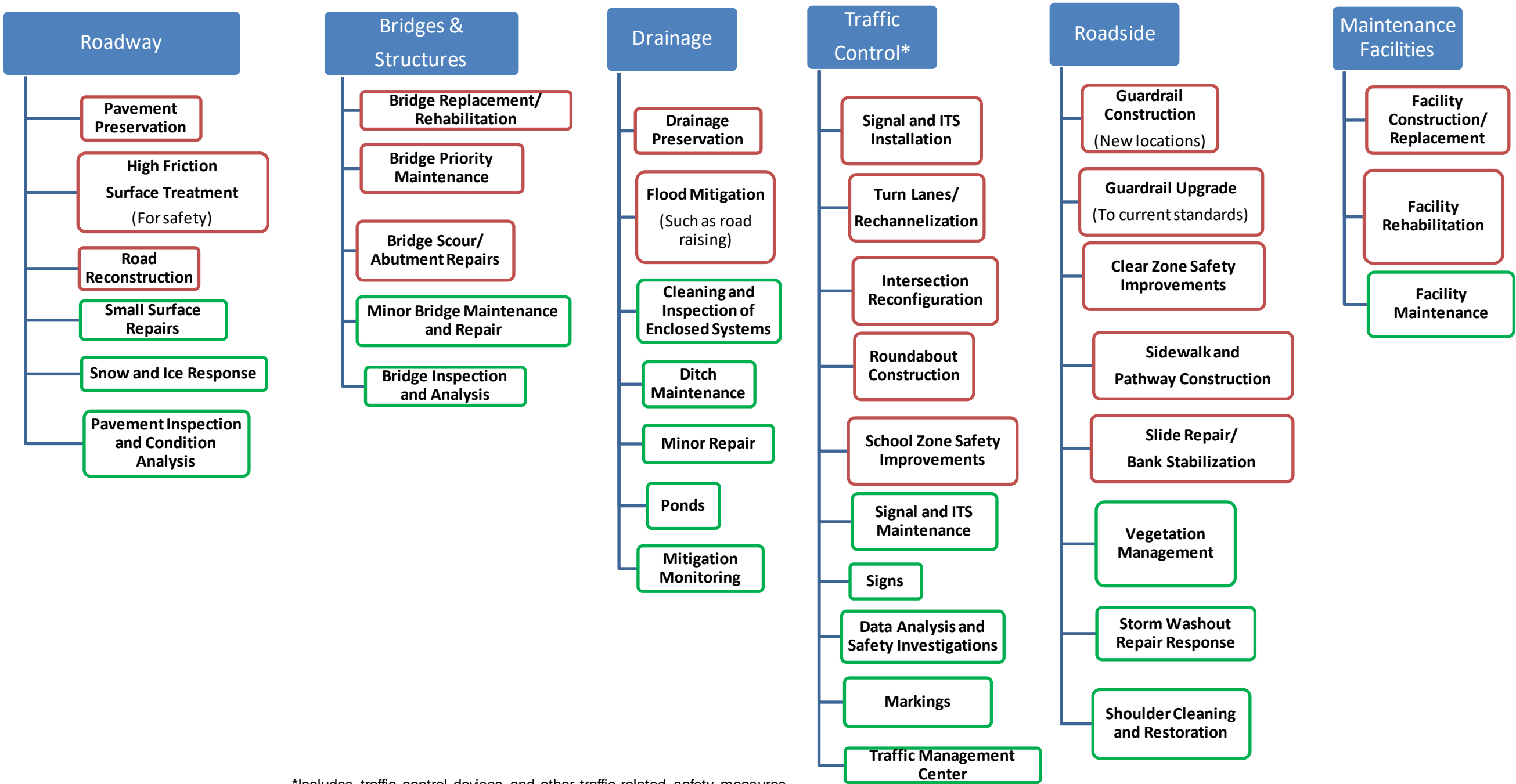
Appendix A. Roads Product Catalog

Figure 8



Roads Product Catalog: Capital and Maintenance/Operations Activities

= capital activity
 = maintenance and operations activity



*Includes traffic control devices and other traffic-related safety measures

Product: Roadway Product Family

Description:

This product family includes:

- Roadway surface – the drivable surface, which is typically made of asphalt, gravel, concrete, or brick.
- Roadway substructure – several differing layers of gravel, dirt, and other materials, to support the roadway surface. Many of the county's older roads were built upon wood and rock, rather than engineered with modern materials.

The roadway enables movement of people and goods, serving residents, commerce, emergency services, and other users. All roads are shared use roadways, per state law, and accommodate cars, trucks, buses and bicycles for their travel needs. Traffic volume and vehicle weight, especially heavy trucks and buses, plus water and weather all impact the rate of deterioration of the roadway asset. Road pavement protects the substructure below from deterioration. Pavement must eventually be resurfaced due to wear and tear or the substructure will deteriorate at an accelerated rate. The substructure is critical to the structural integrity of the road. Typical Roadway activities to be funded in the upcoming biennium include: roadway resurfacing; road reconstruction; small surface repairs (pothole filling, patching, etc.); snow and ice response (plowing, sanding, anti-ice treatment); and pavement condition rating.

Outcomes:

- Preserve roadway infrastructure using cost effective resurfacing treatments and minor roadway rehabilitation to extend the useful life of existing roads.
- As resources permit, rebuild selected roadways when pavement preservation efforts are no longer effective.
- Facilitate accessibility for emergency vehicles
- Promptly respond to emergent hazards

Select Output Units & Cost (2019-2020):

- Roadway Resurfacing: Up to 25 centerline miles to be resurfaced (overlay, chip-seal, etc.)
Cost: \$9.7 M
- Snow and Ice Response: Up to 15% of the road system plowed and/or treated with sand/salt, each storm
Cost: \$3.0 M
- Pavement Condition Inspection and Analysis: 1/3 of road pavement is rated (per year)
Cost: \$0.9 M
- Total 2019-2020 budget request for capital and operating associated with roadway product family: \$35 M

Critical Quality Standards:

- Pavement inspection and condition scores, as measured by industry standard methods
- Meets local, state and federal regulations and standards

Bridges and Structures Product Family

Description:

The bridges and structures product family includes:

- Bridges – can be made of concrete, steel, or timber and include long span bridges, short span bridges, safety enhancement bridges that help keep wildlife off roadways, and pedestrian bridges.
- Structures – infrastructure designed to retain the natural environment and protect the built environment. Examples include seawalls and retaining walls.

Bridges are key components of the county road network that provide routes over bodies of water, roads, lowlands, railroad tracks or other obstacles. Bridges are inspected regularly and if found to be unsafe must be fixed or closed. Closures can result in loss of access to property or longer travel times due to detours. Structures enable roads to exist in diverse landscapes by controlling and shaping the natural environment and providing protection from environmental impacts such as flooding, tides, waves, storm surges, and landslides. Typical bridge activities to be funded in the upcoming biennium include: bridge replacement/rehabilitation; bridge priority maintenance; bridge scour/abutment repairs; minor bridge maintenance and repair; bridge inspection and analysis; South Park Bridge operations.

Outcome:

Perform high priority replacement, preservation and maintenance projects to keep the bridge inventory serviceable and safe for the traveling public.

Select Output Units & Cost (2019-2020):

- Bridge Replacement/Rehabilitation:
5 bridge replacements under design
Cost: : \$7.1M
- Bridge Priority Maintenance:
15-20 Bridge Priority Maintenance projects
Cost: \$1.6 M
- Bridge Inspection and Analysis:
100% of King County's 178 vehicular bridges routinely inspected
Cost: : \$0.83 M
- Total 2019-2020 budget request for capital and operating associated with bridge product family: \$24 M

Critical Quality Standards:

- Meets local, state, and federal regulations
- Sufficient communication to the public regarding bridge restrictions and closures
- Bridge condition rating
- Using a Council approved priority ranking process, decrease the number/percent of the King County bridge inventory in unsatisfactory condition to the degree feasible within available funding.

Product: Traffic Control/Safety Product Family

Description:

The traffic control devices includes devices and other traffic-related safety measures used to regulate, warn, or guide traffic (vehicle and pedestrian) and includes the following:

1. Signs and pavement markings.
2. Street lighting.
3. Signals (flashing beacons, full traffic signals, and associated equipment).
4. Roundabouts
5. Intelligent transportation system (ITS) equipment – cameras, electronic signs, license plate readers for travel time estimation, traffic counters, radar speed feedback signs, and other information gathering and communication devices.

Traffic control devices promote safety and efficiency, and can enhance transit speed and reliability by enabling the orderly movement of all road users. Typical traffic control activities to be funded in the upcoming biennium include: signal and ITS installation and maintenance; intersection improvements and roundabouts; school zone safety improvements; installation of signs; traffic markings maintenance; traffic camera operations and maintenance; data analysis, traffic studies and safety investigations.

Outcomes:

- Improved intersections and turning movement safety and efficiency for all users of the road network, including vehicles, pedestrians, and bicyclists.
- Improved safety in designated school zones.
- Reduction of collisions in targeted intersections and road segments.
- Traffic information is clear, current and informs drivers' choices

Select Output Units & Cost (2019-2020):

- Output: Signal preventative maintenance conducted on 100% of signals 4 times per year
Cost: \$114K
- Intersection Improvements and Roundabouts: Commence design on 4 intersection improvements; complete construction of 3 roundabouts.
Cost: \$1.3M
- School Zone Safety Improvements: 4-8 schools treated with safety improvements per biennium
Cost: \$200K
- Total 2019-2020 budget request for capital and operations associated with traffic control/safety product family: \$31 M

Critical Quality Standards:

Meets local, state and federal regulations and standards

Product: Drainage Product Family

Description:

The drainage product family includes:

1. Conveyance systems, located within Roads right-of-way, which move water from one location to another. These include pipe networks, culverts, ditches, and catch basins.
2. Detention and treatment systems, such as stormwater ponds, rain gardens, vaults and swales.

Drainage infrastructure moves stormwater away from the roadway. Stormwater may originate from the road surface, from neighboring properties or from further distances. Standing water can be a safety hazard to road users and accelerates the deterioration of the roadway surface and substructure.

Drainage infrastructure also reduces flood risk to the built environment (private and public property) by collecting and redirecting stormwater to natural bodies of water and designated collection points.

Drainage infrastructure may improve the safety and condition of the road system while enhancing fish passage, by replacing culverts that are in poor or failing condition, or undersized, with new culverts of fish passable design. In addition, drainage infrastructure reduces water pollution by collecting stormwater and filtering out pollutants and sediment via settlement, infiltration, or other processes.

Typical activities to be funded in the upcoming biennium include: drainage preservation (pipe repair and replacement); design/construction of fish passage culverts; cleaning and inspection of enclosed systems; ditch maintenance; minor repairs; pond maintenance.

Outcome:

Replace failing and preserve aging drainage assets and associated roadway features in compliance with current regulations, codes and standards.

Select Output Units & Cost (2019-2020):

- Cleaning and Inspection of Enclosed Systems
100% of catch basins inspected annually
Cost: \$250K
- Up to 250K linear feet of ditches cleaned bi-annually
Costs: \$4M
- Total 2019-2020 budget request for capital and operations associated with drainage product family: \$43 M

Critical Quality Standards:

Meets local, state and federal regulations and standards

Product: Roadside Product Family

Description:

The roadside product family includes the various road system features and components that are within the road right-of-way but outside the travel lanes of the road. This includes: sidewalks, pathways, shoulders, planters and landscape walls, roadside slopes, and curb ramps. (Note: Drainage facilities may be located in the roadside area, but are treated as a separate product family.) Road shoulders can provide space for slow-moving vehicles, disabled vehicles, nonmotorized travel, and construction and maintenance activities. Typical Roadside activities to be funded in the upcoming biennium include: guardrail construction and upgrades; pathway construction; sidewalk repair; road shoulder vegetation management; shoulder cleaning and restoration; slide repair/bank stabilization (emergent service); storm washout repair response.

Outcome:

3. Reduced safety risks associated with run-off-the-road collisions.
4. Improved safety for pedestrians, bicyclists and other users of the roadside.
5. Repaired roadway shoulders and slopes that have failed.
6. Maintain sufficient sight distance for road users.

Select Output Units & Cost (2019-2020):

- Pathway Construction
Up to 3 school pathway projects
designed/constructed
Cost: \$280K
- Sidewalk repair
Up to 6000 of lineal feet of sidewalk repaired
in ESJ communities
Cost: \$917K
- Road shoulder Vegetation Management
Output: Up to 3500 shoulder miles mowed
Cost: \$3.7 M
- Shoulder Cleaning and Restoration
Output: Up to 1M linear feet of road shoulder
cleaned
Cost: \$3 M
- Total 2019-2020 budget request for capital
and operations associated with roadside
product family: \$39 M

Critical Quality Standards:

Meets local, state and federal regulations and standards