King County

KING COUNTY DEPARTMENT OF TRANSPORTATION

STRATEGIC PLAN FOR ROAD SERVICES

OCTOBER 2010

This page intentionally left blank

King County

Strategic Plan for Road Services

OCTOBER 2010

Department of Transportation
Road Services Division
King Street Center, KSC-TR-0313
201 S. Jackson St
Seattle, WA 98104
206-296-6590 TTY Relay: 711
www.kingcounty.gov/roads

Alternative Formats Available

206-263-5277 TTY Relay: 711

13115-SPRS2010/comm/rh/sd/jp

Acknowledgements

This Strategic Plan for Road Services (SPRS) would not have been possible without the insights, guidance and support provided by numerous King County staff members.

The SPRS Advisory Committee met throughout this process to guide and oversee the Work Group in formulating the strategic plan. The Advisory Committee was ably led by co-chairs Laurie Brown, Deputy Director of the Department of Transportation and by Dwight Dively, Director of the Office of Strategic Planning and Performance Management and the Office of Management and Budget. We sincerely thank each and every Advisory Committee member for their thoughtful insights and willingness to come to the table ready for an open and honest discussion.

Advisory Committee members

Laurie Brown, Co-Chair	Deputy Director, King County Department of Transportation
Dwight Dively, Co-Chair	Director, King County Office of Strategic Planning and Performance Management and Office of Management and Budget
The Honorable Kathy Lambert	Councilmember, Metropolitan King County Council, District 3
Kathy Brown	Director, Facilities Management Division, Department of Executive Services
Linda Dougherty	Former Division Director, Road Services Division, Department of Transportation

Employees from the King County Road Services Division and the King County Office of Strategic Planning and Performance Management staffed the SPRS process and led the Work Group. The Work Group provided input, data and documentation used in preparing the SPRS. The Work Group also reviewed and discussed in detail all documents and analyses before they were presented to the Advisory Committee for approval. We thank them for their support, guidance and their time.

Work Group members

Justin Anderson	Project Manager, Facilities Management Division
Paul Carlson	Legislative Analyst, King County Council
Gwendolyn Clemens	Senior Policy Analyst, Office of Strategic Planning and Performance Management
Tricia Davis	Budget Supervisor, Office of Management and Budget
Terri Flaherty	Manager, Strategic Initiatives Unit, Facilities Management
Ruth Harvey	Program Manager, Road Services Division
Jennifer Lehman	Budget Analyst, Office of Management and Budget
Jennifer Lindwall	Former Manager, Capital Improvement Program and Planning Section, Road Services Division
Mark Melroy	Legislative Analyst, King County Council
Matt Nolan	County Traffic Engineer, Road Services Division
Paulette Norman	Interim Division Director and County Road Engineer, Road Services Division
John Resha	Legislative Analyst, King County Council

The SPRS truly was a collaborative process and everyone involved played an important role in the development of policy recommendations. We sincerely thank all of you for your support.

Contents

Appendices


KOBELCO

Executive Summary

The road system in unincorporated King County is critically important to people who live and travel in the county, but it is aged and deteriorating. Substantial investments are needed to restore roads and bridges, maintain them in good condition, and meet new transportation demands. However, the Road Services Division's available funding falls far short of the need, despite the division's efforts in recent years to gain efficiencies, streamline its organizational structure, and adjust business practices to current financial realities.

This strategic plan for the King County Road Services Division responds to that dilemma by setting clear priorities to guide the division as it manages the road system. The plan gives top priority to basic goals: comply with legal requirements, meet core safety needs and preserve the existing road network. These are followed by the goals of enhancing mobility and increasing capacity to support urban growth.

The plan covers the years 2011 through 2015. This will be a time of transition for the County's road system, as cities are expected to complete annexations of urban growth areas that Road Services now serves.

The plan also looks ahead to the post-annexation period, recognizing that the serious challenges facing the county road system over the next five years will persist—and in most cases will intensify—following annexation:

- Annexations will leave the County with less revenue and with the rural roadways that are most difficult to support because of their location, age and condition, and susceptibility to flooding and snow and ice events.
- The population will continue to grow in both rural areas and adjacent cities, adding traffic to the rural road system and creating expectations for urban levels of service.
- Aging county roads will fail or be at risk of failure because Road Services does not have enough funds to perform all needed safety, maintenance and preservation work—and deferral of this work will lead to higher repair and replacement costs in the future.
- New environmental and safety regulations and engineering standards will continue adding to the complexity and cost of supporting the road system.
- Climate change could lead to an increase in the number and severity of winter storms and their impact on roads, and climate change policies could have wide-ranging effects on roadway management.

Road Services' ability to address these challenges is significantly constrained by a structural funding problem. The division has lost major sources of funding in recent years and has seen declines in revenue from remaining sources. In the meantime, its costs for labor, materials, equipment and for meeting standards and regulatory requirements have generally increased.

As Road Services developed a plan to respond to this situation, it analyzed the road assets that it will continue to manage after annexations have been completed. The analysis found that while annexations will reduce the County's responsibility for some assets, such as local access roads and traffic signals, Road Services will continue to be responsible for a large percentage of other

Road Services' ability to address these challenges is significantly constrained by a structural funding problem.

existing assets in the unincorporated-area road system inventory—90 percent of bridges, 73 percent of arterials, and 80 percent of guardrails, for example.

The division also assessed the condition of the assets that will remain in its care, projected what preservation and maintenance work will be needed, and estimated what that work would cost. The assessment found that much of the remaining County system is in deteriorated condition.

Future service level analysis and recommendation

Road Services estimated that it would need $240 million annually for optimal management of the post-annexation system. This amount includes the costs of completing the backlog of road projects, of meeting new transportation system needs, and of adopting a lifecycle management approach, which the Roads Operational Master Plan Phase I recommended to minimize the lifetime costs of road system assets. The division estimated that under its current funding structure, only $102 million would be available annually beginning in 2015—$138 million less than is needed for optimal management and enhancement of the road system. Since that level of additional funding is unlikely to be forthcoming in these difficult economic times, Road Services developed three alternative scenarios for consideration.

Scenario A, "Maximize asset lifecycle," would fully implement an asset management methodology and address the backlog of preservation and maintenance needs, but would not have sufficient funding to accomplish any road capacity, non-motorized or other road enhancement needs. This scenario would improve the current condition of roads and bridges, allow a cost-effective planned maintenance approach, and improve emergency response capability. The annual revenue needed to accomplish this scenario is estimated to be between $170 million and $180 million.

Scenario B, "Moderate the decline of asset condition," would maintain current asset condition in the short term and make modest investments in road and bridge replacement, but would not optimize the lifecycle of assets. The condition of roads and bridges would remain similar to 2010 levels in the near term and major deterioration would be delayed. However, inevitable deterioration would still occur over time and would ultimately need to be addressed. Pavement condition and drainage systems would experience the most noticeable impacts; pavement condition scores would trend downward and more localized flooding could occur due to deferred maintenance and preservation of drainage infrastructure. The public would likely experience more temporary road closures due to unscheduled repairs. Staff and equipment would remain adequate to maintain the current level of emergency response. This approach would require an estimated $120 million to $130 million annually.

Scenario C, "Manage risk in a declining system," would operate the road system within the $102 million in annual revenue that would be available assuming the current funding structure. In this scenario, Road Services would not be able to fund sufficient infrastructure maintenance and preservation to sustain the current condition of the system. There would be difficult choices to make since the system would eventually deteriorate to failure conditions. Some bridges and roads would eventually need to be load-limited to prevent damage. Speed reductions on some roadways, more lane closures for emergency repairs, and increased congestion would eventually occur. Some complete closures of

roads and bridges might be necessary. Maintenance would be primarily reactive in nature, and the associated needs and costs would accelerate as infrastructure condition deteriorates. Emergency and storm response capability would be limited due to lack of resources.

In order to continue to provide an acceptable level of service to users of the unincorporated-area road system, and to prevent rapidly escalating repair costs and potential infrastructure failures resulting from deferred maintenance and preservation, this plan recommends that the County pursue service delivery scenario B to moderate the decline of asset conditions. While this scenario is not optimal in terms of infrastructure lifecycle management and does not prevent the long term decline of the system, it is a more realistic interim option to strive for given current economic realities.

Goals and strategies

The goals and strategies in this plan respond to the challenges and the analyses of road system needs, costs, and funding. They also are consistent with policies that were recommended in the 2009 Roads Operational Master Plan Phase I and approved by the County Council, as well as policy recommendations developed during the strategic planning process. Key policy direction set forth in Phase I, reflected in the top three operational goals, are to meet safety and legal mandates, to give top priority to roadway preservation, and to manage county roads to maximize their lifecycles.

The plan contains two sets of goals. The first set is about "what we deliver." These goals articulate what Road Services aspires to accomplish. However, the division is mindful that current funding is not sufficient to fully attain all the goals. They are prioritized so that available funding will be dedicated to the most important areas. These goals follow, in priority order:

Goal: What we deliver		
	1	**Meet regulatory requirements and standards.** Compliance with local, state and federal regulatory mandates will be inherent in all the division's activities.
	2	**Meet core safety needs.** Road Services will place high importance on reducing the potential for harm on county roadways through activities such as repairing guardrails, removing snow and ice, and maintaining signs and signals.
	3	**Maintain and preserve the existing roadway facilities network.** The division will develop a program to manage road system assets in a way that minimizes costs over the life of the asset. The division also will assess and monitor road system assets, develop a plan to reduce the backlog of infrastructure needs, and direct efforts to the components of the road system that are most in need of attention.
	4	**Enhance mobility (movement of people and goods) by facilitating more efficient use of the existing road system.** This involves making improvements such as signal timing and intelligent transportation systems in conjunction with preservation and maintenance projects or by finding funding for new mobility projects.
	5	**Address roadway capacity when necessary to support growth targets in the urban area.** The division's final priority will be to pursue appropriate funding to increase capacity to support urban growth, consistent with the King County Comprehensive Plan.

The second set of goals is about "how we deliver." Achievement of these goals is less dependent on funding, and they are all given equal importance. The goals are:

Goal: How we deliver		
	1	**Exercise responsible financial stewardship**. Strategies include entering into partnerships and service contracts to achieve efficiencies, using asset management practices, and pursuing new funding sources. Road Services will strive to achieve organizational efficiencies by streamlining the organization and aligning staffing levels and core competencies with the work plan.
	2	**Provide responsive customer service and public engagement.** Keys to achieving this goal include proactive customer communication, collaboration with road users to solve problems, prompt response to emergency situations, and the use of information technology such as intelligent transportation systems to improve customers' use of the road system.
	3	**Enhance the use of risk assessment in decision making.** Road Services will use risk management to direct limited financial resources to activities based on the following priorities: 1) protecting life safety 2) preventing private property damage 3) preventing asset damage 4) preventing environmental damage 5) preserving mobility.
	4	**Promote workforce excellence during a time of significant transition.** Key strategies are to manage change and help employees develop adaptation skills, and to engage employees in finding work efficiencies. Road Services will also develop a leadership succession plan.

Reflecting the value King County places on performance and accountability, Road Services will utilize a set of strategic performance measures to track its progress toward the "what we deliver" goals in this plan. Progress toward the goal of meeting regulatory requirements and standards will be measured by a regulatory compliance index; meeting core safety needs will be measured by collision, injury and fatality rates for road system users; maintenance and preservation of the road network will be measured by infrastructure condition ratings; mobility enhancement will be measured by travel time trends and reliability; and addition of roadway capacity to support growth targets will be measured by the volume-to-capacity ratio on urban connector arterials.

Next steps

To implement this plan, several categories of actions will need to be addressed. These include efficiency, staffing and organizational structure, funding, and facility planning. The division will work throughout the coming year to identify the specific and detailed actions required to move in the direction of stabilizing current asset condition and will report on progress and present proposals for new or revised business activities in the annual business plan updates and the 2012/2013 Executive Proposed Budget.

Introduction

Purpose

Transportation is critically important to King County and the surrounding region; it has profound effects on quality of life and the economy. King County's Road Services Division helps meet the region's transportation needs by managing the road system in unincorporated areas of the county. During this time of tight budgets, changing communities, and increasing traffic on aging roads and bridges, the Road Services Division must continue to plan facilities and services with exceptional care and efficiency.

The Strategic Plan for Road Services lays out the Road Services Division's mission, vision, and focused direction for the next five-plus years. It will align the division's employees, services, and programs with the overarching goals of King County; inform decisions by the King County Executive and Metropolitan King County Council on matters of policy, operations, and budget; and provide a framework to ensure oversight and management of the division's programs and services.

The plan was developed in response to a critical structural funding problem coupled with a backlog of road system maintenance and preservation needs. Road Services recognizes that it may not be able to fully accomplish all of the goals and strategies suggested in this plan. The plan prioritizes goals to guide division staff so their work meets the most critical needs with available funding and resources. It places high priority on regulatory compliance and immediate operational safety.

Background

In the late 1990s, Road Services had a robust capital improvement program (CIP) and had begun to program debt-supported capacity projects in order to accelerate their construction. The division funded asset preservation work through both the operations budget and capital projects such as the pavement overlay, bridge seismic retrofit, and priority maintenance programs.

Revenue sources, including the road levy and shares of the vehicle license fee and state gas tax, were relatively stable. With its mix of capital projects and local revenue for matching funds, Road Services was well-positioned to compete for grant funding. Its mission, vision, and goals reflected an agency that was aware of its challenges and confident in its ability to meet them.

In 2004, the division adopted a strategic plan that helped clarify and focus its decisions and priorities. Since that time, the environment has changed. The division has been facing a steep decline in revenue, uncertainties about the timing of annexations, issues concerning current and future maintenance facilities, and other challenges.

In light of these developments, the County Council required Road Services to develop a Roads Operational Master Plan (ROMP) in 2008. In September 2009, the Council approved the ROMP Phase I Report. The major finding of this report was that Road Services would not be able to sustain its budgeted level of operations and capital investments due to reduced revenue; increases in costs for labor, materials, and equipment; and growing demand for services.

The council also approved a work plan for the ROMP Phase II. The final Phase II document was to include the following:

1) Road Services' mission, vision, goals, performance measures, and targets
2) Service delivery model
3) Guidelines for a contract service provision business plan (this has been renamed Contract Services Framework)
4) Communications plan (for ongoing communication with customers and stakeholders)
5) Work plan for a review and update of the Road Services Division Facilities Master Plan.

A foundational tenet of this strategic plan is the importance of realizing efficiencies in the delivery of services.

The King County performance and accountability act, ordinance 16202, requires five-year strategic plans for King County departments and offices, and provides for the inclusion of operational master plans within those strategic plans. In light of this, the Advisory Committee recommended transforming the second phase of the ROMP effort into a strategic plan.

The work done for the ROMP Phase I focused on the services the division would provide after all annexations in King County are complete (referred to in this plan as "post-annexation"). While the timeframe for this strategic plan is somewhat shorter, it still relies on the longer-term, forward-looking analysis in the ROMP Phase I as a foundation. Since the County currently estimates that the majority of large annexations or incorporations will take place by 2015, this strategic plan is now effectively a plan for the transition period to the post-annexation scenario.

A foundational tenet of this strategic plan is the importance of realizing efficiencies in the delivery of services. This emphasis is embodied in the recommended goals, strategies, and actions. The relationship between Road Services' organizational structure and the future service plan must be and is a focus for the transition to a post-annexation reality. In the 2010-2011 budget, the County Council required a thorough review of Road Services' organizational structure and staffing plan. This review was completed and the report was delivered to council. The report articulates how Road Services will achieve organizational efficiencies and will align staffing levels and competencies with the service delivery strategies outlined in this strategic plan.

How was the plan developed?

The following ROMP Phase I policy decisions, approved by the County Council, provide the foundation for this strategic plan:

- *Safety and legal mandates* – Enhancing the safety of the users of King County's roadway network while meeting local, state and federal standards is inherent in all of the Road Services Division's program areas and deliverables as a function of how roadway facilities are designed, built, maintained, and managed. Although funding and resources are constrained, safety, standards and legal requirements will be considered in the prioritization of all program areas and deliverables. In addition, Road Services will continue to plan for systematically addressing the prioritized road-related safety issues that exceed its current budget and six-year planned financial capacity.
- *Prioritization of responsibilities* – The following outcomes shall be prioritized for the Road Services program areas and deliverables:

  1) Preserving the existing roadway facilities network
  2) Managing and enhancing mobility through system efficiencies
  3) Addressing concurrency-driven roadway capacity needs.

The Council-approved ROMP Phase I report included guidelines for developing this strategic plan. The primary directive was to perform the analysis necessary for an asset lifecycle management approach. Optimal lifecycle management involves making the right investment at the right time to ensure that the asset delivers the requisite level of service over its full expected life, at the minimum cost. The analysis outlined in this strategic plan identifies the gap between current revenues and the funding required to optimize lifecycle costs. It also identifies service levels and backlog of work, as well as the costs of providing these services and performing the backlogged work.

Development of this strategic plan was guided and overseen by an advisory committee made up of elected officials and other King County representatives. The deputy director of the King County Department of Transportation and the director of the Office of Strategic Planning and Performance Management and Office of Management and Budget co-chaired the SPRS Advisory Committee. The committee agreed on recommendations by consensus with an understanding that if consensus was not reached, alternate views would be provided in the final report.

An interdepartmental work group led by employees from Road Services and the Office of Strategic Planning and Performance Management, and consisting of both Executive Branch and Council staff, supported the advisory committee and the strategic plan development process.

Surveys and discussions with user groups and contract city customers informed the development of the plan. The goals and strategies presented in this plan are in alignment with the King County Strategic Plan.

How will the plan be used?

Strategic planning is a process by which an organization assesses how it is doing, identifies where it wants to go, and charts a path to get there. Strategic plans help define important goals, set specific directions, and clarify policy and budget priorities. This strategic plan:

- Focuses on the delivery of road facilities and services
- Provides direction for prioritizing road projects
- Provides guidance for decisions on spending road-system dollars
- Provides a practical, action-oriented guide for widely varied users, including County staff members, elected officials, and the public.

This is a challenging time for the Road Services Division. This plan is designed to guide the division through an uncertain and rapidly changing environment in the near term and provide a prioritized framework for making sound decisions over the long term.

About the Road Services Division

As directed by the ROMP Phase I, Road Services revised its mission and vision statements as follows to reflect the current operating environment and business focus for the next five years.

Mission

Maintain, preserve, and improve the unincorporated King County road and bridge system for the safe and efficient movement of people, goods, and services, and quickly respond to storms, floods, and other emergencies.

Vision

Road Services Division: A skilled, efficient, and innovative provider of quality roads in collaboration with unincorporated King County residents and all users of the unincorporated road system.

Road system and service area

Road Services is 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 unincorporated-area road system owned and managed by Road Services includes the following inventory (numbers are approximate):[1]

- 1,691 miles of paved roads
- 51 miles of unpaved roads
- 184 bridges, including several jointly owned with cities
- 44,000 traffic control signs
- 116 traffic signals
- 113 miles of protective guardrail
- 59 traffic cameras (viewable on the division's website).

King County is home to about 1.9 million people[2]; the population has increased more than 27 percent since 1990. More than 300,000 county residents live outside of incorporated cities.

Even after all urban unincorporated areas of the county have been annexed into cities, the population of the unincorporated area[3] will be more than 150,000—larger than the current population of Bellevue. By 2015, unincorporated King County will likely remain the second largest local jurisdiction after Seattle, and will have by far the largest land area.

Even after all urban unincorporated areas of the county have been annexed into cities, the population of the unincorporated area will be more than 150,000—larger than Bellevue.

[1] 2009 inventory data

[2] Population estimates in this section are from the King County Office of Strategic Planning and Performance Management.

[3] Rural areas and two large urban planned developments that will not be annexed.

The total land area of King County is 2,130 square miles (see Fig. 1). Approximately 79 percent, or 1,676 square miles of that land is designated as either "rural" or "resource" areas by the King County Comprehensive Plan. These areas cannot be annexed into cities, meaning the County will forever have responsibility to serve them.[4]

This service area is not only large, but also is geographically diverse. It includes a wide variety of landforms (and many environmentally sensitive areas) such as saltwater coastline, river floodplains, plateaus, slopes, and mountains—punctuated with lakes and salmon streams.

Most travel in the county uses a system of interconnected roads that includes interstate highways, state highways, arterials, local access roads, private roads and forest/logging roads. The majority of paved arterial and local roads in unincorporated King County are the direct responsibility of the Road Services Division. Interstate highways, state highways and private or logging roads are the responsibility of other agencies or property owners.

Division functions

Road Services' functions fall into two primary categories: capital project delivery, and operations and maintenance. Every section in the division is involved in capital project work. Major work products and services include planning and programming; project delivery; and design and implementation services. Road Services is also responsible for maintaining and operating all assets within the right-of-way. These include the traveled roadway; roadside assets such as pedestrian and bicycle pathways, drainage systems and shoulders; and traffic control and management features such as signs, striping, and signals. Emergency response activities that keep the road system safe and operational during severe weather or other emergencies are an important area of service.

Road Services also provides additional products and services as part of managing a large and complex road system. Some are not directly related to providing road and bridge infrastructure to the public. Many are required by federal, state or local laws; others are essential aspects of the division's commitment to customer service. More information on all of the division's functions can be found in Appendix A.

Road Services operates within a 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 state law
- Washington State Growth Management Act
- WSDOT Local Agency Guidelines Manual
- Puget Sound Regional Council's Destination 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 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 Climate Plan
- King County Energy Plan
- County Road Administration Board requirements
- King County Executive Policies and Procedures

[4] Source: 2008 King County Annual Growth Report

Fig. 1

Approximately 79 percent, or 1,676 square miles of land in King County is designated as "rural" or "resource" areas, meaning the County will forever have responsibility to serve them.

Customers

With 1.9 million people, King County is the largest metropolitan county in Washington in terms of population, number of cities, and employment, and is the state's growth and economic engine. It contains nearly one-third of the state's population, is the 14th most populous county in the United States, and also has more residents than 10 states. The population is forecast to surpass 2.2 million by 2030.

As reflected in the division's mission and vision statements, Road Services' primary customers are the users of King County's unincorporated-area road system. They may travel on foot or by car, public transit, truck, or bicycle, or even on horseback. They may live and pay property taxes in an unincorporated area, in one of the region's 39 cities, or in another county. The unincorporated road system supports local trips close to home, commuter trips, and regional travel between jurisdictions. All of these users expect and deserve a safe and efficient road system.

More than 300,000 county residents of the unincorporated area depend on the county road system daily and are directly served by Road Services today (over 150,000 will still be served after annexations have been completed in 2015). Unincorporated communities are spread geographically throughout the county and range from highly urban areas, such as Skyway and White Center in the west, to rural farming and suburban areas in the east.

Unincorporated residents are by no means the only users of the unincorporated road system. More than a quarter of a million other people also use the same roads and bridges to commute to work or school, travel to retail and other services or to recreational and leisure destinations, transport freight and goods, or conduct their businesses.

Many of the growing cities in eastern King County are highly dependent on the unincorporated road network. For example, the years between 2000 and 2008 saw significant population growth in the cities of Snoqualmie (427 percent), Maple Valley (41 percent), Duvall (26 percent), Covington (25 percent), Sammamish (18 percent), and Redmond (12 percent). Residents of these communities and other eastern-county cities are major users of the unincorporated road network for commuting to employment and commercial centers. Some rural arterial roads serve as critical connectors to urban areas.

Residents of neighboring Pierce and Snohomish counties also use major arterials in the unincorporated area as commute routes to employment centers in King County. For several of King County's rural arterial roads, 50 percent or more of commuters are from local cities or neighboring counties. For example, 60 percent of P.M. peak hour trips (i.e., the afternoon commute) on Woodinville-Duvall Road are headed to destinations in various eastside cities or Snohomish County. Likewise, 59 percent of such trips on Novelty Hill Road are to cities and Snohomish County and 56 percent of such trips on Issaquah-Hobart Road are going to destinations within cities or Pierce County.

In total, more than one million daily commute trips are taken on King County's unincorporated road network each day.

More than one million daily commute trips are taken on King County's unincorporated road network each day.

In addition to growing, the customer base is also becoming increasingly diverse. About 69 percent of King County's population is non-Hispanic white, 14 percent is Asian or Pacific Islander, 7.2 percent is Latino, 6 percent is African-American, and 1 percent is Native American. The county's population is aging, with a median age near 38 and 11 percent of the population over age 65. Road Services is increasing efforts to provide information about projects and services in multiple languages to meet the needs of diverse communities.

The unincorporated road network also provides access to outdoor recreational activities in King County, which has one of the largest concentrations of outdoor recreation enthusiasts in the state. Residents from all over the county—and beyond—enjoy the biking, camping, hiking, climbing, and skiing opportunities that are abundant in this region. Many of the state's largest outdoor recreational organizations are based in, and serve, King County. These include the Mountaineers, Washington Kayak Club, and Cascade Bicycle Club.

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.

Another important group of customers is the jurisdictions and government agencies that purchase road-related services from Road Services. The division currently provides an ongoing level of contract services to 11 cities. It also provides project-specific or as-needed services to over two dozen other cities and agencies and to several nonprofit organizations implementing projects funded by federal or state transportation grants.

Road Services typically provides reimbursable services through a contractual relationship with these customers. These arrangements are mutually beneficial to both the jurisdiction or agency and King County; the benefits include:

- Economies of scale that allow sharing of the capital cost of equipment and other resources
- Support for specialized technical expertise and flexibility in staffing levels
- Coordination of emergency services, including those provided during snow and ice storms, flooding, and earthquakes, to keep lifeline routes open.

A framework was developed during this strategic planning process to guide implementation of Road Services' contract agreements; this can be found in Appendix B.

The division involved its customers in the process of developing this strategic plan. A summary of public involvement efforts can be found in Appendix C.

Road Services Funding

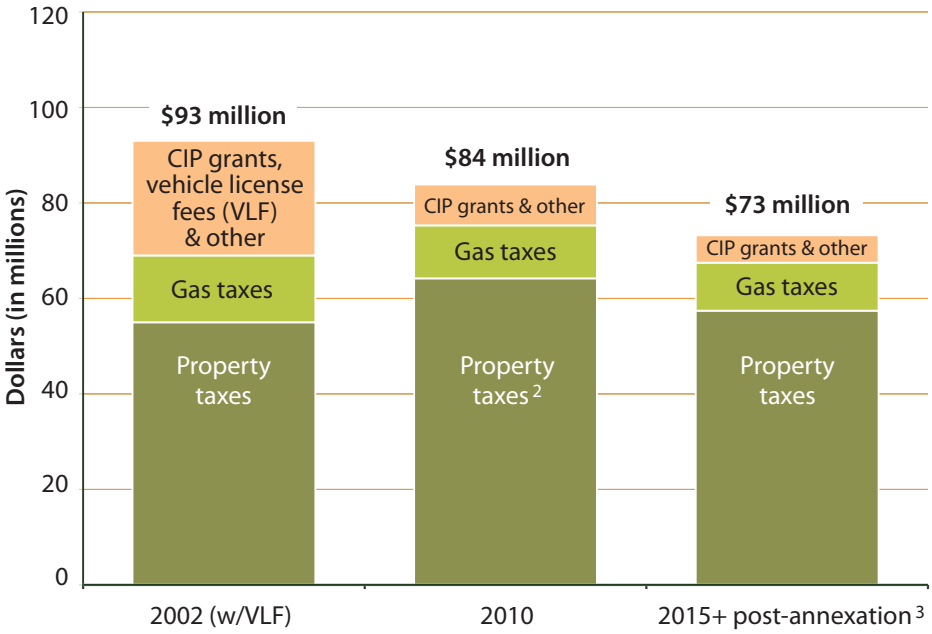
Road Services has a growing structural funding problem. Revenue growth has not kept pace with the costs of doing business, including increases in the costs of labor and benefits, materials and equipment. Factors contributing to the funding problem include the elimination of the Local Option Vehicle License fee seven years ago, the subsequent voter-approved initiative that limited property tax growth to one percent (meaning it would not necessarily keep pace with inflation), exhaustion of levy capacity, the steady decline in gas-tax revenues, and the decrease in federal and state grant funding available for helping to fund the division's CIP.

Declining revenues have led Road Services to focus the CIP on safety, preservation and mobility rather than adding capacity. The magnitude of the funding loss is creating a very large and growing backlog of unaddressed preservation and maintenance needs. Figure 2 illustrates the reduction in Road Services funding (using constant dollars).

The magnitude of the funding loss is creating a very large and growing backlog of unaddressed preservation and maintenance needs

Fig. 2

Road Services annual revenues in 2002 constant dollars[1]



Footnotes:
(1) Deflator based on CPI used to adjust to constant dollars.
(2) Increase in constant dollar property tax revenues reflects use of banked levy capacity. Banked levy capacity was exhausted in 2005 and subsequent levy increases are limited to 1% plus new construction.
(3) Post-annexation annual operating revenues (excluding reimbursables) after all remaining annexations occur; and assuming the 9/7/10 revised OEFA property tax assessed valuation assumptions. Also includes gas taxes, miscellaneous revenues, and CIP grants and other revenues accrued directly to the CIP Fund outside the Road Fund contribution.

In the current 2010-2011 biennium, the division is facing fiscal challenges in balancing its financial plan as funding continues to decline and costs continue to increase for labor and benefits, materials and equipment, and some countywide central programs and services.

Budget reductions of more than $19.1 million will be required in the biennial 2010-2011 budget to balance the Road Services financial plan. This estimate does not include the $9.5 million in additional annual reductions that would occur in 2011 through 2013 if voters approve the fall 2010 sales tax ballot measure, which includes an unincorporated area levy diversion.

Road Services is identifying operational efficiencies to help address these shortfalls; more information is found in the implementation section of this plan. The ROMP Phase I identified a number of funding sources for road services, including taxes, user fees, and transfers (see list in Appendix D). The "Conclusions and Next Steps" section of this plan also identifies potential sources that would be pursued to offset this steady decline.

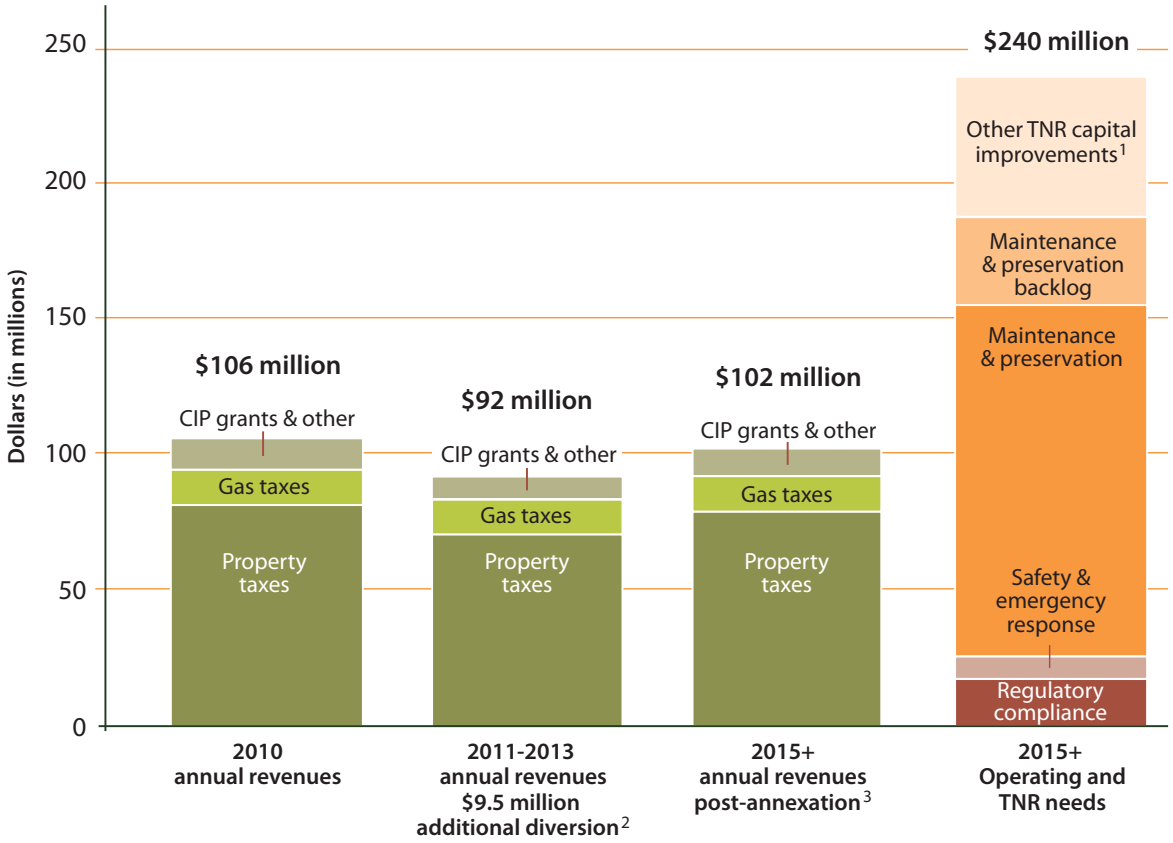
Future funding availability in the post-annexation service area

Figure 3 identifies the shortfall that will exist for funding to address the roads maintenance, preservation and capital improvement needs in the post-annexation service area if no additional funding sources are identified. Total annual operating and CIP needs are $240 million, compared to available annual funding of $102 million. These needs are explained in the "Future Service Level Analysis" section of this plan.

Revenues identified exclude reimbursable revenues that would be neutral to the financial plan and do not reflect unincorporated-area services (payment by other jurisdictions, agencies and entities for services provided by Road Services). The approximately $102 million in annual revenues that would be available for operations and the CIP comprise property taxes ($80 million), gas taxes ($14 million), other revenues such as forest taxes, interest earnings and rents, etc. ($4 million), and CIP grants and miscellaneous revenues ($4 million). Property taxes are based on the September 7, 2010 King County Office of Economic Forecasting and Analysis (OEFA) projections for assessed valuations and new construction and do not include the $9.5 million levy diversion which, if implemented, is to conclude in 2013. For the purpose of this analysis, all major annexations are assumed to have been implemented by 2015.

Fig.3

Road Services annual revenues and needs



(1) Transportation Needs Report (TNR) capital improvements represent an annual amount of the 12-year TNR forecast for capacity, intelligent traffic systems (ITS), non-motorized and other traffic operational improvements remaining in the rural post-annexation service area.

(2) Under the additional $9.5 million diversion scenario, the CIP would be significantly reduced resulting in fewer potential grants given the absence of adequate matching funds.

(3) Post-annexation operating revenues (excluding reimbursables) after all remaining annexations occur; and assuming the 9/7/10 revised OEFA property tax assessed valuation assumptions. Also includes gas taxes, miscellaneous revenues, and CIP grants and other revenues accrued directly to the CIP Fund outside the Road Fund contribution.

Change Drivers

Phase I of the ROMP identified five key challenges, or change drivers, facing the county road system. These challenges will persist—and in most cases will intensify—after annexations occur over the next five years.

- Annexations will leave the County with less revenue and with the rural roadways that are most difficult to support because of their location, age and condition, and susceptibility to flooding and snow and ice events.
- The population will continue to grow in both rural areas and adjacent cities, adding traffic to the rural road system and creating expectations for urban levels of service.
- Aging county roads will fail or be at risk of failure because Road Services does not have enough funds to perform all needed safety, maintenance and preservation work—and deferral of this work will lead to higher repair and replacement costs in the future.
- New environmental and safety regulations and engineering standards will continue adding to the complexity and cost of supporting the road system.
- Climate change could lead to an increase in the number and severity of winter storms and their impact on roads, and climate change policies could have wide-ranging effects on roadway management.

Detailed information on these change drivers can be found in Appendix E.

Post-annexation Service Area Asset Inventory, Condition and Needs

Road Services' inventory of road assets will be reduced as urban areas are annexed into cities, but not as significantly as one might expect. Although inventory in some asset categories will be reduced, considerable inventory will remain in other categories. For example, after annexation, the division will retain responsibility for the following percentages of current assets[5]:

- 90 percent of bridges
- 73 percent of arterial mile pavement
- 87 percent of open drainage ditches
- 85 percent of gravel shoulders
- 80 percent of guardrail
- 57 percent of local access road pavement
- 32 percent of signals
- 45 percent of pipes
- 39 percent of stormwater catch basins.

The effects of annexation on several key inventory categories are illustrated in Figure 4.

The amount of work and associated costs of maintaining and preserving assets in different inventory types varies considerably.

Asset condition and needs

For the purposes of analysis for this strategic plan, Road Services selected specific assets as representative proxies in order to estimate overall infrastructure needs. These proxies include bridges, roadway pavement, drainage (catch basins, pipes, and open ditches), gravel shoulders, and traffic safety infrastructure (markings, signs, signals, and guardrail). The selected proxies were chosen because they account for the largest investment in infrastructure, have an ongoing need to be preserved, are subject to regulation, and are interdependent and critical to the functioning of the road system.

Data on condition varies greatly by asset type in terms of detail, history, and data availability. For example, the division has historical and current data by specific location regarding condition, cost, and performance of pavement and bridges, but drainage and gravel shoulder condition ratings exist only by random sample, and the division has limited information on the condition of individual traffic safety assets.

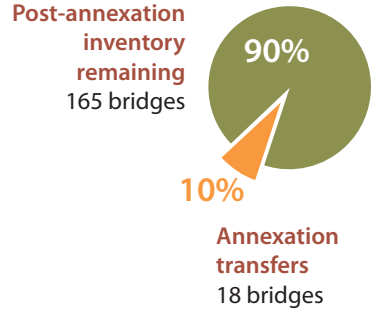
Despite the variation in data availability, it is clear from the proxy analysis that the road system is deteriorating. Road Services must take a long-term perspective and increase its efforts to preserve roads and bridges. For example:

- A $22 million annual investment (over a 20-year period) is needed to address the backlog of roads requiring reconstruction due to structural problems.
- A $3 million annual investment (over a 10-year period) is needed to address a backlog of five long-span bridges requiring replacement due to age and condition.

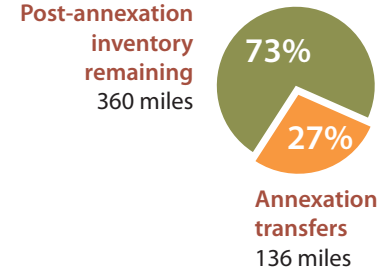
Fig. 4

Effects of annexation on asset inventory

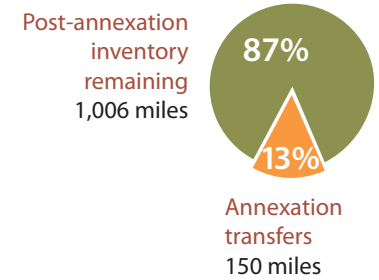
Bridges



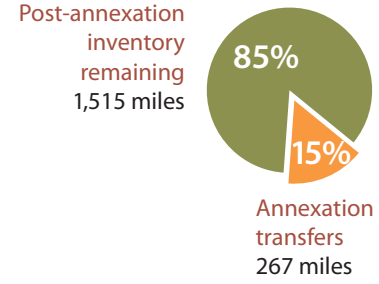
Arterial roads



Drainage inventory: open ditches



Gravel shoulder inventory



[5] Percentage of 2009 asset inventory

- There is a 75-year need of about $20 million per year going forward for lifecycle replacement of long-span bridges (over 20 feet).
- Replacement and preservation funding for short-span bridges (under 20 feet) going forward will cost an additional $2.25 million per year.

Drainage system and other asset categories show similar deterioration and a growing backlog of work. At least $16 million is needed annually to address the backlog of other maintenance and preservation needs, such as:

- Thirty percent of drainage pipes require repair or replacement, and more than 36 percent fail to meet regulations for sediment and need cleaning. Given the current annual replacement rate, Road Services now replaces pipe on what works out to a cycle of once every 339 years, rather than the recommended cycle of once every 40-50 years.
- Fifty-two percent of catch basins inspected in 2009 were clogged.
- An estimated 66 percent, or 664 miles of the open drainage ditches need to be cleaned and may not comply with regulations.
- Each gravel-shoulder mile is restored once every 22 years and graded once every 25 years. The recommended intervals are restoration every four years and grading every year.
- More than 400 rural guardrail end pieces, which can pose hazards if they are substandard, do not meet current standards.
- Road Services currently meets only 51 percent of the annual need for sign replacement/repair and 59 percent of the annual need for striping.

Detailed information on the proxy analysis of infrastructure condition and needs can be found in Appendix F.

Strategic Policy Framework

In response to the analyses done for this plan and for the ROMP Phase I, the following policy recommendations were developed to guide the future direction of Road Services.

Safety and legal mandates – Enhancing the safety of the users of King County's roadway network while meeting local, state, and federal standards is inherent in all of the Road Services Division's program areas and deliverables as a function of how roadway facilities are designed, built, maintained, and managed. Although funding and resources are constrained, safety, standards, and legal requirements will be considered in the prioritization of all program areas and deliverables. In addition, Road Services will continue to plan for systematically addressing the prioritized road-related safety issues that exceed its current budget and six-year planned financial capacity.

Prioritization of responsibilities – The following outcomes shall be prioritized for the Road Services program areas and deliverables:

1) Preservation of the existing roadway facilities network
2) Managing and enhancing mobility through system efficiencies
3) Addressing concurrency-driven roadway capacity needs

Operational model – Road Services will prioritize asset management in rural areas to optimize infrastructure lifecycle. This recognizes that the rural-area roads will be the County's long-term assets, and places a priority on maintenance and preservation of the rural roadway system. The ROMP Phase I acknowledged that Road Fund revenues are insufficient to maximize asset lifecycle management and recommended that Road Services identify the gap between current revenues and what would be required to maximize asset lifecycles. That analysis is reflected in the "Future Service Level Analysis" section.

Contract services provided to other jurisdictions/agencies – Road Services will pursue contracting opportunities when those services provide mutual benefit to King County and the contracting jurisdiction.

Roads hierarchy – Road Services will prioritize the road products hierarchy (road categories) as follows in order to keep the most vital components of the road system operational for customers:

1) Lifeline routes
2) Major arterials
3) Sole access routes
4) Local access roads

Risk management approach – Road Services will allocate resources using a risk management approach that balances the likelihood, consequences, and costs of infrastructure failure and potential solutions to achieve the following desired outcomes (in priority order):

1) Protecting life safety
2) Preventing private property damage
3) Preventing asset damage
4) Preventing environmental damage
5) Preserving mobility

Goals and Strategies

The following goals and strategies grew out of the analyses described in this plan concerning challenges, road system assets, funding, and alternative service delivery scenarios as well as the policies outlined in the previous section. They also respond to views expressed by Road Services customers. These goals and strategies will guide the Road Services Division for the next five years and beyond.

There are two types of goals. "What we deliver" goals articulate 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).

The "what we deliver" goals are:

Goal 1: Meet regulatory requirements and standards

Goal 2: Meet core safety needs

Goal 3: Preserve the existing roadway facilities network

Goal 4: Enhance mobility (movement of people and goods) by facilitating more efficient use of the existing road system

Goal 5: Address roadway capacity when necessary to support growth targets in the urban area.

The "how we deliver" goals are:

Goal 1: Exercise responsible financial stewardship

Goal 2: Provide responsive customer service and public engagement

Goal 3: Enhance the use of risk assessment in decision making

Goal 4: Promote workforce excellence during a time of significant transition.

"What we deliver" goals

Due to the structural funding challenge and the absence of additional funding to address the backlog of critical infrastructure preservation and maintenance needs, over the next five years the Road Services Division will focus on regulatory compliance, immediate operational safety needs, and maintenance and preservation of the road system. Consistent with the ROMP/SPRS policy direction outlined above, the five goals below are listed in priority order. These priorities will serve as an important guide for future resource investment.

Road Services will focus on goals shown on the following two pages, in priority order.

"What we deliver" goals

(Note: These goals are in priority order)

Goal 1:	Meet regulatory requirements and standards

For the purposes of this strategic plan, Road Services defined regulatory requirements very narrowly to mean complying with standards and requirements mandated by law. Part of this compliance includes communicating the requirements to employees and ensuring the mandates are met. Failure to comply with such regulations can result in significant fines, potential harm to citizens, property, or the environment, potential for third-party lawsuits, and ineligibility for certain types of grant funding.

Strategies

1. Meet ongoing local, state, and federal regulatory mandates.
2. Work with regulatory agencies to comply with regulations in ways that strike a reasonable and prudent balance with the cost-effective and efficient provision of infrastructure and related public services.

Goal 2:	Meet core safety needs

For the purposes of this plan, core safety needs are defined very narrowly to include only activities that respond to immediate operational safety needs and reduce the harm (deaths, injuries, and property damage) resulting from motor vehicle collisions, but do not primarily increase the useful life of the road asset. Representative activities included in this category are guardrail repair, snow plowing, ice prevention/removal, landslide clearing, flood closures, sign and signal safety maintenance, dangerous-tree removal, speed limit revisions, and investigation of high-accident locations.

Strategies

1. Although the funding for roads is severely constrained, core safety needs are fundamental and will be addressed first in all Road Services program areas and deliverables.
2. Address non-mandatory safety improvements through the risk-management framework described in "How we deliver" goal number three later in this plan.
3. Continue to plan for addressing prioritized road-related safety needs that exceed the Road Services Division's current budget and six-year planned financial capacity.

Goal 3:	Maintain and preserve the existing roadway facilities network

Strategies

1. Develop a roads asset management program to minimize rural infrastructure lifecycle costs.
2. Assess and document the condition of key road system assets; regularly update this data and share with the public and policymakers to inform discussions on funding and service levels.
3. Develop and implement a plan to reduce or eliminate the infrastructure needs backlog in order to stabilize the condition of the road system.
4. Direct efforts at keeping the most vital components of the road system open and operational for customers in the following priority order:
    1) lifeline routes
    2) major arterials
    3) sole-access routes
    4) other local access roads.
5. Actively pursue and advocate for sufficient funding to assess, and maintain and preserve the existing road system and prevent degradation of asset condition and service levels, and to address the backlog of deficient facilities. Actively seek to influence local, state, and regional bodies that play a role in funding decisions.

continued

"What we deliver" goals, *continued*

Goal 4:	Enhance mobility (movement of people and goods) by facilitating more efficient use of the existing road system

Strategies

1. Preserve existing mobility by keeping the road system in a state of good repair to minimize service disruptions resulting from structural degradation and safety-related road or bridge closures.
2. Implement mobility improvements in conjunction with preservation and maintenance projects when it is cost-effective to do both at the same time, and/or when distinct funding sources can be used for the mobility enhancement components.
3. Maximize the efficient use of existing roads through operational improvements, including things such as signal timing, intelligent transportation systems (ITS), turn lanes or roundabouts, transit signal priority, and speed limit modifications.
4. Seek funding sources such as user-based fees, grants, and regional funding mechanisms, in addition to the unincorporated area levy and other current revenue sources, to pay for road improvements whose sole purpose is to enhance or improve the movement of people and goods.

Goal 5:	Address roadway capacity when necessary to support growth targets in the urban area

Strategies

1. Consistent with the King County Comprehensive Plan, capacity improvements to support urban growth will only be considered on:
    a. Roads in the urban unincorporated area.
    b. Urban connector roads where the added capacity will not stimulate new growth in the rural, unincorporated area.
2. Seek regional funding contributions, city cost sharing, and/or user-based fees when capacity improvements or road maintenance is primarily needed to serve city residents (or facilitate achievement of city growth targets) or residents of other counties rather than residents of King County's unincorporated area.
3. Encourage the state to improve state facilities that affect transportation concurrency in unincorporated King County, and seek grant funds to offset the cost of design and construction of necessary improvements.
4. Seek distinct funding sources such as user-based fees, grants, and regional funding mechanisms separate from the road fund, to pay for road capacity improvements and growth-related maintenance needs.

"How we deliver" goals

(Note: These goals are not prioritized.)

Goal 1:	Exercise responsible financial stewardship

Strategies

1. Deliver projects and services on time and within budget.
2. Seek the most efficient organizational structure and core staff competencies to deliver Road Services Division programs and services.
3. Utilize performance measures and best practices to continually identify and implement operational efficiencies that bring down the costs of providing services.
4. Utilize partnerships and provision of contract services to cities and other agencies to achieve efficiencies and economies of scale.
5. Use asset management practices to support:
    a. Effective everyday resource allocation decisions that assure operating and maintenance service levels are met in order to provide a safe, reliable, well-maintained, and well-operated road system.
    b. Strategic capital investment decisions that accomplish long-term road network sustainability.
6. Articulate to the public and elected officials the consequences of deferring capital projects and maintenance work, both in terms of accelerated deterioration of infrastructure assets and inflationary cost increases over time.
7. Pursue and advocate for new, stable funding source(s) to resolve the structural funding problem associated with the current outdated funding mechanisms for roads and bridges.
8. Seek new regional or user-based funding mechanisms when improvements are needed to support regional/cross-jurisdictional trips on unincorporated King County roads.
9. When possible, select projects that provide multiple benefits (for example, meet both preservation and mobility enhancement goals).

Goal 2:	Provide responsive customer service and public engagement

Strategies

1. Proactively inform road users about the level and frequency of service available in the unincorporated area under existing funding.
2. Provide timely, consistent, and clear two-way communication with customers.
3. Use information technology (such as websites, intelligent transportation systems, and traffic cameras) to enhance communication, improve access to services and their ease of use, and ensure widespread sharing of information (e.g., road closures, emergency notifications).
4. Foster collaboration with road users to solve problems and promote cost-effective use of road-related services.
5. Provide a variety of opportunities for public input on projects and decisions (such as community advisory groups, websites, etc.).
6. Provide prompt and dependable response to, and information about, emergency situations and life safety hazards (such as response to snow or ice conditions, road hazards, etc.).

continued

"How we deliver" goals, *continued*

Goal 3:	Enhance the use of risk assessment in decision-making

Strategies

1. Use a risk-management approach to direct limited financial resources. The approach will be based on the following priorities:
    a. Protecting life safety
    b. Preventing private property damage
    c. Preventing asset damage
    d. Preventing environmental damage
    e. Preserving mobility.
2. Reduce large storm damage repair costs by proactively and cost-effectively repairing deficiencies at chronic storm damage locations.
3. Develop and implement a risk evaluation tool as part of a comprehensive asset management program.
4. To protect life safety, consider both engineered (capital and operational improvements) and behavioral (education and enforcement activities) approaches to decreasing dangerous behaviors and reducing collisions, injuries, and fatalities. Evaluate the costs and benefits of these approaches when considering funding levels.

Goal 4:	Promote workforce excellence during a time of significant transition

Strategies

1. Attract and retain a highly skilled, diverse, and productive workforce.
2. Manage change and further develop employee adaptation skills through communication and training.
3. Engage employees in identification and implementation of workplace improvements and efficiencies.
4. Encourage teamwork, collaboration, and creative problem solving.
5. Recognize high performance.
6. Seek opportunities to partner with labor unions to improve services and promote workforce excellence.
7. Develop and implement a succession plan to identify and develop people with the potential to fill key leadership positions in the division.

Future Service Level Analysis

Given the needs for road system improvement and maintenance, and the shortfall in funding, how can Road Services achieve the goals in this plan?

The adopted policies in the ROMP Phase I directed Road Services to adopt an operational model that prioritizes asset lifecycle in the rural areas. The goal of this model—also known as asset management—is to minimize lifecycle costs for both operating and capital programs.

Transportation asset management is defined by the American Association of State Highway Transportation Officials as a strategic and systematic process of operating, maintaining, upgrading, and expanding physical assets effectively throughout their lifecycle. It focuses on business and engineering practices for resource allocation and utilization, with the objective of better decision-making based upon quality information and well-defined objectives.[6]

Successful asset management provides optimal management of the physical asset to maximize value over its entire life. An asset lifecycle approach for the King County road system would result in the lowest long-term cost, but the initial costs of improving the existing deteriorating system to a point at which lifecycle management could be optimized are significant. Road Services would have to make major investments to rehabilitate and reconstruct roads and other assets that are approaching or exceeding their useful lives.

The division estimates that it would cost more than $240 million annually—for a period that is longer than the life of this strategic plan—to fully address the current backlog of needs, embark on a comprehensive asset management program, and systematically accomplish the road capacity, mobility and non-motorized needs indentified in the Transportation Needs Report.

Since that amount is more than twice the division's current funding level, and is unlikely to be forthcoming in these difficult economic times, Road Services used policy guidance from the ROMP Phase I to develop three other scenarios for consideration. The scenarios analyzed for this plan are as follows:[7]

Scenario A: Maximize asset lifecycles

In this scenario, Road Services would fully adopt an asset management approach. Lifecycle costs would be optimized, backlogs would be addressed, and infrastructure condition would be improved. Asset management would be informed by a full assessment of infrastructure conditions and risks and would include preservation projects to reconstruct road subsurfaces, bridges, and drainage systems to bring the system up to optimum system conditions. This scenario does not, however, accomplish the road capacity, non-motorized and other road enhancement needs indentified in the Transportation Needs Report. In order to maximize asset lifecycles, Road Services would need to improve the condition of the entire roadway system (including bridges, pavement, drainages, shoulders, etc.) to a point that allows for cost-effective planned maintenance and

---

[6] Definition developed by American Association of State Highway Transportation Officials (ASSHTO) Subcommittee on Asset Management, January 2006.

[7] Note that this planning level analysis is based on the road system that will exist after all annexations and incorporations have taken place, which at the earliest is anticipated to occur in the fifth and final year of this strategic plan.

timely reconstruction or replacement. This approach would be very costly up front because of the large number of existing deficient assets, but would reduce long-term costs and minimize liability.

The annual revenue needed to accomplish this scenario is estimated to be between $170 and $180 million.

Scenario B: Moderate the decline in asset condition

In this scenario, Road Services would maintain the road system in its current (albeit deteriorated) condition in the short term and additional deterioration would be delayed. The division would adopt a partial asset management system that would be informed by risk assessment and management. Risk management is increasingly viewed as an integral part of managing lifecycle of major infrastructure assets. The risk assessment process ranks the risk present in the system by considering the consequences and likelihood of any given type of asset failure. A robust risk assessment program ensures that work is done on those assets that have the highest probability of failure and the highest potential consequences from failures. Figure 5 shows a conceptual example of rating risks. Once the risk is identified, the organization can take steps in operations, maintenance, and through capital decisions to reduce or mitigate risk.

Fig. 5

Relative risk rating

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

Legend: L = low risk, M = medium risk, H = high risk, E = extreme risk

(Table source: Tillamook County Public Works 'Core' Infrastructure Risk Management Plan, January 2009)

Road Services would make modest targeted investments in roadway and bridge replacement or reconstruction to avoid cumulative future deterioration. The division would use a cost-effective planned maintenance approach as opposed to reactive maintenance, but would not be able to improve the asset enough to optimize the lifecycle of assets. Instead, the division would attempt to maintain the existing functionality of the system for as long as possible and slow the current decline. However, inevitable deterioration would still occur over time and would ultimately need to be addressed.

Pavement condition and drainage systems would experience the most noticeable impacts; pavement condition scores would trend downward and more localized flooding might occur due to deferred maintenance and preservation of drainage infrastructure. The public would likely experience more temporary road closures due to unscheduled repairs.

The annual revenue needed to accomplish this scenario is estimated at between $120 million and $130 million.

Scenario C: Manage risk in a declining system

Road Services also reviewed an existing-revenue approach. The forecasted funding will not be adequate to maintain current condition of the road network, so this scenario would involve a number of difficult choices as the system deteriorates to failure conditions.

Continuing and accelerating decline would lead to an incremental shutdown of the system. Daily triage would be the norm, and Road Services would rely almost totally on frequent risk-management decisions rather than asset management. System maintenance would be almost strictly reactive, with little to no planned maintenance capability.

Maintenance needs and costs would accelerate steeply as infrastructure condition deteriorated. More bridges would eventually need to be load-limited to prevent further damage. Pavement conditions would worsen, and would receive seal coat/overlay only. Limited roads, bridges, or drainage pipes would be replaced or reconstructed. This situation would lead to speed limit reductions, lane closures for emergency repairs, proactive load-limiting to prevent road damage, increased congestion, diminished useful life of pavement overlays, more flooding of roads and private property, and potential closures of certain "redundant" roads (i.e., roads with alternative routes) due to poor condition and safety issues.

Table 1, shown on the following page, summarizes the characteristics and impacts of the three service scenarios analyzed.

Recognizing that funding will be the key factor determining which service level scenario is achievable, Road Services developed priorities that are represented in Figure 6. The foundations are regulatory compliance and safety. This financial analysis used a very limited definition for these two foundational elements.

Road Services defined regulatory requirements very narrowly to mean complying with standards and requirements mandated by law. Part of this compliance includes communicating the requirements to employees and ensuring the mandates are met.

Regulatory requirements are established in federal, state, and local codes and standards. Representative activities in the regulatory compliance category include but are not limited to: constructing projects that meet state water quality standards, maintaining drainage systems to comply with the Endangered Species Act, preserving road striping and signs as directed by the Manual on Uniform Traffic Control Devices, and inspecting bridges pursuant to the National Bridge Inspection Standards. Failure to comply with such regulations can result in significant fines, potential harm to citizens, property, or the environment, potential for third-party lawsuits, and ineligibility for certain types of grant funding.

For this strategic plan, Road Services defined core safety narrowly to include only activities that respond to immediate operational safety needs and reduce the harm that could result from motor vehicle collisions (deaths, injuries, and property damage). The definition does not include activities for which the primary benefit is to increase the useful life of the road asset.

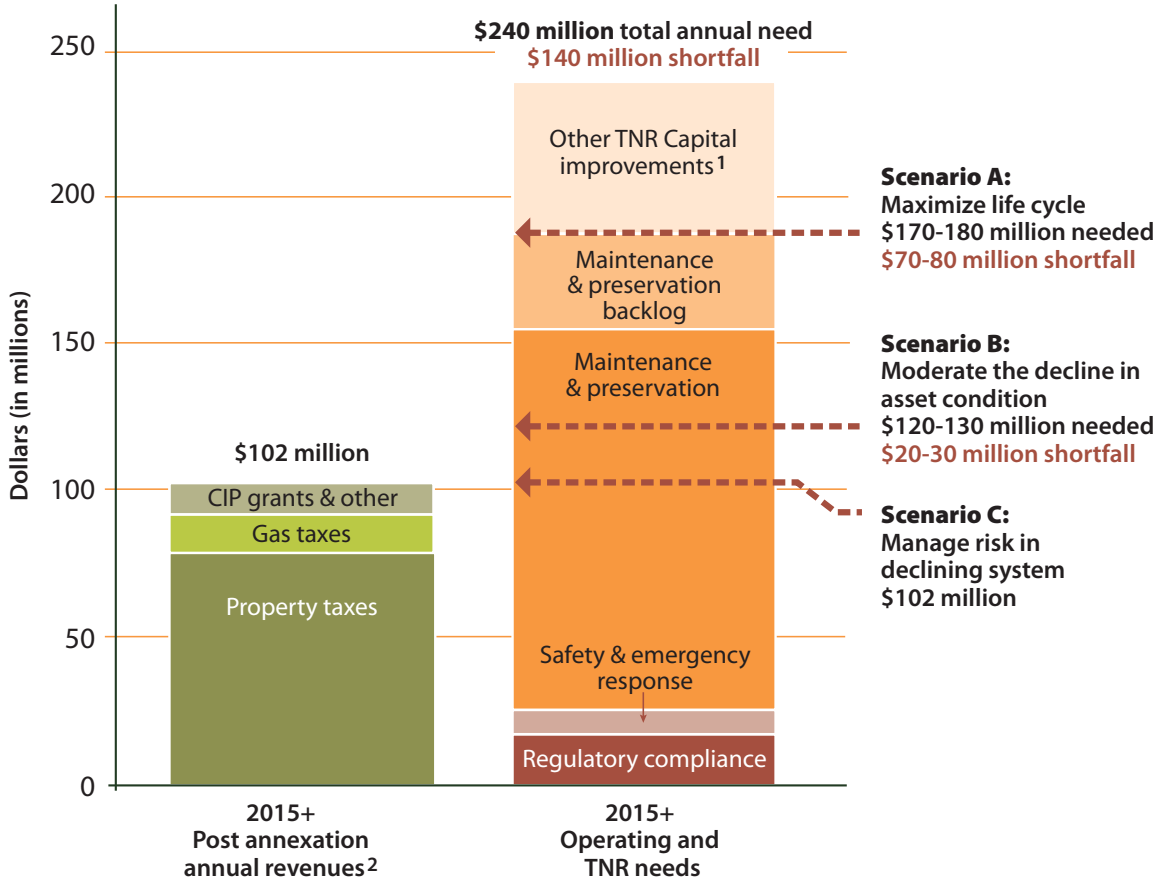
Representative activities included in the core safety category are guardrail repair, snow plowing, ice prevention and removal, landslide clearing, flood closures, sign and signal safety maintenance, dangerous-tree removal, speed limit revisions, and remediation of high-accident-locations.

Table 1. **Future scenarios for service delivery**

	A. Maximize asset life cycles	B. Moderate the decline of asset condition	C. Manage risk in a declining system.
Description	Implements asset management approach, lifecycle costs are optimized, backlog is addressed, infrastructure condition is improved	Stabilizes system at current conditions in the short term and implements partial asset management approach; system continues to deteriorate over the long term	Available funding not adequate to maintain current condition of road network; continuing and accelerated decline leading to incremental shut down of the system; daily triage is the norm
Annual revenue needed	$170–$180 million	$120-$130 million	$102 million
Infrastructure Preservation Projects	Includes roadway subsurface, bridge, and pipe reconstruction on planned basis	Modest roadway and bridge replacement/reconstruction to avoid accelerated future deterioration	Seal coat/overlay only; limited road, bridge, or drainage pipe replacement or reconstruction funded; deferred work creates escalating future cost liability
Capacity/system enhancements	None	None	None
Bridges	Improves current condition	Condition similar to current levels, but still continues to deteriorate over time	Eventual load limits, proactive load limiting to prevent damage, potential closures of “redundant” facilities
Roadways	Improves current condition	Condition similar to current levels in near term, but still continues to deteriorate over time; pavement condition and substructure slowly decline; some increase in localized flooding due to deferred maintenance of drainage infrastructure.	Eventual speed reductions, lane closures for emergency repairs, proactive load-limiting to prevent damage, increased congestion, diminishing useful life of pavement overlays, closures of some “redundant” roads
Proactive vs. reactive	Allows cost-effective planned vs. reactive maintenance	Facilitates more cost-effective planned vs. reactive maintenance; unscheduled repairs and associated temporary road closures will still be likely to occur	Reactive—little planned maintenance; maintenance needs/costs accelerate as infrastructure condition deteriorates
Regulatory compliance	Met over time	Met over time	Met over time
Emergency response	Response capability improved	Staff and equipment are adequate to maintain current level of response	Limited emergency and storm response capability
Grant funding	Avoids loss of federal storm reimbursement and bridge grants	Avoids loss of federal storm reimbursement and bridge grants	Limited or lost
Claims	Reduced	Stabilized	Escalate as risk increases

Fig. 6

Road Services maintenance, preservation and capital improvement needs and annual funding shortfall



(1) Transportation Needs Report (TNR) capital improvements represent an annual amount of the 12-year TNR forecast for capacity, intelligent traffic systems (ITS), non-motorized and other traffic operational improvements remaining in the rural post-annexation service area.

(2) Post annexation operating revenues (excluding reimbursables) after all remaining annexations occur; and assuming the 9/7/10 revised OEFA property tax assessed valuation assumptions. Also includes gas taxes, miscellaneous revenues, and CIP grants and other revenues accrued directly to the CIP Fund outside the Road Fund contribution.

Performance Measures - How Will We Know This Plan is Making a Difference?

Road Services tracks more than 40 performance measures for use in internal program management, management decision support, and public communications and reporting. These include basic output measures such as number of miles of pavement overlay constructed or bridges replaced, outcome measures such as percent of structurally deficient bridges, customer service measures such as average number of days to complete requests for pothole repair, and high level community indicators (that the division has only partial influence over) such as vehicle related fatality rate on unincorporated roads. To date, Road Services has been reporting performance measures in a variety of venues, including annual business plans, on the county's King County AIMs High: Annual Indicators and Measures website and scorecard, and at internal briefings with senior County management and the King County Executive.

This strategic plan identifies five "What we deliver" goals that articulate what the division will focus on for at least the next five years, and sets out a number of strategies that will move the division towards accomplishment of those goals. For the purposes of strategic plan implementation, Road Services will use the performance measures outlined in Table 2 to measure progress towards these five goals. The measures will be reported annually in the agency's business plan and other suitable reporting forums or publications.

Table 2

Goal	Performance Measure
1. Meet regulatory requirements and standards	Regulatory compliance index
2. Meet core safety needs	Collision, injury and fatality rates for motorists, bicyclists and pedestrians
3. Maintain and preserve the existing roadway facilities network	Pavement, bridge, drainage and road shoulder infrastructure condition ratings
4. Enhance mobility (movement of people and goods) by facilitating more efficient use of the existing road system	Travel time trends and reliability on key road corridors
5. Address roadway capacity when necessary to support growth targets in the urban areas	Volume to capacity (V/C) ratio on urban connector arterials

Appendix G contains additional detail about these measures.

Conclusions and Next Steps

As described in this plan, Road Services has a growing structural funding problem, with revenues declining while the cost of doing business continues to increase. Declining revenues, it is necessary to focus funding on the most critical priorities of safety, preservation, and extending the life of existing facilities. The funding situation, coupled with an aging road system, has resulted in a serious decline in the overall condition and sustainability of the county's road infrastructure, creating a large and growing backlog of unaddressed preservation and maintenance needs.

Despite these challenges, the County's responsibilities for providing road services and infrastructure will remain substantial as the post-annexation rural road system will include nearly 1,100 roadway miles and 165 bridges. Post-annexation, Road Services will be responsible for a major road system relied upon by the 150,000-plus citizens who will be living in the unincorporated areas as well as more than a quarter million people who live in cities and neighboring counties but rely on King County's network of regional arterial roads to get to work, school, shopping, and services on a daily basis.

In order to address the fundamental intent of the policies and goals described in this plan, the County will pursue future service delivery scenario B: Moderate the decline in asset condition. While this scenario is not optimal in terms of infrastructure lifecycle management and does not prevent the long term decline of the system, it is a more realistic interim option to strive for given current economic realities. By moderating the decline of asset conditions, the County will continue to provide an acceptable level of service to users of the unincorporated-area road system in the near term, and will prevent rapidly escalating repair costs and potential infrastructure failures that would result from deferred maintenance and preservation.

Road Services must take action in several areas: efficiency, staffing and organizational structure, funding, and facility planning.

To accomplish this, Road Services must take action in several areas: efficiency, staffing and organizational structure, funding, and facility planning. Each is discussed briefly below. The division shall work throughout the coming year to identify the specific and detailed actions required to move in the direction of stabilizing current asset condition, and will report on progress and present proposals for new or revised business activities in the annual business plan updates and the 2012/2013 Executive Proposed Budget.

Efficiency

- Implement performance management business practices to identify, evaluate and implement efficiencies that help reduce the cost of services.
- Pursue efficiencies resulting from the more timely implementation of, and reliance on new information technology as Road Services moves to a data driven, asset management approach. This will be accomplished by implementing a comprehensive asset management approach relying on GIS inventory information articulating detailed and complete asset condition information by location, which will provide the data necessary to implement the new Roads Comprehensive Asset and Maintenance Management (RCAMM) system. When fully implemented, the asset management approach utilizing modern technology will increase efficiency in the identification, inventorying, monitoring maintenance and preservation of the county's road

network assets. It will allow the county to make data driven decisions in the selection and prioritization of investments to strive for least life cycle cost and maximize asset life within available funding.

- Streamline the organization of the division as areas annex and the division's work shifts to a more rural nature. For example, those programs that now serve primarily urban populations such as the neighborhood, pedestrian and school traffic safety programs, signal design and engineering, development review of traffic impacts, traffic data modeling, transportation concurrency management, mitigation payment system planning, and non-motorized planning will likely see workload reductions as the service area changes from urban to rural. Some maintenance and special operations programs will continue to provide services but with a reduced workload as a result of annexations. As the capital program shifts away from larger capacity and other more urban improvements and moves toward a higher volume of rural safety and preservation investments, Road Services also expects to see some workload reductions in civil design, roads project management, bridge project management and environmental studies and design.
- Increase the quantity and variety of contract services provided to cities, agencies and other jurisdictions in order to achieve economies of scale and share the costs of equipment and supplies over multiple users. Outreach to city stakeholders during the preparation of this plan identified several possible mutually beneficial areas to explore further.
- Seek opportunities to benefit from new, improved engineering technologies and materials that help stretch limited resources. For example, to cope with rising asphalt prices, the division has begun using cost effective paving methods such as bituminous surfacing treatments—commonly known as "chip seal"—on low-volume, non-arterial roadways with minimal truck traffic. New chip-seal techniques have improved significantly in recent years, making this an effective way to meet the needs of the community while helping to stretch the overlay budget. The division will continue to explore emerging technological improvements that can provide cost-saving opportunities.

Before identifying any new funding source, the County will demonstrate that it is using all current revenue sources as efficiently and effectively as possible.

Funding

- Advocate and support the pursuit of alternative transportation funding consistent with the Puget Sound region's transportation plan (Transportation 2040) and the King County Strategic Plan. The traditional transportation revenue sources are no longer sufficient to fund the region's transportation infrastructure needs. For example, gas tax revenues will continue to decline over the next several years as a result of reductions in vehicle miles traveled per capita and other adopted federal, state and local policies that reduce the consumption of gasoline and mandate the use of alternative fuel sources.
- Before identifying any new funding source, the County will demonstrate that it is using all current revenue sources as efficiently and effectively as possible. This will be done through the adoption of a performance-management approach to cost containment and will be concurrent with countywide efforts to become three percent more efficient year over year.
- King County residents and users of the county road infrastructure should have a choice in adopting a new funding source, and should demonstrate that

maintaining and preserving this infrastructure is a financial priority in these challenging financial times.

- Develop an integrated and coordinated approach to resolving regional transportation structural funding problems that considers both the County's road and transit needs. As discussed earlier in this plan there are over 250,000 users of the road system who do not reside in unincorporated King County or pay property taxes to support the road system.

- Identify and advocate for additional funding sources including:
  - > Implementation of the Transportation Benefit District (TBD) approved by the King County Council in January 2010. State law governing the implementation of a TBD provides for several revenue options, including two that utilize an annual vehicle fee. One of these authorizes the transportation benefit district to impose, by a majority vote of the district's governing board, a vehicle license fee of up to $20; the second authorizes a voter approved fee of up to $100.
  - > Identify a regional revenue source to help accommodate regional traffic on rural county roads. Several potential regional funding options explored in the ROMP Phase I are outlined in Appendix D.
  - > Consistent with the King County Strategic Plan, once efficiencies have been maximized, give residents/voters choices regarding service level reductions or new revenues.
  - > Advocate on all levels of government to ensure that the available grant funding is targeted at the needs of the changing system, i.e. focused on preservation of infrastructure rather than primarily on capacity and growth.

Staffing and organizational structure

- Follow the direction laid out in the organizational structure and staffing plan to ensure that the agency is right-sized to meet the demands of managing the road system and to respond to emergencies. Road Services will examine staffing in each budget cycle using the following factors:
  - > Changes in service area due to annexation
  - > Changes in regulatory requirements
  - > Changes in revenues and County priorities
  - > Changes due to shifts in CIP workload
  - > Changes in workload from contract cities, agencies and jurisdictions
  - > Changes in technology.
- Road Services will implement best practices and streamline the organization to achieve operational efficiencies and align staffing levels and staff competencies with the work plan that evolves from this strategic planning process. For example, Road Services is proposing to restructure the Capital Improvement Program and Planning Section into the Office of Strategic Asset Management, Monitoring and Reporting within the Administrative Section in 2011.
- Organizational structure, span of control and layers of management will reflect a nimble and efficient service delivery model.
- Appropriate levels of management and administration staffing will be employed to ensure that King County retains the lowest level of overhead among its peers as reported by the County Road Administration Board.

A separate organizational structure and staffing plan transmitted with this document fully describes this process and activities.

Facility planning

- Study the Road Services locations and facilities and identify locations and facilities that are appropriate for the long-term needs of the division. Update the existing facilities master plan when sufficient information becomes available to make decisions regarding long-term facility-related needs.

The steps outlined above will help to keep roads and bridges in the unincorporated area open, reliable, and safe for public use for the next five years and beyond, while maintaining and preserving the useful life of the region's vital infrastructure. A significant effort must be made now in order to preserve and maintain infrastructure, protect mobility and sustain the quality of life in the region.

This strategic plan will be updated in 2016.

Appendix A

Division Functions

Road Services' functions fall into two primary categories: capital project delivery, and operations and maintenance.

Capital project delivery

Every section in the division is involved in capital project work. Major work products and services include the following:

- **Planning and programming** sets priorities for preservation and improvement projects, identifying improvements that will contribute most effectively to the goals set for King County roadways. Various prioritization processes are used to rank project needs related to capacity, high accident locations/high accident road segments, long- and short-span bridges, guardrail, traffic signals, pedestrians, intelligent transportation systems, vulnerable road segments, small-scale operational improvements, and intersections. Products and services include the CIP, the Transportation Needs Report (TNR), the Annual Bridge Report, travel demand forecasting, and division-wide performance measures.
- **Project delivery** is the process of designing and building projects in the adopted capital improvement program. This includes developing and controlling project budgets, identifying and obtaining grant revenues, determining the best project scope, and coordinating with outside agencies and stakeholders. Major work products and services include project management and coordination, contract management, and environmental permitting, compliance, and mitigation.
- **Design and implementation services** include design engineering and other professional services to develop plans, specifications, and estimates as well as the construction administration to manage road and bridge contractors. Major work products and services include biddable and buildable plans; design and construction specifications; professional engineering, survey, and right-of-way services; environmental engineering and analysis; construction management; and materials and geotechnical testing.

Operations and maintenance

Road Services is responsible for maintaining and operating all assets within the right-of-way. These include the traveled roadway; roadside assets such as pedestrian and bicycle pathways, drainage systems and shoulders; and traffic control and management features such as signs, striping, and signals. Emergency response activities that keep the road system safe and operational during severe weather or other emergencies are an important area of service.

The Traffic Engineering and Roads Maintenance sections perform most of the operations and maintenance work. The following are the major work products and services:

- **Road system maintenance and operations** involves routine and major maintenance, repair, and restoration of roads, drainage systems, shoulders, and other assets in the King County right-of-way; removal of trees, vegetation, and debris that impacts roads; maintenance of signs, signals, guardrails, road striping, and other traffic control devices; bridge maintenance; and environmental and regulatory compliance for division activities and facilities.
- **Specialized engineering services** support optimal operation of the transportation system. Specific products and services include traffic engineering, intelligent transportation systems support, and bridge and pavement inspections.
- **Emergency response** encompasses activities such as sanding, plowing and ice prevention on snowy or icy roads; removing downed trees and clearing other debris from heavy rains, flooding, and windstorms; managing flood-related or other types of emergency road closures; and completing storm repairs to roadways and roadside assets such as drainage systems, shoulders, and adjacent slopes.

Other responsibilities

Road Services provides additional products and services as part of managing a large and complex road system. Some are not directly related to providing road and bridge infrastructure to the public. Many are required by federal, state or local laws; others are essential aspects of the division's commitment to customer service. Some examples:

- Providing public access to maps and records
- Reviewing public and private development proposals for potential impacts on transportation
- Operating a 24-hour road help line
- Keeping the public informed about major construction projects, road or bridge closures and repairs, and other road services and activities
- Handling public inquiries and complaints
- Administering state and federal transportation grants for smaller cities and nonprofit agencies
- Issuing permits for special uses of the road right-of-way
- Processing road vacations for property owners
- Developing the transportation element of the King County Comprehensive Plan and other transportation policies
- Managing transportation concurrency and other requirements of the state Growth Management Act
- Operating regional stormwater disposal stations.

Appendix B

Contract Services Framework

The following framework has been developed to guide implementation of Road Services contract services agreements.

The Road Services Division will pursue contracting opportunities when the provision of contract services provides mutual benefit to King County and the customer agency/jurisdiction. The following guidelines provide the framework for the Road Services Division's contract services agreements.

a. Meet full cost recovery requirements consistent with:

- State Accountancy Act
- Federal guidelines
- Generally accepted accounting principles

b. Balance King County and customer agency/jurisdiction needs according to the following priorities:

- Priority 1- Maintenance and preservation of King County's unincorporated area road network
- Priority 2 - Services to customer agencies/ jurisdictions having an established, ongoing maintenance program with the Road Services Division
- Priority 3 - Services to other customer agencies/ jurisdictions based on the amount of lead time the requesting entity provides

c. Develop procedures for the delivery of contract services that address:

- Customer level of service expectations that reflect the priorities listed above
- Clear prioritization of work
- Process for handling work request changes
- Contracting options including a variety of service level options
- Available services and the associated costs and benefits of specific service packages
- Method to address emergency and other response protocols
- Process for resolution of non-standard customer work requests
- Process for dispute resolution, including billing disputes
- Method to address customer-invoicing issues related to billing formats

Appendix C

Customer Outreach

The division involved its customers in the process of developing this strategic plan. It conducted a resident survey in December of 2008 for the Roads Operational Master Plan Phase I. An independent consultant surveyed 400 unincorporated-area residents to gauge public opinion about Road Services' priorities and service levels. When asked about the condition of county roadways, two-thirds of survey respondents reported they were "generally satisfied." Survey respondents also identified priorities for the county road system in the context of limited funds and the potential for decreasing services and service level outcomes.

Overall, respondents reported their asset priorities as:

1. Paved roadway surfaces
2. Storm-water drainage
3. Bridge repair or replacement.

Service priorities included:

1. Making road safety improvements to help reduce accidents
2. Improving intersections and signals to speed traffic control and congestion
3. Adding new lanes to existing roads.

In addition, in 2008 and 2009, Road Services contracted with a consultant to survey 23 customer cities. The division's intention was to gain a better understanding of customer priorities and concerns. The survey found that customer cities that contract with us are generally pleased with our customer service, especially the quality of work we perform. Communication is an area where we are working to make improvements so that customer expectations will align with our ability to deliver services.

The 2009 King County Community survey, conducted by ETC Institute, asked residents of unincorporated King County to rate the quality, satisfaction and importance of "construction and maintenance of roads / bridges." Based on ETC Institute's Importance Satisfaction Analysis, construction and maintenance of roads and bridges is the highest priority for improvement of local services to unincorporated area residents.

This plan also included outreach to inform stakeholders of the process and to obtain feedback on the analysis and direction of the plan. Members of the stakeholders group represented a diversity of interests and the varied geographic areas of the county. Four broad themes emerged from the discussion with stakeholders: 1) Road Services must clearly identify who it sees as its customers; 2) Reduced service levels are not considered an acceptable option -- stakeholders want Road Services to make sure assets do not continue to deteriorate; 3) Before requesting any revenues increases, the county must identify efficiencies and develop trust; and 4) Equitability was felt to be important and stakeholders placed a strong emphasis on user fees and using money where it is raised.

Appendix D

Summary of Funding Options Explored in the ROMP Phase I

Taxes	User Fees	Transfers
Countywide sales tax on auto parts and service	Congestion fees (area tolls).	Portion of utility tax for electric vehicles or bio fuels
Increase in county sales taxes	Container fees at the Port of Seattle	Revenue distribution of state highway tolls to support roads network system
Increase in general Fund property taxt levy	Local arterial tolling	Revenue distribution of truck licensing fee
Increase in Real Estate Excise Tax	New development mitigation fees	
Local option motor fuel tax	Vehicle license and registration fees	
Increase road levy component of property tax	Vehicle-miles-traveled fee	
Tax on commercial parking operations	Surcharge on land used for non-residential parking	

Appendix E

Change Drivers Identified in the ROMP Phase I (Details)

Phase I of the Roads Operational Master Plan (ROMP) identified five key challenges, or change drivers, which are reviewed below.

Incorporations and annexations

King County's goal is that by 2015 cities will annex all land within the Urban Growth Area as mandated by the state Growth Management Act. The County can encourage annexations and incorporations, but they are largely beyond its direct control. The timing of these events is uncertain and dependent on the desires of the cities and residents involved. For Road Services, annexation will result in a decreased road inventory with the following characteristics and effects:

- The bulk of the unincorporated service area will shift progressively to the eastern, rural part of the county, while rural Vashon-Maury Island will remain as unincorporated territory in the western portion of the county.
- Road Services will also retain long-term responsibility for two large urban planned communities (Trilogy and Redmond Ridge) east of the City of Redmond in northeast King County. These urban "islands," which currently have about 8,000 residents, are situated in the midst of the county's rural area yet have an expectation of urban levels of road service that are more costly to provide.
- During the transition to a fully annexed/incorporated urban area, Road Services will continue to be responsible for numerous small unincorporated "in-holdings" that are widely dispersed throughout the county. These remnant urban territories were skipped over by past annexations and incorporations and are inefficient to serve since they are surrounded by city territory.
- Two rural Green River Agricultural Production Districts, completely surrounded by the cities of Kent and Auburn, will remain unincorporated and are inefficient to serve.
- The rural area includes numerous stream crossings, requires more environmental considerations, and also encompasses terrain that is more prone to flooding and snow and ice emergencies than urban and suburban areas of the county.
- Although there are will be fewer road miles overall, due to the age of the rural system as well as the topography and flood zone locations Road Services, the volume of work that will remain does not decrease proportionally.
- Road Services will be responsible for an older, deteriorating roadway system. When that system needs improvements, it will take more work to bring it up to current engineering and environmental standards.
- There will be a smaller road network over which to apply the fixed costs of owning and operating a road system, resulting in the loss of some economies of scale. For example, specialized equipment may not be as fully utilized. Higher fixed costs might be mitigated if the division is able to increase the volume of contracted services it provides to other jurisdictions and share the cost of specialized resources among more users.

Development and population growth

Development and its associated growth in population, vehicle miles traveled, and new road miles will increase Road Services' workload in unincorporated King County in the future, despite reductions in total road miles in the county's road system due to annexation. Travel demand is directly linked to growth in population, the economy, and employment. After all urban areas have been annexed or incorporated into cities, the population of King County's unincorporated areas is projected to grow at a rate of 1,000 to 2,000 people per year. Vehicle miles traveled in King County as a whole are projected to increase by 1.3-1.4 percent per year.[1] The effects of this increased travel demand will include:

[1] Puget Sound Regional Council: "Puget Sound Trends: Vehicle Miles Traveled" August 2002

- Increased traffic on roads and degradation of operational performance, resulting in increased congestion.
- Increased use of county roads for commuting from eastern unincorporated King County, cities, and adjacent counties to population and employment centers in King County.
- An increased need for safety and traffic operational improvements, congestion relief, and road reconstruction, as well as increased road maintenance needs due to more wear and tear on the infrastructure.

Rural roads built as farm-to-market routes in the 19th century are increasingly being expected to perform as highways for residents of unincorporated areas and rural cities as they travel to employment centers during the week, and as recreational routes for cyclists, equestrians, and hikers on weekends. User expectations for convenience and service on rural roadways are ever increasing. Technology enhancements such as e-mail and the Internet have increased expectations that service requests will be attended to immediately. Changing demographics in the rural area have also led to expectations on the part of some rural residents for more urban or suburban levels of service, including amenities like sidewalks, street lighting, or enclosed drainage systems, some of which are inconsistent with King County Comprehensive Plan policies for rural areas.

Aging infrastructure and underinvestment

Road Services has a large, unfunded backlog of high-priority safety, maintenance, and preservation needs. Over time, underinvestment in the preservation and maintenance of roads increases the cost of ownership. Continued underinvestment can lead county road infrastructure to be at risk of failure. The following are some of the consequences of these deteriorating conditions:

- The failure of at-risk assets, resulting in road closures, expensive rehabilitation, and eventually a need for reconstruction or replacement.
- A significant escalation in maintenance costs for at-risk assets if action is not taken to remedy deficiencies and optimize asset lifecycles.
- The risk of more costly emergency repairs, wholesale loss of the road and related closures and detours, and increased probability of damage to persons and property due to flooding and other failures.
- A rapidly escalating backlog of failing and at-risk assets.

Complexity of projects and regulatory requirements

Recent years have seen a large increase in the cost of transportation projects and maintenance and preservation activities due to variable commodity costs and new regulatory requirements. For example, statutory greenhouse gas reduction goals and water quality compliance requirements are changing how roads are designed, built, maintained, and used by adding more mitigation and maintenance responsibility. New projects and activities will have to meet new evolving standards, and this will increase the cost of owning and operating the county's roads.

- A constrained ability to meet needs, combined with fluctuating commodity costs, creates a backlog of capital, preservation, and maintenance work that is increasingly expensive to complete.
- New environmental and safety regulations, coupled with changing pavement, bridge, signal, and sign standards, increase costs and backlogs and require increased investment to meet mandates.
- If investment in the road system is not increased, service levels will decrease.

Climate change

Climate change could affect Road Services in two areas: the requirements of County, state and national climate change policies, and the impacts of a changing climate. The effects are likely to include:

- An increase in the number and severity of winter storms, resulting in an increased need for storm- and weather-related emergency response, maintenance, and repair work.
- An increase in roadway lifecycle management costs (due to increased weather related impacts on infrastructure).

- Wide-ranging effects on the division's management of travel demand, service delivery, and business costs resulting from policy and regulatory responses to climate change.
- The need to change roadway design, maintenance, and construction practice to adapt to climate change.

Appendix F

Proxy Analysis of Infrastructure Condition and Needs

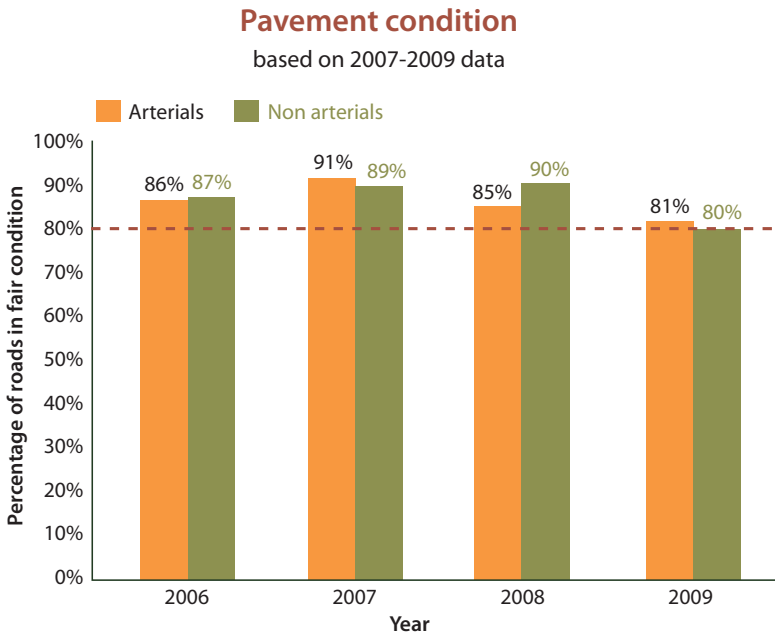
Roadways

Roadways include all facilities within the road right-of-way, including driving surface, drainage facilities, embankments, shoulders, sidewalks, retaining walls, and utilities. With standard maintenance and repair, arterial roadways have a cost-effective life of about 50 years. Many of the arterials in unincorporated King County are older and may not continue to function as they should. As they continue to age, escalating and unsustainable maintenance and repair costs will eventually lead to unpredictable temporary road closures, load limits, speed limit reductions, and, finally, permanent closure.

The Governmental Accounting Standards Board (GASB 34) requires agencies to compile information on the condition and management of pavement assets. For the purposes of GASB 34 reporting, King County has established a standard that 80 percent of roads have pavement that is at least in "fair" condition (i.e., pavement condition score, or PCS, of 40 or above). The standard was chosen because it has been shown to help optimize lifecycle costs. Figure A-1 shows that Road Services easily met that target from 2006 to 2008, but barely met it in 2009.

Arterial surfaces are designed to last about 20 years. Repairing the surface and doing thin overlays are cost-effective ways to extend a road's service life, but the amount of time they add to the road's useful life is shorter for each successive overlay, so thin overlays are an appropriate solution for only a limited time. As the surface deteriorates, structural deficiencies occur, and the road must eventually be reconstructed. Figure A-2 illustrates this concept.

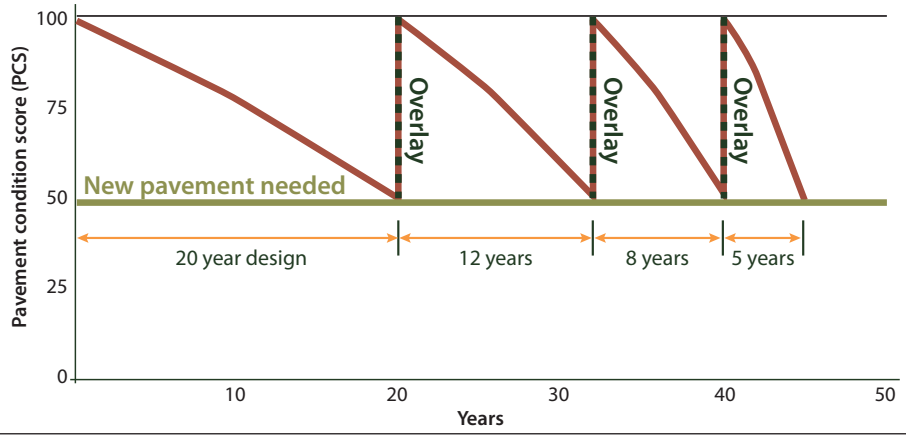
Fig. A-1



GASB requirement: 80% of roads in fair condition with a pavement condition index of 40+

Fig. A-2

Thin overlay performance for an arterial



Due to the age of county roads (some in the rural area are more than 100 years old), road resurfacing is no longer effective. Sample results from 2007 pavement testing show a significant loss in the effective lifecycle of pavement overlay. Overlay should have an effective life of about 15 years, but on many roads the effective lifecycle is as little as five to seven years, a 50-70 percent decrease. There is a need to reconstruct or replace roads because of structural deficiencies—primarily the result of facility age and the increase in number and size of heavy truck loads being carried by roads that were originally built to handle vehicles from another era. Applying an overlay to a road that needs replacement is a "band-aid" solution. It gains very little extended life as payback for the investment and results in a need for more and increasingly expensive maintenance.

In 2007, the division proactively launched a pavement testing program to evaluate the structural integrity of the arterial system. Based on the test results to date, an estimated 110 miles of major and minor arterials have less than 10 years of useful life remaining and are in need of reconstruction.

This backlog of defective arterials can be addressed with a $22 million annual investment over a 20-year period in which Road Services would reconstruct approximately 5.5 miles per year.

Bridges

In the early 1990s, Road Services found that many of its bridges were structurally deficient and/or had exceeded their design and functional lives, so it began a long-span-bridge (those longer than 20 feet) replacement program. Since the program began, the division has replaced 40 bridges. The average overall sufficiency rating of county bridges has increased from about 65 to 70 (on a scale of 0-100, 100 being a bridge with no deficiencies at all). In the two decades since the program began, Road Services has largely completed the backlog of long-span bridge replacement projects. What remains are five bridges, (excluding South Park Bridge) Alvord T, Berrydale Overcrossing, 15 Mile Creek, Baring and Lake Dorothy Overflow bridges that constitute the current backlog. This amounts to $30 million in total cost and if annualized over a 10 year period a $3 million per year need in non-inflated dollars.

Once the above backlog is addressed, then the long span bridges would be replaced on a useful life cycle of 75 years. To replace the full inventory of King County's long span bridges over 75 years would require an annual investment of $20 million per year.

There are a greater number of short span bridges (those shorter than 20 feet) that currently need replacement over the next 20 years due to age and condition. An annual investment of $2.25 million is needed to replace these bridges before they greatly exceed their useful life.

Other infrastructure maintenance and preservation needs

Regular infrastructure maintenance is critical to extend the service life of infrastructure assets. Maintenance needs includes cleaning, repairing, and restoring or replacing infrastructure such as road surfaces (i.e. grinding and patching), drainage, shoulders, embankments, and pedestrian, bike, and traffic facilities.

Drainage systems in particular have a large backlog of needs. Population growth and changing environmental laws have rendered most drainage systems built before 1990 obsolete and substandard for retention/detention, capacity, water quality, and fish passage. Road Services is unable to maximize roadway preservation and facility lifecycle due to budgetary constraints. This has resulted in a backlog of facilities that are functioning in a reduced capacity and need extensive repair.

An annual investment of at least $16 million is required to eliminate the backlog of a variety of maintenance and preservation needs by repairing or replacing substandard infrastructure. This is above and beyond the effort to address the structural integrity of the roadways described earlier.

Appendix G

Performance Measures (Details)

How will we know this plan is making a difference?

Road Services tracks over 40 performance measures for use in internal program management, management decision support, and public communications and reporting. These include basic output measures such as number of miles of pavement overlay constructed or bridges replaced, outcome measures such as percent of structurally deficient bridges, customer service measures such as average number of days to complete requests for pothole repair, and high level community indicators (that the division has only partial influence over) such as vehicle related fatality rate on unincorporated roads. To date, Road Services has been reporting performance measures in a variety of venues, including annual business plans, on the county's King County AIMs High: Annual Indicators and Measures website and scorecard, and at internal briefings with senior county management and the King County Executive.

This strategic plan has identified five "What we deliver" goals that articulate what the division will focus on for at least the next five years and sets out a number of strategies that will move the division towards accomplishment of those goals. For the purposes of strategic plan implementation, Road Services will use the set of performance measures outlined below to specifically measure progress towards these five goals. The measures will be reported on an annual basis in the agency's business plan and other suitable reporting forums or publications.

Goal 1: Meet regulatory requirements and standards

Performance measure: Regulatory compliance index

This is a new measurement need identified during the strategic planning process. Among the variety of performance measures currently tracked by Road Services, there is currently no measure specifically focused on the meeting of federal, state and local regulatory requirements and standards. Since the division has broad array of regulatory requirements, selecting one or two measures to represent the performance in this area is challenging. Instead, Road Services will develop a new Regulatory Compliance Index to use as an indicator of performance.

The index will be based on a rating framework that:

1. Utilizes both qualitative and quantitative assessment information
2. Provides for a range of possible ratings to differentiate between degrees of compliance
3. Establishes rating criteria that take into consideration the consequences and impacts of meeting compliance thresholds both to the public and the agency

The index will incorporate data from the division's most critical, measurable, and resource intensive regulatory compliance categories. Potential information to include may relate to:

- National Pollution Discharge Elimination System (NPDES) requirements
- National Bridge Inspection Standards requirements
- Certification Acceptance (CA) qualification requirements for FHWA projects
- County Road Administration Board standards of good practice
- Regional road maintenance program Endangered Species Act 4(D) requirements
- King County Surface Water Design Manual requirements
- Compliance with MUTCD marking and sign requirements

Goal 2: Meet core safety needs

Performance measures: Collision, injury and fatality rates for motorists, bicyclists and pedestrians

Road Services extensively analyzes collision data for the unincorporated road system, produces a detailed annual safety report, and uses this data to identify safety related improvements. The collision and fatality rates that Road Services has previously reported as performance measures remain well suited to continue to provide a broad metric related to the agency's efforts to meet core safety needs on the road network. The existing measures will be enhanced by adding injury rates and by reporting all data for bicyclists and pedestrians as well as motorists.

Goal 3: Maintain and preserve the existing roadway facilities network

Performance measures: Pavement, bridge, drainage and road shoulder infrastructure condition ratings

Road Services inspects its entire pavement and bridge inventories on regular cycles using nationally accepted inspection and condition rating methodology. The resulting ratings form the basis for several existing division performance measures and the standard rating methodologies allow for comparisons with other jurisdictions. The current performance measures related to bridge condition, pavement condition are well suited to continue to provide a broad performance metric related to the efforts to preserve the existing roadway facilities network. These measures include: pavement miles meeting a condition standard of "fair" (40 PCS) or better, average sufficiency rating for bridges, and number/percent of bridges structurally deficient, functionally obsolete and load-limited.

Additional measures for drainage system structural integrity/capacity and gravel shoulder condition will be reported in the future. Since data for drainage facilities and road shoulders is not as complete and robust as for pavement and bridges, random sampling techniques instead of full inventory assessment are currently used to assess these types of infrastructure. Road Services will continue to use a sampling methodology until data availability can be enhanced. The division is in the process of expanding inventory and condition data availability through a multi-year Roads Asset and Maintenance Management System (RCAMM) project.

Goal 4: Enhance mobility (movement of people and goods) by facilitating more efficient use of the existing road system

Performance measure: Travel time trends and reliability on key road corridors

The King County Benchmarks Program, coordinated by the Office of Strategic Planning and Performance Management, reports on average commute trip time on various interstate route segments, but not on unincorporated King County roads. This new measure will report travel time information for unincorporated area corridors. Consistent and predictable travel times are important to the traveling public. According to the WSDOT 2009 Annual Congestion Report, "Reliability is an important statistic for travel times, because it allows road users to plan for consistency in their travels." The National Cooperative Highway Research Program also suggests travel time reliability as a potential mobility measure in its literature on performance measures and asset management[2].

Road Services will develop a new measure of the reliability of travel time along several important unincorporated county corridors in a manner consistent with the national Highway Capacity Manual and WSDOT methodology. Road Services will use three complementary technologies, including permanent traffic count stations, automated *license plate* recognition technology, and annual probe vehicle travel time studies to report annual travel time trends.

Permanent traffic count stations provide real time data about travel speeds at several count locations in rural incorporated King County. A new grant-funded project incorporating automated license plate recognition technology will allow the division to report annually on daily and hourly travel time trends along the Avondale

[2] NCHRP Report 51, Performance Measures and Targets for Transportation Asset Management, 2006

Road corridor in northeast King County; the corridor will be a useful, representative proxy for understanding mobility trends in the rural, unincorporated areas.

Annual probe vehicle travel time studies are performed as part of the Transportation Concurrency Management Program. These studies provide travel time data on all principal and minor arterials in the unincorporated area and are useful to understand year to year trends. The data from these can also be used in optimizing traffic signal coordination and targeted traffic operational improvements.

Goal 5: Address roadway capacity when necessary to support growth targets in the urban areas

Performance measure: Volume to capacity (V/C) ratio on urban connector arterials

The King County Benchmarks Program currently reports volume-to-capacity (V/C) ratios for three major transportation routes (state routes and interstate highways) to illustrate congestion in King County. This new measure will provide similar information for unincorporated area urban connector arterials, which are corridors that travel through the rural area and serve to connect urban areas. V/C compares roadway demand (vehicle volumes) with roadway supply (carrying capacity). Volume refers to the number of vehicles using a roadway at peak commute times, while capacity is its ability to support that volume based on its design and number of lanes.

Road Services proposes annual tracking of the volume to capacity ratio on urban connector arterials as an indicator of how these corridors are performing as growth occurs in urban areas. The corridors recommended for monitoring are Novelty Hill Road, Woodinville-Duvall Road, and Issaquah-Hobart Road.

Appendix H

Map of Arterials and Lifeline Routes

Appendix I

Glossary of Terms

Annexation: Adding more land into a city's jurisdiction.

Arterial: Categories of roads that fall between highways and local roads in functional classification systems. Arterials typically have higher speed limits and more stringent traffic control measures at intersections (e.g., traffic signals or stop signs) than local roads, but lower speeds than highways.

Best management practices (BMP): Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce pollution. BMPs may also include treatment requirements, operating procedures, and practices to control site runoff. BMPs have been developed for many types of activities, including project construction and maintenance, stormwater management, agriculture, industrial procedures, and soil management.

Capacity: A measure of the supply side of a transportation facility. It reflects the ability of the transportation facility to accommodate a moving stream of people or vehicles.

Capital Improvement Program (CIP): A six-year program of road and bridge improvement projects intended to provide safe, efficient, and environmentally sound transportation facilities for the traveling public.

Comprehensive plan: A generalized, coordinated land use policy statement of the governing body of a county or city pursuant to the Growth Management Act. Each comprehensive plan includes a plan, scheme, or design for land use, housing, capital facilities, utilities, rural areas, and transportation.

Countywide Planning Policies (CPP): Policies required by growth management legislation that provide a framework for consistency among comprehensive plans in King County.

Federal Highway Administration (FHWA): An agency that provides direction and oversight of federally funded roadway projects, including state and local projects that receive federal funding.

Geographic information system (GIS): Computerized information system that combines spatial mapping and database management to provide a wide range of mapped information and analysis opportunities.

Growth Management Act (GMA): In 1990, the Washington State Legislature passed the State Growth Management Act (ESHB 2929). The Act calls for urban counties and cities in the state to develop comprehensive plans to guide growth management decisions for at least the next decade. Amendments to the Act in 1991 require that counties, working with the cities within their boundaries, develop countywide planning policies to provide a common vision of the future to serve as the framework for all comprehensive plans throughout the county.

HAL/HARS: A list of high-accident locations (HALs) and high-accident road segments (HARS) in unincorporated King County, maintained by the Road Services Division as part of its ongoing safety management program. HALs are located at arterial intersections, and HARS consist of arterial roadway segments.

Incorporated areas: Areas within a city or a city's jurisdiction. King County contains 39 incorporated cities.

Intelligent transportation system (ITS): The application of advanced technologies to improve the efficiency and safety of transportation systems.

Lifecycle management: A "whole life" process for managing assets. Effective lifecycle management involves making the right investment at the right time to ensure that the asset delivers the requisite level of service over its full expected life, at the minimum cost.

Lifecycle cost: A calculation of the cost of a system over its entire lifecycle.

Lifeline route: Routes which must be kept open for emergency response personnel.

Maintenance: Activities that ensure that the right-of-way and each type of roadway, roadway structure, and facility remains, as nearly as practical, in its original, as-constructed condition or subsequently improved condition.

Mitigation (environmental): Projects or activities intended to correct or compensate for anticipated adverse effects to the environment caused by a capital project or maintenance activity. Mitigation is often required as a condition of project regulatory permitting.

Mitigation payment system: A system that establishes a requirement that new growth and development pay a proportionate share of the cost of supporting needed transportation improvements. The proportionate share is related to the cost of transportation facility improvements needed by the new development.

Multimodal: Having more than one transportation mode such as auto, bus, rail, bicycle, etc.

Non-motorized: Describes modes of transport that do not require powered vehicles, including walking, bicycle, and equestrian modes.

Operating program: The part of the division's budget that is not related to capital expenditures. Its activities include administration, maintenance, and traffic operations.

Pavement condition score (PCS): Numerical standards for rating the condition of pavement. King County follows standard pavement engineering methodology to determine scores based on visual inspection of the road surface. A PCS of 100 indicates a pavement surface with no visible distress.

Pavement condition score: Numerical standards for rating the condition of pavement.

Potential annexation area (PAA): An area in unincorporated King County that is adjacent to a city and is expected to be annexed by the city, and to which that city will be expected to provide services and utilities, within the next two decades.

Preservation: Specialized maintenance activities that serve to extend the originally estimated life of a roadway, roadway structure, or facility.

Right-of-way: Land, property, or property interest (e.g., an easement), usually in a strip, acquired for or devoted to transportation purposes.

Road: A facility that provides public or private access, including the driving surface and all other improvements (such as sidewalks, paths, landscaping, drainage pipes, etc.) inside the right-of-way. NOTE: "Road", "Street", and "Roadway" will be considered interchangeable terms for the purpose of this plan.

Rural areas: Unincorporated areas outside the designated Urban Growth Area in which little residential or job growth in planned.

Rural cities: Incorporated areas in the rural parts of King County. There are six: Carnation, Duvall, Enumclaw, North Bend, Skykomish, and Snoqualmie.

Traffic signal interconnection: The adjustment of the amount of traffic signal green time for each street and coordination of operation between each traffic signal to maximize traffic flow and minimize delay. Adjustments are based on real-time changes in demand.

Transportation concurrency: Requires that transportation facilities must be available to carry the traffic of a proposed development. A certificate of transportation concurrency is issued when a proposed development meets the county's adopted level of service standards.

Transportation Needs Report (TNR): The King County long-range transportation capital needs list and the transportation capital facilities element of the King County Comprehensive Plan.

Travel demand forecasting model: Computer model used to predict the impacts of various development patterns, policies, and programs on future traffic volumes in King County.

Unincorporated area: An area not within any city and under the jurisdiction of King County.

Unincorporated Area Councils (UACs): Councils representing the residents, business owners, and property owners in each of six unincorporated areas in their dealings with the government of King County and other entities with respect to issues affecting them and their property. The six UACs are: Four Creeks, Greater Maple Valley, North Highline, Upper Bear Creek, Vashon-Maury Island, and West Hill.

Urban growth area (UGA): The area designated by a county pursuant to the State of Washington Growth Management Act to accommodate 20-year growth projections. These areas are supported by urban services and facilities.

WSDOT: Washington State Department of Transportation.

King County

Department of Transportation
Road Services Division

www.kingcounty.gov/roads