

**Transportation 2040 UPDATE MAINTENANCE &
PRESERVATION
DRAFT EXPENDITURE ESTIMATE METHODOLOGY**

10/19/16

PSRC is currently working on developing the 2018 update for its long-range transportation plan, Transportation 2040. The Financial Strategy for the plan involves estimating all of the transportation expenditures and revenues for PSRC's four-county region (King, Snohomish, Pierce, and Kitsap counties) through the plan's horizon year, 2040. Approximately half of the expenditures in the plan will be categorized as funding maintenance and preservation of the region's existing transportation system.

Provided below is a summary of the proposed methodology for calculating maintenance and preservation costs for the eight city and county maintenance and preservation expenditure categories in the plan. This document includes background on how these costs were calculated during previous updates and proposed approaches for the 2018 Update.

Roadways

Scope

Includes all roadway pavement.

Background

Prior to the 2014 Transportation 2040 update, estimates of future roadway (i.e., pavement) maintenance and preservation needs were projected by extrapolating historic investment to the horizon year of the plan, based on the Budgeting, Accounting, and Reporting System (BARS) data collected by the State Auditor's Office. The primary deficiency of this approach was that historic investment trends do not necessarily reflect the magnitude of future needs in a changing and maturing system.

For the 2014 update, this was changed to an outcome-based approach that relied on data provided directly by jurisdictions. This data included financial estimates to eliminate the backlog of pavement preservation investments by asking jurisdictions what it would cost to bring all facilities to a pavement condition index (PCI) rating of 70 as well as the 30-year costs (through 2040) associated with maintaining their roadway assets at that same condition. A PCI of 70 was selected based on the understanding that this was the level at which the optimal lifecycle of roadway pavements is achieved.

To gather this data, PSRC developed a survey in consultation with the Maintenance & Preservation Working Group and input from local pavement managers. The survey was distributed to all of PSRC's 82 member jurisdictions, with 23 cities and two counties responding. An average lane mile cost (by VISION 2040 city type) was calculated and applied to the jurisdictions that did not respond. Once the total costs for each jurisdiction were calculated, they were compiled, annualized, and adjusted for inflation through 2040.

The revised approach led to a \$3.6 billion increase in City roads maintenance and preservation costs, but a nearly \$630 million decrease for County roads maintenance and preservation costs.

Proposal for 2018 Update

The proposed approach for the 2018 update will be similar to the 2014 update, but with a re-deployment of the roadway survey aimed at collecting data from: (1) jurisdictions that did not respond to the previous survey, (2) jurisdictions that did respond to the previous survey but now have better data available, and (3) all four counties in the region, regardless of whether they participated in the previous survey. The reason we are requesting new data from all counties is that the previous estimate appears to have significantly *underestimated* county pavement preservation needs.

Similar to the 2014 update, the survey will ask jurisdictions to provide estimates of the existing backlog of costs to bring facilities to a PCI rating of 70, as well as the 30-year costs (through 2040) associated with maintaining the condition rating of 70. Once all of the data is collected and merged with pertinent data from the previous update, a revised lane mile cost will be calculated and applied to the jurisdictions that did not respond to either the 2014 or the 2018 survey. Once the total costs for each jurisdiction are calculated, they will be compiled, annualized, and adjusted for inflation through 2040.

PSRC will utilize its Transportation Policy Board and other organizations to market and bring attention to the survey. It will be presented as an important opportunity for regional collaboration to capture a more accurate and realistic assessment of regional pavement preservation needs through 2040.

Storm Drainage

Scope

Includes all drainage systems from the point of interception within the right of way to the point of outfall. It also includes retention facilities if they are funded by transportation revenues, as well as street cleaning costs.

Background

Prior to the 2014 Transportation 2040 update, storm drainage expenditures were projected using extrapolations of historic stormwater investment, based on the Budgeting, Accounting, and Reporting System (BARS) data collected by the State Auditor's Office and provided by WSDOT. Similar to pavements, this approach did not accurately capture future needs, particularly as they related to the strengthening of National Pollutant Discharge Elimination System (NPDES) requirements.

For the 2014 update, this approach was revised to reflect new NPDES requirements. Phase I jurisdictions (all counties except Kitsap, as well as the City of Seattle and the City of Tacoma) were required to be in compliance with these regulations by 2011. As a result, a 20% cost increase was observed between 2009 and 2011 among these jurisdictions. To account for the possibility of future strengthening of NPDES requirements, a 2% annual growth rate (in real terms) in costs was applied to the most recently available expenditure data. For Phase II jurisdictions, an average annual growth rate for stormwater maintenance and preservation costs was derived (based on historic BARS data) and applied between 2011 (the most recent year of available expenditure data) and 2017. In 2018, the 20% cost increase seen in Phase I jurisdictions was applied to Phase II jurisdictions (Kitsap and all of the remaining cities) to account for costs associated with the implementation of new NPDES requirements. As with Phase I jurisdictions a 2% annual increase was applied to account for potential future requirements and unforeseen expenses between 2018 and 2040.

The revised approach led to a \$592 million increase in City stormwater maintenance costs and a \$598 million increase in City preservation/construction costs. It also led to a \$364 increase in County maintenance costs, but a \$151 million decrease in County Preservation/Construction costs.

Proposal for 2018 Update

Similar to the 2014 update, the proposed approach for 2018 will be to apply the average annual growth rate for maintenance and preservation costs (based on historic BARS data) beginning

with the last year of available historic data (2015). In addition, a 20% cost increase “bump” will again be assumed for all Phase 2 jurisdictions in 2018.

However, a key difference for the 2018 update is that PSRC and the Maintenance & Preservation Working Group will delve more deeply into the data to better understand and reflect the difference between transportation-related stormwater and street cleaning expenses and enterprise-wide stormwater management programs. PSRC will work closely with the counties to better understand the above issue.

The Maintenance and Preservation Working Group will also receive a presentation from the Washington State Department of Ecology on potential long-term (post-2018) stormwater requirements. A better understanding of these issues will lead to a potential revision to the average annual growth rate increase applied between 2018 and 2040. Finally, PSRC will pull street cleaning costs – which had previously been its own category – into the Stormwater category.

Although a survey will not be deployed, PSRC will work with all four counties to obtain better data on county construction/preservation costs. This will supplement the BARS data on county construction/preservation costs to provide a more accurate projection.

Traffic Control

Scope

Includes all Intelligent Transportation Systems (ITS) and local operations, as well as traffic calming and safety investments.

Background

Prior to the 2014 Transportation 2040 update, local operations and ITS expenditures were projected using extrapolations of historic investment, based on the Budgeting, Accounting, and Reporting System (BARS) data collected by the State Auditor's Office. It was determined that these expenditures did not reflect the breadth and depth of future local operations and ITS needs.

For the 2014 update, this approach was updated to an outcome-based method that relied on data provided by cities and counties. Working with the Regional Traffic Operations Committee (RTOC), PSRC developed a survey designed to compare what was being spent at the time versus what it would cost to maintain and preserve the existing system at an "optimal" level. The definition of optimal was: (1) Fully staffed and able to carry out all functions (operations costs), (2) Receiving regular maintenance (including inspections and general upkeep), and (3) Capital infrastructure replaced within intended lifecycle. The survey, which included questions about these three elements, was distributed to all cities and counties in the region, with 13 cities and three counties responding. Average arterial/collector centerline mile costs were calculated for both current and optimal funding levels and applied to the jurisdictions that did not respond. Once the total costs for each jurisdiction were calculated, they were compiled, annualized (with a higher growth rate assumed between 2015 and 2020), and adjusted for inflation through 2040.

The revised approach included cost estimates for both the current and the optimal funding levels. It led to a \$400 million increase in estimated city operations and ITS expenditures between the 2010 estimate and the current funding level, and a \$930 million increase between the 2010 estimate and the optimal funding level. For the estimated county operations and ITS expenditures, it led to no change between the 2010 estimate and the current funding level, and approximately a \$90 million increase between the 2010 estimate and the optimal funding level.

Proposal for 2018 Update

The proposed approach for the 2018 update will be similar to the 2014 update, but with a new deployment of the operations/ITS survey aimed at collecting data from: (1) jurisdictions that did not respond to the previous survey, (2) jurisdictions that did respond to the previous survey but now have better data available, and (3) all four counties in the region, regardless of whether

they participated in the previous survey. The reason we are requesting new data from all counties is that the previous estimate appears to have significantly *underestimated* county operations/ITS needs at both the current and optimal funding levels.

In addition, PSRC will work closely with RTOC to discuss whether the definition of “optimal” needs to be revised, as well as how potential advancements in technology since the previous update might change the way ITS and operational investments are maintained and preserved. Based on this conversation, revisions to the survey might be implemented.

Similar to the 2014 update, the survey will ask jurisdictions to provide data on what they currently spend on ITS and traffic operations, as well as estimates on what it would cost to maintain and preserve the system at “optimal” funding levels. Although, as noted above, the definition of “optimal” may be revised following the discussion with RTOC. Once all of the data is collected, a revised average arterial/collector centerline mile cost will be calculated and applied to the jurisdictions that did not respond to the survey. Once the total costs for each jurisdiction are calculated, they will be compiled, annualized, and adjusted for inflation through 2040. A decision will need to be made regarding how these costs are distributed by year through 2040.

PSRC will also obtain future maintenance and preservation needs for traffic calming and safety assets via an email data request to all jurisdictions in the region.

PSRC will utilize RTOC and other organizations/channels to market and bring attention to the survey. It will be presented as an important opportunity for regional collaboration to capture a more accurate and realistic assessment of ITS and traffic operations investment needs through 2040.

Structures

Scope

Includes all bridges, culverts, and other assets critical to preserving roadway infrastructure (e.g. retaining and street walls)

Background

Through the 2014 Transportation 2040 update, structures expenditures were projected using extrapolations of historic structures investment, based on the Budgeting, Accounting, and Reporting System (BARS) data collected by the State Auditor's Office. As with other asset categories, this approach was determined to not fully represent future needs.

Proposal for 2018 Update

The 2018 update will replace the BARS historic extrapolations with an outcome-based estimate of costs for maintaining and preserving structures, including bridges, culverts, retaining walls, and street walls (where data is available) through 2040.

PSRC will request an array of data from all jurisdictions on their existing structures under 20 feet in length. Using a methodology similar to one developed by DVRPC (the Metropolitan Planning Organization for the Philadelphia region), we will conduct an analysis to estimate maintenance and preservation costs for structures through 2040. The analysis will incorporate key pieces of information including bridge material, age, size, ratings, and other variables. It will utilize historic data to make estimates about the rate of decline as a bridge ages and the cost of rehabilitating or replacing a bridge, as needed.

For those jurisdictions that have already produced cost estimates for maintaining and preserving these structures, we will skip the analysis and apply their estimates directly into the structures expenditure category. The scope and comprehensiveness of the analysis will be determined by the scope of the data that we receive from jurisdictions.

For culverts that are currently fish passage barriers, we will work with the Department of Fish and Wildlife, the Association of Washington Cities, and the Washington State Association of Counties to develop reasonable assumptions regarding their replacement rates and costs. Special attention will be paid to ensuring that double counting does not occur with the historic BARS SWM expenditure data.

Additionally, the structures category will be broadened to incorporate new non-bridge assets such as retaining walls and street walls where data is available. We will solicit data and incorporate analyses from jurisdictions on these "other" structures via an email request.

Street Cleaning

Scope

Includes all activities associated with street cleaning.

Background

Through the 2014 Transportation 2040 update, street cleaning expenditures were projected using extrapolations of historic street cleaning investment, based on the Budgeting, Accounting, and Reporting System (BARS) data collected by the State Auditor's Office.

Proposal for 2018 Update

The Street Cleaning category will be eliminated and the costs associated with street cleaning will be incorporated into the Storm Drainage costs category. To the extent possible, the financial relationship between street cleaning and stormwater maintenance and preservation will be evaluated and incorporated into the financial strategy.

Street Lighting

Scope

Includes all activities and infrastructure associated with street lighting.

Background

Through the 2014 Transportation 2040 update, street lighting expenditures were projected using extrapolations of historic street lighting investment, based on the Budgeting, Accounting, and Reporting System (BARS) data collected by the State Auditor's Office.

Proposal for 2018 Update

There is no proposed change in methodology for the 2018 update.

Roadside Development

Scope

Includes the portion of the right-of-way beyond the outside edge of the shoulder or the outside edge of the curb when no shoulder exists, including medians. Also includes temporary signs and traffic control during maintenance operations.

Background

Through the 2014 Transportation 2040 update, roadside development expenditures were projected using extrapolations of historic street roadside development investment, based on the Budgeting, Accounting, and Reporting System (BARS) data collected by the State Auditor's Office.

Proposal for 2018 Update

There is no proposed change in methodology for the 2018 update. It should be noted that these projections based on historic BARS data do not accurately reflect the level of need for roadside development in the region. During a future update, we will work to establish an outcome-based approach that reflects actual need.

Nonmotorized

Scope

Includes pedestrian and bicycle infrastructure.

Background

Through the 2014 Transportation 2040 update, nonmotorized expenditures were projected using extrapolations of historic nonmotorized investment, based on the Budgeting, Accounting, and Reporting System (BARS) data collected by the State Auditor's Office.

Proposal for 2018 Update

There is no proposed change in methodology for the 2018 update. However, it should again be noted that the projections based on historic BARS data do not accurately reflect the level of need for nonmotorized infrastructure in the region. Potential future efforts to better capture nonmotorized infrastructure data would allow PSRC to produce a more robust, outcome-based approach in a future update.

Other

Scope

Includes various other miscellaneous maintenance and preservation expenses.

Background

Through the 2014 Transportation 2040 update, “other” expenditures were projected using extrapolations of various other investments, based on the Budgeting, Accounting, and Reporting System (BARS) data collected by the State Auditor’s Office.

Proposal for 2018 Update

There is no proposed change in methodology for the 2018 update