

Background

The 2020 Project Delivery Plan (“Plan”) is a ten-year list of projects that are prioritized and programmed for delivery. The Plan aligns with WSDOT’s performance-based approach to transportation decision-making. The Plan is published on the department’s website for use by the public, OFM, Legislature, and local jurisdictions.

The Capital Program Development and Management (CPDM) Division is responsible for ensuring the projects in the plan: (1) address high priority needs; (2) meet Executive, Legislative and Federal expectations; and (3) are successfully and efficiently delivered. To this end, units in CPDM collaborate with asset stewards and technical experts to facilitate the development of a ranked list of needs by asset class, issue project scoping instructions to propose transportation projects to address the needs, which are in turn prioritized by CPDM for inclusion in the Project Delivery Plan. This framework provides asset stewards with an opportunity to provide input into the policies and investment strategies that result in capital solutions that are intended to achieve lowest lifecycle cost. CPDM’s prioritization process recognizes other pressures exist within and between asset classes such as Executive and Legislative intent, court decision, political and litigation risk, consistency with statewide plans, etc. This framework allows the highest priority needs to be programmed for funding in the Project Delivery Plan, and is subsequently used to inform WSDOT’s capital budget proposal submitted to the Governor and Legislature for the 2021 budget.

Revenue Uncertainty and Planned addendum to the Project Delivery Plan

The Legislature passed the 2020 Transportation Budget (ESHB 2322)¹, which was signed into effect by Governor Inslee on April 3rd, 2020. This budget addresses the immediate impacts of lost revenue from the passage of Initiative 976. In the 2019-21 biennium, expenditure authority (i.e. budget appropriations) was reduced in the capital program by \$429 million. In March 2020, the COVID-19 pandemic began to have more impacts to Washington State and on March 19th, WSDOT suspended construction activities until safety protocols could be in place to protect workers performing construction activities in the field. The Office of Financial Management has issued multiple memo’s to state agencies regarding the revenue shortages and direction to reduce spending in 2019-21 and 2021-23. WSDOT is still working through the delivery assumptions to evaluate the need and extent to reduce spending for the capital programs, primarily the Connecting Washington revenue package projects and projects funded by the Transportation Multimodal Account. While the Department works through these details, the 2020 update to the Project Delivery Plan will not include Mobility (I1), Safety (I2), and Economic Development (I3) funded by the Connecting Washington revenue package. Additionally, where specific project adjustments can be identified, capital programs such as the Rail (Y) Program and Traffic Operations (Q) Program have deferred projects into the 2021-23 biennium. In other cases where specific project adjustments cannot be identified such as Local Programs (Z), the project delivery plan reflects the legislative project aging which is in excess of legislative appropriations for 2019-21. The agency is working on delivery assumptions to reduce spending, which will be reflected in the 2021-23 and 2021 supplemental budget submittals. Once this is completed, an addendum to the “project delivery plan” is anticipated to be provided in early September 2020.

Delivery Plan Update

The Delivery Plan Update Process begins in the fall of each year with an update to the set of financial assumptions used in the previous Plan Update Process, which includes the latest legislative intent

¹ <http://leap.leg.wa.gov/leap/budget/lbns/2020Tran2322-S.SL.pdf>

expressed in the enacted transportation budget, WSDOT's capital budget proposal, adjustments in WSDOT's financial plans, and changes in the federal forecast. Financial adjustments are applied to the individual investment categories or asset classes. Asset Stewards and technical experts are consulted to determine the impacts from expected investment levels. All of these assumptions are shared with the Executive Leadership Team for review and revision.

Throughout the year, CPDM works with asset stewards to develop scoping instructions to detail the project delivery plan for programmatic investments funded by the legislature. Once scoping instructions are issued, regions and modes have until the end of January to update existing projects or propose new projects that address the asset needs. In the first part of each year, CPDM prioritizes the Highway Improvement and Preservation scoped projects within each investment category based on investment strategies and project solutions. Once prioritization is completed in early spring, CPDM provides a recommended program of projects as the draft Project Delivery Plan for review by region Program Management staff. Regions review the draft Project Delivery Plan to determine their ability to deliver their program, including the impacts to state workforce and the contracting community. CPDM incorporates feedback from this review and develops a final plan for review and approval by the Executive Leadership Team. The Plan presented to the Executive Leadership Team may include an assumed amount of "over-scoping" to facilitate subsequent trade-off discussions. The Plan is scheduled to be completed in July each year, and is used to inform the department's capital budget proposal.

Baseline Assumptions

The Plan Update is being developed using the following baseline assumptions:

- Planning horizon
 - The 2020 Plan update is a ten-year detailed plan (SFY 2021 through SFY 2030). Ten-year investments are focused on the 2019-21 through 2029-31 biennia.
- The investment needs at the asset class level generally align with the level of funding appropriated and allocated in the 2020 Transportation Budget (ESHB 2322).
- Preservation funding is at critically low levels. Preservation performance issues are further negatively impacted because the first four years of funding are substantially lower than ten-year needs averages indicate. The Preservation funding gap is large, and action needs to be taken in the near-term to address it. WSDOT communicates this funding gap annually to the Washington State Legislature both as a key part of the State of Transportation and through the agency budget proposal. WSDOT estimates a \$12.4 billion preservation need for all modes for the next ten years, of which approximately \$6.9 billion or 57% is unfunded. This amount is not to achieve excellent condition, but for acceptable performance at the lowest practicable cost, or lowest life cycle cost – consistent with investment mandated by RCW 47.05, Priority Programming for Highway Development².

² <https://app.leg.wa.gov/rcw/default.aspx?cite=47.05>

(Millions of dollars)	Replacement Value	Average Annual Need	Current plan annual average spending	Average annual funding shortfall
Highways	\$109,390	\$665	\$335	\$330
Multimodal (i.e. Aviation, Public Transportation, Rail)	\$600	\$110	\$20	\$90
Intra-Agency (i.e. IT, Facilities, Fleet, Real Estate)	\$66,480	\$125	\$70	\$55
Ferries	\$4,940	\$340	\$125	\$215
TOTAL	\$181,410	\$1,240	\$550	\$690

Bridge and pavement assets are currently meeting their performance targets and are anticipated to do so over the next four years. However, based on future condition modeling, WSDOT anticipates that conditions for bridges and pavements will drop below the target levels by the ten-year mark if funding levels are not increased. In ten years, the expected result is 30% of roads predicted to be in Poor condition, and 10% of bridges, along with an unknown number of closed, load posted, and load restricted bridges.

The funding provided will lead to rough roads, reduction in speed limits, load posted or load restricted bridges, closed bridges, and failed roadways. It will cost three to five times more to restore failed assets than to have preserved them. The many urgent preservation needs for the State Highways include:

- 3,600 lane miles of pavement that are past due for preservation, and another 4,000 are due for preservation.
- 15 bridges need replacement, 19 need major rehabilitation.
- 39 steel bridges are past due for painting, and an additional 60 steel bridges are due for painting.
- 30 concrete bridge decks are past due for repair, and 56 more are due.
- Hundreds of feet of guardrail that is either dilapidated or has been hit, with no funds for replacement.
- Dozens of unstable slopes with high risks are unable to be mitigated, and existing slope mitigation assets are beginning to fail.
- The federal funding levels are based on the Transportation Revenue Forecast Council’s June 2020 Federal Forecast³. Federal program eligibility and penalty provisions will be considered when programming projects, which may result in the selection of lower priority projects to avoid the loss of federal funds. The current forecast is based on the current FAST Act⁴, which expires September 30th, 2020. The federal funding assumptions will likely change as a new federal

³ <https://www.ofm.wa.gov/budget/budget-instructions/transportation-revenue-information>

⁴ <https://www.fhwa.dot.gov/fastact/>

reauthorization act is passed and the federal split between state and locals is determined. This will impact the 10 year plan assumptions in future plans.

- The Plan includes a level of over-programmed federal preservation projects in anticipation of favorable bids, the continued receipt of federal funds redistribution, and as a strategy if projects are delayed.
- Projects selected within the individual categories is based on statewide priorities with input from Subject Matter Experts (SMEs) for the various asset classes.
- Prioritized investments of interest to the Governor or Legislature:
 - Bridge Joints – In 2015, at the request of the Governor the department identified \$27 million in needed investments. The Plan quantifies project costs to address the remaining deficient expansion joints for these specific bridges.
 - Structurally Deficient Bridge - The Legislature provided \$53 million to address Structurally Deficient Bridges. The 2020 Project Delivery Plan continues delivering on that expectation, along with additional investments to address those bridges in “poor condition” based on asset management analyses.
 - Bridge Seismic Retrofit – In ESB 5096⁵, the 2017 Legislature provided \$113 million over ten years to retrofit bridges. The 2020 Project Delivery Plan continues with the plan to use these funds to finish jacketing multi-column bridges as part of the existing seismic lifeline route.
 - Fish Barrier Removal – The 2020 Project Delivery Plan programs fish barrier removal projects ⁶in preparation for delivering higher numbers of projects and position the State of Washington to comply with injunction requirements. The 2020 Project Delivery Plan includes programmed projects over the \$275 million amount for 2019-21 in anticipation of some project deferrals, and advanced work is taking place to program projects to the \$726 million in 2021-23. The 2020 Project Delivery Plan will not have specific projects programmed that use up the entire \$726 million in 2021-23 as it awaits the results of the advanced work to better define the projects. This will be incorporated into the 2020 update to the Project Delivery Plan as soon as the work is finalized.

⁵ <http://leap.leg.wa.gov/leap/budget/lbns/1719Transpo5096-S.SL.pdf>

⁶ <https://www.wsdot.wa.gov/Projects/FishPassage/default.htm>

2020 Project Delivery Plan Targets – This is the baseline for the 2020 Project Delivery Plan update. Ten-year target indicates 2019-21 through 2029-31 biennia. Stand-alone projects are specific projects appropriated by the Legislature and are programmed based on Legislative direction.

	10-Year Target
I1 Mobility	8,876
I2 Safety	566
<i>Safety Stand Alone Projects</i>	146
<i>Collision Prevention</i>	307
<i>Collision Reduction</i>	113
I3 Economic Vitality	452
I4 Environmental	523
<i>Fish Passage Barrier</i>	449
<i>Noise Wall & Noise Mitigation Improvements</i>	5
<i>Stormwater & Mitigation Site Improvements</i>	32
<i>Chronic Environmental Deficiency Improvements</i>	38
Improvement Totals	10,417

	10-Year Target
P1 - Roadway	1,656
P2 – Bridges & Structures	1,684
P3 – Other Highway Assets	447
<i>Unstable Slopes Preservation</i>	86
<i>Major Electrical Preservation</i>	61
<i>Major Drainage Preservation</i>	62
<i>Rest Areas Preservation</i>	22
<i>Weigh Stations Preservation</i>	31
<i>Safety Preservation Features</i>	120
<i>Stand Alone Projects</i>	65
Preservation Totals	3,787

2020 Project Delivery Plan Update – Needs, Prioritization, and Trade-Offs

Subject matter experts are accountable for needs identification and ranking. CPDM is accountable for investment areas, project prioritization methodologies and lists, and trade-off analysis. However, due to the technical nature of these items, it is essential that CPDM work with subject matter experts to ensure that needs are provided in a way that highly ranked needs are scoped into proposed projects for prioritization. Finally, CPDM is responsible for incorporating executive direction and state and federal requirements in these processes.

A transportation need is an assessment that an investment can work towards achieving and sustaining a state of good repair, or improve performance of some aspect of the transportation system towards agency, state or federal transportation goals. Activities associated with achieving and sustaining a state of good repair are most often budgeted through the Preservation program, while performance based

improvements are most often budgeted through the Improvement program. The amount provided for an investment area is determined through budget deliberations and budget adoption. Some investment areas are grouped for budget purposes. For example, pavement preservation has three investment areas: asphalt, chip seal and concrete.

Prioritization methodology describes the key considerations for what is included in the Project Delivery Plan update. This is based on the needs ranking, life cycle cost considerations, cross-asset delivery efficiencies, executive and legislative direction, and state and federal requirements. While previous efforts have focused on providing numbered lists, complicating factors in each sub-program make this approach impractical. For the I4 – Environmental sub-program, it is the complicated timing and construction efficiencies created by bundling the removal of multiple fish barriers into a single project. For the I2 - Safety sub-program, there is an impending effort to define and normalize the cost/benefit analysis across all of the safety investment areas. For the Preservation sub-programs, the chronic funding gap is forcing WSDOT to switch from an effort to hold the entire system together, to a “What’s In/What’s Out” approach where WSDOT strategically preserves only specific assets based on mitigating the overall impact to the transportation system. Finally, the chronic funding gap is reducing the life cycle of ferry vessels requiring replacement vessels sooner than would normally be expected.

Trade-off analysis is distributing funds across two or more investment areas based on decision analysis. This trade-off analysis can occur at several agency levels. For example, trade-off between sub-programs is directed primarily at the executive level. Whereas, trade-off decisions within a sub-program is often managed by the asset stewards with executive oversight of the assumptions used to make the decision. This document only addresses trade-offs within a sub-program, not trade-offs between budget sub-programs. Trade-offs between budget sub-programs as associated with the annual budget deliberation process and would be incorporated into the Project Delivery Plan if acted upon by the Legislature.

Safety Investments (I2)

Safety activities are categorized into two major categories: (1) Collision Reduction; and (2) Collision Prevention. Both national and WSDOT analysis indicate that taking systemic, preventive approach to safety investments is the most effective approach to achieve WSDOT’s role in Target Zero. Based on this analysis, the 2020 update to the Project Delivery Plan, and the 2019 Transportation Budget that it is based on, target 30% for Collision Reduction and 70% for Collision Prevention.

Capacity will be left throughout the plan while WSDOT continues its safety analysis. There is no capacity in 2019-21. The capacity for 2021-23 will be programmed according to the Collision Prevention, Prioritization Methodology sub-section detailed later in this document.

Collision Reduction

Needs Identification - The Collision Reduction program focuses on Collision Analysis Locations (CALs), Collision Analysis Corridors (CACs), and Intersection Analysis Locations (IALs). These locations are identified and ranked based on crash type and frequency. A CAL/CAC needs list is created and distributed to regions in odd years, and the IAL needs list is created and distributed to regions in even years. Region Traffic Engineers review each location and develop documentation for possible safety responses. When alternatives are developed that require a

capital project, these alternatives are vetted through a Safety Panel that reviews and approves the project scope to be considered for prioritization and programming as capital projects.

Pre-IAL (2018) – While this section is under Collision Reduction, the pre-IAL list itself was not created in a manner historically consistent with the program. The Collision Reduction program has focused on treating locations with a history of fatal and serious crashes. When Traffic went through the process to produce a draft IAL list based on demonstrated fatal and serious crashes, only three intersections met the criteria. Deeming this too few intersections to analyze, Traffic expanded the criteria to include all injury crashes, which expanded the list. The resulting list no longer focused on locations with a history of fatal and serious crashes. By definition, Collision Reduction was no longer accurate. To indicate the analysis was not the same as the Intersection Analysis Locations, it was named “pre-IAL”.

In May 2019 Traffic distributed the list to region traffic engineers with these specific action items:

1. Review and confirm that the Safety Analyst crash data is accurate.
2. Determine if modifications would be appropriate based on the context, type and contributing factors for the crashes.
3. If action is appropriate, identify locations that can be addressed by Low Cost Enhancement funding (within existing or next biennium Traffic Operations Program (Q) funding).
4. If the action exceeds what would be considered as a Low Cost Enhancement the location may be further analyzed for potential I2 – Safety sub-program funds consistent with the IAL sub-category and associated scoping instructions.
5. Use the Pre-IAL Documentation Template to record the proposed action or reason for not taking action.

The coordination, review and completion of the above steps has not been completed, therefore there are no I2 – Safety sub-program projects in the 2020 update to the Project Delivery Plan programmed because of the pre-IAL process.

CAL/CAC (2019) – The Traffic Division has produced a draft 2019 CAL/CAC list that was presented to the Highway Safety Issues Group (HSIG) in the March 2020 meeting. The list is likely to be renamed to just CAL, because there is no definition that differentiates a location from a corridor as part of the list development or review. Because it is still under review, results are not included in the 2020 Project Delivery Plan. It is expected to be included as part of the 2020 Scoping Instructions that inform the 2021 update to the Project Delivery Plan.

Prioritization Methodology – Programmed projects that were previously approved by the Safety Panel based on 2016 IAL or 2017 CAL/CAC list or prior and have a benefit cost ratio greater than 1 were kept in the program. These projects are still anticipated to be delivered based on their previously identified schedule. These projects amount to fully programming Collision Reduction projects through the 2023-25 biennium. As the pre-IAL and 2019 CAL lists are reviewed, they are likely to incorporate some direction as part the 2020 Scoping Instructions and 2021 Project Delivery Plan.

Collision Prevention

Needs Identification - Collision Prevention projects are activities intended to reduce crash potential. There are several activities related to this:

- Intersection System Safety – Typically, these are intersections have a configuration that allows for an installation of a compact roundabout. CPDM is working with the Headquarters Traffic Operations Division to correlate intersections on the pre-IAL list with those that meet the criteria for a compact roundabout. The 2020 Project Delivery Plan will not include any projects based on this analysis since it is currently ongoing.
- Rumble Strips – Locations for rumble strips are identified according to standards in the WSDOT Design Manual. Programming of rumble strips is guided based on by the Interactive Highway Safety Design Model (IHSDM) analysis of societal benefit compared to site-specific installation costs. The IHSDM analysis was completed in March 2020 and will be incorporated into the fall scoping instructions. This will only be minimally incorporated into the 2020 Project Delivery Plan. There may be time-sensitive projects which are coordinated with paving, however none are known at this time.
- Roadside Safety Hardware
 - Redirectional Landforms – All redirectional landforms related to median bridge piers were mitigated by the end of 2019. This fulfills WSDOT’s commitment related to redirectional landform mitigation.
 - Breakaway Cable Terminals (BCT) – All known Interstate BCTs have been or are programmed to be replaced.
 - Guardrail Infill – There are no projects related to guardrail infill programmed as part of the 2020 Project Delivery Plan
 - Guardrail retrofit – Replacing weathering steel guardrail that has deteriorated is focused on Blewett Pass and I-90. While smaller efforts at replacing weathering steel have occurred in the I2 – Safety sub-program, the 2020 Project Delivery Plan will continue to incorporate weathering steel into its I2 – Safety investments as well.
- Corridors
 - Field Assessments – There have been no identified Field Assessment investments beyond paying for Field Assessment staff within the I2 – Safety sub-program. These staff investments are only in 2019-21. The 2020 Project Delivery Plan does not assume continued funding for staff in 2021-23 and beyond.
 - Median Cross-Over Protection – The primary median cross-over prevention that has been implemented by WSDOT in a systemic, collision prevention approach is cable median barrier. Guidance for cable median barrier was for full access control sections, speed limits of 45 mph or higher, no other type of existing barrier (e.g. guardrail, concrete), and have median widths of 50 ft. or less. Based on recent analysis by the Department’s Development Division, there are no remaining sections that meet the criteria for new cable median barrier installation.

There has also been an effort to convert existing three strand cable median barrier to four strand cable median barrier. Approximately 50% of the existing three strand has been converted to four strand. However new starts will not happen until there is further analysis that the remaining three strand sections are not performing as designed.

- Vulnerable Users
 - Pedestrian and Bicycle – There are no specific safety investments that are based on a systemic pedestrian or bicycle safety assessment. However, there are Americans with Disabilities Act (ADA) investments shown in the I2 – Safety sub-program for those that were already underway until the shift to put ADA investments in P3 – Other Facilities sub-program that was approved in the 2019 Legislative Session. Additionally, Project Delivery Memo 19-03 was issued that directs all Highway projects to perform a scalable multimodal analysis.

Prioritization Methodology – Until additional guidance is developed, priority will be given to work with:

1. A demonstrable history of high benefit/cost analysis (e.g. rumble strips),
2. Meet agency direction for systemic replacement (e.g. replacement of BCTs on freeway facilities), and/or
3. Have strong ties to preservation work (e.g. replacement of deteriorated weathering steel guardrail). The key assumption here is that ensuring our existing safety assets aligns with Executive and Legislative intent.

Environment (I4)

There are several investment areas within the I4 – Environmental Retrofit sub-program. Each of these investment areas is managed separately. Unless specified, there is only one investment area for each of these items, and therefore there is also no specified trade-off analysis.

Fish Barrier Removal

Needs Identification - Fish passages are surveyed by the Washington Department of Fish and Wildlife (WDFW), which establishes barrier status and habitat gain. The Environmental Services Office (ESO) then evaluates this WDFW survey data, and each fish barrier is given a priority rank amongst all other identified barriers not yet replaced. The priority rank is established in consideration with habitat gain, tribal interest, upstream and downstream barriers, and some construction efficiencies if barriers need to be addressed simultaneously, which aligns with direction from the injunction.

Prioritization Methodology - The priority rank methodology is used to prioritize and program stand-alone fish barrier projects. When fish barriers are in the vicinity of other transportation projects, the fish barrier is assessed by several criteria. If the fish barrier exceeds a threshold score, then it is to be included in the scope of the transportation project.

Compliance with the federal court injunction is a top priority for WSDOT, the Governor's Office and the Legislature. A key part of compliance is opening 90% of the potential habitat for

barriers with significant reach by March 2030. The approximate dividing line for injunction barriers expected to be a part of this 90% is having 1,000 m or more of potential, incremental habitat gain. Therefore, adjusting the timing of specific barrier corrections based on construction or traffic management efficiencies is considered, as long as the action is perceived not to jeopardize compliance with the injunction.

When a culvert has failed and is a fish barrier relevant to the injunction, WSDOT is also required to remove the barrier. Resulting projects are programmed based on the amount of time from failure identification until the fish passage design process from Preliminary Hydraulic Design (PHD) through design can be completed. They are all evaluated to ensure that the failure has reached a critical point and deferral results in unacceptable risk for loss of roadway or other issues. Fish barriers that are not relevant to the injunction follow similar criteria, based on federal environmental regulations.

Chronic Environmental Deficiency

Needs Identification - Chronic Environmental Deficiencies (CEDs) are preliminarily identified by WSDOT, WDFW, Tribes, or other concerned parties. The CED coordinator in the Environmental Services Office receives these identified sites for further screening towards development of a project.

CED locations typically meet these two criteria:

1. Maintenance has been conducted on the site three times in the last ten years and
2. The maintenance activities have a negative impact on fish habitat.

However, the CED coordinator makes the final determination about what qualifies as a CED. The CED coordinator ranks CED sites based on maintenance cost and impact to fish habitat.

Prioritization Methodology – CPDM uses the ranking provided by ESO to prioritize projects. Deviations from the ranking occur primarily because the identified solution is very costly, and sections with lower capital costs produce more perceived benefit than mitigating a single high-cost site. Funding capacity exists in the outer years of the ten-year program because high-ranking sites may not have an associated capital solution scoped.

Stormwater Runoff

Needs Identification - The Environmental Services Office identifies and ranks all segments of highway for stormwater retrofit need. Stormwater runoff needs are now identified statewide, rather than being restricted to the Puget Sound Basin as in the past.

Prioritization Methodology - The ranked needs are used to prioritize stormwater retrofit activities. In preparation for the 2020 Project Delivery Plan, the Department's Priority Programming unit worked with ESO to provide more site-specific scoping instructions along with methodology to make a parametric cost estimate.

The three highest ranked sites were scoped and two of the sites will be programmed as part of the plan. The third site is in the vicinity of fish passage work, and must wait for that work to be completed to ensure the stormwater retrofit is compatible with the fish passage solution. Funding capacity exists in the 2020 Project Delivery Plan for additional sites to be scoped, and

more specific scoping guidance can be issued (i.e. use of parametric placeholders in the outer years of the plan).

Fish passage projects without approved Project Summaries that are in design as of February 2020 and that have medium or high ranked stormwater needs in the vicinity are to be assessed for stormwater retrofit features. These will also have a priority for funding in conjunction with the fish barrier corrections.

Noise Reduction

Needs Identification - Noise Reduction needs are evaluated for neighborhoods built prior to May 14, 1976, before traffic noise was evaluated and are included on a ranked list of noise barriers maintained by ESO. These noise barriers are referred to as retrofit noise barriers. Noise Reduction projects need to meet the following criteria:

1. Homes must have been built prior to May 14, 1976.
2. Noise barriers to be funded should be selected from the Tier 1 ranked list of retrofit noise barriers.
3. A formal noise study will need to be conducted during design of the noise barrier to evaluate whether the homes still exist in criteria 1 above and to more accurately model the length and height of the noise barrier.

Prioritization Methodology - ESO provides a ranking, based on the three criteria above to CPDM, which uses this ranking to prioritize noise reduction projects. The 2020 Project Delivery Plan is fully programmed for noise reduction.

Pavements (P1)

Needs Identification - Needs are initially identified based on annual condition surveys, which are input and analyzed in the Washington State Pavement Management System (WSPMS). Sections that do not have sufficient cracking assessment (chip seals or inside lanes) are assessed based on field reviews and pavement age. Pavement deterioration models and activities based on lowest life cycle cost management are the foundation of needs assessment. Regions then use the information to scope projects and enter into CPMS with a parametric cost for all identified needs.

Roadway preservation investments are grouped based on primary material type used to preserve the roadway and includes three areas: asphalt, chip seal, and concrete. Strategic maintenance is reported as part of the asphalt investment. Chip seal over asphalt is reported as part of the chip seal investment area. Crack, seal and overlay with asphalt is reported as part of the concrete investment area.

Investment Area	Primary Activities
Asphalt	Asphalt Resurfacing; Strategic Maintenance; Asphalt Reconstruction
Chip Seal	Chip Seal Resurfacing; Chip Seal Conversion (Chip Seal on Asphalt)
Concrete	Diamond Grinding; Select Panel Replacement, Concrete Reconstruction; Crack, Seal and Overlay with Asphalt

For all pavement preservation project proposed for programming as part of the 2020 Project Delivery Plan, the Pavements Office has assigned a “Preferred Paving Year”. The Preferred Paving Year is an assessment of the most cost-effective year to complete the typical lowest life cycle cost activity for the project. It includes an assumptions for strategic preservation that has been applied, or is expected to be applied based on best practice for cost-effectiveness. This year will be used for three primary activities:

1. Ensure the project is programmed at or within a year of the Preferred Paving Year to ensure we are not paving too early or too late.
 - a. Deviations from this will be documented. Deviations are only allowed for sections on the “What’s In” criteria noted below in the following Prioritization Methodology subsection.
2. Set expectations for what strategic preservation can achieve.
3. Set expectations for when a section is no longer eligible for strategic preservation.

Prioritization Methodology – The 2020 Project Delivery Plan incorporates a new approach that recognizes the funding identified by the 2020 Transportation budget is well short of the needs to preserve pavements. WSDOT has taken an approach to extend the condition of pavements as much as possible over the last fifteen years, but this strategy is no longer sustainable due to chronic funding at levels less than required to preserve pavements. It is now time to choose which sections of road can no longer be preserved.

The What’s In/What’s Out approach focuses on cost-effectively preserving high freight and high speed routes. Investments in the specific types of activities previously group by asphalt, chip seal and concrete will be a by-product of this approach and are expected to vary across biennia based on the timing of the different needs.

What’s In

- Interstate Mainline
- Non-Interstate T-1 Freight Routes
- T-2 Freight Routes that are also Freeways
- Some T-2 Freight Routes that are not Freeways

What’s Out

- Some T-2 Freight Routes that are not Freeways
- T-3 and Lower Freight Routes

- Sections of Routes that have speed limits less than 45 MPH, even if they meet the criteria in “What’s In”
- Ramps
- Activities that require more capital in the near term, such as reconstruction and chip seal conversion, that lowers long-term life cycle costs
- Shoulder preservation unless deemed necessary for safety reasons

Strategic Preservation work will be funded for all routes. However, it should be reiterated that Strategic Preservation is only allowed up until the year the typical lowest life cycle work would allow.

Structures (P2)

Needs Identification - WSDOT identifies needs through an ongoing inspection program that follows specific federal regulations. Washington State bridges undergo rigorous, routine inspections. In general, the inspection of each bridge on the state system occurs every two years. In some cases, annual inspections are made, such as underwater diving inspections of floating bridges or for bridge components that exhibit advanced deterioration. Bridges with moveable spans receive a special in-depth inspection once every five years. The condition and age of bridge components are used to create several ten-year needs list. These needs are ranked based on condition, age and traffic levels. Needs lists are grouped by activity and include:

1. Replace or Major Rehabilitation
2. Expansion Joints
3. Concrete Decks
4. Bridge Painting
5. Scour
6. Miscellaneous Repair
7. Moveable Bridge Repair

Needs on border bridges are discussed and agreed to by each state.

Seismic Need Identification - Seismic needs are identified separately from condition. Seismic need is based on an assessment of the bridge in a 1,000 year event and does not account for liquefaction or a Cascadia Subduction Zone (CSZ) event. Both a statewide seismic needs estimate and a subset of these called “seismic lifeline” have been defined. WSDOT is using the seismic retrofit funding identified by the Washington State Legislature to address seismic needs along the seismic lifeline.

Investment Areas - There are four major investment areas:

1. Bridge Repairs – This investment area includes concrete deck resurfacing, miscellaneous repair, expansion joint replacement, moveable bridge repair and bridge painting.
2. Bridge Replacement – Projects for major rehabilitation (deck replacement, super-structure replacement) or full replacement are included in this investment area.
3. Scour - Bridge foundations experience “Scour” when high volumes of water remove soil from bridge foundations. WSDOT evaluates bridges showing signs of scouring and develops a mitigation strategy.
4. Seismic - Work to minimize and avoid catastrophic bridge failures by strengthening bridges and structures to better withstand earthquakes.

Prioritization Methodology - WSDOT has taken an approach to extend the condition of bridges over the last fifteen years, but this strategy is no longer sustainable due to chronic funding at levels less than required to preserve the structures. It is now time to determine which structures can no longer be preserved, setting them on a path for failure within the next ten years or in the immediate time period following.

The What's In/What's Out approach focuses on cost-effectively preserving Interstate and bridges with long detours (more than 30 miles). Additional priorities include border bridges, moveable bridge components, floating bridges, and scour mitigation. Border bridges honor Washington States agreements with our adjacent states. Moveable bridge components are necessary to preserve based on coast guard requirements for keeping the waterway traversable. Floating bridges are high priority bridges. Scour mitigation is typically a much lower cost to ensure the bridge does not collapse.

Investments in the specific types of activities will be a by-product of this approach and are expected to vary across biennia based on the timing of the different needs.

What's In

- Border bridge preservation
- Moveable Bridge Components
- Scour Repairs
- Floating Bridge Needs
- T-1 Freight Routes

What's Out

- All other bridge needs

The What's In/What's Out approach outlined here incorporates the Bridge Preservation Office updated ten-year needs of \$3.9 billion. This is \$1.2 billion higher (44% increase) than the \$2.7 billion used in developing the 2019 Project Delivery Plan. Primary reasons are increased costs due to past-due preservation (i.e. paying the deferred liability) and aging bridges (especially timber). Over half of the increase is due to replacement needs. Not all of these needs have had a specific project scoped and programmed. For these cases, capacity will be left unprogrammed by specific projects and sized based on the amount of needs and an associated parametric estimate. This capacity is expected to be programmed by specific bridge preservation needs as part of the 2021 Project Delivery Plan update.

It should also be noted that delivering bridge work, especially joint work, in conjunction with paving projects creates cost efficiencies by sharing design, mobilization and traffic control costs. Therefore, bridge work is often bundled with paving work if the need for the bridge work is determined as needed within 1-3 years of the paving work. Multiple types of bridge work, or work on other bridges in the vicinity, are also considered as opportunities to bundle needs and deliver in a single project, which also gains these cost efficiencies.

Major Electrical

Needs Identification - Major Electrical assets are tracked in the SiMMS (Signal Maintenance & Management System) database. These assets are reviewed by Region Traffic office and bundled into preliminary groups referred to as "projects".

Prioritization Methodology - Region personnel identify systems in need of replacement, and simultaneously size and scope projects to fit within the expected program funding available. CPDM prioritizes these proposed projects according to the following methodology, which was developed in collaboration with the Traffic Operations Division:

1. Separate projects by type of System
 - a. If a project has multiple system types and/or multiple installations of the same type of system (e.g. 3 traffic signals, 5 services, 4 CCTV camera poles installed at different points in time), each System is evaluated independently.
 - b. Signals / Ramp Meters / Flashing Beacons
 - c. Illumination
 - d. Intelligent Transportation System (ITS)
 - e. Communications
 - f. Electrical Service / Power Supply
2. Determine the age of Select System Subcomponents
 - a. Each system considered for replacement is broken into groups of subcomponents for determining hardware age. The oldest component age for each subsystem type is used for scoring.
3. Repair History / Condition of Systems
 - a. System failures can result from other issues beyond the age of the system. Even systems with components well within their life expectancies can fail without warning. Failures could be a result of third party damage, software, manufacturing, installation, weather, etc. Score is assigned based on total repairs and cost for each system as tracked in the SiMMS database.
4. Risk Assessment
 - a. As the systems age there is increased potential for partial or complete system failure. Risk potential varies depending upon the type of system, location of system and a number of other variables.
5. Final Evaluation and Ranking
 - a. The results from assessments 2-4 were assigned to each project and input into a Decision Lens Portfolio for Major Electrical. Weights were assigned based on technical expert input and results of the prioritization were used to program projects in the latter half of the Project Delivery Plan, while the near term projects were minimally adjusted based on investment levels and established schedules.

Changing intersection control type from a traffic signal (currently in need of rehabilitation) to a roundabout is possible within the P3 Other Facilities sub-program, provided the following is true:

- The project cost for the signal rehabilitation has been vetted with the technical specialist
- The project cost to convert to a roundabout is:
 - At or less to the amount to the signal rehabilitation project cost
 - Within 125% of the signal rehabilitation project cost are likely to be approved
 - Higher cost conversions will require further vetting and discussion

The annual preservation need for major electrical assets has been estimated at approximately \$80 million annually. This is based on average service life for major electrical assets at approximately 28 years. Major electrical is funded at approximately \$6 million annually, or less than 10% of the identified need. CPDM continues to work with the Traffic Operations Division to understand when widespread failure should be expected, and what investment strategies are necessary given the preservation funding gap.

Major Drainage

Needs Identification - Needs are identified based on assessments of existing drainage features by Region personnel. This primarily occurs via Level 1 inspections by maintenance personnel. If the Level 1 inspection flags something in a deteriorated state, region hydraulic personnel perform a comprehensive Level 2 inspection. Needs are then prioritized by the Region Hydraulics engineers. The number of projects scoped is based on expected funding levels and prioritization of the needs by the region.

Starting with the 2019 Project Delivery Plan, a Level 2 inspection is required as part of the Project Summary. This allows extra review between region hydraulics, headquarters hydraulics, and CPDM.

Prioritization Methodology - There is no additional prioritization applied to major drainage. The top priority from each region is funded, and then the next priority from each region, and so, until the identified funds are exhausted.

Rest Areas

Needs Identification - WSDOT performs building and site condition assessment biennially to identify functional component deficiencies. This assessment results in a numerical rating based on criteria for each functional component (e.g. roof, wall tiles, etc.), and also critical functional components have a weighted multiplier in the overall evaluation. The combined total building and site ratings are used to define each facility's overall condition.

Prioritization Methodology - The safety rest area program has three primary deficiency groups. Emphasis is placed on utility (sewer, water, and electrical) needs first, then buildings second and site work last. Maintenance and operational costs and the number of visitors are also factors in the prioritization process. There are three categories of rest area preservation: major rehabilitation, minor rehabilitation and RV dump preservation.

Safety rest areas are prioritized by the Facilities Division. CPDM reviews all Project Summaries for safety rest areas.

Weigh Stations

Needs Identification - Needs are identified based on coordination between the Washington State Patrol (WSP) and WSDOT. In early 2018, the Commercial Vehicle Enforcement System Strategic Plan was finalized, which categorized weigh station Improvement and Preservation activities into two separate lists.

Since then, WSDOT has continued to coordinate with the WSP and the needs list has been updated.

Prioritization Methodology - The Strategic Plan includes the prioritization methodology that accounts for both a criticality rating, condition rating and functional rating. More information is contained in the Strategic Plan.

The Strategic Plan did not provide direction on prioritizing between Preservation and Improvement. Additionally, after evaluating several sites the WSP has determined that many can be decommissioned. The Traffic Division is working to update the Strategic Plan needs list and also documenting the ranking between Preservation, Site Removal, and Improvement. It is expected that the needs will generally follow that same order. The Traffic Operation Division has set aside funds for emergent needs, such as a scale failure.

Basic Safety - Signing

Needs Identification - Needs are identified by each Region. For each biennium, Regions are to develop a prioritized list of locations for sign replacement. The prioritized needs list is used to identify which locations will be addressed with the available funding.

Prioritization Methodology - Region staff prioritize to available funding.

Guidance is being developed on investment and sizing the Sign Program relative to Preservation funding. This will change how signs are scoped and programmed starting with the 2020 Scoping Instructions and incorporated into the 2021 Project Delivery Plan.

Basic Safety - Guardrail

Needs Identification - Needs are identified by each Region. Where an inventory of system condition is not available, a prospective list may be compiled based on documented discussions with region Maintenance or other knowledgeable staff. Regions are to prioritize the list based on an assessment of system height, grading, and the state of repair of individual system components, documenting their specific criteria and approach. The prioritized needs list will be used to identify which locations will be addressed with the available funding.

Prioritization Methodology – Region staff prioritize needs within available funding. Starting with the 2020 Project Delivery Plan, site-specific projects are proposed, as opposed to the previous practice of a region-wide bucket. This will allow CPDM and the Development Division to coordinate with the regions on each guardrail run and confirm the need and rank, along with informing future discussions about how best to manage guardrail assets.

Americans with Disabilities Act (ADA) Retrofits

Needs Identification - Needs are identified based on region review of the companion pavement preservation (P1) project. If a P1 pavement preservation project alters a crosswalk, that crosswalk (which includes curb ramps if a sidewalk is present) must be ADA compliant when the pavement project is operationally complete. This applies whether the sidewalk is state jurisdiction or local jurisdiction. ADA needs are addressed according to legal obligations defined by the United States Department of Transportation (USDOT) and the United States Department of Justice (USDOJ), as well as the approved [WSDOT ADA Transition Plan](#).

Due to the decision to no longer pave state routes with speed limits of 40 mph or less, many sections that would have been retrofitted for ADA work are not required to be as part of those projects. An additional needs framework is proposed in the WSDOT ADA Transition Plan, and WSDOT is reviewing how to implement it, and incorporate this framework into its processes.

Prioritization Methodology - ADA Retrofit work occurs in conjunction with (or in advance of) paving work, as per federal regulations. CPDM works with region staff to determine whether the previously planned ADA retrofit work should continue based on engineering judgment which includes assumptions about minimizing rework and any known information related to the types of considerations in the framework.

Other Modes Capital Programs

Ferries Program

The Ferries Program consists of Terminals and Vessels with \$542 million in projects identified for the 2019-21 biennium with \$198 million in federal funding, \$5 million in local funding and \$339 million in state funding. The legislature has provided \$535 million in funding for this list with the reduction approximating a program underrun of \$7 million in state funds. This will result in project funding deferment into the 2021-23 biennium. The Terminals program has 10 years of detailed projects and the Vessels program currently has 2 years of detailed projects and is still working towards developing 4+ years worth of detailed project lists that can be incorporated in the Project Delivery Plan.

Several large projects use a majority of the funding including the Seattle Terminal Replacement project (\$155 million), the Mukilteo Terminal Replacement (\$84 million), a new diesel/electric hybrid vessel (\$96 million) and a conversion of a diesel Jumbo Mark II ferry to an electric hybrid (\$43 million).

The remainder of the funding is predominately for vessel and terminal preservation. Terminal preservation needs are prioritized using a model that incorporates asset condition, economic life and risks to establish project priorities. Vessel preservation needs are prioritized using life cycle cost models to define needs with inspections and SME's providing information to narrow the possible projects within available funding. The vessel program is reaching a crisis in keeping the fleet in operation with the average age of a ferry is approximately 40 years old and not enough vessels to allow for the needed time out of service to preserve the vessels adequately.

Traffic Program

The Traffic Capital program delivers smaller (less than \$1 million) stand-alone projects that increase the efficiency of the multimodal transportation system. The project list is for \$15.2 million. The legislature has provided \$14.5 million in funding for this list with the reduction approximating a

program underrun of \$700,000 in state funds. This will result in project funding deferment into the 2021-23 biennium. Projects include:

- Re-striping to add additional capacity such as turn lanes
- Adding cameras to provide traffic information to the public and traffic engineers to manage the system from the Transportation Management Centers
- Adding ramp meters to increase the flow of traffic on the interstates
- Adding variable message signs to provide information about traffic ahead
- Traffic signal enhancements

The Traffic Program has 2 years of detailed projects with \$10.3 million in reserves for the outer year biennia. The \$10.3 million consists of \$4.2 million in anticipated, but unidentified federal grant funding, \$500,000 in local contributions, and \$5.6 million in state motor vehicle funds. The Traffic Program utilizes state funds to leverage grant opportunities that support operational strategies that improve safety or reduce congestion on the highway system.

Rail Program

The rail project list details \$127.5 million in projects for the 2019-21 biennium. The legislature has provided \$95.55 million in funding for this list with the reduction approximating a program underrun of \$32 million in state funds. This will result in project funding deferment into the 2021-23 biennium. This deferment is reflected in the Delivery Plan. The Rail program has 2 years of detailed projects with grant reserves, slide mitigation reserves and PCC preservation reserves accounting for most of out-biennia project information. Ongoing improvements and maintenance to the passenger rail corridor in the 2019-2021 biennium will be primarily state-funded. WSDOT will pursue grant opportunities as they become available. WSDOT has already been successful in procuring grants for replacing rail trainsets and for increased preservation on the PCC rail system owned by the State.

In addition to the legislatively directed projects, the Freight Rail Capital Program provides grant (\$7 million per biennium) and loan assistance (\$5 million per biennium) to railroads, port districts and local governments to keep freight rail services viable throughout the state. Examples include funding track repairs and enhancing business access to rail service. These projects are selected through a legislatively directed competitive selection process each biennium. The program also has funding to mitigate slides which closes the tracks. Working with Burlington Northern-Santa Fe (BNSF), sites are selected for mitigation to keep slides from impacting service.

Facilities Program

The Facilities Program has a 10 year detailed plan funded from motor vehicle funds and Connecting Washington funds. In accordance with their asset management plan, priorities are driven by life-safety, code compliance, asset preservation and mission support needs. Opportunities to consolidate geographically, to move closer to operational centers, and collocate

with others are also considerations. Financial analysis models are used to assist in making long-term decisions.

Capital Facilities major replacement projects are prioritized considering support of strategic goals of the organization, impact on operations, impact on building condition and project success factors, feasibility and opportunities. Capital Facilities minor projects are currently prioritized using condition assessment data identifying building system and structural repair, roofing, paving, siding, lighting and electrical replacement, and other improvement and preservation deficiencies.

Local Programs

Local Programs coordinates with the Active Transportation Office as they prioritize new Pedestrian Safety/Safe Routes to School grant projects that will reduce fatalities, increase biking and walking, and increase the number of children walking and biking to school safely. In addition, local investments continue for Connecting Washington and local priority projects established in the 2017- 19 Transportation budget for specific improvements in communities throughout the state.

2019-21 Biennium Local Investments:

- \$202.7 million for legislatively identified Connecting Washington projects
- \$37.5 million for legislatively identified Pedestrian and Bicycle Tiered projects
- \$38.3 million for the Pedestrian and Bicycle Safety Program
- \$36.5 million for the Safe Routes to School Program
- \$92.5 million for other legislatively identified projects

The project list totals \$407.5 million for the 19-21 biennium. The Legislature has provided \$340.9 million in funding for this list with the reduction approximating a program underrun of \$66.6 million in state funds. This will result in project funding deferment into the 2021-23 biennium. The projects to be deferred are not known at this time.