

# Performance Audit of Public Works' Capital Project Management, Delivery, and Oversight



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## Better Change Management, Data, and Documentation Needed to Improve Oversight and Outcomes of Capital Programs and Projects



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# Audit Highlights

## Clark County Public Works: Capital Project Management, Delivery, and Oversight Better Change Management, Data, and Documentation Needed to Improve Oversight and Outcomes of Capital Programs and Projects

### Why it Matters

- Capital transportation projects are intended to meet the safety, mobility, and economic development needs of Clark County.
- The 2021 Annual Construction Program had an adopted budget of \$28.3m and actual expenditures of \$18.9m.
- To maximize capital programs, project scopes, schedules, and budgets must be managed effectively and efficiently.

### What We Did

Audit Services conducted an audit to determine whether Public Works has effective and efficient project management systems and practices in place to deliver capital projects.

The audit also evaluated Public Works' ability to scale those systems and practices in response to future changes in external funding.

### What We Found

#### Ineffective Organizational Change Management



Prior to the COVID-19 Pandemic, Clark County Public Works had a less formal, face-to-face work culture. Several efforts to develop more formal systems and practices to manage capital projects were unsuccessful because **Public Works lacked an effective process to manage organizational change.**

Public Works experienced significant turnover including three Public Works Directors and five County Engineers in a two-year period. At the same time, the move to remote work for some employees fundamentally changed the work environment. These **challenges led to a breakdown of the existing informal system of internal controls.**

#### Some Processes Limit Oversight and Collaboration



The audit identified several instances in which current processes do not formally integrate key Public Works staff and management. By failing to integrate key staff and management, the current design of these processes **reduces Public Works' ability to provide oversight of staff and control quality.**

#### Need to Improve Documentation & Transparency



Public Works' current documentation **does not adequately capture the nature and authority behind some capital project decisions.** In contrast, documentation of compliance with the external requirements we tested was generally effective.

#### Missing Efficiency Measures and Unreliable Data



Limited information systems and poor data quality hindered our ability to measure how efficient and effective Public Works is in delivering capital transportation projects. As a result, **Public Works is poorly-equipped to identify issues to improve its estimates of project scope, schedule, and budget.**

### What We Recommend

The audit report contains 28 recommendations aimed at improving capital transportation project operations, reporting, and compliance. Most crucially, Public Works must continue recent efforts to develop and implement an effective change management process.

We applied an organization maturity model to help Public Works prioritize and implement audit recommendations. The full list of recommendations can be found in section 5 of the audit report.

### **Acknowledgement:**

Audit Services would like to thank Public Works for their participation and cooperation throughout the audit process. During the audit Public Works saw significant organizational change resulting from the Covid-19 pandemic, move to remote work for some employees, and turnover of management and staff. Public Works employees were consistently welcoming, helpful, and candid. We appreciate the assistance provided by Public Works.

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## Introduction: The Capital Project Lifecycle and Clark County Public Work's Approach to Project Delivery

Clark County Public Works initiates, plans, and delivers capital projects in Clark County through several different programs, including transportation, clean water, parks and lands, bridge and culvert, road preservation, sidewalk and ADA compliance, and transportation safety.



Source: Photographs from 10<sup>th</sup> Avenue Bridge Project Courtesy of Clark County Public Works.

Potential projects are conceived and prioritized following established processes for each program, overseen by Public Works, other Clark County Departments, county stakeholder groups, and the County Council.

### Land Use and Transportation Planning in Clark County

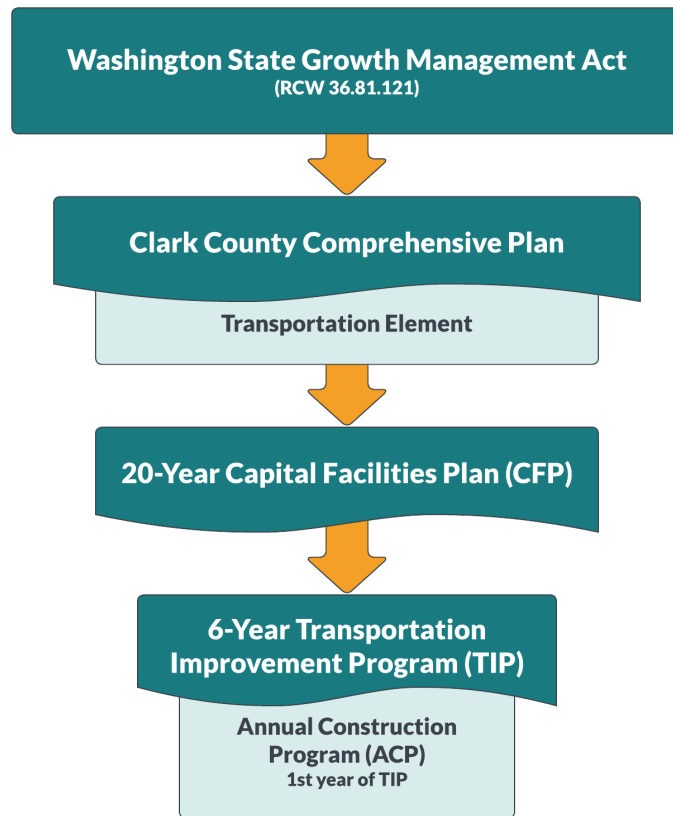
For capital transportation projects the process to identify the mobility needs of Clark County starts with the development of a 20-year Comprehensive Plan, as shown in Figure 1 below. The Comprehensive Plan, as well as subsequent planning processes, are governed by the Washington Growth Management Act and guide future land use decisions. The plan includes a transportation element, which provides guidance for the design, construction, and operation of transportation facilities and services over the life of the plan. From an analysis of the plan's projected future land use, a 20-year Transportation Capital Facilities Plan (CFP) is developed. The CFP lists potential projects—road segments and intersections—but does not prioritize those potential projects.

Potential projects from the CFP are evaluated and prioritized as part of the six-year Transportation Improvement Program (TIP). The TIP is updated annually through an extensive process involving the Clark County Council, county staff (including Public Works), stakeholder groups, and county residents before formal adoption by the council. Projects are scored across nine criteria:

- ◆ Safety
- ◆ Comparison to the County Arterial Atlas
- ◆ Concurrency
- ◆ Multimodal improvements
- ◆ Route connectivity
- ◆ Environmental impacts
- ◆ Public and outside agency support
- ◆ Support for economic development
- ◆ Leveraging of non-county funding

Scores are weighted and totaled, with greater importance given to safety, connectivity, and future development potential. Projects are then ranked in order of total score, and the rankings are used as a starting point to determine which projects are funded over the six-year TIP window.

**Figure 1. Capital Project Development Prior to Initiation**



Source: Adapted from Public Works

The TIP also contains smaller projects for several ongoing subprograms: safety, sidewalk and ADA, bridge and culvert, road preservation, and rural road, each with their own process to identify and prioritize projects.

Programming staff pursue external funding and program available dollars from transportation impact fees and other local funding sources to fund projects on the TIP. Once a project has funding for the initial phase, it can be initiated by engineering & construction and design work can begin.

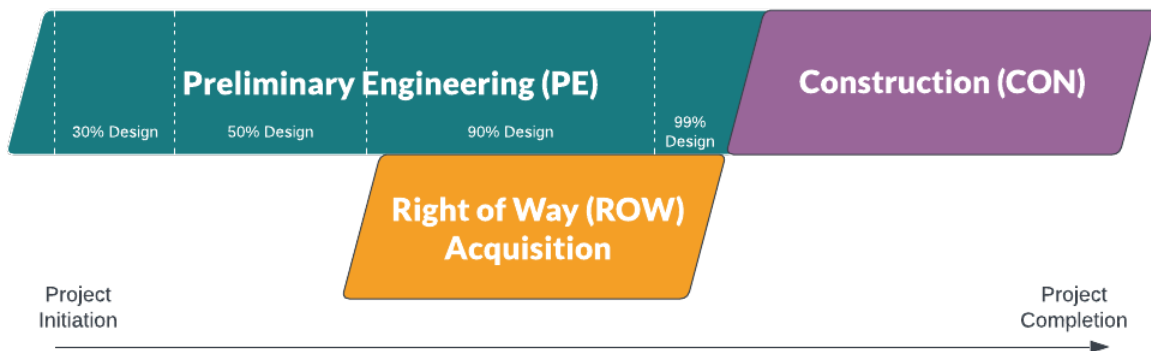
Once 10 percent or more of estimated total project costs have been expended, a project is considered “obligated”—the county is committed to completing the project. Obligated projects are listed alphabetically on the TIP and are not re-scored and ranked during subsequent annual updates.

The first year of the TIP is implemented through the Annual Construction Program (ACP). The ACP is adopted by the council along with the updated TIP. The ACP matrix shows the expenditures by project phase that are projected to be made during that year for the obligated, ranked, and ongoing program projects.

### Public Works’ Three-Phase Approach to Project Delivery

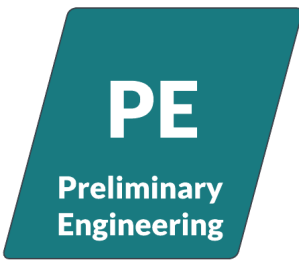
Public Works follows a three-phase approach that takes projects from initiation through completion and closeout, as shown in Figure 2 below.

Figure 2: Project Delivery Phases



Upon initiation, projects enter the preliminary engineering (PE) phase during which project plans and specifications are developed and refined. As the design is finalized, the project enters the right-of-way acquisition (ROW) phase and Real Property services works to acquire any private property necessary to complete the project. The ROW phase begins late in the PE phase; once ROW acquisition is complete the PE phase can also be completed. The construction phase (CON) begins with the bid, advertising, and award of the contract for project construction and sees the project through the completion of construction and final project closeout.

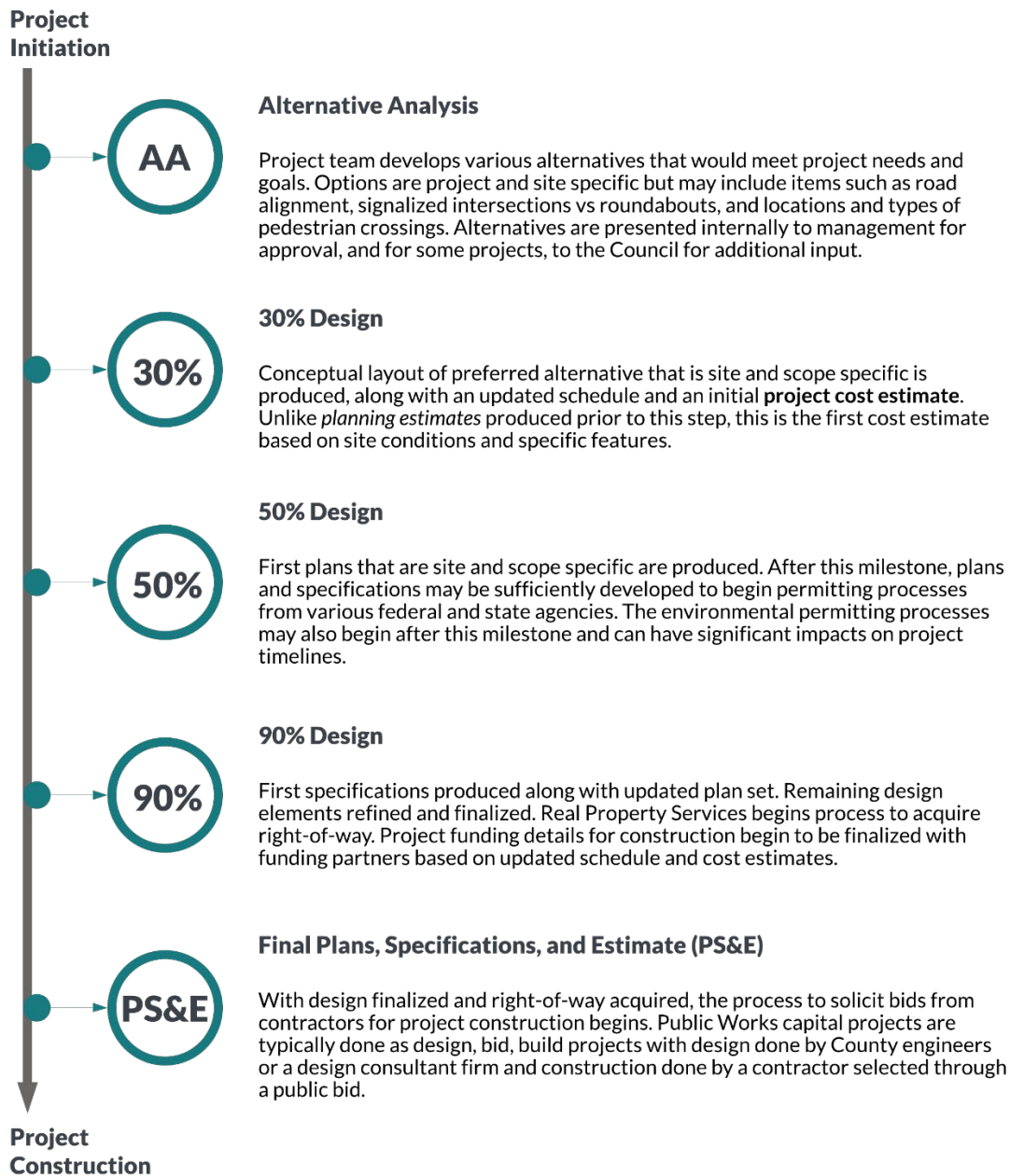




During **preliminary engineering (PE)**, project managers build a project team including design engineers, design consultants, and administrative staff from across Public Works. Projects are managed through internal milestones, which typically include scoping, alternative analysis, 30% design, 50% design, 90% design, and final plans, specifications, and estimates (PS&E), as shown in Figure 3 below. Larger projects may require additional milestones, such as 99% design, while smaller projects may require fewer.

Between each milestone, the project team works collaboratively to complete internal and external tasks necessary to advance the project. The work includes conducting topographical and boundary surveys; performing engineering design of roadways and stormwater management facilities; developing stormwater and environmental mitigation plans; applying for environmental and other necessary permits; identifying right-of-way access that the county will need to acquire; conducting outreach to property owners; securing and programming funding from state and federal sources; and programming and managing county funds, among many other tasks.

**Figure 3. Typical Design Milestones During Preliminary Engineering Phase**



Throughout the preliminary engineering phase, Public Works is conducting outreach to county residents and stakeholder groups in the project’s vicinity to provide updates and solicit input. Project managers are the central point of coordination, management, and oversight for all project related activities during this phase.

Design milestones provide an opportunity to produce or update design schematics, cost estimates, and project schedules, and to memorialize significant decisions and

developments. Additionally, key events that advance the project through preliminary engineering happen around certain milestones.

During **Right-of-Way acquisition**, Real Property Services works to acquire any privately-owned property necessary to complete the project. In some cases, whole properties are purchased, but frequently the county purchases small portions of property. The acquisition process is governed by state law and involves significant oversight from the Washington State Department of Transportation (WSDOT). The process can take up to a year for larger projects and completing right-of-way acquisitions within the anticipated project schedule is crucial for keeping the start of construction on schedule and meeting deadlines for state and federal partners.



The **Construction** phase begins after advertising and bidding when the project is awarded to the winning bidder. The project manager hands over primary responsibility for the project to the construction engineer, who serves as the central point of contact from that point forward (the project manager remains actively involved). The construction engineer oversees the project through advertisement, bid, and award of the contract, the construction process, and contract completion and closeout.

The Construction Engineer and engineering technicians provide oversight through daily, weekly, and monthly reporting and quality assurance tasks. Contractors bill monthly based on progress in completing bid items. Contract change orders are used to adjust contract value and schedule as needed, with effective oversight and management key to controlling project costs.

Progress during construction begins with the initial notice to proceed to the contractor and mobilization, then proceeds through the physical construction to substantial completion (typically when the improvement opens for use by the public), physical completion, and final completion and contract closeout.

### **Managing a Capital Project: Scope, Schedule, and Budget**

Capital projects are constrained by several factors: time, cost, scope, and quality. Decisions or limitations for one factor affect the others: a small budget will limit the projects' quality and the speed with which it can be delivered. To deliver capital projects that meet the needs and goals of the county within the constraints of time, cost, scope, and quality, project managers must effectively and efficiently manage a project's scope, schedule, and budget.

Decisions and actions that impact a project's scope, schedule, and budget happen throughout the three phases of delivery. Milestones within each phase provide the

opportunity to bring together the individual decisions and actions, communicate those decisions and actions among the project team, memorialize those decisions and actions, capture data, and report updated status and data internally and externally. In addition to the ongoing, day-to-day management of a project, milestones are important control points for managing scope, schedule, and budget.

In turn, those milestone updates are used by Public Works leadership to make decisions about resources at the program level.

### Estimating and Managing Project Costs

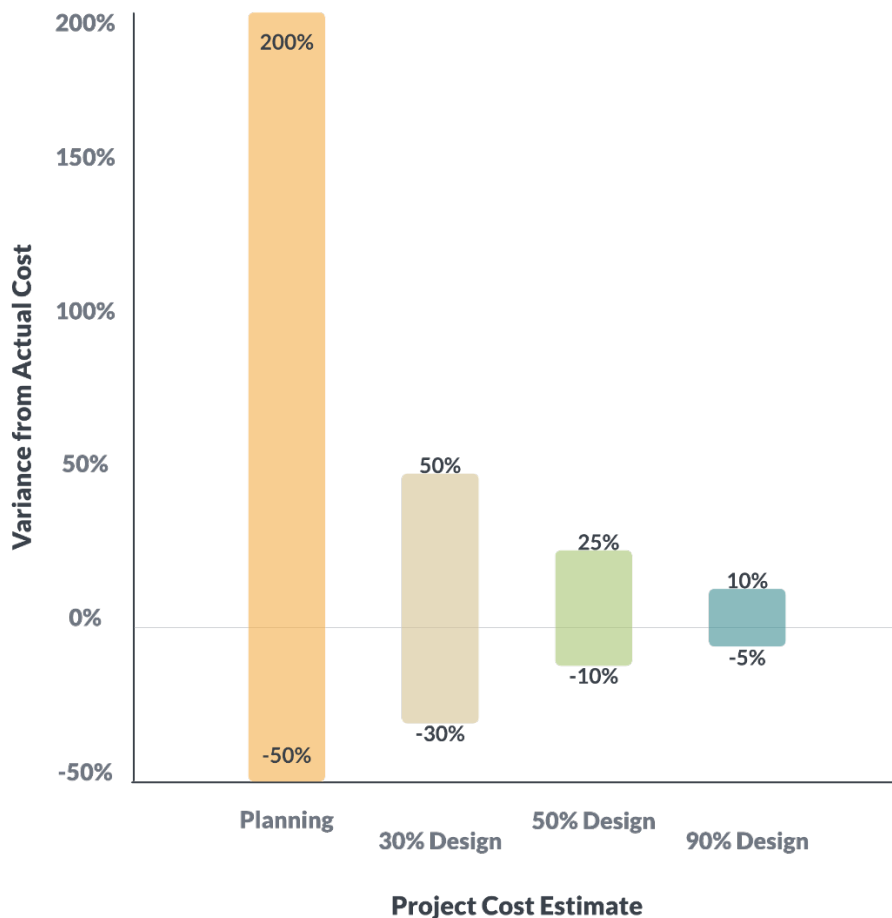
Projects are initiated by Programming and other capital program clients from the TIP and other ongoing programs once PE has been funded, and planning by the project manager then begins. During planning, the PE phase has a budget based on planning estimates and expenditures are made against that budget. As projects advance through preliminary engineering and decisions related to project scope and features are made, updates are made to project cost estimates for all three phases. The PE budget may change as the project advances and the resources needed to complete design become clearer. During PE, the costs for the ROW and CON phases are still estimates, with the first project-specific estimate produced at the 30% design milestone.

With each milestone update during preliminary engineering, designs and specifications are refined, allowing for more detailed and accurate estimates of project costs and schedules. These estimates are used to make staffing and resource allocation decisions at both the project and program levels. Reliable estimates are therefore necessary to use limited resources efficiently.

For project costs, there is an expectation that estimate accuracy relative to actual costs will improve as the design is refined. As projects are developed as part of the 20-year Transportation Capital Facilities Plan, they are given planning-level estimates. Planning estimates generally do not account for specific features, alignments, or site conditions. According to the Washington Department of Transportation (WSDOT) guidance, the variance between these early estimated and actual costs may range from -50 percent lower to +200 percent higher.

The cost estimate produced at the 30% design milestone is the first estimate that considers site-specific features and conditions. Figure 4 below shows the relative accuracy of estimates at various milestones during preliminary engineering.

Figure 4. WSDOT Guidance for Relative Accuracy of Estimates During Project Design



Source: Adapted from Washington State Department of Transportation (WSDOT) Cost Estimating Manual for Projects (2020)

At 90% design, guidance suggests that accurate estimates should generally be within -5 percent and +10 percent of actual cost. After 90% design, there is one period of additional uncertainty: the bid process. Some factors that impact cost can be difficult to forecast, such as the overall demand for capital construction and resulting competition for resources in the local market, or short-term scarcity of materials due to supply chain disruptions. Once bids are received and the construction contract is awarded, the project has moved from estimating costs to managing budgets.

## **1. Ineffective Change Management, Staff Turnover, and Remote Work Resulted in Unclear Roles and Miscommunication**

Prior to the COVID-19 Pandemic, Clark County Public Works had a face-to-face work culture. Divisions and sections involved in capital project delivery and administration shared office and meeting space. This work environment facilitated a less-formal approach to internal controls around capital project delivery where issues were resolved by long tenured staff through impromptu interactions and communication.

While effective at the time, past Public Works leadership teams recognized the limitations of this approach as work volume and complexity increased. Documentation and interviews revealed at least three attempts to develop a more formal system of controls. However, those attempts were not successful due to ineffective change management practices.

The limitations of the informal systems of control were realized during the pandemic as Public Works experienced significant turnover. At the same time, the move to remote work for some employees fundamentally changed the work environment.

To provide reasonable assurance that capital transportation projects can be delivered efficiently and effectively, Public Works needs a formal system of controls for capital project delivery. Current Public Works management has already taken some steps to implement a more effective change process. However, efforts to develop that system will likely continue to be unsuccessful until Public Works improves their processes for designing, implementing, and monitoring organizational change.

### **1.1 Lack of effective change management resulted in incomplete policies and an informal system of controls**

Starting in 2018, and more recently in 2021, Public Works management recognized the need for a more formal and consistent approach to capital project delivery. Leadership undertook efforts to revise the existing project management policy manual, develop additional project documents and tools, and develop workload planning and capacity management tools for divisions and sections. Ultimately these efforts were unsuccessful as Public Works' change management process didn't include verification that new policies, procedures, and processes were well-designed, properly implemented, and operating as intended.

Previous policy updates were never completed. New policies, procedures, and tools were designed but not fully implemented. For example, the project documentation report used to capture major design decisions lacks a review and approval process and as a result is often not completed. In instances where new policies, procedures, and tools were properly designed and implemented, there was not a process to ensure that they were operating as intended.

In 2023 Public Works revised their policy and procedure development program. The stated purpose of the program is to “develop a robust, centralized and user-friendly policy and procedure program to ensure department processes are formally documented and staff have the necessary information and resources”. A draft of the process is shown below in Figure 5.

**Figure 5: Public Works Policy and Procedure Development Process**



Source: Public Works Policy and Procedure Development Overview

The new process should help to ensure policies and procedures are well designed. For example, the new process explicitly mentions communication and training. Still, these elements will need to be developed further to ensure effective implementation.

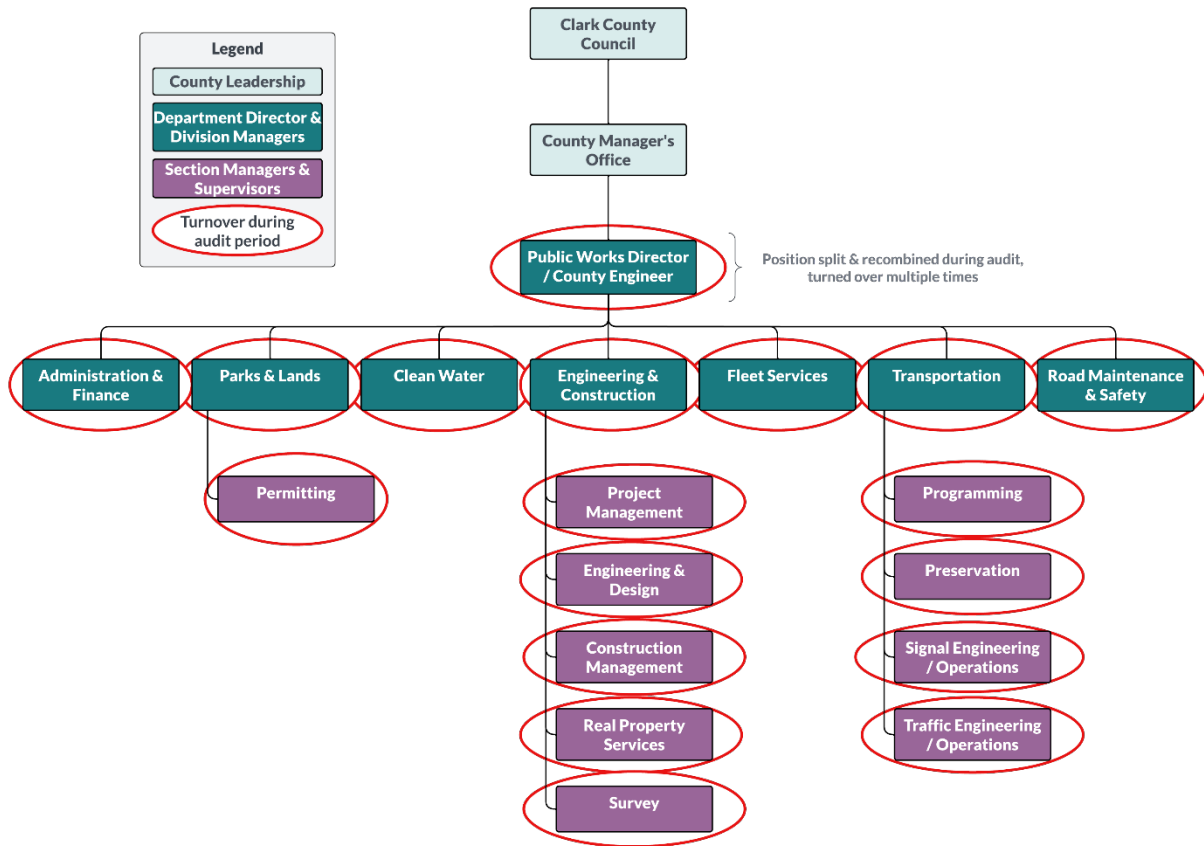
Public Works should continue its current effort to develop and implement a change management process. An effective change management process should include a periodic review process to ensure policies and procedures are well-designed, properly implemented, and operating as intended.

**1.2 Significant turnover among both management and staff led to a loss of historical knowledge of Public Works’ practices and processes.**

Immediately prior to and during the audit, Public Works had three different directors and five different county engineers. Over the same period, the entire senior leadership team involved in capital project delivery changed. The engineering and construction manager, construction section manager, and project management section manager all departed within a few short months of each other. Each had more than 20 years of

experience in their respective fields. Because practices employed by these managers were not captured in formal policies and procedures, these departures resulted in a loss of the historical knowledge of Public Works' practices and processes. Figure 6 below summarizes some of the key departures and staffing challenges immediately prior to and during the audit.

**Figure 6. Turnover Among Public Works Management Between 2019 and 2022**



Source: Auditor Generated. Reflects organizational structure at time of audit fieldwork.

Because Public Works had an informal and relational approach to project management, the historical knowledge possessed by these employees was not codified in existing policies and procedures. Lessons learned and insights were not captured for future projects. Without lessons learned, new employees are likely to be less efficient and may repeat past mistakes.

The overall volume of turnover and the loss of experienced individuals in key positions creates additional ongoing risk. Further, the turnover resulted in the remaining leadership filling multiple roles and taking on additional work. Project team members noted in interviews it was difficult to get timely feedback from managers and supervisors which created more delays in projects.



### **1.3 Move to Remote Operations Exposed Limits of Public Work's Informal Controls**

Public Works operations, like many other organizations across the world, was heavily impacted by the Covid-19 pandemic and associated public health orders. Many staff transitioned to work from home including staff in design, project management, and administration. Other staff continued to operate in the office and in the field. This included construction engineering, inspection, and survey. Temporary barriers were erected that limited in-person interaction and gathering for those in the office.

Public Works implemented tools like Microsoft Teams for communication and shared drives to facilitate the sharing of documents. However, Public Works existing system of internal controls was built around face-to-face interactions among staff and management. Staff noted that they felt less aware of project developments beyond their assigned task. The move to remote work undermined existing controls, leading to uncertainty about whether other project work was being completed appropriately.

Public Works should build a formal system of controls that can be maintained in a hybrid work environment, as some employees will continue to work remotely. This system should include reporting and communication tools that provide assurance to both management and staff that various project steps and process are working as intended.

### **1.4 Lack of formal controls contributed to miscommunication, confusion, and negative public perception**

The lack of formal controls and decreased awareness led to confusion and miscommunication regarding project activities between staff. The apparent difficulties in communication and decreased awareness resulted in increased conflict between project team members.

One previous Public Works Director reported specific concerns regarding potential fraud, waste, and abuse to Audit Services. We evaluated those concerns and did not identify any evidence of potential fraud or abuse by staff.

We did determine that one issue, the purchase of property for environmental mitigation, fell within the scope of this audit and included it in our testing. This issue is discussed in detail in section 2.3.

#### **1.4.1 Unclear communication regarding roles and authority led to public frustration**

The audit also observed miscommunication and confusion in Public Works' communication with the Public. As a result, Public Works had to re-engage the Public multiple times before adoption of a circulation and access management plan.

Eventually, Public Works was able to identify an effective communication strategy that cleared up prior confusion.

On August 22, 2022, Public Works held an open house to address public concerns related to the circulation and access management plan for the 179<sup>th</sup> street corridor. The plan was developed with stakeholder groups, and Public Works solicited public input through several open houses. Before adopting the plan, the Council asked Public Works to solicit additional public input to address concerns raised. Communication around elements of the plan and related projects was unclear and led to notable public frustration. The public expressed confusion over the following items:

- What elements, if any, of the plan were still open to change based on public input and other factors.
- Roles and authority for policy and engineering decisions: the Council role was to make a policy decision to adopt or reject the access management plan. Public Works made engineering decisions about elements of the plan, such as restricting turns to right-in / right-out only for portions of the 179<sup>th</sup> Street corridor.
- Roads and other improvements to be completed by Clark County Public Works vs. improvements that would be completed by private developers and the different impacts and implications for residents.

The lack of clear communication caused additional frustration among the public and even accusations of inappropriate relationships with developers were voiced during public comment.

On September 28, 2022, the results of the open house were presented by Public Works to the County Council. The Council felt that there was still a need for additional public input and Public Works held a series of listening sessions in late June 2023. The sessions were hosted by the director / county engineer and deputy county manager.

Although it did not resolve all the concerns, a few attendees remarked that the communication improved significantly from previous efforts. Unlike the previous open house, Public Works clearly communicated that the plan elements were fixed, clarified the role of the council versus engineering decisions made by Public Works, and discussed improvements completed by the county compared to improvements completed by private developers.

As Public Works builds a new system of formal controls to address the issues discussed throughout this chapter, the organization should consider how individual control activities work to provide assurance to management as well as project team members that project steps and processes are working as intended. Communication around those controls

should also provide assurance to the Council and ultimately, the public. The policy development process should include project managers and other team members.

## 2. Design of Some Processes Limit Oversight and Collaboration, Increasing Risks to Project Quality, Schedules, and Costs

To deliver capital transportation projects, project managers oversee multidisciplinary project teams and coordinate staff from different divisions and sections. However, we identified several instances in which current processes do not formally integrate key Public Works staff and management. The lack of integration was evident in project initiation, feedback during design review, acquisition of property outside normal project processes, financial oversight by the finance team, and communication with Council and other departments.

By failing to integrate key staff and management, the current design of these processes reduces Public Works' ability to provide oversight of staff and control quality. As a result, there is an increased risk that capital projects may not be delivered consistent with the established scope, schedule, and budget.

### **2.1 Design of project initiation process reduces ability to measure progress toward project goals or improve from past projects**

Once a project has funding for the initial preliminary engineering phase, it can be formally initiated. Engineering & Construction Division management assigns a project manager, who begins to build a project team. In addition to a kick-off meeting, a formal Project Initiation Form was developed. Form templates include sections that describe the purpose of the project, funding sources and requirements, and potential challenges and constraints.

We tested a sample of projects to assess if the form is being used consistently. Only 1 out of 10 project files tested during the audit included the form. The form was not well-designed. According to project managers, programming staff are expected to provide the form. However, programming expressed confusion over the purpose of the form and their role. While programming provides the information on project funding and associated constraints, the remaining information comes from project managers or other staff. This confusion led to limited use of the form.

In addition to the confusion over roles and responsibilities, the audit identified other issues with the form. First, the factors that are used to prioritize projects on the TIP are not formally incorporated into the initiation of the project. As a result, it is difficult to determine if completed projects fully met their goals related to measures such as safety, economic development, and concurrency. The form does not capture historical information such as prior performance issues, similar past projects, or key lessons applicable to the new project. While the form does list some generic risks, it does not identify project-specific risks in detail, nor does it discuss strategies for mitigating or avoiding those risks.

Public Works should develop a new project initiation form that incorporates scoring factors used to prioritize projects as well as historical information capturing prior performance and lessons learned on similar projects. The project initiation process should also formally identify project-specific risks and risk mitigation strategies.

## **2.2 Unclear roles and expectations result in limited feedback during the design review process**

At each design milestone during preliminary engineering, updated plans and specifications are sent out to staff across Public Works for feedback. Project managers noted that this step is important for overall quality control by identifying issues such as problems with constructability or the county's ability to maintain the asset over time. If not caught early, issues like these increase costs and delay project delivery. Unfortunately, project managers, staff involved in project teams, and management all reported problems with the current design review process.

PMs and management both reported difficulty in getting stakeholders to provide feedback, especially early in the process. Project team staff noted that it was difficult to provide useful feedback due to unclear expectations and the relative priority of other work. The design review process is missing key elements that prevent it from being effective. Roles and responsibilities are not formally defined and there is no set standard for review or examples of useful review to guide staff. Further, there is no formal approval process in place to ensure sufficient feedback had been provided. As a result, the current process produces limited feedback, especially early in design.

Public Works has implemented new software to facilitate design review and make it easier to provide feedback. While this may be a good first step, additional process improvements are needed to ensure feedback is timely and complete.

To improve the effectiveness of the design review process, Public Works should define roles and expectations for design review and other collaborative tasks at each milestone point throughout design. Additionally, Public Works should develop a formal approval process to ensure feedback has been provided.

Given that design review is one of many collaborative tasks that occur throughout the project lifecycle, Public Works should develop a formal project-specific communications plan for internal stakeholders to ensure clear communication and understanding of roles and responsibilities.

## **2.3 Lack of a process for project related activities that occur outside the typical project phases led to acquisition of property with unclear benefit**

In late 2021, Public Works purchased a 37-acre property to mitigate part of the environmental impacts of the upcoming 179th street projects. However, the purchase was done in anticipation of future projects, not as part of the right-of-way acquisition

phase. Staff did follow established procedures to purchase the property at a fair price. Still, important analysis was not completed, and the lack of a project structure and turnover resulted in miscommunication.

For example, the Public Works Director was aware of the procurement but neither Engineering & Construction management nor the project managers assigned to the various 179th street projects appear to have been involved in the process. The director left employment of the county and a new director was briefed on the purchase prior to a presentation to the county council. Following the council's approval of the action, Public Works determined the actual amount of environmental mitigation the acquired property would provide was less than estimated. Emails and interviews show that the error occurred as staff incorrectly believed and informed the director that a cost benefit analysis had been completed prior to the acquisition.

There was no formal management oversight to ensure coordination between two activities: (1) evaluating and determining the best use of the property for the county and (2) determining the fair market value to purchase the property consistent with laws, rules, and regulations. The result is that while staff followed established procedures to purchase the property at a fair price, Public Works did not fully evaluate the best usage and benefits to the county.

To reduce the risk resulting from purchases outside the typical system of controls Public Works should implement a formal process for activities that occur outside the typical project phases. This should be done as part of a larger integration management process to identify, define, and coordinate any project-related processes or activities that happens outside of a single project. The process should require full cost-benefit and alternatives analysis as well as formal approval by the engineering and construction division manager, the Public Works director, and the county engineer.

#### **2.4 Finance not well integrated into existing processes, undermining planning and oversight**

There has also been confusion about the role finance plays in reviewing capital program plans across Public Works other divisions. Public Works has a dedicated Finance Manager and staff responsible for department finances. The Finance team is involved in forecasting capital project and program costs. However, they are not integrated into capital project processes. For example, Finance is not involved in the review and approval of project cost estimates. They are also not currently involved in the review and approval for construction change orders. This lack of integration undermines Public Works' ability to effectively manage project costs and budgets.

During a Parks capital plan presentation in October 2022, the council was informed that the information presented had been reviewed by Public Works finance. However, the finance manager later indicated that finance had not been provided the current

capital plan to review, and some of the information was inaccurate. A revised Parks capital plan with accurate information was eventually presented to the council. Although the scope of this audit did not include the parks & lands division, the example highlights the increased organizational risk created by the lack of the finance team's involvement in some processes.

Public Works should ensure the finance team is formally integrated into the review and approval of cost estimates and construction change orders for capital projects. The finance team should also have a role in periodically reviewing a sample of project expenditures to ensure controls are operating as intended.

## **2.5 Lack of ongoing status reports to the County Council and other departments creates misunderstanding about capacity and progress**

Each November, Public Works presents an updated Transportation Improvement Plan (TIP) and Annual Construction Plan (ACP) for adoption by the Clark County Council. At present, Public Works does not provide any updates on the status of the ACP as it is executed throughout the following year. There is also no update provided on progress made on the current TIP / ACP prior to adoption of the next TIP / ACP. As a result, the council is not provided an opportunity to assess prior year performance before a new TIP/ ACP is adopted.

Public Works' staff acknowledged that the dollar amount adopted in the annual ACP update always exceeds their capacity to execute capital projects. For example, the 2021 adopted ACP estimate was roughly \$28.3 million. Actual expenditures under the 2021 ACP through December 31, 2021, were \$18.9 million, or roughly 33.3 percent less than the adopted estimate.

According to staff, the gap between the adopted ACP and actual ACP expenditures is the result of a requirement that in order to expend funds on a project the project must be in the adopted ACP. In addition, some projects may advance quicker through some phases while others may slow down unexpectedly, and so the project estimates need to allow more work to be done if the opportunity arises. For example, unexpected fair weather may allow construction to progress faster than anticipated. While this explanation is reasonable, lack of communication and education on these issues could create the appearance that Public Works is unable to deliver projects as expected.

To address this gap, Public Works has begun to develop a process to provide regular updates on the status of the current years' ACP to the council on a quarterly basis. They also intend to identify expenditures not made more clearly in the past year that will be carried forward to the next adopted ACP. Public Works should continue these efforts, working with council to ensure regular reporting of timely, accurate project

status information. Once complete, Public Works should develop policies and procedures around project and program status reporting to ensure historical knowledge of the process is retained.



### 3. Updated Policies and Consistent Use of Best Practices Would Improve Transparency of Decision Making and Documentation of Compliance

Throughout the project delivery lifecycle, a series of decisions and actions large and small shape a project's scope, schedule, and budget. At the highest level, the County Council makes policy decisions, including the adoption of the Transportation Improvement Program (TIP) and the Annual Construction Program (ACP). Pursuant to Revised Code of Washington (RCW) the county engineer exercises broad authority over establishing, laying out, constructing, altering, improving, repairing, and maintaining all county road infrastructure. At the project level, staff apply engineering standards and professional judgment to develop project features. Documentation that these decisions were made by the appropriate authority can provide additional transparency. Public Works' current documentation does not adequately capture the nature and authority behind some capital project decisions.

In contrast, documentation of compliance with the external requirements we tested was generally effective. This includes requirements for change order management and incorporation of funding terms in bid, advertising, and award documentation. For these processes, small changes to adapt best practices would further ensure consistent, quality documentation that demonstrates compliance.

In addition to demonstrating compliance with external requirements and appropriate authority for project decisions, complete documentation helps ensure continuity in the event of project team turnover or when projects are put on hold. It also provides a basis for evaluating past performance as part of lessons learned and continuous improvement processes.

#### 3.1 Fragmented policies and procedures result in insufficient documentation at initiation and design milestones

As part of project scoping and initiation, the project team determines what specific milestones the project will use to guide design. Typical milestones used include: 30%, 50%, 90%, and final plans, specifications, and estimates (PS&E). Larger projects may also have a 99% milestone; smaller projects, such as a traffic signal upgrade, may only need 50% and 90% milestones to effectively coordinate and manage project delivery. Under current practice, the decision of which milestones are necessary for a project should be documented in the project scoping report. Testing shows that milestone documentation was often in draft form, with comments, markup, or other evidence showing that the document had not been completed.

While the milestones may change from project to project, the control activities at each milestone should remain the same. Under current practice, updates to plans, specifications, project cost estimates, and schedules should all be completed and documented. Major decisions and developments should also be documented in the

project file. Updated documentation should be distributed to the project team to ensure coordination. Plans and specifications are also subject to review by a multidisciplinary team as part of quality assurance / quality management. This process was described explicitly in older versions of the Public Works' Project Management Manual but is not addressed in the current policy.

At each milestone, current practice involves updates to the project documentation report (PDR) made by the project manager as well as the project team. These updates bring together individual project decisions and actions captured in emails, memos, and meeting minutes. Together this information provides a narrative history of work completed and major decisions made. This process is crucial for ensuring project history is not lost when project schedules shift, are put on hold, or if key staff depart mid-project.

We reviewed the project scoping report and PDR documentation for 10 capital projects<sup>1</sup>. Only 23 percent of the expected project documentation was present and complete. As shown in Figure 7 below, the scoping reports for two projects were unsigned draft documents. Only four of the 10 projects had a complete PDR at the 30% design milestone. PDRs were often in draft form, with comments, markup, or other evidence showing that the document had not been completed. Only one of the projects in the sample had a completed PDR.

**Figure 7. Project Documentation Report Attribute Testing**

	Scoping Report	30%	50%	90%	99%	Final PS&E PDR
<b>Projects with Milestone</b>	10	10	8	8	7	8
<b>Projects w/ Complete PDR Documentation</b>	8	4	3	2	0	1
<b>% Complete</b>	80%	40%	38%	25%	0%	13%

One reason for the inconsistent use of the PDR is that Public Works does not have a policy that identifies roles or responsibilities for completing the PDR. They also do not have a process requiring review and approval of the PDR to ensure it is completed. The lack of documentation decreases transparency and can even create misperceptions. For example, we identified two issues with the documentation of the 10<sup>th</sup> Avenue Bridge Project. The 50% milestone report simply states that “project managers made the decisions not to use roundabouts”. However, a detailed review of meeting notes, minutes, and emails show that several options were vetted and presented to the Public Works director / county engineer who made the final decision. Further, the 90% report

<sup>1</sup> We reviewed both physical files stored at the Public Service Center as well as electronic project files stored on network drives.

states that “it was decided that all stormwater mitigation would be provided on-site”, despite that not being the county’s preferred option at 50% design. Other meeting notes provide evidence that it was WSDOT that changed the requirements for the county which made the on-site option more viable. In both instances, project staff followed appropriate processes to vet project decisions, but that narrative in the PDR did not accurately reflect the processes followed.

In addition to important decisions, Public Works’ practice is to update project cost estimates at each milestone at a minimum<sup>2</sup>. Updated estimates should occur between milestones if costs suddenly increase by more than 10 percent. Public Works uses a Revenue-Expenditure Report (RevEX) to capture project cost estimates.

We tested for a signed, complete RevEx at each milestone for the 10 projects. While just over 69 percent of the expected documentation was present and complete, most projects did have a complete RevEx at the initial, 50%, and final milestones. However, only four of nine had a signed, complete 30% RevEx and only two out of seven projects had a signed, complete 99% RevEx. Estimates at these milestones were often in draft form and had not been routed for signature and approval.

**Figure 8. Revenue-Expense (RevEx) Report Attribute Testing**

	Initial RevEx	30%	50%	90%	99%	Final PS&E RevEx
<b>Projects with Milestone</b>	10	9	8	7	7	8
<b>Projects w/ Complete RevEx Documentation</b>	9	4	7	5	2	7
<b>Percent Complete</b>	90%	44%	88%	71%	29%	88%

Unclear labeling and version control also made it difficult to reconstruct the project cost estimate history or determine whether estimates were updated due to milestones or unexpected cost increases. Still, there were examples of well documented estimates. The comments for the 90% RevEx update for 10<sup>th</sup> Avenue (NE 149<sup>th</sup> – NE 154<sup>th</sup>) note it is based on the 90% design engineer’s estimate and briefly summarize the major changes in cost and reasons.

To increase transparency and improve financial oversight of capital projects, Public Works should develop policies and procedures for project milestone documentation, including the project documentation reports and revenue-expense estimates.

<sup>2</sup> As with other milestone documentation, this policy was included in prior Project Management manuals. Although consistent with current practice, the current PM manual does not address this topic explicitly.

Procedures should include review and approval processes to ensure management oversight.

When documenting project decisions, Public Works should also include statements or language that connects decisions made to project scoring criteria or project goals. Doing so will help facilitate the development of historical knowledge that can be transferred in the event of turnover and provides a basis for evaluating project outcomes and outputs against project goals and expected benefits.

Finally, project milestone documentation should capture project risks and risk mitigation strategies. A risk register or similar tool to track risks and risk mitigation strategies over the project lifecycle would help to ensure continuity in the event of turnover as well as enable Public Works to evaluate performance and engage in continuous process improvement.

### **3.2 Consistent Application of Best Practices Would Better Demonstrate Compliance with External Requirements**

Capital transportation projects are subject to external oversight at various points in the delivery process. This includes state agencies such as WSDOT and the Department of Ecology as well as Federal agencies. Public Works has processes to ensure compliance with requirements of these agencies such as documentation of contract change orders during construction and incorporating external funding terms into bid, advertising, and award documentation.

Like the design milestone documentation, these external requirements are not supported by Public Works policies and procedures. However, the external requirements themselves set a standard for the staff involved. As a result, this documentation was more complete than the internal project documentation discussed in the previous section.

At the same time, we saw opportunities to further improve that documentation through the implementation of best practices.

#### **3.2.1 Change order documentation could be improved with consistent use of best practices**

We tested a total of 10 contract change orders selected from our sample of 10 projects to determine compliance with requirements regarding the bid, advertising, and award process found in WSDOT's *Standard Specifications for Road, Bridge, and Municipal Construction*. We also compared the sampled change orders against best practices from the Washington State Auditor's Office (SAO) *Best Practices for Change Orders*. The documentation was generally complete and sufficient. At the same time, we identified opportunities to implement best practices to better demonstrate compliance. Results are shown in Figure 9 below.

**Figure 9. Construction Change Order Testing for Compliance and Best Practices**

Project Name	CO Number	Date Signed	Change Order Amount	Original Contract Value	WSDOT Requirements		SAO Best Practices	
					Signed, Approved	Prior to Work Done	Reasonable Basis	Cost Review
NE 63rd Street and NE 58th Avenue Signal	1	6/1/2020	\$6,292	\$677,295	Yes	Not clear	Yes	Partial
NE 10th Avenue (NE 154th Street - NE 164th Street)	4	1/18/2018	\$107,748	\$14,473,236	Yes	Yes	Yes	Not clear
	22	7/13/2018	\$40,669	\$14,473,236	Yes	Yes	Yes	Yes
	48	10/22/2019	\$102,665	\$14,473,236	Yes	Not clear	Yes	Partial
NE 259th Street and NE 72nd Avenue Intersection	2	9/6/2019	\$8,863	\$363,917	Yes	Yes	Yes	Yes
NE 119th Street East (NE 87th Avenue - NE 112th Avenue)	3	5/13/2019	\$40,543	\$11,060,005	Yes	Yes	Yes	Yes
	12	12/16/2019	\$18,719	\$11,060,005	Yes	Not clear	Yes	Yes
NE 99th Street (NE 94th Avenue - NE 117th Ave (SR-503))	6	5/9/2022	\$0	\$18,290,108	Yes	n/a	n/a	n/a
	8 (VECP)	8/31/2022	(\$200,700)	\$18,290,108	Yes (incorrect split)	Yes	n/a	Yes
Highway 99 Corridor Improvements (Highway 99 - NE 99th Street)	6	8/18/2021	\$12,000	\$1,135,280	Yes	Not clear	Yes	Yes
<b>Total Yes Percent</b>					<b>10 100%</b>	<b>5 56%</b>	<b>8 100%</b>	<b>6 67%</b>

WSDOT standard specifications allow for change orders to be authorized in writing or verbally approved and followed-up by a written change order at later date. All 10 change orders tested had signed approval documentation. However, it was not clear from documentation that verbal approval was given prior to the change order work being performed on four of the change orders. We did not see any evidence that suggested work was performed prior to a verbal approval either.

The testing sample included one “value engineering” change proposal for NE 99<sup>th</sup> Street. For these types of change orders, the contractor identifies an opportunity for savings—in this case, excavating material for the project on-site instead of having it delivered—and proposes it to the county. If the county accepts all or part of the proposal, the cost savings is split equally between the two parties. The

savings identified in the sample change order was not equally distributed. Instead, the contractor was given \$150 more than they should have received. Given that the total savings to the county from the change order was \$200,700, this is a small error. However, we believe it could have been avoided through better documentation of the proposed cost savings and the split between parties.

During the audit, Public Works began developing an internal change order policy. The draft policy we reviewed includes language that allows for internal approval via email when formal, signed authorization isn't possible due to time constraints. This policy will help to ensure that verbal approvals given to the contractor, when necessary, are documented to demonstrate compliance with WSDOT standards. Public Works should continue its work to develop and implement an internal change order management policy that incorporates best practices.

3.2.2 Additional detail, consistent use, and management review of would improve bid-ready checklist.

Public Works uses a “bid-ready checklist” to ensure that external funding requirements are incorporated into the bid, advertising, and award process. The checklist is completed by the project manager and submitted to the Project Management Section Supervisor. We tested a sample of bid-ready checklists for 8 projects. Only five of the 8 projects had a complete, signed bid-ready checklist in the project file.

**Figure 10. Bid-Ready Checklist Testing Results**

Project Name	Current Project Status	Project Type	Complete Bid-ready Checklist
NE 10th Avenue (NE 154th Street - NE 164th Street)	Full Completion	TIP	Yes
NE 119th Street East (NE 87th Avenue - NE 112th Avenue)	Full Completion	TIP	No
NE 99th Street (NE 94th Avenue - NE 117th Ave (SR-503))	Construction	TIP	No
Highway 99 Corridor Improvements (Highway 99 - NE 99th Street)	Physical Completion	TIP	No
NE 99th Street / SR-503 (Intersection Improvement)	Full Completion	Ongoing Programs	Yes
Hazel Dell Avenue Adaptive Traffic Signals (NE9th Avenue - NE Padden Parkway)	Full Completion	Ongoing Programs	Yes
NE 259th Street and NE 72nd Avenue Intersection (Intersection Improvement)	Full Completion	Ongoing Programs	Yes
NE 63rd Street and NE 58th Avenue Signal (Signal Installation)	Full Completion	Ongoing Programs	Yes

The checklist does not specifically list the requirements associated with project funding. Instead, it requires project managers to check boxes to indicate special requirements have been included. For example, the checklist includes the following provision:

Required Contract Provisions - Some funding agencies require us to include special contract provisions in our specifications. Examples of these agencies are FHWA, FEMA, and the Dept. of Ecology. The Project Manager should read through these special contract provisions to ensure that the Design Section has included any requirements in the plans and/or specifications.

But the checklist does not require that the specific requirements are listed in the document.

The checklist also notes that “the signed checklist will be submitted to the Project Management Section supervisor but does not include a place for the supervisor to sign or otherwise indicate the documented was submitted and reviewed. There was no evidence of supervisory review in the samples we reviewed.

While the checklist is a useful tool to ensure compliance with external requirements, inconsistent use and a lack a specificity undermine the assurance it provides as an internal control. Public Works should consider revising the bid ready checklist to include details on any required general or special terms and conditions. Additionally, Public Works should formalize policies and procedures for the incorporation of funding terms and conditions into the bid, advertising, and award process.

## 4. Missing Efficiency Measures and Unreliable Data Reduce Ability to Manage Project and Program Resources

The objectives of this audit included a determination of Public Works efficiency in delivering capital transportation projects. However, limited information systems and poor data quality hindered both Public Works' and the audit's ability to measure how efficient and effective the agency is in delivering capital transportation projects.

Overall, Public Work's information systems and data suffer from two problems that prevent them from measuring efficiency and effectiveness. First, internal standards, policies, and procedures for data and recordkeeping are not sufficient to ensure project activity is consistently documented. Second, cost and schedule estimates used to manage projects are unreliable due to missing or inaccurate data.

Absent measures of efficiency and effectiveness, Public Works is unable to identify issues with current processes and practices to improve its estimates of project scope, schedule, and budget. Those estimates are used by Public Works to allocate financial and human resources to projects. Inefficient allocation of scarce resources to projects reduces managements' ability to deliver the capital program.

### 4.1 Limited information systems and poor data quality hinder ability to measure efficiency and effectiveness

Public Works uses several information systems to capture project data, document project decisions, and manage processes. The reliability of that information is limited due to a lack of internal standards, policies, and procedures for data and recordkeeping. Additionally, the information in the Engineering Program Database (EPD) used to manage projects is inaccurate due to missing or erroneous data.

#### 4.1.1 Public Works has insufficient internal standards, policies, and procedures for data management and record keeping

Standards provide a common language for management and staff to interpret events and information. Current Public Works project management policies proscribe an electronic and physical file structure and some documents to be captured. However, they do not establish standards for version control, which documents should be maintained electronically vs hard copy, or when schedule estimates should be revised. The result is that while Public Works has a lot of information, it is not reliable enough to evaluate performance across capital projects.

For example, current policy states that design milestone documentation should include a design report but not what the design report should contain. Staff indicated that Public Works uses the design reports to provide a narrative of major



project decisions and actions completed as well as risks and decisions to be addressed by the next milestone.

In 2021, a new template, the project documentation report (PDR), was developed to replace the design report. The PDR was partially implemented but there is no process to review and approve the report to ensure they were completed at each milestone. As a result, only four of the 10 projects tested had a complete 30% design report. Further, only one project had a complete, final version of the PDR after preliminary engineering was completed. This result was consistent with additional testing of physical and electronic project files where we found incomplete or missing documentation and poor version control.

The lack of standards also makes it difficult to draw conclusions about Public Works' ability to meet project schedule milestones. Schedule milestones are initially estimated during scoping and revised throughout the project. We saw instances in which milestones were revised to reflect dates within a few days of the original milestone, and others in which the milestone was not revised but the work was completed shortly after. Because of the lack of clear standards for when milestones should be revised, we cannot draw deeper conclusions whether projects were delivered consistent with estimated schedules.

#### 4.1.2 Information in Public Works' Project Management software is unreliable due to missing and inaccurate data.

All Public Works divisions and sections involved in capital project delivery enter information into the Engineering Program Database (EPD). The data includes schedule milestone dates, cost estimates and budget information, project scope details. During interviews, management and staff raised concerns about the completeness and accuracy of the EPD as well as its overall effectiveness as a project management system.

Auditors reviewed the schedule information in the EPD for 32 capital transportation projects and found that data was often missing or erroneous. Only 59 percent of projects had complete initial milestone data and only 53 percent had complete actual milestones<sup>3</sup>. Revised milestones were more complete, mostly as a function of many projects not using revised milestones. The full results are shown in Figure 11 below.

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<sup>3</sup> A project was deemed to have complete milestone data in the EPD if it had valid, logically consistent dates entered for all milestones achieved when testing was conducted. Not all projects use all milestones, for example, some smaller projects may only have 50% and 90% design milestones.

**Figure 11. Testing of EPD Data Accuracy**

Milestone Type	Complete	Missing	Error	Total	Percent Complete
Initial	19	13	0	32	59.4%
Revised	27	5	0	32	84.4%
Actual	17	12	3	32	53.1%

Auditors also attempted to review source documentation in electronic and physical files to verify data in the EPD. We found very little documentation related to project schedules, especially schedule changes after initiation and scoping. In some of the source documents the dates did not match the data in the EPD. However, the EPD only shows the most recent revision to the schedule which limits the ability to understand a project’s schedule history. Further, Public Works does not have policies or standards that define when milestones should be revised. This makes it challenging to interpret revisions.

Due to these data and documentation issues, we were unable to draw broader conclusions about Public Works management of project schedules.

Public Works should develop policies and procedures for project schedules, including standards for revised milestones. Public Works should also assess the viability of the Engineering Program Database (EPD) as a project management system. If the EPD is part of the project management information system going forward, develop processes and tools to ensure that data is entered timely and accurately.

#### 4.1.3 Cost estimates early in project lifecycle consistent with guidance, but later estimates are more volatile

Unlike estimated schedules, Public Works does have a standard *practice* for the revision of cost estimates<sup>4</sup>. As a result, we were able to draw some conclusions about the accuracy of cost estimates throughout project design relative to final costs. However, as we noted previously, our testing showed that just over 69 percent of the expected documentation was present and complete. We can conclude that while cost estimates early in project lifecycle are consistent with guidance, later estimates are more volatile. Unfortunately, the cost estimate information currently captured by Public Works is not reliable enough to identify why later estimates are more volatile to improve future performance.

As projects progress through milestones and more detail is known, cost estimates should become more accurate relative to actual final costs. Despite documentation challenges, the audit was able to compare estimated and final project costs for all

<sup>4</sup> As previously noted, this policy was included in prior Project Management manuals. Although consistent with current practice, the current PM manual does not address this topic explicitly.

21 completed projects. In general, cost estimates made at the 30% design milestone were consistently within the suggested range, while estimates made at the 90% milestone showed more volatility. Public Works is not able to achieve more consistent results due to issues with record keeping and data quality and the lack of processes and reporting that leverages historical performance.

WSDOT provides the following guidance on estimate range by percent of design completed:

**Figure 12. Cost Estimate Range by Percentage of Design Completed**

Milestone	Percentage of Design Complete	Estimate Range
Planning	0%	-50% to +200%
Scoping	30%	-30% to +50%
Design	50%	-10% to 25%
Plans, Specs, Estimates (PS&E)	90%	-5% to +10%

Source: Adapted from WSDOT Cost Estimating Manual for Projects (2020)

The Project Management Institute offers similar, albeit more general guidance: a range of -25 percent to +75 percent for project in the initiation phase, and -5 percent to +10 percent later in the project.

The audit compared estimated and final project costs for all 21 completed projects using the WSDOT guidance, as shown in Figures 13 and 14 below.

**Figure 13. Estimated and Actual Capital Transportation Project Costs – Completed TIP Projects**

Project Name	Final Completion	30% Design Estimate	90% Design Estimate	Actual Project Cost	Variance from 30%	Variance from 90%
<b>TIP Projects</b>						
NE 47th Avenue / NE 78th Street (Intersection Improvement)	2016	\$1,862,000	\$2,382,000	\$2,649,859	42.3%	11.2%
VAST: Orchards TSO (NE 55th Avenue - NE Ward Road)	2019	\$4,788,030	\$5,203,240	\$4,753,112	-0.7%	-8.7%
NE 119th Street (NE 99th Street - NE 119th Street)	2021	\$5,127,844	\$6,994,237	\$8,522,904	66.2%	21.9%
NE 94th Avenue (NE Padden Parkway - NE 99th Street)	2017	\$9,168,000	\$10,329,867	\$9,049,446	-1.3%	-12.4%
NE 119th Street East (NE 87th Avenue - NE 112th Avenue)	2021	\$11,249,594	\$12,017,195	\$15,506,320	37.8%	29.0%
NE 10th Avenue (NE 154th Street - NE 164th Street)	2019	\$24,354,359	\$24,895,300	\$23,111,171	-5.1%	-7.2%
NE 119th Street (NE 72nd Avenue - NE 87th Avenue)	2018	\$17,500,000	\$21,826,521	\$24,474,809	39.9%	12.1%
<i>Average (absolute value)</i>					27.6%	14.6%

The actual total costs for 17 of the 21 completed projects were within the -30 percent to +50 percent range. Only 2 of the 21 projects had final costs higher than the range while two had estimates lower than the range. Six of the seven TIP projects shown in Figure 13 were within the range expected for a 30% estimate.

**Figure 14. Estimated and Actual Capital Transportation Project Costs – Completed Ongoing Program Projects**

Project Name	Final Completion	30% Design Estimate	90% Design Estimate	Total Project Cost	Variance from 30%	Variance from 90%
<b>Ongoing Program Projects</b>						
Hayes Road N&S Safety Improvements (NW 403rd Street - NE 12th Avenue)	2019	\$403,258	\$216,558	\$229,822	-43.0%	6.1%
Felida Neighborhood Traffic Calming (NW 122nd Street - NW 36th Avenue)	2018	\$162,250	\$277,750	\$343,041	111.4%	23.5%
NE Salmon Creek Avenue Traffic Signal (at NE 119th Street)	2015	\$539,072	\$539,072	\$505,538	-6.2%	-6.2%
NE 107th Sidewalk (NE Covington Road - NE 78th Street)	2018	\$524,400	\$404,000	\$610,197	16.4%	51.0%
NE 259th Street and NE 72nd Avenue Intersection (Intersection Improvement)	2020	\$642,000	\$755,000	\$675,072	5.2%	-10.6%
Hazel Dell Avenue Adaptive Traffic Signals (NE9th Avenue - NE Padden Parkway)	2018	\$1,004,000	\$1,004,000	\$682,758	-32.0%	-32.0%
Highway 99 - Kline sidewalk (NE 122nd Street - NE 129th Street)	2021	\$553,000	\$647,000	\$760,837	37.6%	17.6%
NE 58th Street Sidewalk (NE 59th Avenue - NE Andresen Road)	2017	\$784,700	\$703,750	\$848,467	8.1%	20.6%
Salmon Creek Avenue Multi-Use Pathway (WSUV Entrance - Pleasant Valley Road)	2016	\$840,000	\$840,000	\$909,488	8.3%	8.3%
NE 63rd Street and NE 58th Avenue Signal (Signal Installation)	2021	\$961,000	\$866,000	\$964,960	0.4%	11.4%
Salmon Creek Street Slide Repair (NE 50th Avenue - NE 53rd Avenue)	2021	\$918,000	\$918,000	\$1,033,039	12.5%	12.5%
Highway 99 Pedestrian / Bike Improvements (NE 63rd Street - NE 78th Street)	2019	\$1,776,000	\$2,312,500	\$2,175,711	22.5%	-5.9%
NE 99th Street / SR-503 (Intersection Improvement)	2019	\$3,685,000	\$2,750,787	\$3,076,922	-16.5%	11.9%
NE 47th Avenue (NE 68th Street - NE 78th Street)	2016	\$3,850,000	\$4,775,310	\$4,636,911	20.4%	-2.9%
<i>Average (absolute value)</i>					24.3%	15.8%

In contrast, only 9 of the 21 projects were within the expected range at the 90% design estimate<sup>5</sup>. Four of the 7 TIP projects had actual costs more than 10% above the 90% estimate.

The average absolute variance—a measure of distance from the actual cost—was 27.6 percent for TIP projects and 24.3 percent for ongoing program projects at the 30% milestone, consistent with guidance. At 90%, it was 14.6 percent and 15.8 percent, respectively, outside of expected guidance.

A few individual projects results stand out. The NE 10<sup>th</sup> Avenue (NE 154<sup>th</sup> Street - NE 164<sup>th</sup> Street) project had highly accurate estimates at both 30% and 90% design relative to final costs and was delivered -7.2 percent cheaper than estimated at 90% design. At \$23.1 million, it was the second largest project by dollar value examined as part of the audit. The result is notable in part because the project had a long development, starting in 2007 as a single project before being put on hold, and split into two projects prior to reaching the initial 30% design milestone. The second segment, the NE 10<sup>th</sup> Avenue Creek Crossing project achieved substantial completion in 2022.

Similarly, the NE 47<sup>th</sup> Avenue project done under ongoing programs was delivered -2.9 percent cheaper than estimated at 90% design. At more than \$4.6 million, it was the largest dollar value ongoing program project examined.

The three NE 119<sup>th</sup> Street projects had far less accurate estimates. NE 119<sup>th</sup> Street East (NE 87<sup>th</sup> Avenue - NE 112<sup>th</sup> Avenue) had actual costs that were 29 percent, or roughly \$3.5 million more than the \$12.0 estimate at 90% design. The variance between actual and estimated costs at both 30% and 90% design for NE 119<sup>th</sup> Street (NE 99<sup>th</sup> Street - NE 119<sup>th</sup> Street) was significant, with the project costing 21.9 percent, or roughly \$1.5 million more than the 90% estimate.

The natural question that follows from these results is why are estimates generally within guidance at 30% design but not at 90%. Public Works suggested two potential causes: first, it could be that the Preliminary Engineering process is not addressing certain elements or details until after the 90% milestone, leading to unexpected costs late in the process. Second, inaccuracy of later estimates could be due to market forces, which lead to short-term fluctuations in the costs of equipment, materials, and labor as projects go out for bids.

The cost estimate information currently captured by Public Works is not reliable enough to delve into those questions to identify issues and improve future

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<sup>5</sup> Six of the 21 projects had total costs more than -5 percent below the 90% design estimate, ranging from -5.9 percent to -12.4 percent and are technically outside of the proscribed range. However, we judgmentally concluded that these estimates were not so significantly off that the impact to potential resources for other projects outweighed the benefits of the cost savings.

performance. While both successes and projects that fail to meet expectations can yield valuable lessons learned, at present Public Works is unable to leverage those experiences to improve future performance.

In terms of cost estimation, testing revealed clear positives and negatives. Cost estimation early in preliminary engineering is generally within guidance. On some projects, Public Works was able to dial in accurate estimates early in design, or able to effectively refine those estimates later in design. However, later estimates often did not accurately capture actual costs, in particular the 119<sup>th</sup> Street projects.

Without more reliable data to measure efficiency of cost estimates over project lifecycle and processes to analyze that data and make improvements, outcomes are likely to remain inconsistent.

Public Works should develop a process to compare estimated, budgeted, and actual costs over a project's lifecycle, document lessons learned, and share insights across projects and programs.

#### **4.2 Effective resource management tools, data, systems, and reports needed to provide consistent, effective oversight, management, and coordination**

To coordinate resources among projects and programs, Public Works management historically used a tool known as the "big board", which pulled information from projects in the EPD. With information in the EPD often outdated or inaccurate, additional information was used to keep the big board accurate. In late-2021, the process to update the big board broke down with key departures among management and staff.

To understand and manage current project timelines, status, and key deadlines, new staff and acting management adapted a tool used by the then-design section manager to manage work at the section level. With a stopgap in place, efforts were made to resume the big board report.

During audit fieldwork, we noted that sections within Public Work's engineering and construction division, including project management, construction management, real property services, and Survey each had developed their own tools to manage deadlines, staff resources, and workloads. There was no additional formal tool or report that coordinated deadlines, staff resources, and workloads at the Division level.

Formal internal project status reporting was similarly limited. Beyond the big board report, policies mention a monthly status report for each project. During interviews, staff indicated that the report was requested by a prior director. Eventually the report stopped being produced because it wasn't being used for anything, and since design progress is based on milestones and not calendar time, required extra effort to produce.

Engineering and construction did work on developing a more formal set of tools to managing deadlines, staff resources, and workloads in 2019. Like many of Public Works' previous efforts, it does not appear that this project was completed and implemented.

Consistent with its informal approach, Public Works had few resource management tools, data, systems, and reports in place to coordinate resources among projects and programs. Tools that did exist were built on the limited information systems and unreliable data previously discussed. The lack of tools limited Public Works' ability to measure effectiveness and efficiency at the program level. With staff departures those tools broke down, leaving Public Works without the ability to effectively manage its resources across projects and programs for a short period. While new management was able to develop some stopgap solutions, a more-coordinated approach is needed to ensure efficient use of limited resources.

To improve its ability to manage and efficiently allocate project resources, Public Works should develop program-level resource management tools that incorporate project-level workloads and resource utilization. They should also develop division level workload and capacity management tools that capture section-level workloads and resources.. In addition, templates for project initiation and planning should identify the staff resources likely needed for the project including collaborative tasks. Finally, Public Works should develop policies and procedures around workload and resource planning to ensure historical knowledge of the process is retained.

## 5. Systematic Approach to Organizational Growth and Maturity Needed

Preceding sections identified a variety of issues with the current system of internal controls for capital project management:

- ◆ The lack of an effective change management system which prevented Public Works from developing a more formal system of controls.
- ◆ Poorly designed processes which limit oversight and collaboration.
- ◆ Outdated policies and practices that limit transparency and documentation of compliance.
- ◆ Missing efficiency measures and unreliable data that reduce Public Works' ability to manage program and project resources.

These issues are significant barriers to the agency's ability to be effective and efficient when delivering capital transportation projects. While addressing these issues, Public Works must also continue to deliver the projects already committed to under the Transportation Improvement Plan (TIP) / Annual Construction Plan (ACP). Even if the current workload remains constant, addressing audit findings and implementing recommendations while continuing to deliver projects will take time.

Recent changes in external funding opportunities have the potential to increase that workload. In November 2021, the United States Congress passed the Infrastructure, Investment, and Jobs Act (IIJA), which contained more than \$550 billion in funding for infrastructure projects, including transportation projects. Touted as a "once-in-a-generation" investment, the increased funding presents an opportunity for Clark County Public Works to deliver additional capital projects, if they can effectively use those additional funds.

The infrastructure funding creates a resource problem for Public Works: how to address the issues identified in this audit while continuing to deliver capital projects while simultaneously growing the organization to take advantage of increased funding opportunities while available?

To help prioritize issue resolution while also mapping organizational growth, this section applies an organizational maturity model to Public Works. Maturity models define different levels of effectiveness, and then score organizations or processes against those levels to identify specific opportunities for improvement. As a result of this continuous improvement, mature organizations achieve more consistent and higher quality results.

### **5.1 Significant variance exists in maturity and consistency of project delivery processes**

The audit applied an organizational maturity model known as the Portfolio, Program, and Project Management Maturity Model (P3M3). Application of the P3M3 model allows us to measure capabilities from different perspectives to both prioritize issue



resolution and map future organizational growth. This model consists of a hierarchical collection of elements that describe the characteristics of an effective process.

The P3M3 maturity model can be applied at the project, program, and / or portfolio levels when evaluating an organization. Our assessment focused on the project-level, consistent with the audit objectives. As shown in Figure 15 below, Public Works was assessed across seven perspectives: management control, benefits management, financial management, stakeholder management, risk management, organizational governance, and resource management. The organizational maturity of each perspective is assessed across five levels of maturity, ranging from awareness of process (level 1) to optimized process (level 5).

**Figure 15. P3M3 Assessment of Public Works’ Organizational Maturity**

Perspective	Level 1 - Awareness of process	Level 2 - Repeatable process	Level 3 - Defined process	Level 4 - Managed process	Level 5 - Optimized process
Management control	█		█		
Benefits management	█				
Financial management	█				
Risk management	█				
Stakeholder management (External)	█				
Stakeholder management (Internal)	█				
Organizational governance	█				
Resource management	█				

As the figure shows, auditors assigned a range rather than a single point score across each of the seven perspectives. This approach better captured the current state of Public Works: some elements may be present but informal, or previously existed but no longer functioning or in-use due to turnover.

### 5.1.1 Management Control

Management control describes the maturity of internal controls and how those controls help ensure that the project continues to progress to completion. Public Works’ management control can currently be described as level 2, with some elements of level 3 present.

Level 3 elements present:

- Ability to tailor the standard project framework to add or remove design milestones.
- Milestone reviews to ensure control and consistency with project goals.

Elements needed to mature:

- Fully documented and supported project lifecycle.
- Standard processes, procedures, and templates to enable consistent management control of projects.
- Project deliverables reviewed against established standards and quality criteria.
- Lessons learned process or similar forum for sharing organizational experience used to improve performance.

### 5.1.2 Benefits Management

Mature benefits management ensures that outcomes have been defined, are measurable, and can be delivered. Public Works current benefit management reflects maturity level 1, with one element of level 2.

Level 2 element present:

- Project team includes a “client” from the applicable program who helps ensure the project meets its intended purpose.

Elements needed to mature:

- Project scoring and prioritization criteria incorporated into initiation process.
- Established standards and criteria for measuring project outcomes.
- Implement post-completion reviews that compare project goals against benefits delivered.

Longer-term opportunities for improving the maturity of Public Works’ benefits managements would involve formal, documented consideration of how changes to project impact expected benefits, statements detailing how benefits are achieved from project deliverables, and defined and explicit measures of project success.

### 5.1.3 Financial Management

Mature financial management ensures that estimated and actual costs are captured and managed within a formal process to efficiently utilize financial resources. Public Works has many, but not all, elements of level 3.

Level 3 elements present:

- Contracting follows established process with support from the county’s centralized procurement function.

- Project budgets are established county's financial system and expenditures tracked against budgets.
- Evidence of signoff when change orders are issued and defined authorities for expenditure levels.

Elements needed to mature:

- Formally integrate Public Works Finance into process to produce project cost estimates in design and approval process for contract change orders.
- Fully integrate cost management at the project level with the organization's financial management function
- Routinely audit project expenditures
- Develop a process to share and capture lessons on cost estimation across projects.

#### 5.1.4 Risk Management

Mature risk management helps to minimize both the likelihood of risks occurring and the impacts when risk do occur. Public Works' formal approach to project risk management can best be described as Level 1.

Elements needed to mature:

- Formal evaluation of project risk using a risk register or other template.
- Incorporation of risk status into internal and external reporting
- Alignment of risk management with other project life cycle activities and risks continually assessed throughout the project.

#### 5.1.5 Stakeholder Management

Mature stakeholder management identifies and engages with all relevant stakeholders to ensure project outcomes and outputs meet stakeholder needs. Capital transportation projects have a large group of stakeholders, including stakeholders internal to Public Works, stakeholders internal to Clark County Government (the Council, county manager), and external stakeholders (Clark County residents).

Public Works' maturity in external stakeholder management has most elements of level 3. There is a generally consistent approach to public outreach and each project has an external communications plan. However, management of internal stakeholders is closer to level 2.

Elements needed to mature:

- Internal stakeholder management plans.
- Internal communications management plans.

- Stakeholders have clearly defined roles within projects.

### 5.1.6 Organizational Governance

Mature organizational governance ensures that project delivery process align with the organizations' strategic direction. This perspective considers how project initiation and project closeout controls are applied as well as how other organization controls outside of project delivery are deployed.

Public Works' organizational governance is generally level 2 but is missing one element. As previously noted, the purchase of property for environmental mitigation on the 179<sup>th</sup> street projects happened outside of a project and was not subject to the typical internal controls.

Elements needed to mature:

- Ensure project-related activities that happen prior to a project or outside of existing project controls are accountable and subject to the organization's governance framework.
- Consistent documentation of structured project initiation and closeout.
- Consolidated progress reporting on all projects.
- Set and maintain clear reporting lines.
- Ensure project decisions are auditable.

### 5.1.7 Resources Management

Mature resource management considers all types of resources needed for project delivery, including human resources, information, and administrative support. There will be evidence of capacity planning and prioritization to enable efficient use of resources. Public Works' resource management is generally consistent with level 2.

Level 2 elements present:

- Resources assigned to projects based on skills and ability.
- Resources are formally tracked at the section level, but there is little documented evidence of actions taken in response to resource issues.

Elements needed to mature:

- Standardized resource planning and tracking tools.
- Centrally defined set of procedures for resource management.
- Potential issues arising for resource availability identified and escalated.

## 5.2 Prioritizing implementation of recommendations needed to quickly mature project delivery systems and practices

In the first four section of this report auditors identified issues with Public Works current approach to project delivery. As part of the audit, we also developed recommendations to address these issues. Applying maturity model from the previous section to the audit recommendations allows us to prioritize recommendations within each of the seven perspectives in the P3M3 model.

In the audit we noted several previous attempts to initiate change through updates to policies and procedures as well as the development of new management tools and templates. These attempts were unsuccessful because Public Works did not have an effective change management process. We also noted in Chapter 1 that Public Works initiated a process to ensure that new policies and procedures are well-designed. This is an important first step for addressing the audit recommendations, because the success of Public Works’ ability to manage organizational change will determine their ability to address the findings identified by the audit.

Additionally, because processes and elements covered by the other 6 perspectives are built on the existing project management structure, improving the maturity of Public Works’ management control is necessary to mature the other process perspectives.

### Audit Recommendations

Recommendation	Recommendation Number	Report Section
Continue to develop and implement a change management process. An effective change management process should also include a period of review and adjustment after initial implementation to ensure the policies, procedures, and controls are well-designed, well-implemented, and operating as intended.	1	1.1
<b>Management Control</b>		
Build a comprehensive set of formal project management policies, procedures, and controls that reflect best practices. The effort is most likely to be successful if project managers are involved to develop policy from the bottom-up. Key policy areas include: <ul style="list-style-type: none"> <li>• Project initiation and scoping</li> <li>• Project Documentation Report / capturing design decisions at milestones.</li> <li>• Cost estimates and the Revenue Expenditure report</li> </ul>	2	1.3; 1.4; 2.1; 2.4; 3.1; 4.1

<ul style="list-style-type: none"> <li>• Project schedules, including standards for revised milestones.</li> <li>• Project file management, version control, and naming conventions.</li> <li>• Project information system and data management</li> <li>• Standards for collaborative tasks including design review.</li> </ul>		
<p>Assess the viability of the Engineering Program Database (EPD) as a project management system. If the EPD is part of the project management information system going forward, develop processes and tools to ensure that data is entered timely and accurately.</p>	3	4.1.2
<p>Improve monitoring and oversight of key control activities by:</p> <ul style="list-style-type: none"> <li>• Developing a review and approval process for the Project Documentation Report to ensure the report is completed timely at each design milestone.</li> <li>• Developing a checklist or review process to ensure the completeness and accuracy of data and documentation captured in key project management systems.</li> <li>• Ensuring that RevEx estimates are updated timely at each design milestone and routed for review and approval.</li> </ul>	4	2.2; 3.1;
<p>Develop a project post-mortem and / or lessons learned process to ensure that project performance information is captured for each completed project. The process should capture:</p> <ul style="list-style-type: none"> <li>• Narrative of lessons-learned and other takeaways to apply to future projects.</li> <li>• Estimated and actual project cost estimates.</li> <li>• Initial, revised, and actual schedule.</li> <li>• Risks identified and risk mitigation strategies used.</li> <li>• Evaluate project goals and scoring criteria against what was ultimately delivered.</li> </ul>	5	3.1, 4.1.3
<p>Implement best practices for change order management, including the recently developed policy on change order management which has provisions for ensuring documentation of verbal approvals for the project file.</p>	6	3.2.1

In addition, ensure that the policy includes a provision requiring the Construction Engineer to review and clearly document the cost basis used for the change order and whether the amount proposed are appropriate.		
Formalize policies and procedures for the incorporation of funding terms and conditions into the bid, advertising, and award process.	7	3.2.2
Consider revising the bid ready checklist to include details on any required general or special terms and conditions and to include attestations from staff involved in addition to the project manager.	8	3.2.2
<b>Benefits Management</b>		
Project Management and programming should work to develop a project initiation process that formally incorporates project scoring and prioritization into project goals and outcomes.	9	2.1
When documenting project and design decisions and alternatives, include statements connecting decisions to project scoring criteria and / or expected benefits.	10	3.1
Establish criteria for measuring and evaluating project outcomes and outputs against project scoring criteria and / or expected benefits.	11	3.1
<b>Financial Management</b>		
Ensure that finance is formally included when any updates are made to project revenue and expenditure estimates and contract change orders.	12	2.4
Develop a process to compare budgeted and actual costs over a project's lifecycle, document lessons learned, and share insights across projects and programs.	13	4.1.3
Develop a process to periodically review a sample of project expenditures to ensure controls are operating as intended	14	2.4
<b>Stakeholder Management</b>		
Define roles and expectations for design review and other collaborative tasks at each milestone point throughout design.	15	2.3
Develop a formal approval process to ensure feedback has been provided.	16	2.3

Consider developing a formal project-specific communications plan for internal stakeholders.	17	2.2
Develop an Integration Management Process to identify, define, and coordinate the any project-related processes or activities that happens outside of a single project. The goal of the process is to ensure similar internal controls are applied as if done within the scope of a single project. Items to address include: <ul style="list-style-type: none"> <li>• A process to evaluate the costs and benefits of any property used for environmental mitigation prior to purchase.</li> <li>• A process to evaluate shared features or dependencies between multiple projects such as multi-site stormwater mitigation facilities.</li> <li>• If property purchased for environmental mitigation on the 179<sup>th</sup> street projects is not used for that purpose, Public Works must determine whether there is another use consistent with the county’s land use and / or conservation goals. They also must determine if the funding source used to purchase the property is still appropriate given the change in intended use, and if not, take action to charge the purchase to the correct source.</li> </ul>	18	2.4
<b>Risk Management</b>		
The project initiation process should formally identify project-specific risks and risk mitigation strategies and include historical information / past project performance.	19	2.1
Reassess and document project risks and risk mitigation strategies during key milestones throughout the project lifecycle.	20	3.1
Implement a risk register or similar tool to track risks and risk mitigation strategies over the project lifecycle.	21	3.1
During the project post-mortem and / or lessons learned process, evaluate risks identified and risk mitigation strategies used to identify opportunities for improvement.	22	3.1
<b>Organizational Governance</b>		
Develop a formal process to produce periodic internal reports on project and program status. The	23	2.5



reporting frequency should be consistent with the cadence of project level updates, which typically happen at milestone points when in design and monthly while in construction.		
Work with the Council to develop a formal process to report project and TIP/ACP status including actual expenditures. For projects in design, the updates should be based on milestones achieved; while projects in construction should be updated based on monthly progress made.	24	2.5
Develop policies and procedures around project and program status reporting to ensure historical knowledge of the process is retained.	25	2.5
<b>Resource Management</b>		
Develop division level workload and capacity management tools that capture section-level workloads and resources.	26	4.2
Develop program-level resource management tools that incorporate project-level workloads and resource utilization.	27	4.2
Develop policies and procedures around workload and resource planning to ensure historical knowledge of the process is retained.	28	4.2

## Appendix A: Management's Response



**CLARK COUNTY WASHINGTON**

**PUBLIC WORKS**

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**CC:** Kathleen Otto, County Manager  
Amber Emery, Deputy County Manager

**From:** Ken Lader, PE, Public Works Director / County Engineer  
Jeremy Provenzola, PE, Deputy County Engineer  
Priya Dhanapal, PE, Deputy Director Public Works

**Date:** October 26, 2023

**Subject:** Performance Audit of Public Works' Capital Project Delivery - Management Response

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The County Auditor's Office initiated an audit of the Public Works' capital project delivery system in the fall of 2021. The intent of this audit was to determine whether Public Works has effective and efficient project management systems and practices, and whether the department has the ability to scale those systems up in response to future changes in external funding.

Broadly speaking, Public Works' management agrees with the recommendations in the report. We humbly acknowledge that our project delivery function could be improved and truly appreciate the thoughtful and collaborative review by the auditor's office and their insightful recommendations.

We would like to acknowledge that the timing of this audit reflects a specific moment in the history of the Public Works department characterized by extraordinary challenges. Department leadership underwent significant turnover and often failed to provide constructive or meaningful support to staff, at times exhibiting open hostility. The global pandemic disrupted every aspect of how employees worked and how business operations were conducted. Public Works faced difficulties in recruiting and retaining employees, resulting in prolonged staff shortages, particularly in the Project Management Section.

Regardless, staff persisted to deliver on the department's mission. Notably, several capital projects were subject to project reviews from Washington State Department of Transportation (WSDOT) during the period covered by the county's audit, testing the department's compliance with state

and federal project delivery requirements. Public Works was found to be in good standing as a Certified Agency following those reviews.

Furthermore, staff assessed the department’s project management model and its adherence to the Project Management Institute’s (PMI) model. This assessment confirmed that our project management framework is in close alignment with the processes that the Project Management Body of Knowledge (PMBOK) Guide considers “good practice on most projects, most of the time.” These anecdotes suggest that the foundational elements of the department’s project delivery function are sound, and they are primed for iterative improvements such as those identified in this audit.

This report underscores the reality that Public Works’ capital project delivery persisted despite the deficiencies noted in the audit and the challenging work environment. This is a testament to the dedicated professionals who competently and faithfully delivered on Public Works’ mission as the department grappled with a series of existential crises. Essentially, these are the same professionals that will eagerly lead the effort to implement the recommendations.

Conversely, our leadership team has focused our limited resources on stabilizing the department. This means changes are executed deliberately and methodically when the opportunity presents itself. Many of the recommendations are already in the process of being implemented but we recognize that substantial implementation will take several years.

Public Works management offers the following responses to the report’s recommendations:

### CHANGE MANAGEMENT

R1. Continue to develop and implement a change management process. An effective change management process should also include a period of review and adjustment after initial implementation to ensure the policies, procedures, and controls are well-designed, well implemented, and operating as intended.

Response: **Public Works is committed to robust change management and has already taken several steps towards implementation including recruitment for a Policy and Procedure Program Coordinator, realigned responsibilities, a commitment to promote from within for improved continuity and retention, a commitment to a culture of trust and transparent decision-making, and leadership training with change management elements.**

### MANAGEMENT CONTROL

R2. Build a comprehensive set of formal project management policies, procedures, and controls that reflect best practices. The effort is most likely to be successful if project managers are involved to develop policy from the bottom-up. Key policy areas include:

- Project initiation and scoping
- Project Documentation Report / capturing design decisions at milestones
- Cost estimates and the Revenue Expenditure report
- Project schedules, including standards for revised milestones
- Project file management, version control, and naming conventions
- Project information system and data management
- Standards for collaborative tasks including design review

R3. Assess the viability of the Engineering Program Database (EPD) as a project management system. If the EPD is part of the project management information system going forward, develop processes and tools to ensure that data is entered timely and accurately.

R4. Improve monitoring and oversight of key control activities by:

- Developing a review and approval process for the Project Documentation Report to ensure the report is completed timely at each design milestone.
- Developing a checklist or review process to ensure the completeness and accuracy of data and documentation captured in key project management systems.
- Ensuring that RevEx estimates are updated timely at each design milestone and routed for review and approval.

R5. Develop a project post-mortem and / or lessons learned process to ensure that project performance information is captured for each completed project. The process should capture:

- Narrative of lessons-learned and other takeaways to apply to future projects.
- Estimated and actual project cost estimates.
- Initial, revised, and actual schedule.
- Risks identified and mitigation strategies used.
- Evaluate project goals and scoring criteria against what was ultimately delivered.

R6. Implement best practices for change order management, including the recently developed policy on change order management which has provisions for ensuring documentation of verbal approvals for the project file.

In addition, ensure that the policy includes a provision requiring the Construction Engineer to review and clearly document the cost basis used for the change order and whether the amount proposed are appropriate.

R7. Formalize policies and procedures for the incorporation of funding terms and conditions into the bid, advertising, and award process.

R8. Consider revising the bid ready checklist to include details on any required general or special terms and conditions and to include attestations from staff involved in addition to the project manager.

**Response: Public Works is committed to reviewing and/or updating its project management tools and will assess them with consideration of these recommendations. The department plans to update the Project Management Manual once staffing levels permit. In addition, the following steps have already been completed or are in progress:**

- **Performed an assessment of Public Works's capital project delivery to determine how closely it aligns with the Project Management Institute's (PMI) model for project delivery.**
- **Developed a draft Change Order Authorization Policy collaboratively with Public Works finance and client divisions, which is currently in use as a pilot.**

**Assessed the viability of EPD and determined that it is insufficient to meet all the department's project management demands. Preliminary discussions have been held with IT's PMO and budget authority has been requested for 2024 to replace EPD with a modern PMIS solution.**

## BENEFITS MANAGEMENT

R9. Project Management and programming should work to develop a project initiation process that formally incorporates project scoring and prioritization into project goals and outcomes.

R10. When documenting project and design decisions and alternatives, include statements connecting decisions to project scoring criteria and / or expected benefits.

R11. Establish criteria for measuring and evaluating project outcomes and outputs against project scoring criteria and / or expected benefits.

Response: **Public Works agrees that benefits management and documentation is an underutilized element of project delivery and, as the PM Manual is updated, will explore opportunities to integrate priorities and desired outcomes throughout the project lifecycle. This effort will endeavor to improve continuity of initial objectives in decisions and documentation by revisiting project initiation, scoping, and project documentation reports (PDR), as well as post-mortem exercises.**

## FINANCIAL MANAGEMENT

R12. Ensure that finance is formally included when any updates are made to project revenue and expenditure estimates and contract change orders.

R13. Develop a process to compare budgeted and actual costs over a project's lifecycle, document lessons learned, and share insights across projects and programs.

R14. Develop a process to periodically review a sample of project expenditures to ensure controls are operating as intended.

Response: **Partial implementation is underway, and Public Works has already cultivated and benefitted from a more transparent and cohesive approach to the financial management of the major Public Works' capital plans. This is demonstrated in part by quarterly meetings with countywide budget and finance teams and the recent implementation of fund forecasting models. In addition, PW Finance is included in the Rev/Ex updates through the TIP process and currently monitors proper use of revenue sources for all projects during the annual and supplemental budget sessions.**

## STAKEHOLDER MANAGEMENT

R15. Define roles and expectations for design review and other collaborative tasks at each milestone point throughout design.

R16. Develop a formal review and approval process to ensure feedback has been provided during design review.

R17. Consider developing a formal project-specific communications plan for internal stakeholders.

R18. Develop an Integration Management Process to identify, define, and coordinate the any project-related processes or activities that happens outside of a single project. The goal of the process is to ensure similar internal controls are applied as if done within the scope of a single project. Items to address include:

- A process to evaluate the costs and benefits of any property used for mitigation prior to purchase.
- A process to evaluate shared features or dependencies between multiple projects such as multi-site stormwater mitigation facilities.
- If property purchased for mitigation on the 179th street projects is not used for that purpose, Public Works must determine whether there is another use consistent with the county's land use and / or conservation goals. They also must determine if the funding source used to purchase the property is still appropriate given the change in intended use, and if not, take action to charge the purchase to the correct source.

Response: **Public Works already has software tools in place to facilitate an effective and collaborative design review process but would benefit from clearer roles, expectations, and milestone definitions, as well as additional project-specific communication.**

**Public Works will review existing procedures and develop more robust processes and policies that address the elements identified in Recommendation 18. The department's approach to environmental mitigation, particularly multi-project mitigation, has been identified as an area for improvement and expansion by the Public Works Environmental Permitting Section.**

## RISK MANAGEMENT

R19. The project initiation process should formally identify project-specific risks and mitigation strategies and include historical information / past project performance.

R20. Reassess and document project risks and mitigation strategies during key milestones throughout the project lifecycle.

R21. Implement a risk register or similar tool to track risks and mitigation strategies over the project lifecycle.

R22. During the project post-mortem and / or lessons learned process, evaluate risks identified and mitigation strategies used to identify opportunities for improvement.

Response: **Public Works acknowledges the benefits of improving risk-management practices throughout the project lifecycle and reestablishing a project post-mortem exercise. Opportunities to expand these practices will be considered during the PM Manual update.**

## ORGANIZATIONAL GOVERNANCE

R23. Develop a formal process to produce periodic internal reports on project and program status. The reporting frequency should be consistent with the cadence of project level updates, which typically happen at milestone points when in design and monthly while in construction.

R24. Work with the Council to develop a formal process to report project and TIP/ACP status including actual expenditures. For projects in design, the updates should be based on milestones achieved; while projects in construction should be updated based on monthly progress made.

R25. Develop policies and procedures around project and program status reporting to ensure historical knowledge of the process is retained.

Response: **Partial implementation is already underway in the form of quarterly capital plan update meetings between Public Works, Budget, and Finance teams. The content and frequency of these meetings will continue to evolve but there is strong consensus that this new generation of transparent management is mutually beneficial for all participants.**

## RESOURCE MANAGEMENT

R26. Develop division level workload and capacity management tools that capture section-level workloads and resources.

R27. Develop program-level resource management tools that incorporate project-level workloads and resource utilization.

R28. Develop policies and procedures around workload and resource planning to ensure historical knowledge of the process is retained.

Response: **Resource loading has already been identified as a critical need as part of the potential EPD replacement effort and as solutions are developed Public Works is committed to memorializing how and why tools are used to facilitate meaningful knowledge transfer.**

## Appendix B: Audit Objectives, Scope, and Methodology

Audit Services initiated an audit of Public Works project management practices in October 2021. Public Works was selected for an audit due to several factors. Although not directly related to project management and delivery, prior audit findings from the Washington State Auditor (SAO) suggested control weaknesses in several areas across Public Works. The then-Public Works Director also requested the audit in response to concerns regarding compliance, oversight, and reporting. During audit planning, we also noted potential Federal legislation which could lead to significant additional funding opportunities for the county. In November 2021, the United States Congress passed the Infrastructure, Investment, and Jobs Act (IIJA), which contained more than \$550 billion in funding for infrastructure projects, including transportation projects.

Project management was chosen as a topic because capital project delivery involves management and staff from across Public Works and the impact that project management has on project and program outputs and outcomes, as well as the potential for increased Federal funding.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

### Audit Objectives

The objective of the audit is to determine whether Public Works has effective and efficient project management systems and practices in place to deliver capital transportation projects and whether Public Works can scale those systems and practices in response to increased external funding opportunities.

In this context, systems and practices refers to the elements and components working together for a common purpose: completing capital transportation projects. Public Work's systems and practices include the tone set by leadership; formal rules, policies, and procedures; informal practices and unwritten rules, information systems used to capture and report data, internal communication and relationship among and between staff and management, and external communication with the Public, stakeholders, other county departments, and county leadership.

*Objective 1: Determine whether Public Works has effective project management systems and practices in place to deliver capital transportation projects.*

We can conclude that while Public Works does have project management *practices* in place and is continuing to delivery capital transportation projects, Public Works lacks formal *systems* for capital project management.



Current practices help ensure compliance with key external requirements reviewed during the audit. Processes for incorporation of terms and conditions into the bid, advertising, and award process and management of construction change orders, documentation could be improved.

Without formal systems, Public Works cannot consistently deliver capital transportation projects within the expected scope, schedule, and budget. Policies and procedures do not sufficiently address roles, responsibilities, and expectations for project managers and team members. Key controls in the delivery process, including project initiation, design review, and control of project scope, schedule, and budget are either not well designed, well-implemented, or operating as intended.

Because the scoring used to rank capital projects as part of the Transportation Improvement Plan (TIP) process is not formally incorporated into project initiation, we also cannot conclude whether the improvements delivered met the project's purpose.

*Objective 2: Determine whether Public Works has efficient project management systems and practices in place to deliver public works.*

Based on the evidence, we can conclude that Public Works lacks the both the quality data and standards necessary to determine how efficient they are overall in delivering capital transportation projects.

We observed projects that appeared to be completed within schedule estimates as well as projects that were not. However, the lack of clear standards for revising milestones prevented the audit from drawing conclusions about Public Works ability to deliver projects within schedule.

At the program level, current management tools, internal reports, and external reports are not sufficient. As a result, Public Works cannot be assured that its limited resources are being efficiently allocated to projects.

*Objective 3: Determine Public Works' ability to scale systems and practices to facilitate changes in external funding.*

Based on the evidence, we can conclude that Public Works would have difficulty scaling their existing project management systems and practices without significantly increasing the risk the projects will not be completed within the expected scope, schedule, and budget.

In turn, projects not completed within expected scope, schedule, or budgets creates additional risk that Public Works will not be able to achieve the goals of their capital programs.

## **Audit Scope**

The audit examined capital transportation projects that appeared on the TIP / ACP between 2016 and 2022. The audit universe included 20 projects identified in the Capital Facilities Plan and prioritized through the annual TIP scoring process. In terms of scope, schedule, and budget, these are the largest projects the county undertakes. The audit universe also includes 26 projects under the ongoing transportation sub-program, which includes smaller projects to support the existing transportation network or compliment larger projects. This group of projects includes intersection improvements, traffic signal upgrades, sidewalk installations, and culvert repairs and replacements. In total, 46 transportation projects were identified. During the audit period, Public Works successfully delivered 21 capital transportation projects, including 7 TIP projects.

The audit was unable to rely on project data to assess performance; similarly Public Works is unable to use its own data to generate accurate, reliable internal and external reporting to manage its capital programs more effectively and to leverage that data along with lessons learned to improve and refine its approach to project management and delivery. Best practices note that data on prior performance is necessary to identify systematic issues and challenges to achieve consistent results.

## **Audit Methodology**

The audit reviewed project documentation and data for all 46 projects identified, with additional detailed testing performed on a judgmental sample of 10 projects.

Our conclusions regarding the accuracy and availability of data were based on a review of all 46 projects identified. Our conclusions regarding the accuracy of estimates relative to final costs were based on a review of the 21 completed capital projects we identified. These results are generalizable to universe of projects during the audit period.

Our conclusions regarding project milestone documentation (including schedules, project documentation reports, and completed revenue-expenses estimates) and compliance with external requirements (change orders and bid, advertising, and award documentation) were based on the same judgmental sample of 10 projects.

The judgmental sample was selected to capture both TIP and ongoing program projects, projects ranging from large to small dollar values, and project in various stages of design and completion. Given the sample selection methodology, the results from these tests cannot be generalized to the population of capital projects during the audit period.

