Secretary of State
Oregon Audits Division

Oregon Department of Transportation

ODOT Oversees a Robust Project Delivery Process, yet Opportunities Exist to Further Improve Work Zone Safety

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Executive Summary

Oregon Department of Transportation

ODOT Oversees a Robust Project Delivery Process, yet Opportunities Exist to Further Improve Work Zone Safety

Why This Audit is Important

» ODOT's mission is to provide a safe and reliable multimodal transportation system for all Oregonians.

» Roughly $1.3 billion in federal, state, and local funds are allocated to a variety of road construction and maintenance projects in Oregon every year. House Bill 2017 will also lead to an increase in road construction projects.

» Road work is necessary to maintain and preserve roadways used by Oregonians every day, but construction can impair traffic mobility and presents some safety risks to workers and transportation users.

» On average, there are 488 crashes and five fatalities in Oregon road construction work zones every year (including ODOT, city, and county roadway projects).

» To reduce risks to workers and transportation users in work zones, ODOT staff design and evaluate traffic control strategies with the intent of improving safety and maintaining traffic mobility.

What We Found

1. The Oregon Department of Transportation (ODOT) has a robust project delivery process that supports traffic control and permanent design decisions that emphasize the safety of both workers and transportation users. (pg. 15)

2. ODOT has taken steps to standardize some process elements and promote greater consistency of practice across the state, which further support the design of safe work zones. ODOT could benefit from expanding these efforts to include the creation of a statewide transportation management plan template and more opportunities for designers to visit work zones and receive feedback throughout project delivery. (pg. 19)

3. ODOT should formalize and clarify expectations around stakeholder involvement in project design to continue to meet the needs of public safety and traffic mobility in work zones. Stakeholder feedback is important to project success but must be balanced with the technical expertise of ODOT staff and consultants. (pg. 21)

What We Recommend

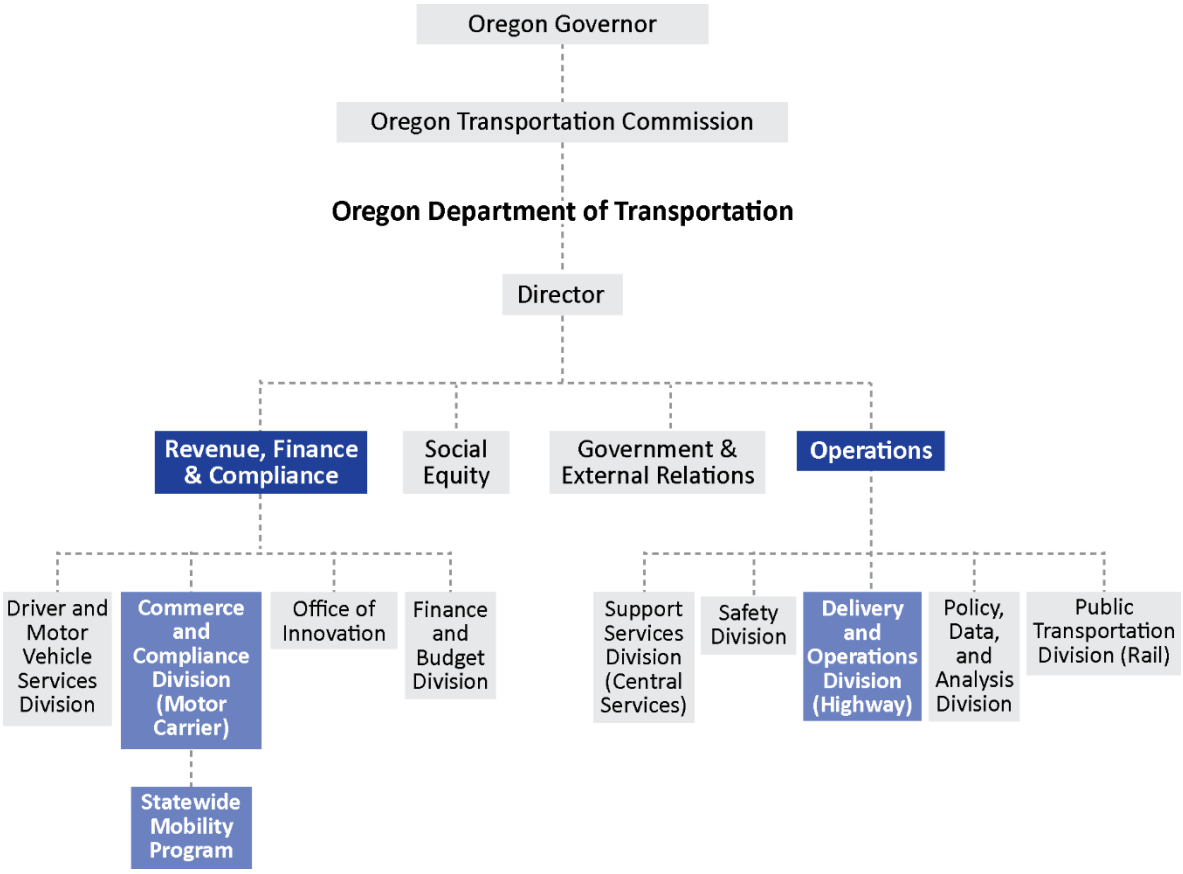
ODOT can further reduce risks to workers and drivers in work zones by continuing to emphasize transportation safety during project design, including standardizing some project delivery steps, aligning project design policies and procedures, and strengthening the control framework around stakeholder participation.

ODOT agreed with all 10 of our recommendations. Their response can be found at the end of the report.

Introduction

Every year, the Oregon Department of Transportation (ODOT) oversees the planning, development, design, construction, maintenance, and preservation of state-owned and managed roadways. Drivers, pedestrians, cyclists, freight and others use Oregon's roadways every day. Most of these users will, at some point, have to navigate through or around road construction work zones.

Road construction work zones create some distinct safety risks for workers and transportation users. While ODOT must mitigate those risks, the agency must also account for project costs, timelines, and mobility needs. The objective of this audit was to determine how ODOT could better evaluate traffic control strategies and planning decisions to enhance the safety of workers and transportation system users in active construction work zones.



ODOT dedicates billions of dollars to support the construction and maintenance of Oregon roadways every biennium

ODOT is one of the largest state agencies in Oregon, with more than 4,700 employees and five independently functioning regional offices covering a variety of transportation services at the regional and local level. ODOT's mission is to provide a safe and reliable multimodal transportation system that connects people and helps Oregon's communities and economy thrive. The agency is charged with developing and maintaining Oregon's system of highways and bridges, public transit services, rail passenger and freight systems, and bicycle and pedestrian facilities. ODOT also manages driver licensing and vehicle registration programs, motor carrier operations, and transportation safety programs.

ODOT will collect just over $6 billion in federal and state revenue during the 2019-21 biennium.[1] The agency also receives funding for specific purposes from cigarette tax revenues, lottery funds, and a variety of transportation-related permits and fees.

For the 2019-2021 biennium, ODOT will distribute about $1.2 billion, or 20% of total revenue, to Oregon cities, counties, and other agencies. Another $4.5 billion goes to ODOT's biennial operating budget and ending balance. This budget is what funds programs related to Oregon's system of maintaining highways, roads and bridges, railways, public transportation services, transportation safety programs, driver and vehicle licensing, and motor carrier regulation. $348 million is specifically allocated to the Statewide Transportation Improvement Program (STIP) and mandated programs in the 2019-2021 Legislatively Approved Budget. (The STIP is funded on a 3-year cycle, with annual allocations around $575 million.)

ODOT aims to integrate services through a recent agency reorganization

In December 2019, ODOT began to reorganize its divisions out of a need for greater integration of services across modes of transportation. ODOT is now organizationally divided into four main areas, each consisting of different divisions and offices. This organizational restructure has resulted in some divisions being renamed. Most notably the Highway Division, the primary focus of our audit, has been renamed the Delivery and Operations Division, while the Motor Carrier Division has been renamed the Commerce and Compliance Division.

The **Delivery and Operations Division** is the largest ODOT division and consists of two major program areas: Project Delivery and Maintenance & Operations.[2] The division dictates the bulk of work relating to the maintenance, operations, design, and construction, of state roadways, bridges, and other transportation infrastructure. Over half the workforce of the agency is housed under this division.

About $2.7 billion of ODOT's $4.5 billion biennial operating budget goes to the following programs:

- The Preservation Program, which preserves pavement surfaces;
- The Bridge Program, which inspects, preserves, and designs bridge structures;
- The Modernization Program, which looks to enhance and expand the transportation system;
- The Highway Safety and Operations Program, which looks to reduce serious and fatal crashes;
- Local Government and Special Programs; and
- The Maintenance and Operations Program, which includes the daily activities of maintaining and repairing the existing transportation system to keep it safe and usable for travelers.

The Delivery and Operations Division also oversees the implementation of the Statewide Transportation Improvement Program (STIP) projects. Each STIP project passes through several project delivery phases before construction begins.

ODOT's five regional offices under the Delivery and Operations Division work with many of the consultants and contractors across the state for the design and construction of transportation projects. Under House Bill 2017, ODOT has a goal of outsourcing 70% (in terms of dollars spent) of its project development-related work in the coming years, including: design, engineering,

[1] The current and upcoming budgets may be affected by the COVID-19 pandemic.
[2] About $2.7 billion, or 60%, of ODOT's budget goes to the Delivery and Operations Division.

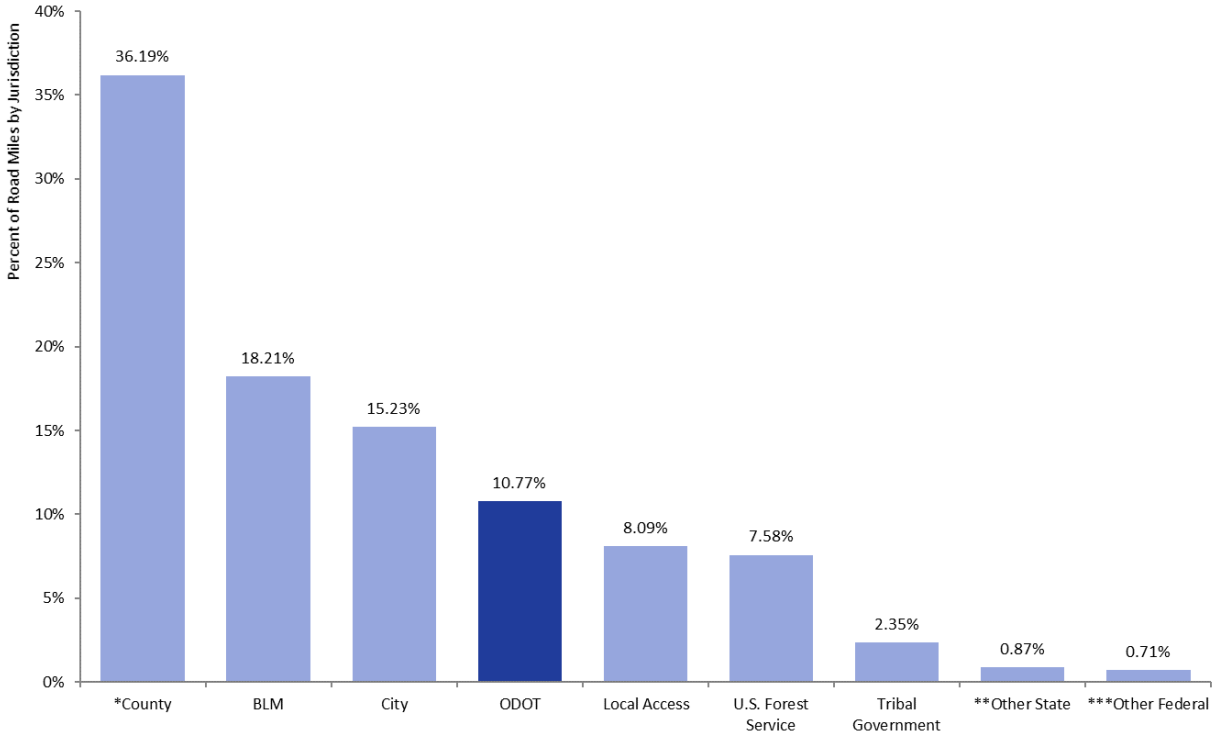
project management and implementation, and 40% (in terms of dollars spent) of construction related-work, including construction contract administration and inspection.

The **Commerce and Compliance Division** regulates a diverse commercial transportation industry operating on Oregon public roads, ranging from one-truck owner-operators to carriers with large fleets throughout the United States and Canada. The division maintains accounts for approximately 29,610 trucking companies with over 504,455 trucks registered to operate in Oregon.[3] The division is responsible for implementing federal and state regulations relating to commercial vehicle safety and registration, truck size and weight permitting and compliance, and highway use taxes and fees. The division has served as a conduit for the agency to address issues related to freight mobility. The Mobility Program, a stand-alone unit within the Commerce and Compliance Division, works directly with members of the freight industry, as discussed in greater detail later in this report.

While ODOT oversees a small percentage of Oregon's roadways it is responsible for the most heavily travelled highways

As of December 31, 2018, Oregon has approximately 74,000 miles of public roadways and less than 8,000 miles of those roads are under ODOT's jurisdiction. The remaining 89% of public roads fall under jurisdictions other than ODOT, such as cities, counties, and the federal government.

Figure 1: ODOT's jurisdiction covers a small portion of roadway miles in the state



*County includes Municipal Extension Miles
**Other State includes: Campus, Fish & Wildlife, State Institutions, State Forests, State Parks, Other Local Agencies
***Other Federal includes Army Corp of Engineers, U.S. Military, National Parks, and Other Federal Agency Miles
Source: 2018 Oregon Mileage Report

[3] CCD staff may regulate and assist carriers and their trucks by issuing license plates, temporary passes and trip permits, collecting taxes and registration fees, or ensuring liability insurance is in place, among other things.

ODOT provides support and guidance for federally funded work on city and county projects, but the agency's primary responsibility is state highways.

While state highways under ODOT's jurisdiction comprise only 11% of Oregon's roads, they carry the bulk of Oregon traffic. In 2017, 58% of vehicle miles traveled statewide occurred on Oregon state-owned highways. The fact that roadways cross and intersect with many different jurisdictions adds to the complexity of ODOT's mission of providing a safe and reliable transportation system.

Funds flow to specific projects via the Statewide Transportation Improvement Program

The STIP is a staged, multi-year, statewide multimodal program of transportation projects. Federal law requires it to be developed in cooperation with at least three separate entities: Metropolitan Planning Organizations (MPOs),[4] public transit providers, and Regional Transportation Planning Organizations[5] in the state. Area Transportation Commissions generally fulfill the regional planning function in Oregon (Oregon does not have Regional Transportation Planning Organizations). The STIP must also be compatible with the Transportation Improvement Program for the state's MPOs, which is a list of upcoming transportation projects covering a period of at least four years. Projects listed in the STIP may include state and federally funded highway and bridge construction or repairs; project development activities such as environmental reviews; and other non-construction projects such as public transit service improvements and capital purchases. The STIP also includes federal and locally funded projects of significance.

In 2019, **heavy vehicles (such as large trucks) made up 9%** of vehicle miles traveled in Oregon. Light vehicles (such as privately owned cars) made up 91% of vehicles miles traveled.

The STIP is adopted by the Oregon Transportation Commission and is effective once approved by the Federal Highway Administration and the Federal Transit Administration, as required by federal law[6]. Identifying and planning for transportation needs is an ongoing process. The STIP is updated every two or three years and projects are approved and scheduled according to their priority, available funding, and readiness to proceed. Upon adoption, the Oregon Transportation Commission allocates available state and federal funding to specific projects in the STIP.

In 2017, the Oregon Legislature passed House Bill 2017, which among other things established a transportation funding increase for the next eight years, established additional gas taxes and registration fees, required tolls on portions of Interstates 5 and 205, and appropriated roughly $3 billion to public works projects and transportation initiatives. The bill outlined a handful of specific, large-scale construction projects in the Portland-Metro area and provided funding for STIP projects around the state.

[4] Metropolitan Planning Organizations are federally mandated organizations created to carry out metropolitan transportation planning; these are required for urbanized areas with populations over 50,000.
[5] Regional Transportation Planning Organizations are organizations that conduct planning, assist local governments, and support the transportation planning process in non-metropolitan regions.
[6] Oregon Transportation Commission is a five-member board that provides policy and oversight for programs relating to rail, highway, motor vehicles, public transit, transportation safety, and other transportation related activities.

ODOT's project delivery process encompasses the planning, design, and construction of roadway projects

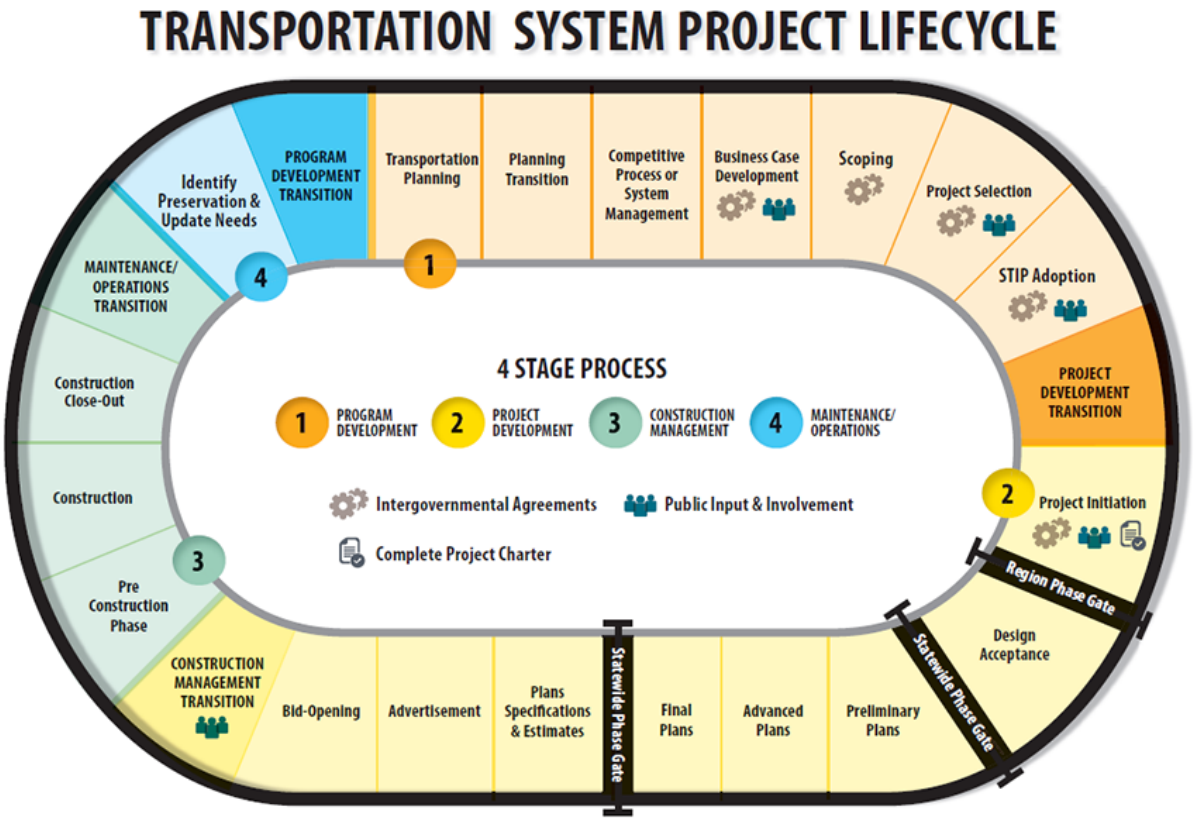
The project delivery process includes multiple "phase gates" with a series of technical reviews

At ODOT, the transportation system lifecycle begins with analysis of the existing system to identify potential projects and ends when a project transitions into maintenance and operations. This process has four stages: program development, project development, construction management, and maintenance and operations. Each stage includes distinct activities and products that are scrutinized and reviewed by ODOT engineers and analysts in detail throughout the lifecycle.

Program Development: ODOT identifies and scopes projects to validate their purpose and potential investment strategies while identifying delivery risks and opportunities. Outputs of scoping include: defining the project context, scope, schedule (for funding and programming purposes), budget, risks, and opportunities. The scoping and selection process often provides additional perspective and identifies expectations for stakeholder input and public engagement.

Project Development: In most cases, a significant amount of time passes between project selection and project initiation (typically two to three years). The entirety of the project development stage can take as little as one to two years for simple projects, or last as long as eight or more years for more complex projects (e.g., a modernization project requiring an Environmental Impact Statement). This audit is focused on the design and planning portion of project development, from project initiation and Design Acceptance through bid opening.

Figure 2: The lifecycle of a project can take several years to complete



Source: ODOT

Design Acceptance is a critical decision point that establishes the boundaries of the project footprint and considers the Americans with Disabilities Act, environmental, and land use requirements in addition to contract activities. Design Acceptance starts at the end of the initial design phase. Significant scope, schedule, and budget changes may occur between project initiation and Design Acceptance. These include changes in funding requirements and right of way, tentative bid opening dates for contracts, and construction timelines.

Another important component of this process is the traffic and delay analyses, which provide key details on current roadway operations, including vehicle volumes and an overview of any significant crash history. The results of the delay analysis will often inform what traffic control strategies (i.e., lane closures or road closures) are viable, which are then reviewed and recorded in a Work Zone Decision Tree Matrix. The matrix shows which options have been evaluated, their impacts, viability, who had input, and ultimately what was decided or recommended. This information is added to the greater Transportation Management Plan (TMP) package.

Pedestrians' ability to navigate these work zones is also carefully considered. A Temporary Pedestrian Accessible Route is required for ODOT contracted or delivered road construction work zones in Oregon following the 2016 settlement of a lawsuit with the Association of Oregon Centers for Independent Living.[7] As part of the settlement agreement, ODOT has committed to enhancing outreach, communication, and access through or around their work zones while ensuring that curb ramps on or along the state highway system meet Americans with Disabilities Act standards.

Construction Management: After a project successfully progresses through these milestones, it is put out for bid and ultimately a contract is awarded for construction to begin. Construction is a fluid and complex process and it is not uncommon for costs to deviate from original estimates. Contractors can propose changes to the traffic control plan using change orders, but those adjustments must be thoroughly reviewed and approved by the Engineer of Record.

One of the most common reasons a contractor requests a change to the original traffic control design is to change the timing or staging of the different construction phases to better match their abilities and resources. This may result in the contractor needing to set up portions of the traffic control sooner or later than originally planned, or perhaps in a different manner entirely, thus triggering the review and approval process.

Maintenance and Operations: Once a project has been completed, ODOT maintenance staff work to keep roadways and shoulders safe and clear of debris throughout the year, maintain roadway features such as signs and signals, and respond to traffic incidents.

Implementing safe work zone traffic control designs is critical for workers, drivers, and other transportation users

The risk for crashes is higher in work zones than in non-work zones. In 2017, there were a total of 426 work zone crashes on Oregon state highways (this excludes crashes that occurred on county roads and city streets outside of ODOT jurisdiction).[8] These crashes killed three people and injured 393. The statewide average for all roads, including ODOT, city, and county roads, is 488 work zone crashes every year and five fatalities.

Work zones make up a very small percentage of the entire roadway system during a limited time of the year; thus, comparing work zone fatalities, injuries, and crashes to all roadway crash data

[7] Temporary Pedestrian Access Routes are areas within a work zone, typically marked by signs and other traffic control devices, for the use of pedestrians to navigate through or around the work area. Accessibility must be equal to or better than the existing pedestrian facility, and must be maintained at all times in the work zone.
[8] Crash data and reports provided by the ODOT Crash Analysis & Reporting Unit.

or other traffic safety issues would not be effective or accurate. This comparison would only be valid if roadways had an active work zone for an entire year.

Road work next 5 miles sign
Source: MUTCD

Inattentiveness continues to be the number one cause of work zone crashes; speed is a compounding factor. According to national studies, work zone crashes tend to be more severe than other types of crashes.[9] Drivers and their passengers are injured and killed more often than construction workers in work zone crashes.

ODOT work zones must adhere to state and federal standards

Given these risks, State Departments of Transportation (DOTs) across the nation have implemented work zone standards in an attempt to increase awareness and safety in and around work zones. Any road construction or maintenance project on or next to a roadway that includes signage counts as a work zone. A work zone encompasses everything from a single truck and worker filling in a pothole to multi-year, massive construction projects that may significantly impact traffic flow for extended periods of time. Work zones can be set up for day shifts, night shifts, and rotating 24-hour shifts, and may occur throughout the year.

End of road work sign
Source: MUTCD

Unlike maintenance work zones, which are guided by a standard ODOT temporary traffic control handbook, construction work zones each have their own temporary traffic control plans and designs based on ODOT specifications. Construction projects are more likely to depend upon consultant and contract work, whereas maintenance projects are largely performed in-house. That said, there is standardization of how work zones are set up that an average driver likely would not be able to observe the difference between maintenance and construction, or between contractor work and ODOT work.

ODOT manages traffic through work zones using traffic control strategies

Traffic control is the act of guiding transportation system users safely through or around a work zone using various methods and devices, such as: closing lanes of travel, re-routing traffic with cones or barriers, posting signs identifying detours, or possibly using flaggers to control traffic through the work areas. When conducting road work or working within the public right of way in Oregon, a Traffic Control Plan (TCP) is required. When the normal function of the roadway is suspended, temporary traffic control plan provides for continuity of the movement of motor vehicle, bicycle, and pedestrian traffic (including accessible passage); transit operations; and access to property and utilities.

The goal of a TCP is to route road users safely and efficiently through or around a work zone by:

- Using signs and pavement markings well in advance of, and adequately spaced throughout, the work zone;
- Using devices that highlight or emphasize the appropriate path;
- Avoiding frequent or abrupt changes in roadway geometry; and
- Avoiding work zone environments resulting in unanticipated, abrupt changes in speed.

[9] https://etd.auburn.edu/bitstream/handle/10415/6332/Zhang_Thesis.pdf; http://citeseerx.ist.psu.edu/viewdoc/EffectsOfWorkZonePresenceOnInjuryAndNoninjuryCrashes

Consideration for road user safety, worker and responder safety, and the efficiency of road user flow is an integral element of every work zone, from planning through completion. An objective of traffic control is both the efficient construction and maintenance of the highway and the efficient resolution of traffic incidents.

Oregon traffic control design and review practices expand on federal guidance

Federal regulations and guidance form the basis for some of Oregon's transportation programming. Specifically, ODOT is mandated by Oregon rule to use federal guidance in the design of temporary traffic control plans. These requirements dictate that a temporary traffic control plan, including a temporary pedestrian accessible route plan, be prepared for work zones within Oregon highways.

A number of additional resources are made available by ODOT and are regularly used in developing a traffic control plan.

For any ODOT project, at a minimum a TMP must include:

1. A traffic control plan (TCP).
2. A narrative explaining the Scope of Work, work location and duration details, as well as how selected traffic control measures and devices are being used to protect workers and road users.
3. A delay estimate for all projects on State Highways with delay thresholds.
4. An evaluation of the delay impacts, including a discussion of the impact differences between the different options explored.
5. Copies of the Work Zone Decision Tree form for each project development milestone.

Transportation Management Plans: A key federal requirement is the development and inclusion of a Transportation Management Plan (TMP) as part of the project development and contract administration processes. As part of its commitment to safety and project integrity, ODOT makes the TMP a required portion of ODOT highway construction contracts. ODOT maintenance operations and permitted work are encouraged to use a TMP, but it is not a requirement.

The TMP is considered a "project diary" used by the agency to document and track critical design and implementation decisions made over the course of project development, design, and construction. The TMP, and the amount of detail within it, is relative to a project's scope of work; the more complex the project, the more details and information that should be included in the TMP.

Work Zone Reviews: ODOT requires and conducts daily inspections of road construction work zones to assess the requirements outlined in the traffic control plan are being met. The agency also conducts biennial statewide work zone reviews in coordination with the Federal Highway Administration to collect data related to traffic control plan designs and the implementation of those plans on state highway construction projects and score the work zones on various performance measures. Data is used to identify priorities related to changes in traffic control plan design standards and practices and inform updates to ODOT's traffic control design manual.

ODOT staff and external stakeholders work to balance safety needs with traffic mobility

ODOT's Mobility Program reviews road construction projects for potential mobility impacts

While safety is paramount, freight and commuter traffic must still be able to move through or around road construction work zones. Mobility is critical to commerce, the delivery of public services, and community stability.

ODOT's Mobility Program, a stand-alone unit with seven positions, is currently housed within the Commerce and Compliance Division (formerly the Motor Carrier Transportation Division). It processes highway restriction notices prior to the beginning of road construction projects and reviews documents produced by regional design staff to determine whether there are impacts to freight mobility. Projects with the potential for permanent mobility impacts must go through this process; many projects with temporary impacts (such as work zones) are reviewed as well. The intent of the review is to determine whether available options for reducing mobility impacts to freight have been considered, to engage stakeholders in finding solutions if necessary, and assist ODOT teams with keeping projects on schedule and on budget.

Mobility staff are over dimension permit subject matter experts bridging the gap between ODOT design staff and external stakeholders. They work with regional mobility liaisons who coordinate project presentations to the Mobility Advisory Committee (MAC) (explained in greater detail below) and handle communication between project teams and mobility staff. Additionally, mobility staff are one of two signatories on the Mobility Considerations Checklist that allows projects to move forward to bid.

Temporary Pedestrian Bridge used for a TPAR
Source: ODOT

Mobility staff review project TMPs, Work Zone Decision Trees, and the Mobility Consideration Checklists and confirm that the materials submitted are complete and accurate. They decide which projects should be reviewed by the MAC and the Stakeholder Forum, coordinate meetings and take meeting minutes, and handle the bulk of communication between the regional offices and the committee.

ODOT engages some stakeholders in project design through the Mobility Advisory Committee and Stakeholder Forum

Stakeholder involvement in project development and implementation is an important part of keeping freight and traffic moving safely and efficiently throughout Oregon. Stakeholders bring industry knowledge and different perspectives to consider that can be very helpful to engineers and designers during the development of project plans and designs. ODOT staff consider stakeholder input on projects valuable to the process. It helps to guide them in determining the best course of action.

ODOT engages different stakeholders throughout the planning and design process in a variety of ways. Members of the public are welcome to participate and learn about potential projects, as well as share concerns about project impacts they foresee during online open houses. During project scoping, project teams may coordinate with cities and counties playing a role on the project team, especially if the project calls for a detour or other impact in or around their city. Residents and impacted property owners in project areas may also receive postcards in the mail, explaining what is being planned.

Some stakeholder groups are built in to project planning. Under state administrative rule,[10] ODOT is required to seek advisory feedback from the Stakeholder Forum, including the freight industry, on projects that create permanent, not temporary, reductions in roadway capacity. Statute prohibits the Oregon Transportation Commission from permanently reducing the

[10] Oregon Administrative Rules, Chapter 731, Division 12, Reduction of Vehicle Carrying Capacity.

vehicle-carrying capacity of an identified freight route unless safety or access considerations require the reduction. [11] There is no equivalent statute or rule for stakeholder feedback on temporary capacity reductions, such as those caused by work zones.

One of these stakeholder groups is the **Mobility Advisory Committee (MAC).** The MAC is a 12-member advisory committee comprised of representatives from external stakeholder groups that weighs in on proposed projects during project design. They review project presentations, ask questions, and provide feedback to project teams. These are the primary external stakeholders most frequently involved with traffic control decision making during the design phase. Seven member groups directly represent freight and trucking, two represent manufactured housing, two represent general contracting, and one member represents the driving public.

The MAC holds frequent meetings, with the assistance of Mobility Program staff, to discuss mobility impacts such as permanent capacity reductions, roundabouts, and temporary traffic control on road construction projects.

The other major avenue for stakeholder feedback is the **Stakeholder Forum**. Stakeholder Forums are required under agency rule to help provide feedback on projects proposing permanent capacity reductions on state roads and freight corridors, and are intended to be held during MAC meetings.

At a minimum, ODOT is required to invite to each Stakeholder Forum a representative from each of the following groups:

- Cyclists;
- Pedestrians;
- Trucking;
- Mobile home manufacturing;
- Oversize load freight;
- Automobile users; and
- Affected city, county or Metropolitan Planning Organization.

After reviewing project information, participants may give their support for proposed actions at monthly meetings, which is then recorded formally in a Record of Support document by Mobility staff.

The MAC's role in project planning and design has grown over the past decade

While the MAC started as a series of informal meetings with freight stakeholders to discuss permanent capacity reduction impacts and continues to be an advisory body, it has essentially taken over the more official capacity of the Stakeholder Forum.

2004: Following the 2003 passage of OTIA III, ODOT appointed a Statewide Mobility Manager and began formalizing the Mobility Program.

2005: ODOT began hosting regular meetings with freight industry lobbyists to discuss potential mobility impacts. These meetings reportedly became less frequent and formal over time.

2012: ODOT issued a directive requiring that the freight industry be included in agency discussions of planned roundabouts and freight accommodation.

[11] ORS 366.215 grants the Oregon Transportation Commission authority to create state highways. https://www.oregonlaws.org/ors/366.215

2013: An administrative rule was introduced in 2013 creating the Stakeholder Forum, in response to concerns voiced by bicycle advocates that the agency was relying heavily on non-technical feedback from freight stakeholders to make decisions about highway capacity. ORS 366.215 restricts the Oregon Transportation Commission from reducing highway capacity unless safety or access considerations require reduction, but until 2013 the types of stakeholders that should be involved in capacity reduction discussions had not been clearly defined. Forum participants are invited to weigh in on project impacts at the MAC monthly meetings. MAC meetings are now intended to be delineated three ways: a portion of the meeting covering a variety of mobility impacts, a portion dedicated to the Stakeholder Forum discussion, and a portion covering other advisory needs.

2017: The 2012 internal directive on roundabouts was updated, now requiring that roundabouts be approved by the trucking industry through a documented agreement.[12]

2020: Internal ODOT documents indicate that the MAC is now considered the base stakeholder group for the Stakeholder Forum. MAC members are also the only identified members of the Stakeholder Forum.

The MAC, which had existed in an informal manner since the passage of OTIA III,[13] became the entity through which permanent capacity reduction plans were reviewed by members of the freight industry.

Lack of law enforcement coverage contributes to the need for additional risk mitigation steps in work zones

While conducting this audit, we identified another risk to work zone safety. Despite the benefits provided by having a police presence at construction work zones, the state lacks sufficient law enforcement resources to meet this need.

Having law enforcement presence at road construction work zones is considered an effective traffic control countermeasure which can significantly improve safety. This was reiterated by many of our interviewees, including construction workers who stressed how beneficial law enforcement presence is to improving safety in and around work zones. Through a steering committee and task force, ODOT has worked closely with law enforcement leaders in recent years to maximize the resources that are available to provide coverage at work sites.

Despite these efforts, it is simply not possible to have law enforcement presence at all the work zones where it is desired, so ODOT and construction workers take additional steps to mitigate risk to the extent possible. For example, a construction team may utilize additional work vehicles to pace the workers doing initial setup or takedown of the traffic control devices.

COVID-19 has altered ODOT operations, but has had limited impacts on current projects

According to ODOT management, the COVID-19 pandemic and Governor Brown's related Executive Orders have resulted in ODOT altering the way it conducts its business. The majority of agency activities continue under the current Stay Home, Save Lives Order, with the exception of the closure of many DMV field offices that serve the general public. While very few ODOT staff worked remotely prior to the pandemic, nearly half have now transitioned to working from home. ODOT management says the agency and its construction contracting partners have

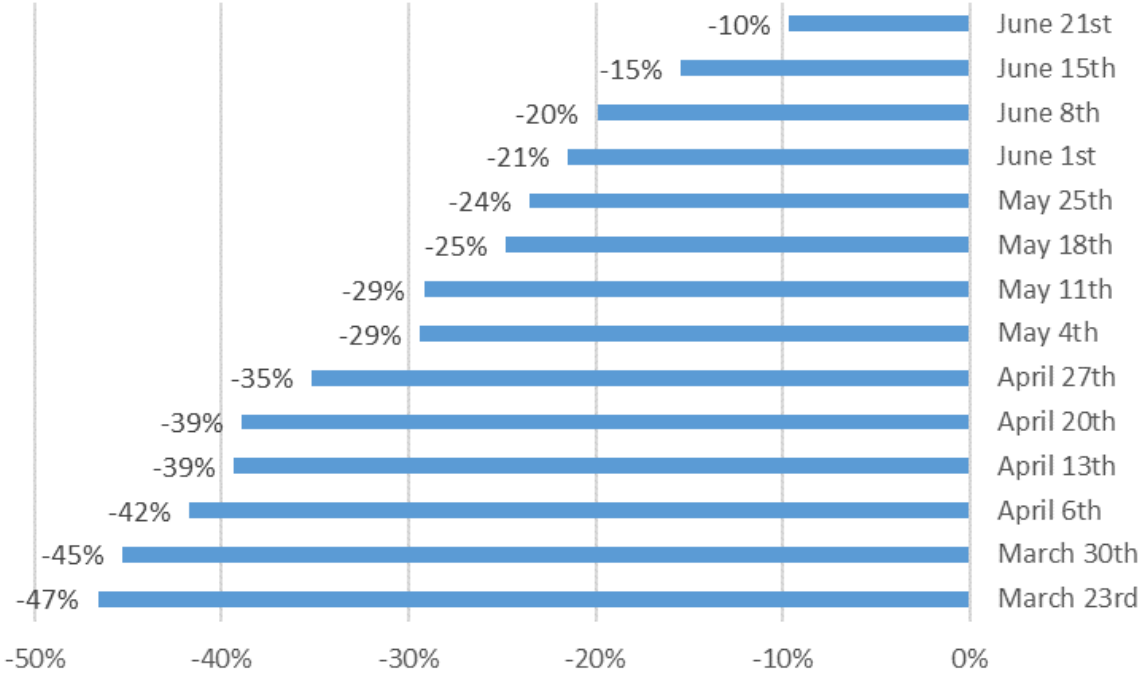
[12] https://www.oregon.gov/ODOT/Engineering/Doc_TechnicalGuidance/DES_02.pdf
[13] The Oregon Transportation Investment Act (OTIA III) authorized ODOT to issue additional revenue bonds for highway improvement projects. https://www.oregonlegislature.gov/lpro/Publications/BB2014Bridges.pdf

implemented COVID-19 safety procedures to ensure social distancing, use of face coverings, sanitation, and other on-site protocols in work zones.

ODOT's road system maintenance and project delivery operations have reportedly progressed with minimal disruption; most projects remain on schedule and some have progressed more quickly due to a decrease in traffic volumes. Some projects have been slightly delayed due to contractor employee health related travel concerns, as well as supplier and supply chain delays. However, ODOT says it expects its 2020 construction season to be relatively unaffected by COVID-19 and will closely monitor project-related factors to inform future accommodations, needs, and trends going forward. As of early August, ODOT has issued over 20 contract change orders modifying lane restrictions, meaning contractors were granted additional space to work, made possible by decreased traffic volumes, allowing the projects to progress or complete more quickly. Alternatively, one project in rural Oregon will be delayed for a year due to a lack of motel availability caused by COVID-19.

Contributing to the limited impacts on some projects is the statewide decline in traffic volumes. Figure 3 below shows the average change in traffic volumes compared to the same period in 2019 aggregated across some of Oregon's main travel routes. Beginning with Monday, March 23rd, the first full week of the Oregon shutdown, traffic volumes initially dropped to almost 50% of normal as people stayed home. Over time, as counties began to enter phase one and two of reopening, people began to drive more, and traffic has continued to increase. By the week of June 21st, traffic was back to 10% below the prior year's level.

Figure 3: Weekly reduction in statewide traffic volumes in 2020 over the same week in 2019



Source: ODOT

Early forecasts showed there would be some lost fuels tax revenue resulting from traffic volumes initially being down about 40% across the state. More recent data highlights the severity of the initial losses; to date, the impact on Motor Fuels is about $44 million. This is from comparing a pre-COVID baseline forecast to actual tax receipts from January through May. There is still a high degree of uncertainty around the duration of the losses and how long it will take to recover, which could further impact revenue.

DMV revenues were hit particularly hard as field offices closed late March to all but commercial activities. They only recently started opening to serve a limited number of customers in June. ODOT anticipates much of the lost revenue from the period when field offices were closed will be recaptured over the next few months, but still expect a total drop of $44 million in fiscal year 2020 revenue compared to their previous forecast.

ODOT estimates the loss in revenue due to the recession will be about $170 million over the 2019-21 biennium. However, as noted above, they consider the forecast to be highly uncertain. If a regression in reopening plans occurs, or if the virus resurges this fall or winter, the impact on the revenue outlook will worsen.

Audit Results

We found ODOT's project delivery process supports traffic control and permanent design decisions that emphasize worker and transportation user safety. The agency conducts technical reviews at potential work sites to ensure project viability and promotes safe design elements and practice in STIP road construction work zones. However, there are some inconsistencies in practice between regions that could complicate efforts to fully complete each project delivery planning step.

Additionally, ODOT has not formalized or clarified the role of the MAC in the project delivery process, resulting in some potential imbalances between safety and mobility needs in both temporary traffic control and permanent design decisions. The MAC is primarily composed of members of the freight industry; involvement from other key stakeholder groups has not been actively encouraged. In order to gain approval for a project to move forward, engineers and designers report sometimes having to change project design elements to better emphasize freight mobility, owing to MAC input. Such changes to traffic control or project design may be inherently riskier for workers than what was initially proposed, and alternative viewpoints of other key stakeholders is not solicited or considered.

ODOT's comprehensive approach to road construction planning and design improves safety outcomes in work zones

ODOT has a robust and thorough project delivery process and continually makes incremental improvements to its processes over time. The process includes enhanced evaluation of traffic control strategy options during design and reviewing and monitoring the implementation of traffic control designs in the field.

ODOT has a robust project delivery process enhanced by incremental improvements

ODOT projects run a wide gamut of size, cost, and complexity, but most follow very similar project delivery processes. Oregon's project design is compliant with and expands upon federal requirements and Oregon's work zone project planning requirements and procedures, roles and responsibilities, planning decisions, and traffic control strategies, compare similarly to methods used in other states.

Oregon is also a noted best practice state in several arenas, particularly around using different tactics to reduce mobility impacts to commuters navigating through or around work zones; proactive communication with the public regarding road safety concerns (such as the TripCheck website[14] that shows real time road condition updates around the state); and coordinating multi-level transportation plans (program, corridor, and project level).

ODOT's five regions function fairly independently and have developed some distinct practices over time. While these practices are not always consistent with those in

ODOT must coordinate multi-level Transportation Plans, including:

Program Level TMPs: Address traffic management at a high level, framing work for corridor and project level TMPs.

Corridor level TMPs: Address traffic management for specific corridors. These plans inform project level analysis and focus on areas within a corridor where diminished mobility could impact stakeholders.

Project level TMPs: Address traffic management for individual or interrelated projects within a highway corridor. These include temporary traffic control plans, public information campaigns, and operations strategies.

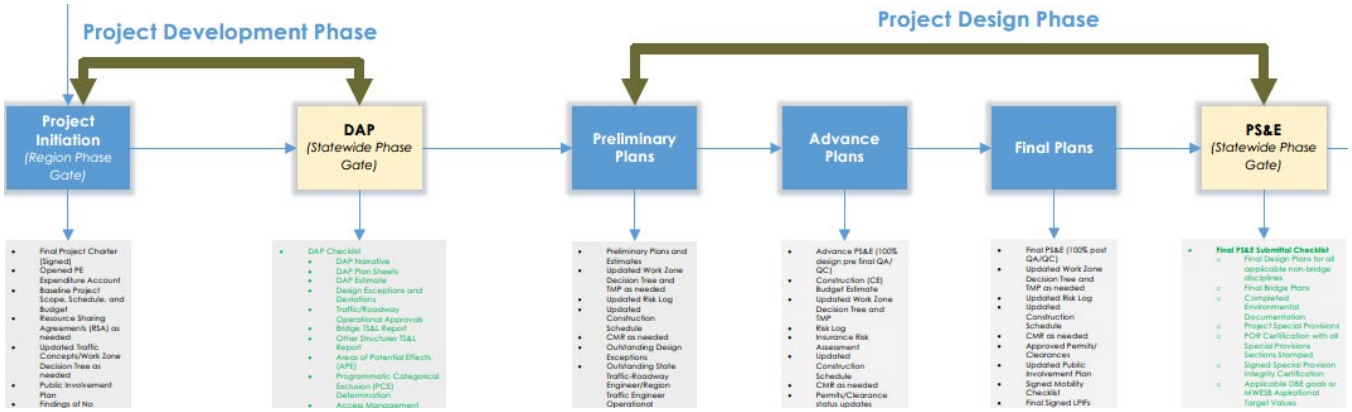
[14] https://www.tripcheck.com/

use elsewhere in the state, differing practices do not necessarily appear to have detrimental impacts on individual projects. However, differing local practices could complicate the sharing and implementation of promising practice models.

In recent years, ODOT has moved toward greater standardization of practice across the state. This move has been incremental and includes improved electronic documentation of planning and design materials,[15] evaluation of traffic control methodologies, and setting universal milestones for contract management.

ODOT has also introduced multiple phase gates to the project delivery process to ensure that key project components have been considered at each leg of what is often a lengthy and complex process. Each phase gate has a list of milestone deliverables attached to it that project leads should include for the project to move forward. ODOT staff and consultants from different disciplines work together under the guidance of project leads and resident engineers to fulfill milestone requirements. Technical reviews for projects include hydraulic and environmental reviews, traffic and roadway analyses, pavement design and markings, illumination, and access management. Project designs also undergo a quality control review to evaluate data elements needed in the final contract bid package.[16] Traffic control decisions are supported by traffic analyses and agency research.

Figure 4: Each ODOT project phase includes numerous milestone deliverables



Source: ODOT 2019 Milestone Deliverables Chart[17]

Completed projects have typically gone through years of intensive planning and design and have been approved to go forward by a licensed ODOT engineer. While issues and setbacks still occur on projects, these are typically due to external influences beyond the control of the agency; weather events, political interventions,[18] and performance issues with construction contractors may lead to setbacks in project completion. The process in place accounts for conditional concerns, such as environmental restrictions, local development, and traffic volume, and carries a degree of flexibility in how projects are managed by allowing contractors to submit change orders up to and throughout construction.

[15] In 2016, ODOT began transitioning to the ProjectWise database to store planning and design documentation electronically. Approximately 80% of active projects are utilizing ProjectWise.
[16] See Oregon 2012 State Highway Design Manual, Chapter 16 on 3D Roadway Design
[17] https://www.oregon.gov/odot/ProjectDel/Documents/Statewide-Milestone-Deliverables.pdf
[18] For example, a 2018 project repaving a portion of I-105 through Springfield and Eugene was delayed after a local legislator contacted the Oregon Transportation Commission with concerns about congestion.

Evaluations of traffic control strategy options are now documented on applicable STIP projects

In 2016, ODOT issued an internal directive requiring project teams on STIP road construction projects to prepare and complete a Work Zone Decision Tree Matrix.[19] The matrix is part of the TMP package and outlines how and why certain temporary traffic control decisions are made. It includes 16 commonly used temporary traffic control strategies and allows project teams to input alternative methods as desired. While ODOT engineers and design staff conduct in depth analyses of traffic control options, the matrix is an efficient medium for communicating the reasoning behind their decisions to management and stakeholders.

The matrix documents the positive and negative impacts of certain strategies as determined by designers and construction staff, which strategies are considered viable, and which the team ultimately recommends. Multiple factors go into the decision, including road conditions, traffic analyses, external stakeholder input, and budget limitations. The matrix can provide clear documentation on how and why certain decisions are made, and ease communications with stakeholders, contractors, and ODOT management. If questions are raised during design or construction about the use of a specific traffic control strategy, the team can refer to the matrix to show why that decision was made, what factors played into the decision, and what alternatives were considered.

The majority of STIP projects in our sample had adopted the use of the Decision Tree Matrix (matrix); out of 30 projects, 24 had a complete matrix**.** Those that did not have a complete matrix included the following:

- one project that was far along in the process when the matrix was introduced and likely would not have benefited from its use;
- one project that failed to complete a decision tree, despite starting after the rollout of the directive;
- two projects that likely had not yet progressed far enough into planning to start the matrix;
- one project whose team was unable to locate the decision tree used when asked, and
- one project whose team did not provide a response.

Recently, the directive was clarified for staff to require that project teams begin putting together the matrix early in project scoping.

While the strategies incorporated in the matrix may be viable on road construction projects, some strategies in our sample were generally considered to be more viable than others, on a broader array of project types. Standard lane closures with channelizing devices (such as cones or concrete barriers), law enforcement overtime, smart work zone systems (which can detect traffic queues forming), and night work were considered viable on a majority of sampled projects, and were most likely to be recommended for traffic control.

Staff also rely on the Mobility Considerations Checklist to help weigh the safety and mobility impacts of temporary traffic control decisions. The checklist must be signed by the project lead and a Mobility staff person and submitted as part of the Plans, Specifications & Estimates package for projects to go to bid.[20]

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[19] Work Zone Decision Trees are intended to be used concurrently with the Transportation Management Plan. https://www.oregon.gov/ODOT/Engineering/Doc_TechnicalGuidance/TRA10-16d.pdf

[20] The Plans, Specifications & Estimates package is put together by the Resident Engineer. The package is then sent to the Office of Controls for QC review before being advertised to potential contractors and opened for bid.

ODOT addresses a variety of potential work zone safety hazards during planning and design

Road construction work zones pose some unique safety risks to workers and transportation users. ODOT has taken steps to identify and reduce a variety of potential work zone safety risks during planning.

Work zone safety risks impact multiple groups:

Workers may often be out on the road and exposed to oncoming traffic. They are also frequently working within proximity to heavy machinery and work overnight shifts in low visibility conditions.

Drivers may encounter work zones that are distracting and confusing to navigate and may be at higher risk for fender bender type crashes and slowdowns.

Pedestrians, cyclists, and public transit commuters may have difficulties navigating through or around work zones and be exposed to traffic while attempting to do so.

One key step was the evaluation of temporary traffic control strategies, documented in the Decision Tree Matrix and the TMP. ODOT often deploys multiple strategies in conjunction with one another. For example, a large paving project along the California border split up temporary traffic control and project work into seven distinct stages, six of which would include closing and redirecting lanes of traffic. Other temporary traffic control strategies deployed on that project include concrete barriers between temporary lanes to prevent collisions, ramp closures and detours to eliminate through traffic and protect workers, Temporary Pedestrian Access Route detours for pedestrian safety, Smart Work Zone Technology to detect traffic queues and potentially head off collisions, temporary speed reductions to calm traffic flow, and having a tow truck available during construction activities.

ODOT has also recently introduced the requirement that most STIP projects must include TPAR planning considerations for pedestrians, bicyclists, and public transportation users. ODOT is monitoring the rollout of this new requirement and is working with an accessibility consultant to help ensure that curb ramps and work zones are appropriately navigable by people with a spectrum of accessibility needs.

ODOT also works closely with Oregon State University to conduct in-depth traffic control and traffic safety research. One 2019 study set out to evaluate the viability of using different colors of lights in work zones to mimic those used by law enforcement.[21] The study concluded that vehicle speed was affected by flashing blue lights, but that further research was needed to confirm whether the use of blue lights was a viable and effective traffic control strategy.

Traffic control strategies can reduce the risks of injury and death in the work zone to workers or transportation users. ODOT's emphasis on adhering to standards and achieving safe outcomes is also supported by a highly qualified workforce.

ODOT's practice of reviewing and monitoring active work zones helps identify effective traffic control strategies

Oregon conducts biannual work zone safety reviews in coordination with a regional federal highway division office staff person. Measures in the state review include how well work zones allow for mobility and traffic flow, the clarity of signage, the condition and placement of equipment, and the visibility of flaggers, among other steps. Following the 2016 ADA settlement, ODOT has begun to incorporate the assistance of an ADA consultant to confirm that work zones with TPAR set ups have been done appropriately. The 2019 review confirmed that ODOT's temporary traffic control and design standards were being implemented consistently in the field,

[21] https://www.oregon.gov/ODOT/Programs/ResearchDocuments/ODOT19-03BlueLights.pdf

and that those standards appear to be effective at protecting the safety of workers and the traveling public. The biannual reviews also help ODOT identify practices that need updating.

ODOT inspectors also routinely visit active work zones to ensure that the project is on track and that safety protocols are being followed.

Increasing standardization in ODOT's project delivery process may help further reduce safety risks in work zones

While ODOT has adopted many work zone safety leading practices, some project delivery process functions would benefit from greater standardization. These include TMP development, traffic control designer staff visits to work zone sites prior to and during construction, and communicating between design and construction staff across the life span of the project.

ODOT does not have a standardized TMP template that would further support planning

While TMPs should abide by the statewide TMP manual, ODOT does not have a comprehensive standardized statewide reporting template for preparing TMPs. A comprehensive TMP template would help staff and consultants adhere to the guidelines outlined in the manual and reduce the risk that certain project elements could be left out during the planning and design phase.

Wisconsin uses an electronic, partially automated TMP system called WisTMP.[22] This system essentially acts as a standardized template. Other states we surveyed indicated using a template or checklist to account for specific TMP elements (such as construction staging, traffic control and separation strategies, and public involvement) during project design.

Some ODOT regions and consulting firms work with their own unique templates. Regional templates that were provided to the audit team differed in some key aspects. One region's template largely followed the organization of the TMP manual. Another region instead uses the Mobility Considerations Checklist as a template and focuses very specifically on mobility concerns. Use of templates is not consistent among ODOT regions.

While ODOT provides the TMP procedures manual to consultant designers, the amount of collaboration regional staff have with consultants during TMP development varies. Some regional staff also voiced concerns that consultants sometimes required more guidance to get them up to speed on ODOT policies and practices. Several staff also stated that they would appreciate having a statewide template as a guide for creating comprehensive TMPs.

Staff in the Mobility Program who routinely review TMPs submitted with Mobility Considerations Checklists said that TMPs are sometimes lacking key mobility information. Regional staff also reported that they did not necessarily always know who was responsible for the completion of the TMP. Different staff positions in different regions appear to have done so. Without clearly assigned responsibilities tied to the core planning document, there is a risk that key material or information may be missing or incomplete.

The template can also guide the development of the plan, no matter who takes the lead. ODOT is in the process of outsourcing up to 70% of its design functions, including work zone planning. Consultants that work in multiple regions may benefit from having an additional tool at their disposal to ensure that project elements are adequately accounted for. Having a TMP template in

[22] https://transportal.cee.wisc.edu/tmp/manual.html

place would also help ensure that policies and procedures designed to improve safety are reliably followed by the project team — whether they consist of ODOT staff or consultants.

Designers have limited opportunities to visit work zone sites during planning or construction

Work zone traffic control designers participate in scoping and planning a project, sometimes over the course of several years. During scoping, designers can visit a potential work site in person to help assess what forms of traffic control could conceivably work in that location.

However, designers in some regions reported having limited time and opportunities to visit work zone locations during design. Design can take place long after a project has been scoped, which means that a few years could pass between when a designer is able to visit a site and when they begin evaluating traffic control options. Conditions at work sites are not static and are prone to changes over time that affect both permanent design decisions and the efficacy of temporary traffic control options. Projects may have multiple staff rotations and some designers report having heavy workloads that created a disincentive to visit work sites in person after scoping.

It is not unusual for designers to only make it out to work sites during the scoping phase, although one region reported designers making regular visits to the location during design. Other states we surveyed also reported limited in-person visits to aid in plan development. However, four states indicated performing more frequent visits, and Idaho's Department of Transportation confirmed to the audit team that their designers perform in-person project site visits during the design phase of project delivery on the majority of their projects.

Work zone on I-105 near Springfield.
Source: Audit team

Building in more frequent opportunities for designers to visit work zone sites in person would allow them to consider current conditions on the ground that should be incorporated into design work. Less experienced staff would particularly benefit from having field experience to understand project needs and support their designs.

Designers sometimes receive little or no feedback on the viability of their designs once projects go to construction

Traffic control design and construction staff meet and discuss planning and design materials several times during the design phase. However, both designers and construction staff in some regions report having little to no interaction throughout the construction phase of the project. Designers may not receive any updates or feedback after a project has left their hands. They may not know how or whether one of their designs has been effectively deployed or whether the contractor made substantial changes to the design.

Communication between design and construction staff is coordinated differently across the state. For example, Region 4 (Central Oregon) reported having annual construction meetings that looped in regional design staff for feedback and provided a high-level look at lessons learned in the preceding year. Other regions had ad hoc lessons learned meetings on large projects or projects that had unusual or difficult issues but did not have a formalized approach to providing feedback to staff after the completion of a project.

A licensed ODOT engineer, or Professional of Record, must approve and sign off on a project before it goes to bid — a step that can help the agency avoid making costly mistakes. However, creating a feedback loop throughout the lifecycle of a project that includes design and construction staff (both ODOT and consultants) could benefit designers that tend to work on multiple projects at a time and may not routinely receive feedback on the outcomes of their work.

Continuing to improve communication between construction and design teams may also help with ODOT's shift to more outsourced design. Consultants and contractors follow guidance and practice models established by ODOT on the design and implementation of safe and mobile work zones.

ODOT should formalize and clarify expectations around stakeholder involvement in project design to continue to meet both safety and mobility needs in work zones

Despite being an advisory committee composed of external stakeholders, the Mobility Advisory Committee (MAC) has enough authority under agency policy and practice to influence the direction of project design and traffic control decisions, sometimes substantially. While stakeholder feedback can be greatly beneficial to completing quality projects, the current composition of the MAC does not represent many mobility or stakeholder interests required under agency rules. The MAC also lacks operational controls to guide committee activities, and ODOT has not introduced comprehensive criteria for which projects should qualify for committee review.

ODOT has taken some steps toward instituting greater controls over committee functions. Further work is needed to ensure that stakeholder feedback through the advisory committee is appropriately balanced with the professional expertise of ODOT designers, engineers, and consultants, and does not negatively impact worker or transportation user safety.

ODOT's policy implementation practices may grant authority to the MAC over project decisions that is not supported in statute or rule

The MAC was originally created to gather input from freight stakeholders on road construction design. It now gathers input from a few different groups of stakeholders, including a few that are specified in the Stakeholder Forum rule, and is advisory in nature. However, current statutes, rules, and agency policies do not appear to make direct reference to the MAC itself. It has no charter (covered in more detail on pg. 20) and no official decision-making authority, but the implementation of internal ODOT policy indicates that MAC support for projects must be sought and granted before projects can move forward. This essentially grants the MAC "go or no go" decision-making authority over state transportation projects, despite lacking legal and formal standing. Additionally, not all policies and procedures that dictate roles and responsibilities during the design review process align with each other. This may cause confusion among staff about which policies and procedures should be followed.

Since 2013, the Mobility Considerations Checklist, a required STIP project deliverable, must be signed by a project lead and by a mobility staff person on projects with mobility impacts for that project to move forward to contract bidding.

A highway mobility policy released in 2014 states that either the Commerce and Compliance Administrator or the Mobility Policy Committee (which is no longer active) is responsible for making decisions regarding conflicts unable to be resolved at the region level.

Another agency policy introduced in 2015 outlined ODOT staff roles and responsibilities when communicating potential project mobility restrictions internally and with members of the freight industry.[23] The policy, which was updated in late 2019, is targeted for bridge work but includes guidance for non-bridge projects. The non-bridge guidance reads that, when concurrence is reached (with members of the freight industry), the project should be approved by the project lead. When concurrence is not reached, the project team is supposed to forward the project to the Statewide Mobility Manager. Until recently, the project was forwarded to the Commerce and Compliance Administrator.

The 2015 Mobility Procedures Manual also outlines an issues resolution process that involves more layers of escalation and more coordination around resolving disagreements than the 2015 policy. The manual puts final responsibility for resolving mobility issues on the defunct Mobility Policy Committee. The 2020 draft manual updates the issues resolution process by escalating issues jointly to the ODOT Director, the Delivery and Operations Division Administrator, and the Commerce and Compliance Division Administrator. However, according to ODOT management, go/no go decisions on highway projects rest with the Delivery and Operations Division or Assistant Director.

Staff interviews and agency policy indicate that mobility staff only sign off on projects that have the approval and support of the committee. ODOT staff also said that in situations where projects did not receive committee approval, and thus could not get both required signatures on the checklist, teams might have to change project design or traffic control elements and resubmit the project to the committee. Otherwise, they risked not being able to send the project out to bid. This has reportedly led to long delays and to decisions being made on some projects that emphasize mobility over safety. Staff also said that committee decisions are rarely, if ever, overruled by ODOT leadership.

While the perspective and advice of committee members is valuable, it must be weighed against the professional judgment and analytical work of ODOT's engineering and design staff and consultants. According to ODOT staff, the MAC also serves a function unique to Oregon. Other states work with stakeholders during project scoping, but outside groups are not necessarily included in the decision-making process around project design. None of the other state transportation departments surveyed indicated having an equivalent version of the MAC in their states influencing project delivery and design decisions.

ODOT should align mobility policies, procedures, and lines of responsibility to ensure that participating MAC members and ODOT staff clearly understand their roles in the process.

The MAC is not chartered and does not have clearly established roles and responsibilities

Despite the importance of the MAC's role in project delivery, no committee charter has been created. ODOT began coordinating meetings to discuss the development of a charter in 2018, but as of March 2020, no further action had been taken.

Under ORS 366.215 and agency rule, ODOT must seek feedback from stakeholders on permanent design decisions that reduce highway capacity. There is no equivalent rule or agency policy for temporary design decisions.

Without a charter, the agency lacks clear governance controls outlining how they should best respond to MAC feedback, and how MAC members are expected to engage with the agency. The MAC has no bylaws, no established voting procedures, no appointment process for MAC members, and no term limits. This lack of formality and clarity hinders transparency over transportation project decisions and results in conflict and delays.

[23] https://www.oregon.gov/ODOT/MCT/Documents/PMT%2006-01.pdf

There are sometimes disagreements between MAC members and ODOT staff on the interpretation of the statute and rule requiring freight industry feedback on permanent capacity reductions and how the statute should be applied. There have also been disagreements over what conclusions the MAC has actually reached and how agency staff are expected to respond since there is no formal voting protocol. According to some ODOT staff, the MAC acts like a decision-making entity, not an advisory body. Staff further suggested the committee can be dismissive of the safety and mobility analyses performed and presented by staff.

Aside from the lack of a charter, there do not appear to be clear expectations on acceptable behaviors or modes of communication between MAC members and staff. Some staff are reportedly uncomfortable presenting their work to the MAC, due to what is perceived to be intimidating behavior by MAC members. In early 2020, ODOT leadership decided to include senior level managers at every MAC meeting and appointed a third-party facilitator to oversee the meetings; prior to that, meetings were facilitated by mobility staff.

MAC meetings were originally intended to cover three specific agenda areas; capacity reduction affecting freight, a general advisory discussion, and the Stakeholder Forum, where outside stakeholders are invited to provide feedback on specific projects. However, MAC topics are lumped into a single review discussion and there is no clear break between topics for the MAC and topics for the Stakeholder Forum. In practice, there does not appear to be a distinguishing line between the MAC and the Stakeholder Forum. The 2020 draft version of the Mobility Procedures Manual even confirms that the two entities essentially act as one.

Ramp Closure on I-105 near Springfield
Source: ODOT

These and other issues have prompted ODOT to begin taking steps to formalize and clarify the committee's role in project delivery. Other advisory committees within ODOT provide clear examples of charters and bylaws after which the MAC can model their structure. Those committees have documents identifying the purpose of the committee, outlining membership, guiding principles, standards of conduct, voting procedures, and office appointments. Other practices that can be covered by a charter include the frequency of meetings and how meeting minutes are recorded.

Chartering the MAC may help the agency specify the committee's role in the project delivery process and resolve issues stemming from a lack of clear guidance.

Some stakeholder groups that may be affected by project design and traffic control decisions are not represented during MAC meetings

The Stakeholder Forum, which takes place during MAC meetings, is specifically required by rule to include multiple stakeholders, including freight, bicyclist, and pedestrian groups.[24] City and county representatives should typically be invited on a project-by-project basis to provide input, in holding with the rule. Yet according to mobility staff, there are currently no members of the Stakeholder Forum that represent bicyclist or pedestrian interests, and they are not specifically invited through another notification process. The Stakeholder Forum's membership is indistinguishable from that of the MAC.

[24] Oregon Administrative Rule 731-012-0020

In 2013, ODOT organized an email list for Stakeholder Forum participants that included representatives from required groups. However, there is no indication that outreach was successful, sustained, or that bicycle and pedestrian advocacy groups have participated in any Stakeholder Forum meetings. Mobility staff said that they no longer had contact information for bicycle and pedestrian groups that may be interested in participation, and did not know if regional offices had local contacts. ODOT management noted that there is also limited local participation from cities and counties.

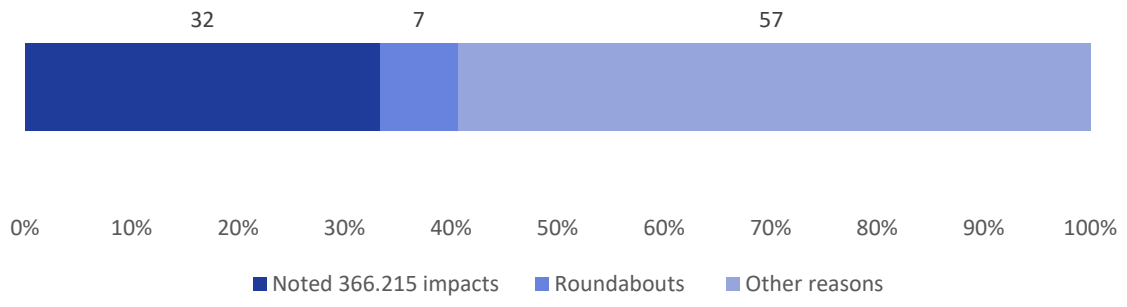
Project design and traffic control decisions affect users of many modes of transportation. While freight and the driving public may be the most impacted on highway projects, or on projects in rural areas with limited foot traffic, projects that take place in heavily populated areas must account for the transportation needs of local communities. ODOT's Temporary Pedestrian Access Route initiative is a recent example of the agency's efforts to accommodate a spectrum of community transit needs through active work zones.

Despite efforts like the Temporary Pedestrian Access Route initiative, the lack of input from bicycle and pedestrian groups on traffic control decisions in work zones may create a risk that the spectrum of transit and mobility needs may not be accounted for and that key stakeholders are not included in decisions that may impact them. Permanent design projects like roundabouts (which provide demonstrated safety benefits for drivers and pedestrians) may also encounter continued committee resistance to moving forward.

The majority of projects with mobility impacts are now reviewed by the MAC, but ODOT does not have comprehensive criteria for MAC project selection

In 2019, mobility program staff received documentation on a total of 132 projects with potential mobility impacts and shared 96 of those projects with the committee. Of those 96 projects, only 39 were roundabouts or were identified as creating permanent capacity reductions. Other reviews covered maintenance projects, which typically do not create permanent reductions, revisiting project information, and undeclared projects that would include proposals for work zone traffic control. ODOT is required to seek advisory feedback on projects that create permanent reductions in roadway capacity under state administrative rule.[25] While there is an internal agency memo from 2004 that encourages coordination with the freight industry to discuss non-permanent mobility impacts, there is no requirement in statute, rule, or agency policy to seek advisory feedback for traffic control. Traffic control can however create temporary impediments to mobility.

Figure 5: Over half the reviews conducted by MAC are not for permanent capacity reduction



Source: ODOT

[25] Per OAR 731-012-0020, roadway capacity is the horizontal and vertical clearance provided by a section of highway for motor vehicles. Reductions in roadway capacity reduce the allowable traffic density that a roadway can support, and may limit or prohibit certain kinds of motor vehicles from using the roadway due to lack of clearance.

The number of projects reviewed by the MAC may also have increased over the last few years. Mobility staff reported that MAC reviewed 20 projects in 2017 and 39 projects in 2018, in addition to the 96 projects reviewed in 2019. However, agency management disclosed that the program had no formal tracking mechanism in place prior to 2019, so the 2017 and 2018 numbers have not been validated. Seventeen projects were also reviewed in person by committee members in February and March 2020.

With over 70% of the 2019 projects shared with the mobility program being reviewed by MAC members, the MAC wields some degree of influence over most projects with identified mobility impacts, permanent and temporary alike. Some projects tagged for MAC review have distinctly minor temporary impacts and no permanent capacity reduction impacts.

The 2015 Mobility Procedures Manual outlines which categories of temporary traffic control could impact mobility. These include road and ramp closures, delays, detours, and height, width, and weight restrictions. An updated draft 2020 Manual does include guidance for how and when teams should notify mobility staff about potential impacts caused by traffic control and road construction staging decisions. The mobility team then determines which projects to send to the MAC. However, neither version of the Manual specifies how significant or severe temporary work zone mobility impacts must be before a MAC review is triggered, as opposed to a mobility program review. As a result, some projects that may have very minor temporary mobility impacts, and no permanent mobility impacts, are slated for review.

Creating comprehensive criteria for MAC review project selection could help focus ODOT and MAC resources on the projects most in need of stakeholder feedback on design decisions.

ODOT's priority is roadway safety, but the agency occasionally struggles to balance safety and mobility needs during road construction project design

While ODOT must frequently weigh and attempt to balance safety and mobility needs on its projects, the agency's highest priority is roadway safety. Projects that go to bid have undergone an extensive development and review process to identify ideal project and traffic control design options, but they can be subject to changes brought on by external parties.

According to ODOT staff and management, the MAC has at times acted as a roadblock to proposed traffic control strategies determined by ODOT's technical staff to provide the greatest safety benefits to workers — even when these strategies include mobility impacts to commuters and freight that ODOT considers acceptable. Some decisions made on projects that go forward are even considered by some ODOT staff to prioritize traffic mobility over safety. If true, this could increase safety risks for workers at those sites.

The safety of workers and transportation users in work zones is of primary concern to ODOT. In particular, the risks to workers in work zones are well documented.[26] Every hour of exposure to through traffic increases the risk that a worker will be injured or killed by an oncoming vehicle. Some traffic control strategies have inherent safety advantages, though they may impact the flow of traffic more than alternative measures. For example, a full road closure with a detour allows workers on site to focus on the project with little concern for driver intrusion into the work zone, but a full closure may create substantial congestion on alternate routes that must be weighed against the benefits to worker safety.

Maintaining a degree of mobility through or around construction sites is important to commuters, local communities and businesses, emergency services, and freight. Freight mobility often requires roadways to maintain adequate space (such as lane width and height allowance

[26] https://www.cpwr.com/sites/default/files/publications/Eseonu-reducing-highway-fatalities.pdf, FHWA Facts and Statistics: https://ops.fhwa.dot.gov/wz/workersafety/index.htm

How night work affects project safety and quality

Reduced visibility puts road construction workers at greater risk.
Intoxicated drivers are more prevalent at night, despite reduced traffic congestion.
Shorter working windows may not allow adequate time for workers to lay down pavement smoothly and may result in more worker exposure to traffic when setting up and taking down the work zone in the mornings and evenings.
Longer overall project timelines compared to daytime and 24-hour projects can put projects at risk of delays due to weather and staffing.

beneath overpasses) for large or over-dimensional loads. Being asked to navigate through a work zone, or detour onto smaller side roads around a work zone, can be challenging or even impossible for some freight loads to accommodate. Extensive delays caused by road construction can also impact freight's ability to make timely deliveries. Delays and detours caused by road construction could potentially impact commuter safety, with significant increases in traffic on smaller local roadways not built to accommodate it, and fender benders between cars heading into the work zone.

Some staff said that, in order to get approval from the MAC to move forward, they had to make changes to some projects that emphasized freight mobility over worker and driver safety. As a result, the projects may need additional mitigating safety measures, such as staging changes or flaggers onsite, which may come at a higher cost or lengthen the overall timeline of the project.

Staff also shared examples of projects where they thought that mobility needs had taken precedence over safety. In one case, a proposed road closure was denied by the MAC, requiring the contractor to instead place a flagger on a dangerous stretch of road for the duration of the project. A bridge project on Highway 22 originally proposed a full closure that reportedly would have been safer, saved money, and was supported by the neighboring community. Yet freight did not support the detour plan for that project, and it was decided that the agency would pursue the more costly alternative that did not require a detour.

On a third project, an agency risk assessment analysis was conducted that assigned risk levels to three potential traffic control strategy proposals. The project team recommended the option deemed safest and fastest to complete according to the analysis, but ODOT leadership ultimately chose to pursue another method with greater risks to workers that would take many months longer to finish. Project team members said that the MAC simply refused to support the hour-long weekend delays the project would have caused.

ODOT's relationship with the MAC has impacted not only traffic control, but permanent design decisions made by the agency, and has contributed to slowing the introduction of roundabouts to dangerous intersections across the state. In 2011, under pressure from the freight industry, the former ODOT director implemented a statewide moratorium on roundabout projects. The moratorium was technically lifted the following year. However, ODOT

Roundabouts improve traffic safety

Roundabouts can reduce the risk of serious injury crashes in intersections by approximately 80% and have a traffic calming effect on drivers that makes car crashes less severe and less likely to be fatal. When well designed, roundabouts have minor impacts on traffic mobility, even for large and over dimensional loads.

In 2019, Oregon had 5 state highway roundabouts open to the public and seven more locations in development.

did not take action to build more roundabouts until after a deadly accident on Highway 47 in 2014.

Roundabout projects have begun to move forward since then. However, according to ODOT staff, members of the freight industry continue to push back on the introduction of roundabouts. Some projects may be held up for extended periods due to this pushback, potentially for years. Delaying the introduction of roundabouts in dangerous intersections in Oregon increases the risk of more injurious and deadly crashes at these locations in the future.

ODOT designers and engineers weigh the safety and mobility costs and benefits of a variety of traffic control strategies during project planning. Feedback from mobility stakeholders must be appropriately balanced with the judgment of ODOT's professional staff and consultants to ensure that the best version of the project moves forward.

ODOT is taking action to update the mobility function

In response to some of these concerns, ODOT has taken some steps to update and clarify the role of the Mobility Program that works closely with the MAC, and the MAC itself, in the past few years.

2017: The Mobility Program is shifted out of the Over Dimensional Permits unit and becomes a stand-alone program within the former Motor Carrier Transportation Division.[27]

2019: ODOT replaces its Executive Work Zone Safety Committee with the Safety and Mobility Policy Advisory Committee. The new committee's role is to review and update as needed safety and mobility policies. This could potentially include providing policy guidance in the development of a charter for the MAC.

2020: A consultant is brought in to take over the role of MAC meeting facilitation from mobility staff. ODOT is also including the presence of ODOT senior leaders to assist with meeting discussions and provide support to ODOT staff asked to come in and present.

ODOT is drafting an updated version of the Mobility Procedures Manual to reflect multiple changes in policy and practice over the past several years. The new draft manual clarifies the role of the MAC in the project delivery process; previously, no direct mention had been made of the committee itself.

Meeting guidelines for the MAC are also updated to include a determination of whether an in-person presentation was required or not.

The former ODOT Director also specifically invited Associated General Contractors representative(s) to join the MAC to provide technical, constructability, and construction staging knowledge during discussions in this time period, in an effort to balance decisions for safety and mobility.

While there have been several important changes to the role of the mobility function in project delivery in the past few years, further steps are needed to ensure that mobility and safety needs are appropriately balanced in committee discussions.

[27] ODOT plans to shift the Mobility program from the Commerce and Compliance Division entirely and into the Delivery and Operations Division in July 2020.

Balancing Safety and Mobility on the California State Line: Ashland Paving Project

The purpose of the project is to repair and replace concrete pavement in poor condition. Much of the roadway surface is damaged and rutted by chains and studded tires used during winter months. The work will cost approximately $28 million to complete and was one of 11 projects included in a Work Zone Separation Pilot intended to explore alternative approaches to temporary traffic control that would enhance worker safety with manageable traffic slowdowns. ODOT is currently in year two of the project.

The project team vetted multiple design options and ultimately recommended closing lanes on the freeway and redirecting traffic into temporary single lanes to shift traffic entirely out of the work area. The team considered this final proposal to be the safest for onsite workers, having the shortest working timeline and highest pavement quality outcomes, all while addressing mobility with safe and economic freight movements.

A few options were presented to the MAC, along with the team's recommendation. The project was ultimately reviewed three times by the MAC between November 2018 and January 2019. Members of the MAC wished to avoid hour-long delays that may have happened during the working weeks. They preferred another single lane option with traffic crossovers and run-away vehicle exits, allowing for improved pavement construction quality along with low risk of worker exposure to oncoming traffic. Concerns were also voiced that single lane staging in steep grades could cause some driver safety issues, though risks to travelers and freight mobility was not quantified. Safety features were incorporated to account for the steep pass and winter operating conditions.

ODOT management ultimately made the decision to pursue the proposal preferred by the MAC.

Construction started in June 2019, with a goal of completing the project by October 2021. In general, traffic delays during the summer were few; held to no more than 20 minutes, primarily due to vehicle break-down issues. There were no reported worker injuries, but two incidents occurred with large trucks entering the safety run-away ramp systems. As of July 2020, no traveler or freight mobility complaints have been received.

Recommendations

To further enhance transportation safety measures during project design, ODOT should:

1. Develop a template for the Transportation Management Plans to support greater consistency in design decisions between regions and clarify expectations for consultant designers.

2. Create more opportunities for traffic control designers to visit work sites during design and construction, which would bolster their working knowledge and better inform design decisions. For example, designers could regularly participate in ODOT's biennial work zone reviews in their regions.

3. Formalize a feedback loop between design and construction staff throughout the life of the project to enhance the viability of design decisions.

To strengthen its control framework around stakeholder participation in project delivery, ODOT should:

4. Create a charter for the MAC to clarify its role in project delivery, level of responsibility, and standard voting procedures.

5. Once the charter is created, review MAC and Stakeholder Forum membership and perform outreach to ensure that the needs of diverse stakeholder groups are sufficiently represented during project delivery review.

6. Review, update, and align ODOT policies and procedures to clarify ODOT staff and stakeholder roles and responsibilities in the design review process.

7. Observe the administrative rule requiring the agency to engage with a specific group of stakeholders during Stakeholder Forums during the project delivery review process. Specifically, ensure that outreach to bicycle and pedestrian advocacy groups is regularly performed at the state and local level.

8. Create comprehensive criteria for deciding which projects should be reviewed by the MAC.

9. Ensure that new and existing criteria for MAC project selection reviews are applied.

10. Create and track performance metrics for the Mobility Unit and mobility reviews that take place during the design process.

Objective, Scope, and Methodology

Objective

The objective of this audit was to determine how ODOT could better evaluate traffic control strategy and planning decisions to enhance the safety of workers and transportation system users in active work zones.

Scope

This audit focused on the ODOT Delivery and Operations Division as well as the Commerce and Compliance Division (formerly known as the Highway Division and Motor Carrier Division, respectively). Specifically, this audit focused on the planning, design, and traffic control strategies used on ODOT STIP road construction projects. We focused on STIP construction projects with an estimated budget between $3 million and $30 million; active as of November 2016, that had reached or surpassed Plans, Specifications & Estimates (PS&E) approval by November 2019.

Methodology

To achieve our objective, we used a methodology that included but was not limited to: conducting interviews, reviewing documentation, an in-person site visit to an active work zone, survey of other state Departments of Transportation, reviewing research on work zone safety and mobility best practices, and analyzing crash and project data.

To learn about the views, opinions, and perspective of major stakeholders, we conducted over 60 interviews with ODOT staff, other agencies, leading researchers, and stakeholders from related industries, including freight, contracting, and consulting,

To gain an understanding of practices in other states, we conducted a survey of 11 other state Departments of Transportation, capturing their work zone project planning requirements and procedures, roles and responsibilities, planning decisions and traffic control strategies, and their use of related data.

To establish which states to survey, we utilized a variety of state demographics and factors including:

- Location (are they a neighboring state to Oregon),
- Total population;
- Population density;
- Land area;
- Organizational structure of the department (specifically, are the Driver and Motor Vehicles and Highway Patrol functions housed within the department and funded by the agency budget, or not);
- Number of employees; and
- Total amount of lane miles (roads) in the state

This information was used to inform a judgmental sample, where we identified 15 states to reach out to and ask to participate. Of those, 13 agreed to partake and 11 ultimately completed and returned our survey in time.

For our review of STIP projects, we chose to collect a judgmental sample of 30 projects. Sample projects were selected and extracted from the ODOT ProjectWise electronic document repository. A proportion of the total sample of projects were included in the 2019 work zone

safety audit, the 2017 separation pilot project, and have been reviewed by the MAC; these were selected from lists provided by ODOT staff. Projects had to include other established criteria, including; inclusion in the STIP program, project cost estimates, and regional placement.

For purposes of this audit, a sampling unit was defined as a single STIP project that was active as of November 2016 and had reached or surpassed PS&E approval by November 1, 2019. A sampling unit included early and final stage transportation management plans, a decision tree matrix, a mobility checklist, and other project materials as deemed necessary.

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.

We sincerely appreciate the courtesies and cooperation extended by officials and employees of ODOT during the course of this audit.

Oregon
Kate Brown, Governor

Department of Transportation
Office of the Director
355 Capitol St NE
Salem, OR 97301

August 25, 2020

Kip Memmott, Director
Secretary of State, Audits Division
255 Capitol St. NE, Suite 500
Salem, OR 97310

Dear Mr. Memmott,

This letter provides a written response to the Audits Division's report titled "ODOT Oversees a Robust Project Delivery Process, yet Opportunities Exist to Further Improve Work Zone Safety."

We appreciate the review of our program and the professionalism shown by your staff. As noted in the ODOT mission statement, "*We provide a safe and reliable multimodal transportation system that connects people and helps Oregon's communities and economy thrive.*" As we deliver on our mission, safety and mobility are complementing, not competing, values; these values govern how we operate and improve the transportation system in Oregon, meeting the needs of the communities we connect and the users we serve. We are continuously working to improve our processes to deliver better projects and improvements to the transportation system in a cost efficient and effective manner. We know success requires strong, intentional stakeholder partnerships; preserving and enhancing our state's transportation system demands active engagement from all perspectives to arrive at the best decisions for our state. The audit calls clear and specific attention to the evolution as we have moved away from existing guidance, created inefficiencies in our processes, created confusion for staff and stakeholders, and impeded or delayed the ability to implement safety innovations and other system enhancements efficiently.

During the course of this audit, several efforts were already underway to make improvements to our project delivery processes and stakeholder outreach efforts. The observations, findings and recommendations further highlight the efforts we will continue to make to improve in these areas.

An example of a step that we have already taken is the more intentional integration of our mobility-focused resources in with our project delivery staff and processes. During the course of this audit, the Mobility Unit was in the Commerce and Compliance Division. Earlier this year, that unit and staff were moved to the Delivery and Operations Division and we are in the process of integrating our project delivery efforts, policies, guidance, and practices to better balance both safety and mobility in our projects and design decisions.

The agency agrees with the recommendations identified in this audit. We will work with our staff, design consultants, construction contractors, law enforcement and the users of the transportation system to implement the recommendations. Support from those stakeholders will be critical to our shared success in these areas.

We appreciate the efforts of your audit team and look forward to working with them as we implement these recommendations. Below is our response to each recommendation in the audit.

RECOMMENDATION 1
Develop a template for the Transportation Management Plans to support greater consistency in design decisions between regions and clarify expectations for consultant designers.

Agree or Disagree with Recommendation	Target date to complete implementation activities	Name and phone number of specific point of contact for implementation
Agree	March 31, 2021	Mike Kimlinger State Traffic/Roadway Engineer (503) 986-3606

Narrative for Recommendation 1
We agree there should be statewide consistency in documenting design decisions in Transportation Management Plans for both our internal staff and our consultant partners. The Agency has existing guidance available, but we recognize the need to develop a standard template, improve the utilization, and increase the accountability to address the audit findings.

We acknowledge and will develop clear expectations for our staff and consultant partners. Information contained in the document should be consistent and easy for the end user to find. Current guidance requires a TMP for all projects included in the Statewide Transportation Improvement Program. We will conduct a quick review of the existing guidance to ensure it contains the necessary information to understand impacts and address safety and accessibility concerns for all users of the system throughout the project lifecycle.

We will implement the recommendation by March 31, 2021.

RECOMMENDATION 2
Create more opportunities for traffic control designers to visit worksites during design and construction to bolster their working knowledge and better inform design decisions. For example, designers could regularly participate in ODOT's biannual work zone reviews in their regions.

Agree or Disagree with Recommendation	Target date to complete implementation activities	Name and phone number of specific point of contact for implementation
Agree	May 31, 2021	Mike Kimlinger State Traffic/Roadway Engineer (503) 986-3606

Narrative for Recommendation 2
We agree that all design staff, including traffic control designers and engineers need to have opportunities and should be encouraged to visit worksites during both design and construction. The agency has guidance in place for a variety of project activities that encourage staff to visit the project site. Our biannual work zone reviews do provide an opportunity for staff to gain feedback. Participation has been impacted by resourcing needs and additional guidance may be needed. The agency will review current procedures to ensure equitable opportunities for design staff participation, whether they are ODOT staff or consultants and contractors. This effort will improve our partnership with our consultant design staff and the construction contractors. The agency will look to provide more formalized feedback loops to improve our project delivery processes from start to finish.

ODOT Technical Services Branch will work with regional technical centers and construction offices to develop a plan to provide traffic control designers opportunities to visit projects during construction, and increase participation in the biannual work zone reviews. We will update existing guidance to strengthen the language related to design and construction site visits for staff and consultants. We will also establish accountability measures to ensure successful implementation and monitoring of this.

We will implement this recommendation by May 31, 2021 to be in place for the 2021 construction season.

RECOMMENDATION 3 Formalize a feedback loop between design and construction staff throughout the life of the project to enhance the viability of design decisions.		
Agree or Disagree with Recommendation	**Target date to complete implementation activities**	**Name and phone number of specific point of contact for implementation**
Agree	May 31, 2021	Will Woods Project Delivery QA/QC Program Manager (503) 986-7130

Narrative for Recommendation 3
We agree that a formalized feedback loop between design and construction staff throughout the life of the project is necessary to enhance the viability of design decisions. We currently have guidance in effect and we will need to increase the level of accountability. We recognize that the intent of the guidance may be done more informally and does not allow us the ability to identify trends that note both our successes and areas in need of improvement. We are currently working towards stronger, more formal, feedback loops as part of our Project Delivery Improvement Process.

We will incorporate this recommendation into our current efforts to improve project delivery quality assurance and quality control processes. We will implement an enhanced construction review meeting process and accountability measures. We recognize this will be on-going and will be incorporated into the Project Delivery Process.

We will implement this recommendation by May 31, 2021.

RECOMMENDATION 4 Create a charter for the Mobility Advisory Committee to clarify its role in project delivery, level of responsibility and standard voting procedures.		
Agree or Disagree with Recommendation	**Target date to complete implementation activities**	**Name and phone number of specific point of contact for implementation**
Agree	December 31, 2020	David Kim Statewide Project Delivery Manager (503) 986-7141

Narrative for Recommendation 4

We agree with the recommendation that a formal charter for the Mobility Advisory Committee is needed. We will work in partnership with the members of the Safety and Mobility Policy Advisory Committee to address this recommendation. We recognize concerns expressed by stakeholders that this formality will only lengthen the meetings, but the criteria for review should help alleviate that concern. Clear guidance should assist with some of the concerns that have been identified by stakeholders and the audit.

We will craft and implement a charter by December 31, 2020. However, stakeholder engagement and support will be critical in providing this clarity and for successful implementation of these changes.

RECOMMENDATION 5 Once the charter is created, review Mobility Advisory Committee and Stakeholder Forum membership and perform outreach to ensure that the needs of diverse stakeholder groups are sufficiently represented during project delivery review.		
Agree or Disagree with Recommendation	**Target date to complete implementation activities**	**Name and phone number of specific point of contact for implementation**
Agree	January 31, 2021	Donnell Fowler Programs Development Office Manager (503) 986-3761

Narrative for Recommendation 5

We agree with the recommendation. As part of the chartering of the group, we will ensure we clarify the difference between the value added stakeholder engagement process for projects and work zone safety which is the Mobility Advisory Committee and that which is required as part of the Administrative Rule, which is the Stakeholder Forum. We agree with our stakeholders that we can approach this with one well-defined committee instead of creating additional committees. We recognize the need to ensure we are reaching out to all parties identified in the

Administrative Rule in a fair and consistent manner. Members will be identified in the charter which should assist the agency in ensuring all groups are sufficiently represented. We recognize the administrative rule indicates there is an ad-hoc project specific nature to membership, but a core group that represents all stakeholder groups will be identified as part of the charter.

We will implement these changes within one month of the charter completion, which would be January 31, 2021.

RECOMMENDATION 6
Review, update, and align ODOT policies and procedures to clarify ODOT staff and stakeholder roles and responsibilities in the design review process.

Agree or Disagree with Recommendation	Target date to complete implementation activities	Name and phone number of specific point of contact for implementation
Agree	December 31, 2021	Donnell Fowler Programs Development Office Manager (503) 986-3761

Narrative for Recommendation 6
We agree with the recommendation. We have recognized there are inconsistencies between the guidance provided in various policies, memos and procedure manuals. There is conflicting information about roles and responsibilities for both staff and stakeholders that are likely contributing to confusion and unmet expectations. We will do a review of our policies, guidance, memos and manuals and identify areas in need of improvement. Where we find ambiguities or areas in need of improvement, we will utilize the Safety and Mobility Policy Advisory Committee to provide feedback on policy updates or clarifications. It is important we understand all stakeholder needs as we work to provide clarity and guidance for staff and stakeholder roles as they relate to the project delivery process. This effort will span multiple programs and divisions within the agency and this will require a greater level of engagement and communication.

The agency will review, update and align our policies and procedures which will take a significant amount of effort and be completed by December 31, 2021.

RECOMMENDATION 7
Observe the administrative rule requiring the agency to engage with a specific group of stakeholders during Stakeholder Forums during the project delivery review process. Specifically, ensure that outreach to bicycle and pedestrian advocacy groups is regularly performed at the state and local level.

Agree or Disagree with Recommendation	Target date to complete implementation activities	Name and phone number of specific point of contact for implementation
Agree	January 31, 2021	Donnell Fowler Programs Development Office Manager (503) 986-3761

Narrative for Recommendation 7
We agree with this recommendation and will address it as we develop the charter for the Mobility Advisory Committee. As part of the chartering of the group, we will ensure we clarify the difference between the value added stakeholder engagement process for projects and work zone safety and that which is required as part of the Administrative Rule and the Stakeholder Forum called out in the rule. We agree with our stakeholders that we can approach this with one well-defined committee instead of creating additional committees. A membership reset is necessary to ensure we are meeting the requirements of the administrative rule. We will also ensure the meetings are facilitated in such a way as to provide clarity as to when the group is serving in an advisory role and when it is fulfilling the requirements of the Administrative Rule. We have already taken some steps to address these issues, but will formalize it as we implement Recommendations 5 and 6.

We will implement this by January 31, 2021.

RECOMMENDATION 8
Create comprehensive criteria for deciding which projects should be reviewed by the Mobility Advisory Committee.

Agree or Disagree with Recommendation	Target date to complete implementation activities	Name and phone number of specific point of contact for implementation
Agree	July 31, 2021	Tamira Clark Programs Development Manager (503) 986-3761

Narrative for Recommendation 8
We agree with this recommendation. As we have been reviewing the program, we have found the agency has criteria established, but the guidance as noted in a previous recommendation is conflicting and our policy/procedure review should assist in the implementation of this recommendation. We will work to address the inconsistencies and refresh the existing guidance to be in alignment with the administrative rules and adopted plans. The Project Delivery Services group will incorporate the agency's adopted criteria into the project phase gate processes.

We will implement changes by July 31, 2021.

RECOMMENDATION 9
Ensure that new and existing criteria for Mobility Advisory Committee project selection reviews are applied.

Agree or Disagree with Recommendation	Target date to complete implementation activities	Name and phone number of specific point of contact for implementation
Agree	July 31, 2021	Donnell Fowler Programs Development

		Office Manager (503) 986-3761

Narrative for Recommendation 9
We agree with this recommendation and have already started this work. Based on the feedback from our staff as well as the advisory committee members and other stakeholders, we recognized a need to revisit the criteria for project reviews. Work is already underway. We will continue to evaluate the effectiveness of those changes and adapt to any other changes needed to ensure timely delivery of projects and the appropriate stakeholder engagement.

Implementation of the new criteria will be completed by July 31, 2021.

RECOMMENDATION 10 Create and track performance metrics for the Mobility Unit and mobility reviews that take place during the design process.		
Agree or Disagree with Recommendation	**Target date to complete implementation activities**	**Name and phone number of specific point of contact for implementation**
Agree	July 31, 2021	Donnell Fowler Programs Development Office Manager (503) 986-3761

Narrative for Recommendation 10
ODOT agrees with this recommendation and has already built a database that can be utilized to track performance metrics for the Mobility Services Team. In partnership with our Safety and Mobility Policy Advisory Committee we will be discussing ways to make sure we have both qualitative and quantitative performance metrics that can assist the agency as we continue to improve our robust project delivery practices. We have a culture of continuous improvement in project delivery. By incorporating the Mobility Services Team into the Project Delivery Services Group, we will be better positioned to utilize these metrics as part of the continuous improvement processes within Project Delivery.

We recognize that there is a need to create metrics to ensure policies and procedures are applied correctly, consistently, timely and to hold ourselves accountable. This recommendation is consistent with feedback we have received from our Mobility Advisory Committee Members as well as our Safety and Mobility Policy Advisory Committee. Having reliable data to identify trends will be very helpful as we continue to review the program and improve our internal processes. We will identify key performance metrics by July 31, 2021. This timeline will allow for inputs from staff, executive leadership and our external partners.

There is a lot of information captured in the above recommendations and the steps we will take to successfully implement them. While we have identified specific individuals for each recommendation item, I would encourage you to please contact either Mac Lynde, Delivery and

Operations Division Deputy Administrator or Amy Ramsdell, Commerce and Compliance Division Administrator with any questions.

Sincerely,

Kristopher W. Strickler
ODOT Director

Audit Team

Will Garber, CGFM, MPA, Deputy Director

Andrew Love, CFE, Audit Manager

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Andrew Mendenhall, Staff Auditor

About the Secretary of State Audits Division

The Oregon Constitution provides that the Secretary of State shall be, by virtue of the office, Auditor of Public Accounts. The Audits Division performs this duty. The division reports to the elected Secretary of State and is independent of other agencies within the Executive, Legislative, and Judicial branches of Oregon government. The division has constitutional authority to audit all state officers, agencies, boards and commissions as well as administer municipal audit law.

This report is intended to promote the best possible management of public resources.
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