SCAN TEAM REPORT
NCHRP Project 20-68, Scan 21-01

Lessons of Agency Resilience

During Periods of Disruption

Supported by the

National Cooperative Highway Research Program

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Abbreviations and Acronyms

AASHTO	American Association of State Highway and Transportation Officials
Alaska DOT&PF	Alaska Department of Transportation & Public Facilities
AQs	Amplifying Questions
CDC	Centers for Disease Control and Prevention
CDOT	Colorado Department of Transportation
COVID-19	Coronavirus Disease 2019
DOT	Department of Transportation
FHWA	Federal Highway Administration
GDOT	Georgia Department of Transportation
GOHSEP	Governor's Office of Homeland Security & Emergency Preparedness
HR	Human Resources
IT	Information Technology
LaDOTD	Louisiana Department of Transportation and Development
NCHRP	National Cooperative Highway Research Program
NHSC	National Homeland Security Consortium
TRB	Transportation Research Board
UDOT	Utah Department of Transportation
USDOT	U.S. Department of Transportation
VTrans	Vermont Agency of Transportation
WSDOT	Washington State Department of Transportation

Executive Summary

This report summarizes findings from a domestic scan of transportation agencies and private organizations on the topic of organizational resiliency in the face of disruptions. The purpose of this scan is to identify the most innovative and beneficial elements of practice adopted by state transportation agencies to maintain their productivity and system performance, particularly as those activities have enhanced agency resilience and are likely to strengthen agencies' adaptability if confronted by future disruptions.

Organizational resiliency is a concern in federal agencies as well as in state and other public organizations. Therefore, the scan investigated these entities for innovative and beneficial elements of practice.

A scan team consisting of representatives from state Departments of Transportation (DOTs) and the Federal Highway Administration (FHWA) was formed to guide the scan and develop findings, recommendations, and dissemination actions. Scan team members brought a diversity of experience and knowledge in the related areas of human resources, emergency management, fiscal management, operations, workforce development, and an understanding of DOT management and knowledge of transportation agency challenges. See **Appendix A** for contact information and **Appendix B** for brief member biographies.

Scan team members met virtually on two occasions over the course of the scan. The first meeting was an organizational meeting to determine what information the team should collect. The primary output of the meeting was the creation of a set of amplifying questions (AQs).

The second virtual meeting was organized to facilitate information gathering and sharing between the team and the invited host agencies. At the second meeting, held in April 2022, scan team members and host agencies shared their organizations' COVID-19 pandemic and general resiliency experiences and lessons learned.

In all, scan participants collected and reviewed information and activities from eight state DOTs (Georgia, Iowa, Louisiana, North Dakota, Ohio, Utah, Vermont, and Washington State) and two private companies (Deloitte and OrgShakers).

This report presents information collected from host agencies and invited private entities concerning activities designed to ensure their organizations maintained an acceptable level of productivity during the COVID-19 pandemic and in preparing for future disruptions.

Presented within the report are findings and recommendations from information gleaned from a desk scan (**Appendix C**), the AQs (**Appendix D**), the responses to AQs (**Appendix E**), and from information exchanged at the scan meetings (**Appendix F**).

Introduction

Background

This scan was conducted under NCHRP Project 20-68, the U.S. Domestic Scan Program. The American Association of State Highway and Transportation Officials (AASHTO) Committee on Human Resources (HR) requested the scan, with funding provided through the National Cooperative Highway Research Program (NCHRP). The purpose of this scan is to examine how state departments of transportation (DOTs) maintain their productivity and system performance in times of disruption, particularly how they responded to the COVID-19 pandemic in ways that are reflective of a resilient organization. Throughout the experience agencies have learned valuable lessons, allowing them to recover and adapt from the pandemic and remain resilient in the face of future disruptions.

A scan team consisting of representatives from state DOTs and a representative from the U.S. Department of Transportation (USDOT) guided the domestic scan to identify the most innovative and beneficial elements of practice adopted by state transportation agencies to maintain their productivity and system performance. Particular focus was on those activities that enhanced agency resilience and are likely to strengthen agencies' adaptability when confronted by future disruptions. The scan also developed findings, recommendations, and dissemination actions.

Scan team members brought a diversity of DOT experience and an understanding of DOT organizations, their leadership, and employees to the scan. Scan team members and host agencies met virtually in April 2022 to share innovative practices and exchange information.

Scan Purpose and Scope

The purpose of this scan is to identify the most innovative and beneficial elements of practice adopted by state transportation agencies to maintain their productivity and system performance, particularly as those activities have enhanced agency resilience and are likely to strengthen agencies' adaptability when confronted by future disruptions.

The NCHRP Project Panel tasked the scan team with identifying transportation agencies that were successful in maintaining their accepted level of productivity and service to the traveling public during the COVID-19 pandemic. The team was instructed to collect from those agencies information on recognized policies and practices that build organizational resilience. The team examined policies and practices that include remote work policies and arrangements, use and configuration of the physical workplace, continuity of services and prioritization of work, use and incorporation of technology, productivity and performance management, employee engagement, remote training and learning, communications, and leadership and culture.

Scan Team

The principal investigator, with input from the designated chairperson, formed a scan team with representation from each of the four AASHTO regional associations. The principal investigator invited representatives from DOTs and the USDOT headquarters staff to guide the scan and develop findings, recommendations, and dissemination actions. Amanda Holland, Alaska's acting commissioner of the Department of Administration, chaired the team.

Members of the scan team represented Alaska Department of Transportation & Public Facilities (Alaska DOT&PF), FHWA, Georgia DOT (GDOT), Iowa DOT, Utah DOT (UDOT), Vermont Agency of Transportation (VTrans), and Washington State DOT (WSDOT).

Scan team members brought a diversity of management experience and an understanding of DOT management and agency challenges to the table. Members of the team represent critical areas of a DOT organization, including administration, fiscal management, construction, engineering, human resources, and employee development.

Scan Approach and Participants

The scan team held a day-long web organizational meeting on September 29, 2021, to review the results of the desk scan, develop and refine AQs, and select organizations to include in the scan. Following this meeting, the team invited the selected organizations to participate and asked them to provide written responses to the AQs in advance of the scan meeting.

The team held a virtual meeting from April 25–29, 2022. During the first four days of the meeting, the scan team heard presentations from eight state DOTs (Iowa, Georgia, Louisiana, North Dakota, Ohio, Utah, Vermont, and Washington State) and two private agencies (Deloitte and OrgShakers).

On the final day of the meeting, scan team members discussed what they had learned and compiled findings, drew conclusions, and developed recommendations. The team also initiated a series of discussions to identify strategies and actions for disseminating the scan's findings.

Definitions

There are many versions of the definition of "resilience" found in the transportation industry literature. NCHRP Research Report 976, "Resilience Primer for Transportation Executives," contains several definitions, including those of seven DOTs. For example, *resilience means the ability to prepare for, and adapt to, changing conditions and withstand and recover rapidly from disruptions* (adopted from: Presidential Policy Directive 21, February 12, 2013). Washington State DOT's Secretary's Executive Order 1113 defines resilience as *the ability of facilities and operations to withstand threats and serve long-term needs.* The Louisiana Department of Transportation and Development (LaDOTD) defines resiliency as *the ability of a system to provide and maintain an acceptable level of service or functionality in the face of major shocks or disruptions to normal operations. The ability to recover quickly or withstand the impacts of a disruption or some damaging event.*

The definition most aligned with this domestic scan is the *ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions (FHWA's Order 5520).*

A definition of individual resilience is *the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioral flexibility and adjustment to external and internal demands* (American Psychological Association Dictionary of Psychology, 2022).

Resilience plays a role in other areas as well, including:

- Resilient delivery – The elimination of all single points of failure: equipment, people, places, and processes.

- Resilience factors – Conditions that help a person survive and recover from a crisis or trauma. These can include flexibility and adaptability, connection to others, purpose, and hope.

- Resilience-oriented agency – The ability of an organization to prepare for, plan for, manage, and recover from unexpected transportation system disruptions.

- Team resilience – A team-level capacity to respond to and bounce back from adversity.

Disruption Responses and Outside Influencers

The scan team learned that when it comes to disruptions, outside influencers often determine the level and type of response. This was particularly true in the case of the COVID-19 pandemic. Participating states shared that in addition to the more traditional weather events, natural disasters, or economic challenges, a state's governor, legislative assembly, or information technology (IT) agency influenced their response to a disruption.

Departments are dependent on these outside influencers for guidance related to the types and levels of response and with coordinating with them in times of disruptions. The type of disruption, in most cases, will determine which outside influencers will coordinate with a DOT. For example, DOTs in states with a centralized provider of IT services worked closely on the development of remote work environments and the allocation of IT resources (e.g., people and equipment) throughout the pandemic.

Report Organization

This report documents the scan results, focusing primarily on the desk scan and the team's findings and recommendations. The remainder of the report is organized into three major chapters:

- **Desk Scan (Literature Search)** presents key information from all aspects of the scan, including the desk scan, AQs, and the scan meeting.

- **Findings** presents a summary of the findings and conclusions developed from the desk scan, responses to the AQs, and the scan workshop.

- **Recommendations** identifies actions that scan team members recommend for disseminating the findings and fostering adoption of beneficial agency resiliency practices.

Findings

Desk Scan (Literature Search)

The purpose of the desk scan is to inform the scan team of activities and elements that transportation agencies, other public sector organizations, and private sector organizations use and that can be easily adapted. Desk scan activities include scanning the literature, analyzing secondary data, conducting phone interviews, and creating a list of potential host agencies. The results of the desk scan were used to develop a list of potential agencies to be studied (referred to as host agencies in scan parlance) and the creation of the AQs. "Host agency" refers to an agency the scan team invites to present at a scan workshop. While at the workshop, a host agency's representatives share information targeted for study in the scan's scope, in this case the resiliency-building activities in which their agency is engaged. Team members have an opportunity to question host agency representatives and have informal conversations concerning their agency's resiliency-building activities.

The following sections include findings extracted from the desk scan.

Social Dimensions Versus Built Environment

The built environment includes all the intellectual and physical assets of a transportation agency's infrastructure, ranging from planning and design and asset management to operations and maintenance of transportation infrastructure. These elements have been studied through pilot research funded and supported by USDOT/FHWA. Until recently little research has been funded or conducted on transportation organization resiliency or the resiliency of its workforce.

A search of the AASHTO committee pages is useful in highlighting the focus of resilience efforts in the field of transportation. Using the search term resilience returned 104 records. Example articles included:

- "… Formula Funding Critical for Resilience"
- "Building Extreme Weather Resilience into Transportation Asset Management Programs"
- "Proposed Bill Seeks to Help States Build More Resilient Infrastructure"

Using the search term organizational resilience returned one record: "AASHTO Offering Five Transportation 'Resiliency' Webinars in December." The search term workforce resilience returned zero records.

Looking at the organization and workforce under the lens of resilience is critical to understanding what it takes for an organization and its workforce to recover from a period of disruption such as that caused by the COVID-19 pandemic.

Studies show long-term exposure to stressors reduces individual resilience and negatively affects employees' physical and mental well being. This also affects organizational readiness. Not surprisingly then, two of the most common employee programs related to resilience are wellness programs and employee assistance programs.

The organization resilience literature discusses five key elements needed to develop a resilient workforce and organization:

- Resilient leadership

- A focus on work-family balance

- Diversity and a supportive work environment

- Employee engagement

- Career and professional development opportunities

There is a relationship between leadership and resilience. The evidence is supported in NCHRP Research Report 976, "Resilience Primer for Transportation Executives." In the report, the authors discuss the role a chief executive officer plays in DOT resilience. According to the authors, a resilient organization's leaders foster, promote, model, and are actively engaged in a DOT's resilience efforts.

Employee training and career development opportunities are critical to workforce and organizational resiliency. Courses related to the following areas should be a part of any employee development program designed to develop workforce resiliency:

- Physical state

- Emotional state

- Family/community

- Work

- Culture

- Environment

Communications is an important activity related to workforce and organizational resilience. A new pandemic-related study found that workplace resilience—how employees respond to obstacles—is developed when managers and senior leadership keep employees informed about organizational challenges and the near-term future of the business.

With workforce resilience and organizational resilience in mind, the original problem statement was used to identify agencies whose COVID-19 experiences would be a valuable source of information.

Summary of Relevant Information

The highest valued organizational offerings during the pandemic are coaching, flexible work arrangements, time off, mental health resources, and home office equipment.

DOTs are using horizontal career pathing, allowing employees to chart a course for career path, growth, and development. Multiple states transitioned or converted paper-based processes to electronic processes.

The following is a list of state DOT practices and innovations that are worthy of highlighting.

Colorado has a resiliency program manager and has established a resilience program.

Utah has developed a formula that, when applied, helps to reduce the criticality of known risks. It is believed that reducing the criticality of a risk leads to increased resilience.

Georgia has created a telework hub portal. The portal is a website that hosts GDOT's telework policies, telework training resources, and telework frequently asked questions.

Idaho places strong emphasis on organizational culture and aligns performance evaluation with culture.

Rose, Thorn, Bud Exercise

Each Scan Day ended in a group discussin using the Rose, Thorn, Bud method for identifying findings as positive, negative, or having potential.

ROSE = something positive

THORN = something more of a challenge

BUD = a new goal, insight, or possibility

Louisiana has a continuity assurance program that is written into policy and falls under its knowledge management program. The agency tailored communications to work units during the COVID-19 pandemic.

Ohio employed a work-from-anywhere model during the COVID-19 pandemic. Its leadership took a first-hand approach, visiting field locations when possible.

Vermont selected some of its employees to be deployed to assist with some of its sister agencies within the state's government. The agency used an incident command structure during the early days of the pandemic.

Existing Practices and Innovations

According to the Colorado DOT (CDOT), the focus of resilience work in transportation up to now has been on transportation system infrastructure. Therefore, no state DOT practices or innovations have been identified that can be categorized as leading to or creating an organizationally resilient DOT.

However, state DOTs are conducting activities deemed by resilience professionals to be necessary to create a resilient workforce and a resilient organization. Despite the COVID-19 pandemic, state DOTs continued to develop their high potentials into leaders; state DOTs that had employee assistance programs before the pandemic continued to offer them during the pandemic; and state DOTs that focused on employee engagement activities before the pandemic continued to focus on employee engagement activities during the pandemic. In other words, the state DOTs interviewed for the desk scan are performing as resilient organizations and did not allow the COVID-19 pandemic to derail their resilient organizational practices.

The National Homeland Security Consortium produced an after-action report in which it highlighted workforce resilience best practices. The top eight best practices are:

- Implement flexible work schedules, when possible, while maintaining critical services

- Provide consistent wellness training for employees, including webinars, mindfulness strategies, and coping resources

- Provide staff members and their families access to mental and behavioral health services and peer support programs

- Encourage leaders to take extra interest in their workforces and to demonstrate empathy and kindness in their interactions

- Ensure that childcare and other needed resources are available to support the families of incident responders, teachers, and other essential workers

- Host virtual employee town hall meetings with leadership to facilitate open communication and transparency and to address questions

- Provide financial support for remote work equipment and/or compensation for increased risk of exposure

- Expand planning for continuity of operations to address pandemics and update existing plans with lessons learned from the COVID-19 pandemic[1]

The workforce and organizational resilience literature emphasize the importance of resilient leadership, effective communications, a healthy workforce, an engaged workforce, and providing opportunities for employee and professional development.

Amplifying Questions

During the initial team discussions, the team developed a list of AQs. These questions are intended to assist in the discussion with host agency representatives and to provide additional insights about the purpose of the scan. The questions are focused on the areas the team deemed most critical to developing an understanding of how agencies achieve resiliency. The list of AQs is presented in its entirety in Appendix D.

The team was interested in collecting information from participating agencies in 10 broad topic areas, which are outlined below.

General Information – The team considered it important to capture information from the invited host agencies regarding agency size and organizational structure, relevant workforce demographic data, and whether the agency had mandates in place. The team also wanted to know how individual agencies define resiliency.

Use of strategic plan and values to guide decision making during the pandemic.

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1   The National Homeland Security Consortium COVID-19 PANDEMIC After-Action Report, June 2021,
https://www.apwa.net/library/government-affairs/NHSC_COVID-19_Pandemic_After_Action_Report_Final.pdf

Leadership – The team questioned host agency representatives about what role leadership plays during a disruption. For example, is there a crisis leadership team, is resilience an organizational goal, or are leaders trained on the principles of organizational resilience.

Lessons Learned from the COVID-19 Pandemic – Individual team members were aware of the lessons their agencies learned from experiencing the COVID-19 pandemic. Members wanted to hear what the invited agencies learned from their experiences dealing with the pandemic and other disruptions. The team was specifically interested in learning of any policy or process changes, the implementation of ad hoc committees, and any lessons learned resulting in changes to operations or leadership's engagement with employees.

Communications – The team was interested in learning what communications were put in place that allow agencies to successfully navigate a disruption.

Work Environment (includes physical workplace, remote/teleworking) – The team was interested in learning what policies and practices were implemented that allowed agencies to continue operations under the extreme challenges brought on by the COVID-19 pandemic.

Learning and Development – As previously stated, employee training and career development opportunities are critical to workforce and organizational resiliency. Therefore, the team was interested in hearing how DOTs addressed the challenges that confronted them during the COVID-19 pandemic.

Organizational Culture – The team was interested in learning what role organizational culture played in successfully meeting the challenges of the COVID-19 pandemic and preparing agencies for future disruptions.

Workforce – As stated previously, studies show long-term exposure to stressors reduces individual resilience and negatively affects employees' physical and mental well-being. Therefore, the team was interested in hearing what steps agencies took to ensure employee physical and mental well-being.

Technology/Tools/Systems – The team was interested in learning what resources are required to successfully manage a disruption. In the case of the COVID-19 pandemic, the team was interested in what innovations were implemented to ensure continuity of government.

Safety – The team was interested in hearing how agencies ensure their employees have proper safety equipment and what preparations for disruptions are in place.

Findings

Select Findings from Amplifying Questions

The invited agencies were sent AQs in advance of the scan meeting and asked to prepare and submit their responses prior to the meeting. In most cases the invited agencies used their responses to the AQs as the basis for their presentation. In other cases, their responses to the AQs were an extension of their presentation. From the scan team's perspective, the AQs serve as another source of valuable information.

The following information was gleaned from the host agencies' submitted responses to the AQs. The team was interested in finding out what lessons were learned from the COVID-19 pandemic experience.

General

In your opinion, what do resilient agencies do to be successful during periods of disruption?

- **Louisiana** – Make sure that all employees know our emergency plans and their roles in the plans. Establish standard operating procedures to address actions and/or responses to events that could impact the agency. Build infrastructure with redundancies and/or is capable of withstanding disruptions.

- **Ohio** – Having redundancy built into processes and operations (i.e., prevention) is the best approach. When you find yourself in a period of disruption, though, implement incident management style operations and communication for as long as it makes sense to do so. Communicate early and often. Stay ahead of the rumor mill. Have a plan (continuity of operations, continuity of government).

- **Utah** – It really starts before the disruption happens. Having a plan in place to address the disruption is what successful agencies do.

- **Washington State** – In times of disruptions agencies must build a framework to minimize potential impacts that allows for rapid recovery from an incident that disrupts their operations. For WSDOT, this requires us to identify key personnel who perform or manage the implementation of WSDOT essential functions at both the headquarters and regional levels. Often this requires not just the right structure to support the response but also an understanding of who is making what decisions in an emergent environment. Communication with the public and internal employees is vital. Understanding intent, planning, and how the response is going to affect people and services is important to delivering a consistent message to the public. Traditional organizational structures become less important. Units or organizations are "task organized" to respond directly to the threat or disruption while focusing on the most essential functions and services the agency provides and working back to normal operations or as close to what can be achieved moving forward.

Lessons Learned from the COVID-19 Pandemic

What policy or process changes has your agency made resulting from the COVID-19 pandemic?
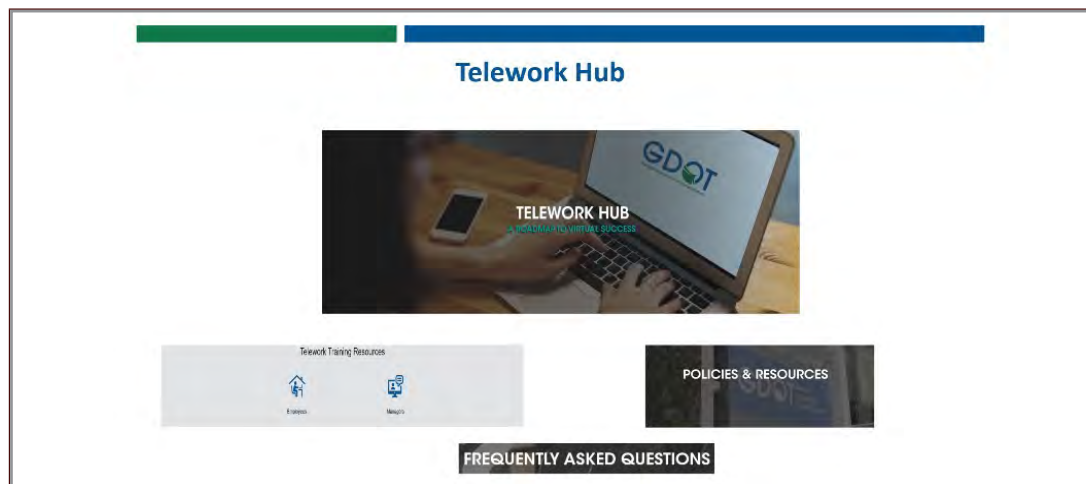
Figure 2-1. Georgia DOT's telework hub

- **Georgia** – GDOT had to modify our telework policy to allow for greater flexibility and support for managers and employees.

- **Iowa** – Our teleworking policy was changed to allow greater flexibility for employees; we used Microsoft Teams for meetings, interviews, and town hall meetings. Both will be permanent changes.

- **Ohio** – Telework, paperless environment

- **Louisiana** – Implemented COVID protocols. Made changes to the telecommuting process as it relates to COVID-related events. Changed leave types (paid leave for employees needing to be quarantined).

- **Washington State** – Several policy and procedures changes have occurred as a result. Some of those include:

  - Enabled in-state telework for over 40% of the workforce

  - Allowed out-of-state and out-of-country telework

  - Provided remote work for employees to work outside of their regional boundaries

  - Renewed and refreshed the agency commitment to cybersecurity

  - Instituted acceptance of digital signatures

  - Consolidated facilities

Communications

What role does leadership play in communications during a disruption?

- **Iowa** – Senior leadership took the lead in keeping employees informed during the pandemic, keeping them aware of the status of the pandemic, what the agency was going to do, and how it impacted employees.

- **Louisiana** – Leadership recognized that it needed to make sure that all employees understood what was expected of them and make sure they were updated on the department's status.

- **Washington State** – Leadership's role is vital. Our leadership was tasked with communicating frequently with employees to keep them abreast of changes. We scheduled weekly meetings with both executive management and the organization's senior managers to make sure information was disseminated as appropriate; the expectation was that the managers shared that information with their staff. For significant items we followed up with communication on both our intranet and via e-mail.

Work Environment (includes physical workplace, remote/teleworking)

What challenges, if any, did your agency overcome related to teleworking? Please explain.

- **Georgia** – Historically, GDOT had very few employees who were teleworking. As we shifted to a hybrid/remote environment, many employees and managers needed resources on how to successfully navigate that new arrangement. This led to the creation of a Telework hub as a one-stop shop for all telework-related resources.

- **Iowa** – Most of the challenges were technology-related. Being a rural state, internet and Wi-Fi access were spotty in some locations. We needed to deploy more cell phones so that employees did not have to use their own phone. We even had a few employees who did not have home internet. We had to deploy a lot of loaner laptops and were initially limited in how many could access systems at one time.

- **Ohio** – Some minor technical issues occurred early on. These were explained as first-time implementation issues that come along with a new practice. We did have some employees self-report some substance-abuse issues that were exacerbated by telework. We also had to figure out on the fly how to do a reasonable suspicion test in a remote environment.

- **Washington State** – The department faced mostly cultural challenges or resistance from either employees or managers. As time went on and people realized the possibilities it got much better. We really benefited from our previous efforts in telework and the areas that already had a strong commitment in this area. It helped other divisions in the organization realize what is possible.

Please describe how your agency addresses re-entry to the worksite during and/or after a disruption that requires evacuation, remote work, etc.

- Washington State – To safely reopen, our plan included ongoing support of a workforce that can continue to accomplish business outcomes through telework, while identifying the work that must be done on-premises or in-person in the community. A combination of on site and telework (i.e., a hybrid model) may be the best option for many lines of businesses and employees. As we moved into this next stage of recovery and reopening, it meant further analysis of work functions and services that continued remotely and those that need to take place at worksites, facilities, or in person in the community to close business gaps, improve services, increase access, and better serve the state.

Learning and Development

Does your agency provide resilience-related training? If yes, is the training internal or external?

- **Georgia** – We do offer soft-skill related training that has an impact on our ability to respond to critical events. Specifically, we offer training for managers as it relates to dealing with difficult situations, emotional intelligence, communication plans, etc. Some of these are offered through external training resources as well as during our management development programs.

- **Louisiana** – Our agency offers some resilience-related training internally and externally. For example, we offer classes that specifically discuss emotional intelligence, organizational culture, transformational leadership, and conflict management. It is also addressed in other training-related efforts: succession planning, shared work efforts, project/process management, and typical workflows.

- **Washington State** – Yes, we had multiple versions. Some were from an outside person at the Department of Health who was a psychologist qualified in the field. We also adapted the Department of Defense's resiliency training to fit the needs of our organization.

Organizational Culture

What role, if any, does organizational culture play during a time of disruption?

- **Georgia** – The organizational culture is critical, both in daily operations, but especially in times of crisis. For GDOT, the focus of our culture is on innovation and collaboration, which permeates the organization.

- **Iowa** – Culture plays a significant role in a time of disruption. We focused on communication, letting our employees know it was important to us that they were kept aware during the pandemic. We also surveyed them a couple of times to see how they were doing. Additionally, we held several town hall meetings to keep employees informed and allow them to ask questions.

- **Washington State** – Leadership plays one of the most vital parts during disruption; our leaders have grown a ton under the pandemic. They've shown they can be dynamic in their style of leading and showing trust toward their employees to get the work done. The construct of our strategic plan helped guide our approach.

- **Ohio** – The organizational culture and health of an organization play a big role in how it responds to a disruption. Organizations that instill empowerment in employees and encourage innovation are more likely to better withstand disruptions. Balance is important as well. In a crisis, an incident-management approach may be beneficial and results in decisions being made higher up the organizational chain of command than they would be in normal circumstances. Getting people to understand that change quickly and communicating it through a large organization can be challenging. If an organization has a culture of a policy saying one thing and the practice being another, it can be additionally challenging to get people to really understand the importance of abiding by new rules and practices during a crisis. Trust and the ability to be honest are two critically important elements of organizational culture; their importance is only heightened during disruptions.

> *If problem solving is an inherent part of the culture, a disruption can be seen as another opportunity to solve problems.*

- **Louisiana** – The culture I think of is at the district level, the front line, but it counts on leadership up through the organization. They mobilize quickly to clear a path for other first responders. Overall, this is our core priority, so all hands-on deck is the mentality.

Technology/Tools/Systems

What technology challenges do you face during a disruption?

- **Louisiana** – Potential extended loss of access to enterprise business systems and lack of a sufficient number of some mobile tools (e.g., Wi-Fi devices and satellite communications access) to facilitate remote work.

- **Ohio** – Worker bandwidth: Available VPN bandwidth (for workers who regularly access large data files that are stored on our network and are attempting to manipulate them on a local machine).
Machine capabilities: We need to have accessible to our staff physical or virtual machines with

high graphics capabilities that can manipulate large files and are capable of high-resolution graphics manipulation. We have systematically reduced the network impact of disruptions. Currently, the location from where our people perform their work is not of much concern.

Patch management: We have limited ability to manage patches/updates while the machines are not on our network. There is a higher instance of machines being turned off during patch cycles than when they were PCs and when they were in the office buildings.

- **Washington State** – Loss of connectivity to the state network; the fallback is office.com. This is not ideal if you do not have access to some of the internal systems that individuals require to do their work. We have backup access points, which we test occasionally; however, they are capped on how many people can utilize them.

Safety

How do you prepare employees for disruptions (e.g., power outage, severe weather event, natural disaster)?

- **Georgia** – We have safety briefings in advance of events to prepare employees and their families (in the case that the employee may be away from home for an extended period), as well as briefings throughout the event. We also store much of this information in a centralized location online for safety team members, managers, and employees to be able to easily access. We also begin sending out weather-related notices to impacted offices as they become available to assist in their preparation.

- **Ohio** – The agency has an annual Agency Safety & Security Action Plan and annual fire and tornado drills.

- **Washington State** – We give safety notices on how employees can prepare.

Summary of Scan Workshop Findings

On days one through four of the scan workshop host agencies shared their experiences with respect to their response to the COVID-19 pandemic. On day five of the workshop, scan team members discussed their findings from the host agency presentations and developed conclusions and recommendations.

The following sections include a day-by-day summary of information shared by host agencies and findings and conclusions identified by scan team participants from information collected over the course of the four-day scan workshop.

Presentations

Host agencies received a set of AQs to answer as the basis for the development of their presentation. The scan team, being familiar with the characteristics of a resilient organization, designed the AQs to identify those characteristics within a resilient transportation agency and to collect examples of lessons learned from experience gained during the COVID-19 pandemic. The scan team arranged the questions into 10 categories:

- General

- Leadership

- Lessons Learned from the COVID-19 Pandemic

- Communications
- Work Environment
- Learning and Development
- Organizational Culture
- Workforce
- Technology/Tools/Systems
- Safety

Responses to the AQs provided the information needed to draw conclusions and make recommendations for agencies wishing to improve organizational, leadership, and individual resiliency. This section organizes the information collected using these 10 categories.

The following is a summary of information gleaned from each day's presentations. Host agency representatives guided by the AQs focused their presentation on several of the categories previously mentioned. Host agency representatives also discussed activities conducted during the pandemic identified as "resiliency action steps."

> *Key Learning #1 – Organizational resilience depends on the organization's ability to recover and adapt.*

Day 1

On Day 1, two host agencies delivered presentations.
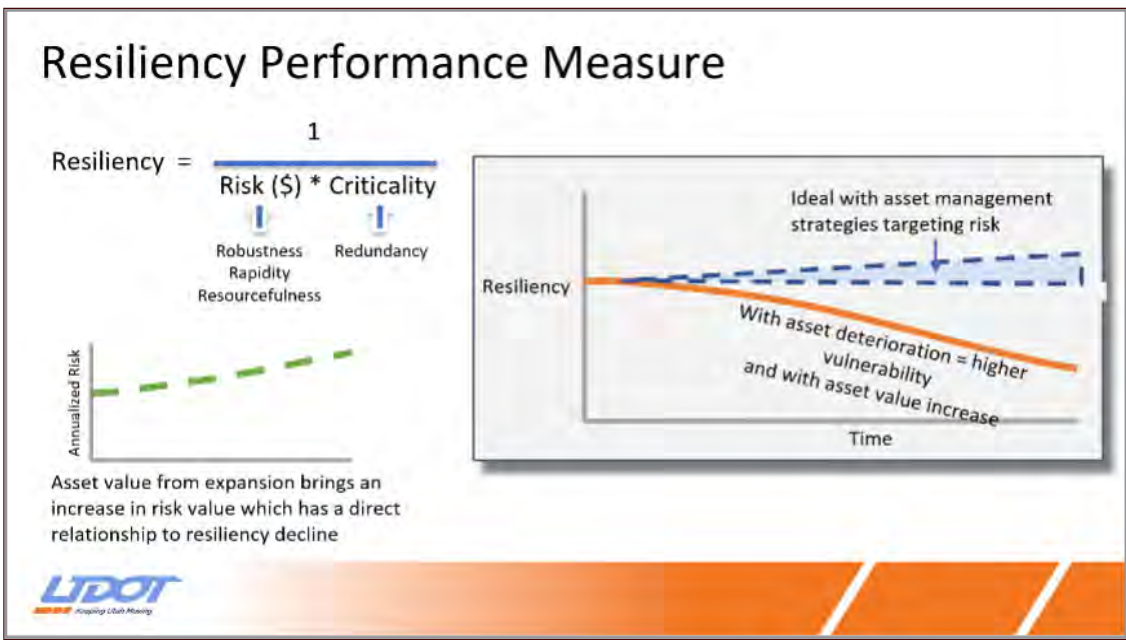
Figure 2-2. Utah DOT's resilience performance measure

Leadership

During the pandemic, leadership rapidly adjusted the workplace and work schedules to adapt to the quickly changing work environment. The well-being of workers was a key focus, with increased flexibility in schedules to accommodate the needs of employees working from home. That effort was accompanied by the heightened need for stepped up communications and an increase in the frequency of communication between leadership and the workforce.

Communication

The creation of an internal COVID-19 website to communicate current COVID-19 information and the availability of resources was instrumental in providing employees with the latest information. Additionally, leaders and managers shared information with employees regularly through updates from leadership, weekly updates, and town hall meetings. Department leadership conducted a staff survey to identify employee concerns; this resulted in a set of frequently asked questions.

Lessons Learned from the COVID-19 Pandemic

The presenters included cautionary lessons learned, such as, "What do you do when all electronic systems fail? You have manual processes in place when electronic processes are unavailable. You also need to be prepared for short-duration disruptions and long-duration disruptions."

Workforce

For one DOT, response to the COVID-19 pandemic included transitioning to telework status within 72 hours of notice of shut down. This led to the distribution of over 500 mobile devices to increase employee productivity. During the initial response to the COVID-19 outbreak, one DOT temporarily deployed employees to other state agencies to aid containment, mitigation, and operations efforts.

At one DOT, employee adoption of e-learning was accelerated from a three-year plan to immediate adoption, which replaced all in-person training that did not require a hands-on component.

Technology/Tools/Systems

One department quickly transitioned to remote working. Approximately one-third of the workforce began teleworking in a brief period, which required the deployment of extra equipment, such as laptops, headsets, and wireless internet connections (i.e., hotspots).

Work processes needed to be adjusted to account for changes in person-to-person interactions. Many of the existing business processes were converted from paper-based to an electronic format. DOTs also converted to electronic formats using computer-based tools from processes requiring face-to-face interaction between employees and between employees and customers.

DOTs contained and mitigated the spread of the COVID-19 virus by monitoring interstate travel through data collection systems already in use to collect and analyze data traffic. Additionally, DOTs responded to the pandemic using virtual meeting platforms, hotspots, satellite phones, the Radio Amateur Civil Emergency Service, and social media outlets.

One presentation included information about the development of a tool to better understand employee circumstances and leverage employee skills. The agency surveyed employees to find out who

had emergency medical services training, who had exceptional customer service skills, who was an expert in specific types of software, and which employees had a state-issued cell phone and laptop.

The same state's Department of Health requested support with COVID testing and vaccine clinics. The agency was able to connect employees who had identified prior or current medical experience in alignment with the request requirements to perform testing activities and vaccine administration. The agency was also asked to provide staff to support several call centers in other departments. Staff who self-identified as having exceptional troubleshooting and customer-interaction skills were contacted first for these volunteer deployments.

Resiliency Action Steps During the Pandemic

Host agency representatives reported taking steps to ensure that their DOT maintained its level of performance and to prepare their DOT to quickly recover from the disruption, which in this case was the COVID-19 pandemic. These activities are presented in below in the Resiliency Actions Steps.

Day 2

On Day 2, three host agencies delivered presentations.

General

One presentation combined the concepts of risk management and resilience management. Combining the two concepts led to the development of a theoretical resiliency performance measure that was applied in an enterprise risk management pilot that included a workforce management analysis.

Conduct regular check-ins to assess employee quality of life	Share best practices about how to check in with your team	Accelerate the implementation of online learning plan from three years to months
• Develop a state asset tracker (computers, monitors, printers). • Offer online training when COVID-19 broke out. Five COVID-19 related trainings. • Implement a resilience training program for personal and professional effectiveness. For example, use Blue Courage training for law enforcement.	• Create a demobilization plan in conjunction with a pandemic response plan – based on criteria and the executive order from the governor's office (like mask mandate, mandatory testing). Aligns with strategic plan. • Develop a COVID-19 tracker and a COVID-19 playbook. • Increase communication from leadership and between supervisors and staff.	• Provide services as usual, including driver's license services, construction inspection, winter operations, and motor vehicle enforcement to name a few. • Develop and implement a pandemic response plan that prioritizes services, ensures employee health and safety, addressees human resources concerns, and in general ensures continuity of operations.

Figure 2-3. Resiliency action steps

Leadership

Leaders continuously assess changing conditions during a disruption. Leaders support employees by empathizing with them and expressing understanding during the challenging times.

Leaders and managers throughout the organization play an active role in communication efforts and reducing employee fears during a disruption.

Figure 2-4. Iowa DOT leaders promoted resiliency

- A DOT needs to consider using one of multiple approaches to working: telework, in-office, or a hybrid.

- Changing where we work did not result in catastrophic failure.

- It is possible to build relationships and connections virtually.

- Intentional and meaningful communication is more important than simply just communicating.

- Use all available media for delivering communications, including town hall meetings, weekly meetings, TVs, e-mail, leadership visits, and mass e-mail.

Work Environment

Teleworking was an immediate response to the pandemic. DOTs implemented long-term policies allowing compatible positions to telework with certain provisions, including working in the office at least two days a week, completing required training, ensuring that the employee is not a primary caregiver to someone in their home, making sure there is access to adequate IT, and confirming that the employee has satisfactory work performance.

> *Key Learning #2 – Develop communication guidelines that are responsive and clear.*

Certain DOTs employ three work arrangements:

- In-office – Work is done from a DOT facility and employees have an assigned physical office space.

- Hybrid – Work is done from a DOT facility one or two days per week and from home. Employees do not have an assigned physical office space and will utilize hoteling spaces when in-office.

- Telework – Work is done exclusively from home. Employees do not have an assigned physical office space and will utilize hoteling spaces when in-office.

A DOT conducted an annual Gallup Employee Engagement survey in 2020. The first year focused on employee recognition. The second-year focus is on employee well-being, which ties directly to individual resilience. According to an analysis of the Understanding Society Survey by the Young Foundation, well being is strongly related to resilience, with most individuals reporting both high well-being and high resilience or, conversely, low well-being alongside low resilience.

Organizational Culture

New employees initially learn about a department's culture during new hire orientation. Following new employee orientation, new employees learn about the department's culture from supervisors and co workers.

A culture of innovation enhances a department's response to disruptions.

Workforce

One host agency has several policies related to the workforce that make it a worker-centric agency. Resilience-related policies include leave sharing, an employee assistance program, and an employee wellness program. Leaders openly talk about employee well-being, mindfulness, and related topics.

One host agency demonstrated its concern for the well-being of its employees by conducting periodic welfare checks via phone calls, meetings, and virtual coffee/water cooler talks.

Worklogs maintained employee accountability while working remotely.

Focus response on the department's mission, vision, and goals	Conduct annual risk assessment	Conduct enterprise risk management focused on the workforce
• Build redundancy into processes and operations (i.e., prevention), implementing incident management style operations and communication and communicating early and often. • Develop internal communication plan to inform employees about changing conditions, reopening, etc. • Establish standard operating procedures to address actions and/or responses to events that could impact the agency.	• Develop and implement policies related to teleworking, IT, and paperless environment. • Promote an employee- and family-first attitude – take care of those around you first and work will follow. • Inform all employees of emergency plans and their roles in the plans.	• Review reduced facility footprint/shared workstations. • Implement policies concerning electronic signatures, stamps, and seals. • Build infrastructure with redundancies capable of withstanding disruptions. • Update strategic goals to include resiliency.

Figure 2-5. Resiliency action steps

Day 3

On Day 3, three host agencies delivered presentations.

General

One presentation team made the point that the pandemic experience accelerated change and exacerbated the need for DOTs to address future-of-work challenges now—the future of work had already arrived. As DOTs move forward, it is imperative for leaders to learn from the pandemic experience and continue to adapt their work, workforce, and workplace to address new and old problems.

One presentation team shared information regarding the adaptive workplace hybrid models. There are three workplace models: the expanded traditional model, equivalent to 20% to 40% virtual; the employer choice job-based hybrid, equivalent to 40% to 60% virtual; and the workforce choice hybrid, equivalent to 60% to 80% virtual. The models address three attributes: work, workforce, and workplace.

One presentation team discussed four critical considerations when responding to a disruption:

- Leadership resilience in the form of communicating critical information and supporting employee morale

- Workforce engagement – supporting employee engagement

- Telework enablement and infrastructure

- Constituent impact

Leadership

DOT leaders need to work with and coordinate disruption responses with influencers external to a DOT, such as the Office of the Governor, Department/Division of Administration, Office of Public Health, and the Centers for Disease Control and Prevention (CDC).

If there's not a solution, it's not a problem, just a fact you have to accept.

Lessons Learned from the COVID-19 Pandemic

The pandemic accelerated progress and changes already underway.

Communication

One DOT's HR Office established a COVID-19 e-mail address to distribute and receive information from employees.

Host agencies used their intranet to publicize COVID-19 pandemic information to employees.

Work Environment

One agency demonstrated adaptability in the face of the pandemic disruption by moving rapidly to modernize its IT systems and infrastructure to enable remote work operations.

One agency reported on its efforts to recruit and hire out-of-state remote workers.

One agency moved from 15% of workers teleworking to setting an organizational goal to have 30% to 40% of employees teleworking to reduce the department's footprint. At the time of the workshop, 46% of the agency's employees were teleworking.

Teleworking created challenges around equipment, managing and monitoring performance, social interaction, and access to in-office only resources

Learning and Development

One agency employs the Reward, Establish, Share, Trust Model, a tool to help increase personal resilience.

Workforce

An agency provided employees access to behavioral health professionals during the COVID-19 pandemic.

Day 4

On Day 4, two host agencies delivered presentations.

General

The first presentation team shared information about organizational risk. The presentation included a discussion about the risk-immune system and how mitigation costs are assigned to defined risks. The system, driven by leadership, is a constant feedback loop known as the Detect, Assess, Respond, Learn Loop. The respond and learn phases of the risk-immune system are like the recover and adapt phases of resiliency. In the model presented, action replaces respond and adaptability replaces adapt.

Work Environment

One DOT went from approximately 150 teleworkers before the COVID 19 pandemic to approximately 1500 employees currently teleworking. This required the DOT to update the department's telework policy, which it had not updated since 2019.

Deployed new technology during the pandemic (during a disruption)

The department took steps to improve the existing approval and management process. An HR position was repurposed to serve as telework coordinator to support the increase in teleworkers. The DOT converted the paper-based telework approval process to an electronic process.

Deliver resilience workshops ("Building Personal Resilience") and conduct train-the-trainer sessions	Make your organization less vulnerable to risks	Create Experience U internal website, a communications/ information portal
• Deliver change leadership workshops. • Offer 1:1 coaching for key leaders. • Conduct virtual interviews. • Create an Onboarding and Engagement coordinator position.	• Increase risk intelligence – Key concepts: speaking a common risk language (using the same vocabulary to identify and discuss risks); forward-looking. • Create telework hub – includes short training videos, updated telework policies, and frequently asked questions.	• Convert telework workflow approval process to an automated, electronic process. • Increase availability of web-based training. • Conduct virtual new employee orientation training.

Figure 2-6. Resiliency action steps

Learning and Development

DOTs continued to offer training throughout the pandemic. During the two-year period covering the pandemic, web-based training increased from the previous three years by approximately 25%. The number of available online courses increased by 15.

A DOT reduced its in-person class size to increase training effectiveness and employee safety.

Scan Workshop Findings

Each day of the workshop ended in a group discussion using the Rose, Thorn, Bud Method for identifying findings as positive, negative, or having potential. With this method, a rose is something positive, a thorn is something that is more of a challenge (difficult to overcome), and a bud is a new goal, insight, or possibility. The rose, thorn, bud exercise helped the scan team to codify research data, gather input from all team members, facilitate productive discussion, and identify issues and insights.

> *Key Learning #3 – The most common response to the COVID-19 pandemic was the implementation of teleworking.*

Each participant shared with the group a rose, thorn, or bud drawn from

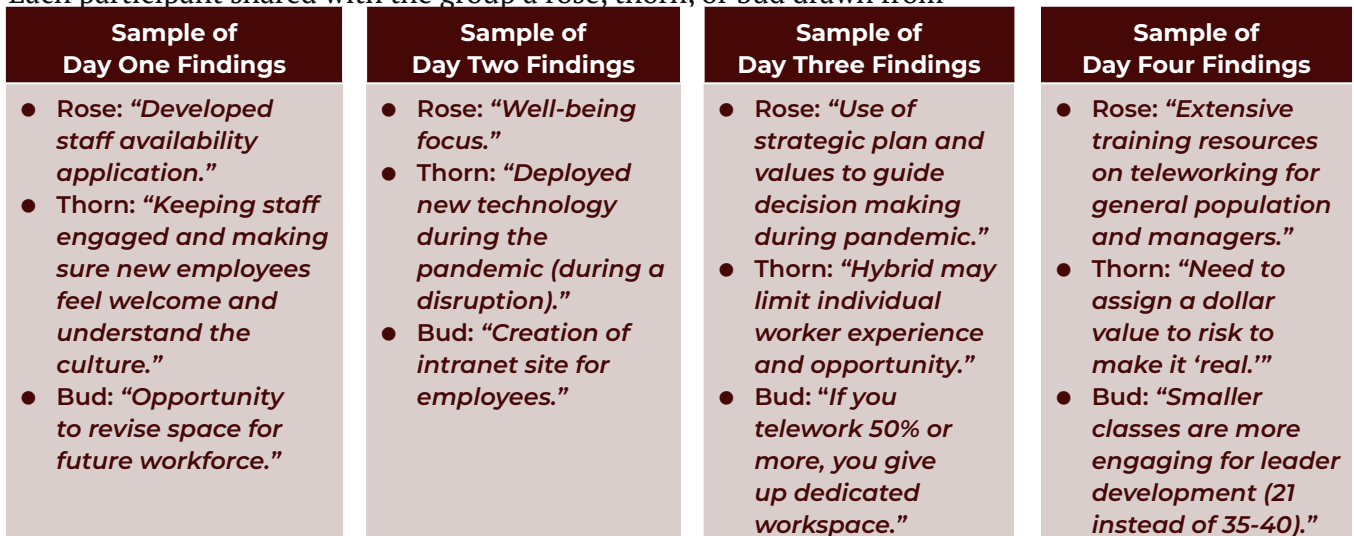| Sample of Day One Findings	Sample of Day Two Findings	Sample of Day Three Findings	Sample of Day Four Findings
• Rose: *"Developed staff availability application."* • Thorn: *"Keeping staff engaged and making sure new employees feel welcome and understand the culture."* • Bud: *"Opportunity to revise space for future workforce."*	• Rose: *"Well-being focus."* • Thorn: *"Deployed new technology during the pandemic (during a disruption)."* • Bud: *"Creation of intranet site for employees."*	• Rose: *"Use of strategic plan and values to guide decision making during pandemic."* • Thorn: *"Hybrid may limit individual worker experience and opportunity."* • Bud: *"If you telework 50% or more, you give up dedicated workspace."*	• Rose: *"Extensive training resources on teleworking for general population and managers."* • Thorn: *"Need to assign a dollar value to risk to make it 'real.'"* • Bud: *"Smaller classes are more engaging for leader development (21 instead of 35-40)."*

Figure 2-7. Sample of Rose, Thorn, Bud discussions

information shared during the day's presentations. One example of a rose is one agency's focus on performance metrics and performance goals, not where the person is working from. An example of a thorn is that a hybrid work environment may limit individual worker experience and opportunity. An example of a bud is a survey of employees to identify employees with skills that can be used in an emergency response.

Develop safety protocols	Provide mental health support (peer support)	Provide ergonomic support/ training
• Communication keeps us safe; town halls.	• Constantly share protocol updates.	• "Fairness perception" resulting from teleworking.
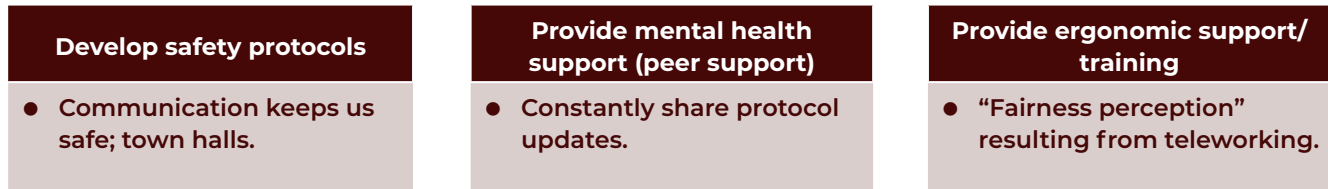
Figure 2-8. Common DOT pandemic practices

Conclusions

The team drew conclusions from its findings following a detailed discussion of each finding. **Table 2-1** is organized by the previously mentioned categories and presents the conclusions developed through rose, thorn, or bud discussions.

Conclusions	
Category 1 – General	**Category 2 - Leadership**
It is imperative to have redundancies in your system.	Strategic plan, mission, vision, goals, and core values should be the cornerstone of a resilient organization.
Emergency planning is a journey not a destination: always need to be doing it.	The well-being of workers is a key focus, with increased flexibility in schedules to accommodate the needs of employees working from home.
Keep risk as a part of the conversation, not just once a year.	Stepped up communications, including an increase in the frequency of communication between leadership and the workforce.
Importance of understanding the risks.	Continuous assessment of changing conditions is critical to recovery.
Need definitions of terms to include risk, resiliency, etc.	
Category 3 – Lessons Learned from the COVID-19 Pandemic	**Category 4 – Communications**
Flexibility in scheduling is imperative to address the leave needs of employees.	Need multiple tools to reach all stakeholders. "There's no such thing as overcommunicating in an emergency."
Must be willing or flexible to implement multiple tools to address the challenge.	Create a central repository of information.
Lessons learned from previous disruptions can be used in the current disruption.	Collaborate and coordinate with neighboring states, federal agencies, and other partner agencies.
Have a single point of contact to ensure there is consistent application of practices, safety measures, etc.	It is important to get into a regular pattern of communication so information is consistent and timely.

Conclusions	
A team is an effective single point of contact.	Check with employees to make sure they are getting what they need, employee engagement, polls, pulse checks, etc.
Having a central e-mail address or building redundancy into your response or point of contact is effective.	
Category 5 – Work Environment	**Category 6 – Learning and Development**
Teleworking (hybrid, remote) is an effective tool to use during a disruption.	DOTs need to be adaptable in delivery methods.
Need to find the balance between the needs of the organization and the needs of the worker.	For employees to remain resilient, DOTs need to pay attention to employees as persons.
Need to create an environment where the worker wants to come into the workplace.	Having a central repository for training resources is critical/effective for delivering training during a disruption.
The workplace is evolving. It is important for DOTs [to evolve with it] to be open to other work arrangements.	Need resilience training for the organization, team, and individual levels.
Make planned changes before the disruption occurs when possible.	Have the right training in place before an emergency and be sure it can be modified as events evolve.
The workforce is more resilient than previously acknowledged.	Training needs to be relevant to the types of ongoing risks.
Hybrid working during the pandemic has shifted the paradigm for how employees get their work done.	Training needs to focus on the tools employees need to do their job.
Employees need the tools (training, equipment) to remain productive and be successful in teleworking.	It is important to train leaders to lead in a hybrid work environment.
DOTs need to adapt their workplace, technology, training, and work processes accordingly when considering hybrid working and changing work expectations.	Civility training is needed when coming out of an extended period of disruption.
Evaluate out-of-state telework strategies that meet your organization's needs for talent recruitment and retention.	
If hybrid work becomes a standard practice, DOTs need to evaluate out-of-state and international telework options.	
Category 7 – Organizational Culture Environment	**Category 8 – Workforce**
Culture plays a key role in the types of decisions made in an organization.	It is important to focus on the employee life cycle.
A workforce open to change, which is transparent, collaborative, innovative, safe, and empathetic characterizes a resilient culture.	Focus on the well-being of the employee – work and family.
The culture needs to reflect an agency's core values.	DOTs need to consider a greater emphasis on data analytics with HR.

Conclusions	
	DOTs should adjust hiring to match what the market will provide.
	DOTs should be looking for future skills needs, not skills traditionally sought.
	Workforce decisions can enhance or inhibit the ability to respond to disruptions.
	It is important to check on the welfare of employees during a disruption.
	There is a fatigue that comes from being in crisis mode for an extended period.
Category 9 – Technology/Tools/Systems	**Category 10 – Safety**
Technology enhances a DOT's ability to respond to a disruption.	The proper safety equipment needs to be available to all employees.
Tools and systems need to support the type of decision-making model used.	DOTs need to be looking for safety equipment that will enhance the welfare of their employees.
Have a central repository for telework training resources.	
Tools and systems need to help guide a response.	
DOTs should look for ways to automate the "dull, dirty or dangerous work."	
Provide tools for employees to access information quickly.	
Technology without a redundant system creates problems.	
Technology should match the evolving needs of the workforce and workplace.	
In an emergency, DOTs need to know the availability of resources, including equipment, technology, and employees.	
An emergency operations plan application is useful during a disruption.	
Planning tools need to be current and up to date.	
Need to look at available technologies that create a nimble and flexible workforce.	

Table 2-1. Conclusions

Recommendations

The scan investigated such key factors as remote work policies and arrangements, use and configuration of the physical workplace, continuity of services and prioritization of work, use and incorporation of technology, productivity and performance management, employee engagement, remote training and learning, communications, and leadership and culture.

The scan team analyzed information collected from its investigation using accepted domestic scan techniques, including a desk scan, AQs, and a scan workshop. From this analysis the scan team developed the following recommendations:

- Develop or identify a dynamic tool that could grow, a way to share our lessons learned from disruptions that is accessible to all the state DOTs.
  - Find a way to get together one year later and add to the conversation.
  - Is there some way for this to continue developing after the scan—ongoing follow-up and updates?
  - Consider NCHRP 20-44, "NCHRP Implementation Support Program," implementation of NCHRP research, the possibility of the scan team developing a proposal to develop this tool/repository.
- Create a center of excellence for workforce and organizational resiliency.
- Ask AASHTO to identify a committee with oversight over resiliency.
  - Would the current committee be Transportation Systems Security and Resilience, which focuses on infrastructure resilience?
  - Is it perhaps more closely aligned to AASHTO's Agency Administration Managing Committee, HR, and Planning committees?
  - Clarify resilience definition by changing the wording to better represent the scan's focus.
  - Keep resiliency alive and active.
  - This could become an emerging focus for AASHTO.
- Develop workforce-centered performance measures focused on resiliency.
- Develop a tool to help DOTs determine the best compatible positions for teleworking (build on existing research).
- Develop a guide for embedding risk-mitigation and resiliency-building activities into the regular rhythm of an agency and moving away from a one-time event approach.
- Develop a playbook for building organizational and workforce resiliency in a state DOT.

Implementation Strategy

This section presents strategies and supporting actions for disseminating the outcomes of this scan. The scan team will identify strategies and actions for implementing recommendations and disseminating results of the scan. Potential categories of dissemination actions and examples of dissemination activities are listed below.

Presentations

- AASHTO presentations
  - HR Committee webinar
  - Agency Administration Managing Committee webinar
  - Agency Administration Managing Committee in-person conference in Charleston in August 2022
  - AASHTO fall or spring meeting (roundtable discussion)
  - Committee on Performance-Based Management meeting or webinar
- Western Association of State Highway and Transportation Officials, Northeast Association of State Transportation Officials, and other presentations
- Pacific Northwest Transportation Consortium presentation
- PIARC – World Road Association presentation

Media

- AASHTO HR Committee webinar
- AASHTO Agency Administration Managing Committee webinar
- AASHTO Subcommittee on Transportation Workforce Management Webinar
- Article in the AASHTO Journal
- AASHTO podcast

Other Actions

- TRB annual meeting
- May be able to connect with the Council of University Transportation Centers to arrange a presentation
- NTT DATA may be interested in a presentation (webinar or at annual conference)

Appendix A: Scan Team Contact Information

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Appendix B:
Scan Team Biographical Sketches

AMANDA HOLLAND (Team Chair) has served the transportation public sector since 2007, with 15 years' experience in the American Association of State Highway and Transportation Officials (AASHTO) and the Transportation Research Board (TRB) and 12 years in the Alaska Department of Transportation and Public Facilities (Alaska DOT&PF). With 30 years of public sector experience, she has served as commissioner, deputy commissioner, administrative director, budget director, and Human Resources manager. She championed knowledge management, strategic workforce management, leader development, and engineering automation while with Alaska DOT&PF. In 2015, she launched a leader development program recognized by both AASHTO and TRB. Holland uses her degrees in industrial/organizational psychology and organizational leadership to help agencies realize operational efficiencies and build workforce resilience. Workforce readiness, the integration of data, knowledge, and workforce management, the future of work, and healthy work environments are the cornerstones of her expertise. She is currently the principal for Holland Enterprise Resource Solutions consulting and a member of the TRB Information and Knowledge Management Committee.

KAREN BOBO is currently serving in a one-year assignment as senior advisor for Workforce Development and Interagency Coordination in the U.S. DOT's Office of the Secretary; this assignment began in June 2022. Prior to her current assignment, she was the Federal Highway Administration (FHWA) director, Transportation Workforce Development, in May 2019. Prior to taking this position, she served as the division administrator in the FHWA Iowa Division from 2015 to May 2019. Before going to Iowa, she was the assistant division administrator in the FHWA Indiana Division from 2011 to 2015 and the director, Local Agency Programs, in the FHWA California Division from 2009 to 2011. Bobo has held other leadership and technical positions throughout her career and has over 30 years of experience with FHWA, beginning with the Highway Engineer Training Program. She has a bachelor's degree in civil engineering from Clemson University.

JAYNA MORSE is the director of the Finance and Administration Division for the Vermont Agency of Transportation (VTrans). In this role she develops and implements strategic operational plans. She is responsible for oversight of the agency's finance, contract administration, emergency management, facilities and logistics, internal and external audit, civil rights and labor compliance, organizational development, hearings, and organizational performance bureaus. She has been with VTrans for five years, holding positions in Information Technology and organizational performance before deploying for two years as the agency's COVID Response Incident Commander and being appointed to her current role. As the Incident Commander, Morse was responsible for all pandemic-related agency activities, both internal operations and in support of statewide response efforts. She holds a bachelor's degree in prevention and community development and a master's degree in business administration.

JEFF PELTON is the director of Human Resources (HR) & Safety at the Washington State DOT (WSDOT). This office supports over 7000 employees with a staff of 120 professional HR and safety personnel. Its mission is to provide strategic business guidance to promote a positive work environment by consulting with customers to build trusting relationships to attract and cultivate a high-performing and dedicated workforce to meet the agency's goals. Pelton has helped lead the development of WSDOT's current strategic plan for WSDOT and the agency dashboard that tracks the progress of agency strategies. The current strategic plan includes three goal areas: workforce development, inclusion, and practical solutions; he leads initiatives and strategies supporting two of the three goal areas. Under his leadership these initiatives have resulted in major cultural and organizational changes within WSDOT. Pelton and his staff lead seven of the 15 strategies within the agency's strategic plan. The initiatives of the agency seek to strengthen commitment to diversity and engagement while remaining an employer of choice by attracting and retaining a workforce to deliver WSDOT's mission.

TROY L. PETERSON is the Operations director at the Utah DOT. He has 28 years of experience in construction management, material, maintenance, roadway design, and project management. Resiliency is an important aspect of all disciplines and a valuable factor for designs, operations, and personnel. Peterson is a graduate of the University of Utah, where he earned a bachelor's degree in civil engineering.

BRIAN ROBINSON is the deputy HR director for Georgia DOT (GDOT). In this role, he oversees the areas of employee safety, classification and compensation, employee relations, policy and compliance, workforce planning, and HR field services. He earned a bachelor's degree in business administration from Berry College and a master's degree in public administration from the University of Georgia. Robinson has worked for GDOT for over 15 years, holding a variety of positions in HR and district administration. He began his career in the Office of Intermodal Programs before moving into HR, where he has served as a recruiter, HR analyst, employee management relations specialist, district administrative officer, and deputy HR director. He currently serves on the AASHTO Committee on Human Resources and is a member of the AASHTO Joint Subcommittee on Work Zones.

MIKE TOUCHETTE is the director of Emergency Management, overseeing a bureau within the Vermont Agency of Transportation (VTrans), Division of Finance & Administration. In this position, he is responsible for both preparedness and planning for potential emergency situations, as well as leading the agency's partnerships with FHWA and the Federal Emergency Management Agency when qualifying disasters for public assistance and federal funding. Touchette has been with VTrans for three years, initially as the director of Special Programs with the Department of Motor Vehicles and then for the past year and a half in his current position. Soon after the onset of the COVID pandemic, Touchette served as the deputy incident commander for the agency. Previous to his employment at VTrans, he worked with the Vermont Department of Corrections for 30 years.

LEE WILKINSON is the Administrative Services Division director for the Iowa DOT and is responsible for the agency's HR, budgeting, financial, procurement, Affirmative Action/Equal Employment Opportunity, engagement, and facilities functions. He began his Iowa DOT career in 1996 as an area maintenance manager in District 6. In 2000, he was promoted to director of the Statewide Office of Maintenance. He was then named director of the Administrative Services Division in December 2006. Prior to coming to the department, Lee worked at the Iowa Department of Personnel from 1991 to 1996 as a personnel officer and labor relations specialist; the Iowa DOT was one of the agencies he assisted while in this position. From 1989 to 1991, Wilkinson also served as a management analyst in the Iowa Department of Revenue and Finance. He is a graduate of the University of Northern Iowa, where he earned a degree in public administration, with an emphasis in personnel. He is a past chair of the AASHTO Committee on Human Resources, currently serves as the Mid America Association of State Transportation Officials regional representative for the AASHTO Agency Administration Committee, and has served on several NCHRP domestic scans.

RICK A. SMITH is the subject matter expert (SME) for the scan. In this position, he serves as the lead researcher. He is responsible for collecting, organizing, and presenting relevant data and information to the scan team; for documenting the information-sharing sessions; and is the lead author of the report. Prior to Domestic Scan 21-01, Smith served as the SME on Domestic Scan 13-01, "Leading Management Practices for Developing a Cross-Trained Workforce," Domestic Scan 15-01, "Developing and Maintaining Construction Inspection Competence," and Domestic Scan 19-02, "Leading Practices in Strategic Workforce Management by Transportation Agencies." Smith is retired from Georgia DOT with over 25 years of experience in the transportation industry and in training program development and delivery. Before leaving, he served as the agency's training director, during which he also served as president of the National Transportation Training Directors. He was also a member of the Transportation Research Board's Knowledge Management Task Force. Smith earned a bachelor's degree in civil engineering technology from the University of North Carolina-Charlotte and has a master's degree in business administration, with a concentration in project management, and a master's degree in human resource management. Smith's research interests include learning transfer and knowledge management. He is a certified senior professional in human resources.

Appendix C:
Desk Scan

Summary

The genesis for this domestic scan is the COVID-19 pandemic. State DOTs responded to a disruption that no risk assessment, no matter how thorough, could have revealed. The pandemic caused DOTs to take reactive measures never seen before. Some DOTs went from a handful of employees teleworking to the entire population of the headquarters office teleworking.

Disruptions of a lesser, but just as disruptive, magnitude are not uncommon in the highway transportation industry. Many DOTs are confronted annually by avalanches, blizzards, erosion, flooding, hurricanes, wildfires, and other natural disasters. Human disruptions such as cyberattacks are also becoming commonplace. It is because of these natural and human-caused disasters that the federal and state DOTs have been working together to reduce the criticality of disruptions.

Since the early 2000s USDOT has been looking at ways to ensure that this country's infrastructure is resilient in the face of climate change, flooding, hurricanes, wildfires, and other natural disasters. Beginning with the Policy Statement on Climate Change Adaptation [2], followed by a series of circulars, guidance, memorandums, orders, and plans, FHWA began looking at ways to ensure that the nation's transportation infrastructure could withstand the impacts of climate change and other disasters. A majority of FHWA's efforts fell to the oversight of the Office of Planning, Environment & Real Estate.

The Environment section's Sustainability team led the resilience effort. Through its efforts, an adaptation framework was developed, case studies were created, policy and guidance developed, papers written, peer exchanges held, seminars conducted, and pilot studies conducted.

Between 2010 and 2020, 42 pilot teams representing 15 states partnered with FHWA to assess transportation vulnerability and evaluate options for improving resilience. Each pilot resulted in a report, which led the participating states to create their own resilience programs. The output of these programs includes tools, lessons learned, models, and procedures to analyze risk. Through planning and design changes, states learned to design and build resiliency into infrastructure. For example, from its Risk and Resilience Program, CDOT created a "4 R Framework for Identifying and Evaluating Resiliency in Transportation System Assets and Organizations"[3]. Another example of a state DOT active in this area is Minnesota. The agency's website includes this statement: "… *is working to better understand our statewide vulnerabilities to climate change and the most effective response to related threats and stresses.*

The elements critical to infrastructure resilience include new and novel approaches to long-term planning, asset management, project development, engineering design, and lifecycle planning. Other areas of impact include maintenance and operations.

The CDOT Resilience Program website rightly states that, *"While the concept of resilience is not limited to physical threats, this is the main focus of resilience work in transportation."* [4]

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2   US DOT Policy Statement On Climate Change Adaptation, FHWA Office of Planning, Environment and Realty (HEP), https://www.fhwa.dot.gov/environment/sustainability/resilience/policy_and_guidance/usdot.cfm

3   CDOT Resilience Program, which includes risk and resiliency tools, guides, and manuals, https://www.codot.gov/programs/planning/cdot-resilience-program

4   What is Resilience?, CDOT Resilience Program, https://www.codot.gov/programs/planning/cdot-resilience-program

Definitions

There are many definitions of resilience in use today in the transportation industry. For example, the 2009 AASHTO–TRB Transportation Hazards & Security Summit proposed a comprehensive definition of resilience: *The ability of a system to provide and maintain an acceptable level of service or functionality in the face of major shocks or disruptions to normal operations.*[5] FHWA's Office of Operations defines resilience as the ability to prepare for changing conditions and withstand, respond to, and recover rapidly from disruptions.[6] Colorado's definition is more inclusive, stating that resilience is "*the ability of communities to rebound, positively adapt to, or thrive amidst changing conditions or challenges—including human-caused and natural disasters—and to maintain quality of life, healthy growth, durable systems, economic vitality, and conservation of resources for present and future generations.*"[7]

In the realm of the organization and the workforce, resilience is defined as the ability to rebound after adversity [8]. The definition of a resilient workforce is provided by the NCHRP publication "Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide (2021)." *Workforce Resilience: As a critical component of institutional capacity, workforce resilience includes both the staff mindset toward accepting and supporting agency resilience efforts and the physical and mental health of the workforce.*[9]

Resilience or resiliency concerns numerous aspects of transportation. We have seen its importance to planning, design, asset management, maintenance, and operations. There is also a resilience dimension to the individual, to the community (see Colorado's definition on page C-3), and to economic, infrastructure, and strategic planning. This scan differentiates between infrastructure resilience and organization resilience.

The National Infrastructure Advisory Council supports this distinction between infrastructure and the organization. The council differentiates between approaches related to people and processes and the structure of infrastructure and assets.[10]

Social Dimensions Versus Built Environment

The built environment includes all the intellectual and physical assets of transportation infrastructure from planning to the design and asset management to operations and maintenance of transportation infrastructure. These elements have been studied through pilot research funded and supported by USDOT/FHWA. Until recently little research has been funded or conducted on transportation organization resiliency and workforce resiliency.

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5   Understanding Transportation Resilience: A 2016–2018 Roadmap, American Association of State Highway and Transportation Officials, https://ctssr.transportation.org/wp-content/uploads/sites/54/2017/10/UTR-1-book-vers-5.pdf

6   Transportation System Resilience to Extreme Weather and Climate Change - Technical Staff, Federal Highway Administration, https://ops.fhwa.dot.gov/publications/fhwahop15025/index.htm

7   CDOT Resilience Program, Colorado Department of Transportation, https://www.codot.gov/programs/planning/cdot-resilience-program

8   BetterUp Annual Report: Resiliency in an Age of Uncertainty, Training Magazine Network, https://www.trainingmagnetwork.com/lessons/122301/overview

9   Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide, page 7, (2021), The National Academies of Sciences, Engineering, and Medicine, https://www.nap.edu/catalog/26125/mainstreaming-system-resilience-concepts-into-transportation-agencies-a-guide

10 NCHRP Synthesis 527, Resilience in Transportation Planning, Engineering, Management, Policy, and Administration, The National Academies of Sciences, Engineering, and Medicine, https://www.nap.edu/download/25166

A search of the AASHTO Committees pages is useful in highlighting the focus of resilience efforts in transportation. Using the search term resilience returned 104 records. Example articles include "… Formula Funding Critical for Resilience," "Building Extreme Weather Resilience into Transportation Asset Management Programs," and "Proposed Bill Seeks to Help States Build More Resilient Infrastructure." Using the search term organizational resilience returned one record: "AASHTO Offering Five Transportation 'Resiliency' Webinars in December." Using the search term workforce resilience returned zero records.

Looking at the organization and workforce under the lens of resilience is critical to understanding what it takes for an organization or its workforce to recover from a disruption such as the COVID-19 pandemic.

Studies show long-term exposure to stressors reduces individual resilience and negatively affects employees' physical and mental well-being. This also affects organizational readiness. Not surprisingly then, two of the most common employee programs related to resilience are wellness programs and employee assistance programs.

The organization resilience literature discusses five key elements needed to develop a resilient workforce and a resilient organization:

- Resilient leadership

- A focus on work-family balance

- Diversity and a supportive work environment

- Employee engagement

- Career and professional development opportunities

There is a relationship between leadership and resilience. The evidence is supported in a National Academies post entitled "Resilience Research Becoming a Bigger Part of Transportation Planning" [11]. The author talks about the important role leadership plays in resilient organizations.

Employee training and career development opportunities are critical to workforce and organizational resiliency. Courses related to the following areas should be a part of any employee development program designed to develop workforce resiliency:

- Physical state

- Emotional state

- Family/Community

- Work

- Culture

- Environment

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11 Resilience Research Becoming a Bigger Part of Transportation Planning, The National Academies of Sciences, Engineering, Medicine,
    https://www.nationalacademies.org/trb/blog/resilience-research-becoming-a-bigger-part-of-transportation-planning

Communications is an important activity related to workforce and organizational resilience. A new pandemic-related study found that workplace resilience (i.e., how employees respond to obstacles) is developed when managers and senior leadership keep employees informed about organizational challenges and the near-term future of the business.

With workforce resilience and organizational resilience in mind, the original problem statement was used to identify agencies whose COVID-19 experiences would be a valuable source of information.

Background

Scope of Desk Scan

The original problem statement established the initial focus for the scan. The problem statement highlighted the critical areas that DOTs impacted by the COVID-19 pandemic focused their efforts on. These areas include technology, flexible staffing policies, workforce adaptability, and effective leadership. The problem statement also highlighted state DOTs for which anecdotal evidence was available. Named states include Washington State, Virginia, Vermont, Texas, Minnesota, Idaho, and Georgia.

A broadened scope includes state DOTs that participated in research or studies related to resilience. For example, of the states that participated in FHWA-funded research on infrastructure resilience, which might have applied lessons learned to workforce or organizational resilience?

Finally, the desk scan scope was not limited to DOTs. In addition to state DOTs, federal organizations and professional associations were examined to identify the most innovative and beneficial elements that could be easily adapted and implemented.

Methodology Used

The subject matter expert used scan team referrals, outreach methods, and environmental scanning techniques, including extensive internet searches using key terms to identify organizations practicing activities identified as important to resilient organizations, which include the development of resilient leaders, a focus on work-life balance, promoting diversity and a supportive work environment, employee engagement, and career development activities.

The various sources of information include government documents, internet postings, government agencies, interviews, referrals, and websites.

The methodology included a search of AASHTO, TRB, and state DOT webpages using search terms such as resilience, resiliency, organizational resilience, workforce resilience, and disruptions.

In conducting the literature review, a comprehensive search was performed using online search engines, including the National Academies Press library database and Google Scholar.

Results

Summary of Relevant Information

The following is a list of state transportation agency practices and innovations worthy of highlighting at this point in the domestic scan. It is not all inclusive. A follow-up review of the information

collected to date or the collection of additional information from other sources after the release of this draft may reveal additional practices or innovations of interest.

- **Colorado** has a Resiliency Program manager and has established a resilience program.

- **Utah** has developed a formula that, when applied, helps reduce the criticality of known risks. It is believed that reducing the criticality of a risk leads to increased resilience.

- **Georgia** has created a telework hub portal, a website that hosts GDOT's telework policies, telework training resources, and telework frequently asked questions.

- **Idaho** places strong emphasis on organizational culture and aligns performance evaluation with the agency's culture.

- **Louisiana** has a continuity assurance program that is written into policy and falls under its knowledge management program.

- **Louisiana** tailored communications to work units during the COVID-19 pandemic.

- The highest valued organizational offerings during the pandemic are:
  - Coaching
  - Flexible work arrangements
  - Time off
  - Mental health resources
  - Home office equipment

- Multiple states use horizontal career pathing.

- Multiple states transitioned or converted paper-based processes to electronic processes.

- **Ohio** employed the work-from-anywhere model during the COVID-19 pandemic.

- **Ohio** leadership took a hands-on approach, visiting field locations when possible.

- **Vermont** selected some of its employees to be deployed to assist with some of its sister agencies.

- **Vermont** used an incident command structure during the early days of the pandemic.

Existence of Practices and Innovations of Interest to the Team

According to CDOT, the focus of resilience work in transportation up to now has been on transportation system infrastructure. Therefore, no state DOT practices or innovations have been identified that can be categorized as leading to or creating a resilient DOT. However, state DOTs are carrying out activities deemed by resilience professionals to be necessary to create a resilient workforce and a resilient organization.

Despite the COVID-19 pandemic, state DOTs continued to develop their high potentials individuals into leaders. State DOTs that had employee assistance programs before the pandemic continued to

offer them during the pandemic. State DOTs that focused on employee engagement activities before the pandemic continued to focus on employee engagement activities during the pandemic. In other words, the state DOTs interviewed for the desk scan are performing as resilient organizations.

The National Homeland Security Consortium produced an after-action report in which it highlighted workforce resilience best practices. The top eight best practices are:

- Implement flexible work schedules, when possible, while maintaining critical services.

- Provide consistent wellness training for employees, including webinars, mindfulness strategies, and coping resources.

- Provide staff members and their families access to mental and behavioral health services and peer support programs.

- Encourage jurisdictional leaders to take extra interest in their workforces and to demonstrate empathy and kindness in their interactions.

- Ensure that childcare and other needed resources are available to support the families of responders, teachers, and other essential workers.

- Host for employees virtual town hall meetings with leadership to facilitate open communication and transparency and to address questions.

- Provide financial support for remote work equipment and/or compensation for increased risk of exposure.

- Expand planning for continuity of operations to address pandemics and update existing plans with lessons learned from the COVID-19 pandemic [12]

The workforce and organizational resilience literature emphasizes the importance of resilient leadership, effective communications, a healthy workforce, an engaged workforce, and providing opportunities for employee and professional development.

Overlap and Time Elapsed Since Previous Scan(s) on a Similar Topic

This section includes a list of NCHRP reports and syntheses published on topics that have common connection with the elements of resiliency. These reports and syntheses include information that should be considered as part of any workforce or organizational resilience efforts.

- "Building a Resilient Workforce: Opportunities for the Department of Homeland Security: Workshop Summary" – Institute of Medicine 2012. Washington, DC: The National Academies Press.

  Relevance: Summary discussions from a series of workshops on what is involved in creating and maintaining a resilient workforce at the Department of Homeland Security. Experts offer opinions and share knowledge factors that influence workforce resilience.

- "Deploying Transportation Resilience Practices in State DOTs" – National Academies of Sciences, Engineering, and Medicine 2021. Washington, DC: The National Academies Press.

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12 The National Homeland Security Consortium COVID-19 PANDEMIC After-Action Report, June 2021, https://www.apwa.net/library/government-affairs/NHSC_COVID-19_Pandemic_After_Action_Report_Final.pdf

Relevance: Chapter 2 covers the literature review and definitions. Includes a section on organizational resilience and resilience-oriented state DOT culture.

- "Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide" – National Academies of Sciences, Engineering, and Medicine 2021. Washington, DC: The National Academies Press.

  Relevance: Includes a self-assessment tool with questions related to workforce resilience.

- "Resilience in Transportation Planning, Engineering, Management, Policy, and Administration" – National Academies of Sciences, Engineering, and Medicine 2018. Washington, DC: The National Academies Press.

  Relevance: Chapter 3 discusses resilience definitions, metrics, and frameworks. Transportation definitions are included along with several state DOT definitions of resilience.

- "Resilience Primer for Transportation Executives" – National Academies of Sciences, Engineering, and Medicine 2021. Washington, DC: The National Academies Press.

  Relevance: Includes a chapter (Chapter 2: The CEO Role in Resilience) that discusses the role of leadership in creating and maintaining a resilient organization.

Reporter's Assessments

Prioritized recommendations to the scan team on agencies and institutions or individuals to serve as host agency.

Recommended State DOTs

The following is a list of state DOTs for the scan team to consider collecting information from for the scan. The subject matter expert interviewed representatives (HR professionals and scan team members) on activities their agency is engaged in that are comparable to those engaged in by a resilient organization. Activities include work environment, employee wellness, employee and professional development, and leadership.

Invite the following state DOTs to participate:

- Colorado

- Georgia

- Idaho

- Iowa

- Louisiana

- Minnesota

- North Dakota

- Ohio

- Utah

- Vermont

- Washington State

Recommended Organizations:

Invite the following organizations to participate:

- ORGShakers (for risk mitigation tool of interest)

- DeLoitte

- AASHTO Leadership Training Institute (University of Kansas)

- Washington State Department of Health

- Invite a representative from the National Emergency Management Association to share information from the National Homeland Security Consortium's (NHSC) COVID-19 Pandemic After-Action Report.

  - NHSC's 22 associations represent a diverse cross-section of thousands of state, local, and private-sector professionals who are responsible for the nation's safety and security. Based on the NHSC's COVID-19 Pandemic After-Action Report's findings of best practices related to the workforce, it is recommended that a representative from National Emergency Management Association participate in this scan.

Supporting Information and Resources

List of institutions, agencies and/or individuals contacted or consulted, including name, position, date of contact, telephone, fax, e-mail, and/or Web site.

A.   Individuals Contacted

Brian J. Brown, SHRM-SCP
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Date of Contact: August 24, 2021

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Amanda Holland – AASHTO Chair
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Date of Contact: August 31, 2021

National Emergency Management Association
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B.   **List of Websites Searched**

- AASHTO Committees

- AASHTO Committee on Human Resources

- AASHTO Committee on Transportation System Security and Resilience

- Arizona DOT Resilience Program

- Colorado DOT Resilience Program

- Minnesota DOT, Sustainability and Public Health

- National Emergency Management Association National Homeland Security Consortium

- State Smart Transportation Initiative Framing resilience for state DOTs (February 2020)

- Transportation Research Board

C.   List of Active Projects with a Focus on Some Aspect of Transportation Resilience

- NCHRP 20-127 [Active] Business Case and Communications Strategies for State DOT Resilience Efforts

- NCHRP 08-129 [Active] Incorporating Resilience Concepts and Strategies in Transportation Planning

- NCHRP 15-80 [Active] Design Guide and Standards for Infrastructure Resilience

- NCHRP 20-125 [Active] Strategies for Incorporating Resilience into Transportation Networks

- NCHRP 20-127 [Active] Business Case and Communications Strategies for State DOT Resilience Efforts

- NCHRP 20-59 [Active] Surface Transportation Security and Resilience Research

- TCRP F-29 [Pending] Mental Health, Wellness, and Resilience for Transit System Workers

Appendix D:
Amplifying Questions

Amplifying Questions

The scan team encourages agencies to develop answers to the AQs in a PowerPoint presentation. Additionally, agencies are encouraged to circulate the AQs throughout their headquarters, field districts, and individual business units. If your agency (or some of your business units) has a particularly successful practice to share, please provide a more in-depth description of the practice.

General

1. Agency information:

    a. Agency size and organizational structure, relevant workforce demographic data, union or right-to-work state

    b. Y/N – Comprehensive continuity of operations/government plan

    c. Resilience-related regulations, policies, etc.

2. Outside influencers

3. What COVID-19 mandates do you have in place?

4. What geographical features in your state influence your ability to respond to disruptions?

5. What political concerns influence your ability to respond to disruptions?

6. Do you consider regional/border states during your response?

7. How do you address organizational funding challenges during a disruption?

8. How do supply-chain issues affect your ability to respond?

9. How does your agency define "resiliency" and what does it mean for you?

10. In your opinion, what do resilient agencies do to be successful during periods of disruption?

11. How does your agency plan to protect itself from future disruptions?

12. What current strategies and practices promote resilience in the agency?

13. Does your agency have any resilience performance measures? Which of your current performance measures are relevant to resilience (e.g., mobility measures, recovery measures, safety)?

14. Have you reviewed staff roles and responsibilities to identify how they relate to enhancing system resilience?

15. What policies does your agency have to address managing disruptions? Are there different protocols depending on the type of disruption?

Leadership

1. Does your agency have a crisis leadership team?

2. Is resilience an organizational goal?

3. Does your agency's leadership training include resilience-related training? If yes, is the training internal or external?

4. What role does leadership/executive team play in managing disruptions?

Lessons Learned from the COVID-19 Pandemic

1. What policy or process changes has your agency made resulting from the COVID-19 pandemic? Which changes, if any, are deemed permanent?

2. Has your agency's executive team implemented ad hoc committees resulting from the COVID-19 pandemic? Which, if any, are likely to be made permanent?

3. What lessons about agency operations did your agency learn resulting from the COVID-19 pandemic? How have these lessons been applied?

4. What change(s) resulting from the COVID-19 pandemic has had the greatest impact on your agency?

5. How has the COVID-19 pandemic changed leadership's interaction with your agency?

6. What are some of the techniques your agency has employed resulting from the COVID-19 pandemic to ensure peak performance? Please describe.

7. How has your agency's pandemic response affected agency costs (e.g., savings in facility utility costs, expense in PPE and protective barriers, etc.)?

8. Do you envision further changes resulting from the COVID-19 pandemic?

9. What did your agency do to remain flexible and nimble in response the COVID-19 pandemic?

Communications

1. What role does leadership play in communications during a disruption?

2. How does your agency's approach to internal communication change during a disruption? Please explain.

3. What is your level of transparency during a disruption? Explain.

4. How do you reach employees, what information do you share, and who shares information in the face of a disruption? How does it change depending on the longevity or type of disruption?

5. Please describe resources you use to inform your workforce related to a disruption (e.g., federal regulations, CDC guidelines, National Weather Service guidelines, ISO).

6. How do you alert employees of emergencies and their role in the emergency response?

Work Environment (includes physical workplace, remote/teleworking)

1. What role, if any, does the physical workplace play during a disruption?

2. Is teleworking one of your agency's responses to a disruption?

3. What lessons were learned from expanding/instituting/implementing teleworking? Where any of those lessons implemented on a permanent basis?

4. Does the remote work location extend beyond state borders?

5. What limitations do you place on teleworking?

6. Will telework be a continued tool in response to a disruption?

7. What activities/strategies does your agency employ to ensure employee engagement associated with teleworking or remote working?

8. What challenges, if any, did your agency overcome related to teleworking? Please explain.

9. Please share lessons learned from your agency's experience with teleworking/remote working as it relates to long-term disruptions.

10. Please describe how your agency addresses re-entry to the worksite during and/or after a disruption that requires evacuation, remote work, etc.

11. What challenges does a hybrid work environment create for you and how do you address them?

12. Other than teleworking, what arrangement do you use to allocate workspace (e.g., hoteling, hybrid)? How does lease versus own impact your decisions and policies?

13. Has the pandemic caused you to rethink "modern workplace programs" such as infants at work?

Learning and Development

1. How does your agency address remote training/learning and development?

2. Please describe the systems, protocols, and policies your agency uses to ensure employees and contractors have the knowledge and skills needed to handle a disruption.

3. Does your agency provide resilience-related training? If yes, is the training internal or external? Does your agency have a training and exercise program for the emergency response and management program?

4. Does your agency conduct training, drills, and exercises on its continuity of operations plan/ disaster recovery plan, including response procedures and decision-making processes?

5. Have you examined your training/professional development programs for their coverage of resilience?

Organizational Culture

1. What disruption did you experience that is now considered routine? How did the agency get to that point? Explain.

2. Does your agency respond differently to a local disruption than it does a global disruption? Please explain.

3. What role, if any, does organizational culture play during a time of disruption?

4. How do employees learn your organization's culture?

5. How does your organizational culture enhance or limit your response to disruptions?

6. How does your agency's culture change, if at all, because of long-term disruptions? How does your agency interact with other transportation agencies, federal/state/local governmental entities, law enforcement, military, science organizations, etc., when responding to a disruption?

Workforce

1. How does management conduct welfare checks on employees during a disruption?

2. How does your agency manage work priorities during a disruption?

3. What practices does your agency use to address the human/emotional elements of a disruption (e.g., post-traumatic stress, compassion fatigue, loss, grief, depression, fear, anxiety, etc.)?

4. How does your agency prepare its workforce for managing disruptions?

5. What pre-disruption planning or preparations occur in your agency to ensure the workforce knows what to do in the event of a disruption?

6. What activities does your agency perform to manage and measure productivity and production management during a disruption?

7. How does your agency foster employee engagement during a disruption?

8. How would you describe the human cost of disruptions (e.g., overtime, burnout, supplies, equipment, and productivity)? What does your agency do to address this cost?

9. Do you measure employee engagement? How do you leverage employee engagement information during a disruption?

10. How do you designate employees as essential workers during disruptions? Do you treat those workers differently with regards to your response?

11. Do you have staff dedicated to managing or developing organizational resilience? Please explain.

Technology/Tools/Systems

1. In the face of cyberattacks, which/what systems are being "hardened"?

2. How does your agency leverage technology to help manage disruptions?

3. What is your agency's plan in the face of a technology-specific disruption?

4. What types of technology allow you to be flexible in your response?

5. What technology challenges do you face during a disruption?

6. What needs to be updated to be better prepared for future long-term disruptions?

7. What skills and/or tools are needed during times of disruption?

8. What is the role of risk management during a disruption?

9. What tools are available to manage a disruption?

10. What role, if any, does contracting play during a disruption?

11. How does your agency leverage asset management to assist with disruption response?

Safety

1. How do you ensure employees have the proper PPE when responding to a disruption?

2. How do you prepare employees for disruptions (e.g., power outage, severe weather event, natural disaster)?

3. How do you address psychological safety under a disruption?

4. How did you modify your work environment to ensure worker safety?

5. What resources or support did you provide your employees during the disruption?

Glossary of Terms

- Compassion Fatigue

  - The physical and mental exhaustion and emotional withdrawal experienced by those who care for traumatized people over an extended period

  - Apathy or indifference toward the suffering of others as the result of overexposure to tragic news stories and images and the subsequent appeals for assistance (Merriam-Webster online)

- Disruption

  - A break or interruption in the normal course or continuation of some activity, process, etc. (Merriam-Webster online)

  - For purpose of this scan, disruption affects the DOT workforce and HR practices

  - For purpose of this scan, disruptions can include but are not limited to:

- Weather events (e.g., hurricanes, tornados, heat waves, earthquakes, freezing rains/ice storms, etc.)

- Economic (e.g., downturns, recessions, upsweeps, etc.)

- Public health (e.g., pandemics, water contamination, sewage, etc.)

- Technology (e.g., cybersecurity, outages, new systems, system glitches, etc.)

- Societal (e.g., protests, riots, etc.)

- Mass system failure (e.g., equipment breakdown, bridge failure, etc.)

- Workforce instability (e.g., unions on strike, layoffs, mass retirement or resignation, etc.)

- Political (e.g., change in administration's priorities, etc.)

- Disruptions may be local, statewide, regional, national, or global in scope

■ Individual Resilience – Ability to bounce back from adversity[13]

■ Resilience

- The ability to recover quickly from illness, change, or misfortune; buoyancy (American Heritage dictionary online)

- The 2009 AASHTO–TRB Transportation Hazards & Security Summit proposed a comprehensive definition of resilience: "The ability of a system to provide and maintain an acceptable level of service or functionality in the face of major shocks or disruptions to normal operations." [14]

- The ability to prepare for changing conditions and withstand, respond to, and recover rapidly from disruptions.[15]

- FHWA defines resilience as the "ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions."

■ Resilience-Oriented Agency: The ability of an organization to prepare, plan for, manage, and recover from unexpected transportation system disruptions. [16]

■ Risk

- "The potential for adverse effects from the occurrence of a particular hazardous event, which is derived from the combination of physical hazards, the exposure, and vulnerabilities" (The National Academy of Sciences, 2012).

■ "The positive or negative effects of uncertainty or variability upon agency objectives" (FHWA, 2013b).

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13 BetterUp, Resilience in an age of uncertainty. Website: www.betterup.com

14 From Understanding Transportation Resilience: A 2016–2018 Roadmap for Security, Emergency Management, and Infrastructure Protection in Transportation Resilience, https://ctssr.transportation.org/wp-content/uploads/sites/54/2017/10/UTR-1-book-vers-5.pdf

15 Transportation System Resilience to Extreme Weather and Climate Change - Technical Staff, Federal Highway Administration, https://ops.fhwa.dot.gov/publications/fhwahop15025/index.htm

16 Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide. Page 7, National Academies of Sciences, Engineering, and Medicine 2021.

- Short-term – Less than three months' duration

- Mid-term – Three to nine months' duration

- Long-term – Over nine months' duration

- Workforce Resilience: As a critical component of institutional capacity, workforce resilience includes both the staff mindset toward accepting and supporting agency resilience efforts and the physical and mental health of the workforce.[17]

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17 Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide. Page 8, National Academies of Sciences, Engineering, and Medicine 2021.

Appendix E: Responses to Amplifying Questions

Iowa

General

1. Agency information:

    a. Agency size and organizational structure, relevant workforce demographic data, union or right-to-work state

    2,749

    b. Y/N – Comprehensive Continuity of Operations/Government Plan

    Yes.

    c. Resilience-related regulations, policies, etc.

2. Outside Influencers

3. What COVID-19 mandates do you have in place

    None.

4. What geographical features in your state influence your ability to respond to disruptions?

5. What political concerns influence your ability to respond to disruptions?

    Not a concern, but must follow the directions of the governor, state Emergency Operations, and the state's Department of Administrative Services

6. Do you consider regional/border states during your response?

    No.

7. How do you address organizational funding challenges during a disruption?

    Manage budgetary issues by adjusting internal operational funding. If needed, request a supplemental appropriation.

8. How do supply-chain issues affect your ability to respond?

    COVID created numerous supply-chain issues. Early on, safety PPE, including masks, cleaning supplies, and hand sanitizer, were not readily available. Distilleries began manufacturing hand sanitizer and we made no-sew masks internally

9. How does your agency define "resiliency" and what does it mean for you?

    The ability to work through an emergency and continue to provide transportation services with minimal interruption.

10. In your opinion, what do resilient agencies do to be successful during periods of disruption?

11. How does your agency plan to protect itself from future disruptions?

   Continue to work toward creating a more mobile workforce, making things like laptops standard and making phones and hotspots available. Also, we continue to move all operations to a paperless process.

12. What current strategies and practices promote resilience in the agency?

13. Does your agency have any resilience performance measures? Which of your current performance measures are relevant to resilience (e.g., mobility measures, recovery measures, safety)?

14. Have you reviewed staff roles and responsibilities to identify how they relate to enhancing system resilience?

15. What policies does your agency have to address managing disruptions? Are there different protocols depending on the type of disruption?

   Continuity of operations plan/continuity of government plan, pandemic plan, teleworking policy

Leadership

1. Does your agency have a crisis leadership team?

   Yes. It is led by our Traffic Operations Bureau and includes our Emergency Operations staff. Other participants include division directors (e.g., HR, Motor Vehicle Enforcement, Purchasing, Support Services [facilities], Finance, FHWA, Federal Motor Carrier Safety Administration, director, chief operating officer, and Contracts Bureau) and might include other staff depending on the emergency.

2. Is resilience an organizational goal?

   Yes, as a resilient organization is critical in order to maintain transportation services.

3. Does your agency's leadership training include resilience-related training? If yes, is the training internal or external?

4. What role does leadership/executive team play in managing disruptions?

Lessons Learned from the COVID-19 pandemic

1. What policy or process changes has your agency made resulting from the COVID-19 pandemic? Which changes, if any, are deemed permanent?

   Our teleworking policy was changed to allow greater flexibility for employees. We used Microsoft Teams for meetings, interviews, and town hall meetings. Both of these will be permanent changes.

2. Has your agency's executive team implemented ad hoc committees resulting from the COVID-19 pandemic? Which, if any, are likely to be made permanent?

3. What lessons about agency operations did your agency learn resulting from the COVID-19 pandemic? How have these lessons been applied?

    1. Staff need to be mobile.

    2. Organizationally we have to be nimble.

    3. We must take full advantage of technology in our operations.

    4. Communication is critical.

    5. We have moved to a teleworking policy that allows employees to work remotely more easily. We are moving to a predominately laptop org.

4. What change(s) resulting from the COVID-19 pandemic has had the greatest impact on your agency?

    We have significantly increased the level of communication in the organization.

5. How has the COVID-19 pandemic changed leadership's interaction with your agency?

6. What are some of the techniques your agency has employed resulting from the COVID-19 pandemic to ensure peak performance? Please describe.

7. How has your agency's pandemic response affected agency costs? (e.g., savings in facility utility costs, expense in PPE and protective barriers, etc.)

8. Do you envision further changes resulting from the COVID-19 pandemic?

9. What did your agency do to remain flexible and nimble in response the COVID-19 pandemic?

Communications

1. What role does leadership play in communications during a disruption?

    At Iowa DOT, senior leadership took the lead in keeping employees informed during the pandemic, keeping them aware of the status of the pandemic, what the agency was going to do, and how it impacted employees.

2. How does your agency's approach to internal communication change during a disruption? Please explain.

    It was critical the communication was timely and quickly shared with employee. In order to do this, we used multiple communication methods, including weekly e-mail updates; frequent video messages from the director, as well as periodic e-mail updates from the director; town hall meetings; printed resources; and signs.

3. What is your level of transparency during a disruption? Explain.

    On a scale of 1 to 10, I would put it at a 9. It was important to keep staff informed and put them at ease as best we could in order to maintain operational efficiencies.

4. How do you reach employees, what information do you share, and who shares information in the face of a disruption? How does it change depending on the longevity or type of disruption?

   As the pandemic went on, the level of communication increased or decreased depending on the ebb and flow of the pandemic.

5. Please describe resources you use to inform your workforce related to a disruption (e.g., federal regulations, CDC guidelines, National Weather Service guidelines, ISO).

6. How do you alert employees of emergencies and their role in the emergency response?

Work Environment (includes physical workplace, remote/teleworking)

1. What role, if any, does the physical workplace play during a disruption?

   We put up plexiglass barriers in those locations where we could not maintain 6-foot social distancing or where we had customer interaction. We mandated only one person per vehicle and limited elevator occupancy to two people per elevator at a time. Masks were provided. Initially, meetings were held virtually. For those meetings that were in-person, 6-foot social distance was maintained. We also used split shifting in some situations like our warehouse in order to limit exposure.

2. Is teleworking one of your agency's responses to a disruption?

   It was a significant part of our response. It was mandated for over a year.

3. What lessons were learned from expanding/instituting/implementing teleworking? Where any of those lessons implemented on a permanent basis?

   Prior to the pandemic, teleworking was not significantly used. However, we learned during the pandemic that approximately one-third of our workforce could work remotely very efficiently, and we learned that teleworking could be a permanent part of our daily operations.

4. Does the remote work location extend beyond state borders?

   State practice generally prohibits this.

5. What limitations do you place on teleworking?

   Policy is provided.

6. Will telework be a continued tool in response to a disruption?

   Yes.

7. What activities/strategies does your agency employ to ensure employee engagement associated with teleworking or remote working?

8. What challenges, if any, did your agency overcome related to teleworking? Please explain.

   Most of the challenges were technology related. Being a rural state, internet and Wi Fi access were spotty in some locations. We needed to deploy more cell phones so that employees did not have to use their own phone. We even had a few employees who did not have home internet. We had to deploy a lot of loaner laptops and were initially limited in how many could access systems at one time.

9. Please share lessons learned from your agency's experience with teleworking/remote working as it relates to long-term disruptions.

10. Please describe how your agency addresses re-entry to the worksite during and/or after a disruption that requires evacuation, remote work, etc.

    When we brought employees back to the workplace, we phased them in and encouraged managers to limit the number of employees in the workplace at one time.

11. What challenges does a hybrid work environment create for you and how do you address them?

12. Other than teleworking, what arrangement do you use to allocate workspace (e.g., hoteling, hybrid)? How does lease versus own impact your decisions and policies?

13. Has the pandemic caused you to rethink "modern workplace programs" such as infants at work?

Learning and Development

1. How does your agency address remote training/learning and development?

   We provide employees with access to online learning courses.

2. Please describe the systems, protocols, and policies your agency uses to ensure employees and contractors have the knowledge and skills needed to handle a disruption.

3. Does your agency provide resilience-related training? If yes, is the training internal or external? Does your agency have a training and exercise program for the emergency response and management program?

4. Does your agency conduct training, drills, and exercises on its continuity of operations plan/ disaster recovery plan, including response procedures and decision-making processes?

5. Have you examined your training/professional development programs for their coverage of resilience?

Organizational Culture

1. What disruption did you experience that is now considered routine? How did the agency get to that point? Explain.

2. Does your agency respond differently to a local disruption than it does a global disruption? Please explain.

3. What role, if any, does organizational culture play during a time of disruption?

   Culture plays a significant role in a time of disruption. We focused on communication, letting our employees know it was important to us that they were kept aware during the pandemic. We also surveyed them a couple of time to see how they were doing. Additionally, we held several town hall meetings to keep employees informed and allow them to ask questions.

4. How do employees learn your organization's culture?

   From senior leadership. We developed an agency business plan that includes the department's core values. Additionally, the department is incorporating our core values into a number of areas, including our new performance evaluation and our hiring process. Additionally, we conduct an annual Gallup engagement survey.

5. How does your organizational culture enhance or limit your response to disruptions?

6. How does your agency's culture change, if at all, because of long-term disruptions? How does your agency interact with other transportation agencies, federal/state/local governmental entities, law enforcement, military, science organizations, etc., when responding to a disruption?

Workforce

1. How does management conduct welfare checks on employees during a disruption?

   Staff meetings, open Teams chats with supervisors, and virtual water cooler chats

2. How does your agency manage work priorities during a disruption?

   Follow our continuity of operations plan/continuity of government plan and pandemic plans

3. What practices does your agency use to address the human/emotional elements of a disruption (e.g., post-traumatic stress, compassion fatigue, loss, grief, depression, fear, anxiety, etc.)?

4. How does your agency prepare its workforce for managing disruptions?

5. What pre-disruption planning or preparations occur in your agency to ensure the workforce knows what to do in the event of a disruption?

6. What activities does your agency perform to manage and measure productivity and production management during a disruption?

7. How does your agency foster employee engagement during a disruption?

8. How would you describe the human cost of disruptions (e.g., overtime, burnout, supplies, equipment, and productivity)? What does your agency do to address this cost?

9. Do you measure employee engagement? How do you leverage employee engagement information during a disruption?

10. How do you designate employees as essential workers during disruptions? Do you treat those workers differently with regards to your response?

11. Do you have staff dedicated to managing or developing organizational resilience? Please explain.

Technology/Tools/Systems

1. In the face of cyberattacks, which/what systems are being "hardened"?

2. How does your agency leverage technology to help manage disruptions?

3. What is your agency's plan in the face of a technology-specific disruption?

4. What types of technology allow you to be flexible in your response?

5. What technology challenges do you face during a disruption?

6. What needs to be updated to be better prepared for future long-term disruptions?

7. What skills and/or tools are needed during times of disruption?

8. What is the role of risk management during a disruption?

9. What tools are available to manage a disruption?

10. What role, if any, does contracting play during a disruption?

11. How does your agency leverage asset management to assist with disruption response?

Safety

1. How do you ensure employees have the proper PPE when responding to a disruption?

    We provide employees with all the PPE they need.

2. How do you prepare employees for disruptions (e.g., power outage, severe weather event, natural disaster)?

3. How do you address psychological safety under a disruption?

4. How did you modify your work environment to ensure worker safety?

5. What resources or support did you provide your employees during the disruption?

Louisiana

Key

OMF: Office of Management and Finance
OS: Office of the Secretary
OO: Office of Operations
OE: Office of Engineering
OMC: Office of Multimodal Commerce
HR: Human Resources

General

1. Agency information:

    a. Agency size and organizational structure, relevant workforce demographic data, union or right-to-work state

        - *4000 employees; nine districts that cover the state and headquarters*

        - *Six offices: Secretary's Office, Management and Finance, Engineering, Operations, Multimodal Commerce, Planning*

        - *LaDOTD maintains 16,558 miles of highway, 8,000 bridges, and 102 movable bridges*

b. Y/N – Comprehensive Continuity of Operations/Government Plan

OS: Yes. The department has a comprehensive Continuity of Operations Plan. The plan is detailed in scope and application. It could use some examination and updating.

c. Resilience-related regulations, policies, etc.

OS: The LaDOTD Strategic Plan calls for: "Maintain a comprehensive emergency management program that supports the state's emergency operations and LaDOTD's assigned responsibilities each fiscal year." LaDOTD also has an annual capital program to reduce flooding on state highways; roadway flooding, including washouts, is one of the key resiliency issues for Louisiana.

HR: Knowledge Management Program – PPM 62 (Continuity Assurance Program & Succession Planning)

2. Outside Influencers

OMF: We receive guidance from the secretary level and from the Division of Administration.

OS: LaDOTD has responsibility for the ESF-1 and ESF-3 in the state's Emergency Management Plan, administered by the Governor's Office of Homeland Security & Emergency Preparedness.

OMC: The legislature, by nature. We also coordinate projects with other state and local government agencies and have to consider input from the public.

3. What COVID-19 mandates do you have in place?

HR: Currently, the only requirements that continue to be in place are for employees to report positives and exposures. Previous mandates include masking, social distancing, reporting travel, and limiting outside personnel in buildings.

4. What geographical features in your state influence your ability to respond to disruptions?

OMF: Rivers, swamps, Gulf of Mexico, elevated highways, and interstates.

OE: With many waterways and low-lying areas, bridge damage or roadway flooding/washouts can severely hamper our access to impacted areas.

5. What political concerns influence your ability to respond to disruptions?

OS: Federal emergency declarations and FEMA reimbursement rates

OMC: Jurisdiction and anticipating lessons learned from prior experience with potential federal funding agencies, such as FEMA.

6. Do you consider regional/border states during your response?

OS: Yes. During most widespread weather incidents, we conference with our counterparts in Mississippi, Arkansas, and Texas.

7. How do you address organizational funding challenges during a disruption?

   OMF: They are addressed at the executive level with input from financial services and/or budget.

8. How do supply-chain issues affect your ability to respond?

   OO: Salt in winter events is the only resource that is currently difficult to procure if supplies run low during an event.

9. How does your agency define "resiliency" and what does it mean for you?

   OMF: The ability of a system to provide and maintain an acceptable level of service or functionality in the face of major shocks or disruptions to normal operations. The ability to recover quickly or withstand the impacts of a disruption or some damaging event.

10. In your opinion, what do resilient agencies do to be successful during periods of disruption?

    OO: Make sure that all employees know your emergency plans and their roles in the plans.

    OMF: Establish standard operating procedures to address actions and or responses to events that could impact the agency. Build infrastructure with redundancies and/or are capable of withstanding disruptions.

11. How does your agency plan to protect itself from future disruptions?

    OS: We stock basic supplies that will be needed in quantity to ensure our initial response is not hampered. We maintain an up-to-date emergency management plan and have executed contracts with private companies for bus evacuation, debris management, and other functions.

12. What current strategies and practices promote resilience in the agency?

    OS: We engage our staff and the nine LaDOTD districts in planning, training, and exercising the plan. We participate in Louisiana's emergency operations planning, training, and exercise activities.

13. Have you reviewed staff roles and responsibilities to identify how they relate to enhancing system resilience?

    OO: Yes. Employees know their roles in the response to emergencies.

14. What policies does your agency have to address managing disruptions? Are there different protocols depending on the type of disruption?

    OS: The department has a dedicated Emergency Operations group that is staffed by seasoned emergency management personnel.

Leadership

1. Does your agency have a crisis leadership team?

   OS: The Emergency Operations group exists to step up and operate during a crisis.

2. Is resilience an organizational goal?

   OS: Yes. See answers to questions 2 and 11 under General.

3. What role does leadership/executive team play in managing disruptions?

   OO: The executive team helps coordinate response efforts.

Lessons Learned from the COVID-19 Pandemic

1. What policy or process changes has your agency made resulting from the COVID-19 pandemic? Which changes, if any, are deemed permanent?

   HR: Implemented COVID protocols. Made changes to telecommuting process as it relates to COVID-related events. Changed leave types (e.g., paid leave for employees needing to be quarantined).

2. What lessons about agency operations did your agency learn resulting from the COVID-19 pandemic? How have these lessons been applied?

   OS: We learned how to manage operations virtually. We invested in supplies, equipment, and software to allow Emergency Operations to work remotely when possible.

3. How has the COVID-19 pandemic changed leadership's interaction with your agency?

   OS: No change. Leadership is very involved.

4. What are some of the techniques your agency has employed resulting from the COVID-19 pandemic to ensure peak performance? Please describe.

   OS: LaDOTD was declared essential and therefore exempt from much of the lockdown requirements. With appropriate precautions, we managed to continue construction, maintenance, and operations activities. Planning and preconstruction engineering also continued through remote work with limited in-office personnel.

5. What did your agency do to remain flexible and nimble in response the COVID-19 pandemic?

   OS: We learned how to manage operations virtually. We invested in supplies, equipment, and software to allow Emergency Operations to work remotely when possible.

   OMC: Working at home and gradually bringing the workforce back into offices. Those who worked in the field and operated vehicles alone and could function without close, in-person contact were identified, such as inspectors and project managers in my division.

Communications

1. What role does leadership play in communications during a disruption?

   OO: Leadership needs to make sure that all employees understand what is expected of them and make sure they are updated on the status of the department.

   OMC: Most critical in crafting the message and speaking with one voice.

2. How does your agency's approach to internal communication change during a disruption? Please explain.

   OS: We were accustomed to working face to face in Emergency Management and learned how to manage operations virtually. We invested in supplies, equipment, and software to allow Emergency Operations to work remotely when possible.

   HR: Increased day-to-day communications significantly between management, employees, and Human Resources.

3. What is your level of transparency during a disruption? Explain.

   OS: LaDOTD issues twice daily situation reports during emergencies for use by the LaDOTD secretary, the LaDOTD Public Information officer, and the Governor's Office of Homeland Security & Emergency Preparedness to keep elected officials and the public informed. LaDOTD also uses social media, including our website, to advise the public of such issues as road closures, road openings, and debris removal efforts.

4. How do you reach employees, what information do you share, and who shares information in the face of a disruption? How does it change depending on the longevity or type of disruption?

   OO: The department will use e-mail and also has emergency phone numbers for all employees.

5. Please describe resources you use to inform your workforce related to a disruption (e.g., federal regulations, CDC guidelines, National Weather Service guidelines, ISO).

   OMC: State executive orders, division of administration, LaDOTD secretary, CDC guidelines, LaDOTD HR, National Weather Service, and information about individual assistance and resources.

6. How do you alert employees of emergencies and their role in the emergency response?

   OS: We have a contact list of all response personnel that contains multiple phone numbers and other means of contact for activation. All response personnel are placed on standby if an incident is anticipated.

Work Environment (includes physical workplace, remote/teleworking)

1. What role, if any, does the physical workplace play during a disruption?

   OS: We have communications equipment and facilities that assist in emergency operations; however, we found that during the pandemic, with proper planning, we were able to function remotely in most situations.

2. What lessons were learned from expanding/instituting/implementing teleworking?

HR: It can work on a large scale. The agency continued operations during lockdowns. LaDOTD worked quickly to address equipment/software needs (e.g., workstations and virtual meeting platforms). We are switching from standard desktops to laptops, which will be beneficial for future disruptions. Before COVID, teleworking was used sparing and typically only for a short duration. Managers were not prepared to manage and monitor telework. Future policy changes will be implemented. Louisiana State Civil Service now has rules and policy requirements regarding teleworking.

3. What challenges, if any, did your agency overcome related to teleworking? Please explain.

HR: Obtaining equipment and software that allowed people to work from home was an issue for the first couple of weeks at the start of COVID in 2020.

OMC: Some people did not want to return to the office environment and exhausted every measure to avoid that outcome.

4. Please share lessons learned from your agency's experience with teleworking/remote working as it relates to long-term disruptions.

HR: See the response to question 2 above.

5. What limitations do you place on teleworking?

HR: Requires advanced approval from HR for COVID-related reasons. All other requests must go through the standard telecommuting process outlined in policy.

6. Will telework be a continued tool in response to a disruption?

HR: Yes, when necessary.

7. Please describe how your agency addresses re-entry to the worksite during and/or after a disruption that requires evacuation, remote work, etc.

HR: Employees are told when to report back to the office. In the case of COVID, all managers were required to return to the office in June 2020. Appointing authorities had the discretion to allow employees in positions that allow teleworking to continue to telework full-time, on an intermittent basis, or not at all. Employees able to telecommute gradually all returned to the office in 2021.

Learning and Development

1. How does your agency address remote training/learning and development?

OMF (LTRC): Remote training was rarely used in the past but increased during COVID-19 lockdowns. The current system in place utilizes Zoom for synchronous training. Other web-based courses are available through the LMS. Each employee is part of a structured training program to dictate proper learning and development for their specific job role, title, and section. Depending on the position, an employee may be required to attend specific in-person trainings.

2. Please describe the systems, protocols, and policies your agency uses to ensure employees and contractors have the knowledge and skills needed to handle a disruption.

   OMF (LTRC): Trainings are created using current research and best practices and are updated regularly. It is our responsibility to ensure that learning objectives are appropriate and relevant. Laptops are provided for employees so they may work from home. Most trainings are available as web-based programs or through distance learning when face-to-face training is not feasible.

3. Does your agency provide resilience-related training? If yes, is the training internal or external? Does your agency have a training and exercise program for the emergency response and management program?

   OMF (LTRC): Our agency offers some resilience-related training internally and externally. For example, we offer classes that specifically discuss emotional intelligence, organizational culture, transformational leadership, and conflict management. It is also addressed in other training-related efforts, such as succession planning, shared work efforts, project/process management, and typical workflows.

4. Does your agency conduct training, drills, and exercises on its continuity of operations plan/ disaster recovery plan, including response procedures and decision-making processes?

   OMF (LTRC): Since a continuity of operations plan is a federal requirement, we offer training that would ensure our compliance with federal disaster recovery guidelines.

5. Have you examined your training/professional development programs for their coverage of resilience?

   OMF (LTRC): Our agency audits our trainings in-house. During those audits, we ensure that our content covers defined resilience-related areas, especially emotional, cognitive, and mental. A needs assessment and competency modeling project is helping identify current training gaps and needs and verify trainings that are outdated and need to be removed or updated accordingly.

Organizational Culture

1. What disruption did you experience that is now considered routine? How did the agency get to that point? Explain.

   OS: Because of the number of them in recent years, weather-related disruptions are becoming more "routine." Everyone knows their job and does it.

   OMC: Natural disasters are common enough that the response is second nature to many in the agency, particularly on the front lines.

2. Does your agency respond differently to a local disruption than it does a global disruption? Please explain.

   OS: Other than the pandemic, I'm not sure what other global disruptions we have had to address unless issues like supply shortages and inflation are included.

3. What role, if any, does organizational culture play during a time of disruption?

   OS: LaDOTD has an organizational culture of teamwork, particularly during catastrophic events. That is greatly beneficial.

   OMC: The culture I think of is at the district level, the front line, but it counts on leadership up through the organization. They mobilize quickly to literally clear a path for other first responders. Overall, this is our core priority, so "all hands on deck" is the mentality.

4. How do employees learn your organization's culture?

   OS: Most is learned on the job from more seasoned staff. LaDOTD also has an extensive employee training program with some aspects unique to this agency.

5. How does your organizational culture enhance or limit your response to disruptions?

   OS: See the answer to question 3 above.

6. How does your agency's culture change, if at all, because of long-term disruptions?

   The only long-term disruption we have had is the COVID pandemic. We'll find out after this spring when we see the results of our latest employee survey and compare that with the 2018 survey.

7. How does your agency interact with other transportation agencies, federal/state/local governmental entities, law enforcement, military, science organizations, etc., when responding to a disruption?

   OS: LaDOTD has responsibility for the ESF-1 and ESF-3 in the state's emergency management plan administered by the Governor's Office of Homeland Security & Emergency Preparedness (GOHSEP). All other state agencies also work under GOHSEP during emergency events. GOHSEP takes the lead in coordinating with local governments and many federal agencies, although LaDOTD maintains direct communications with the FHWA, most airport and port authorities, and with most transit agencies.

   OMC: We work with federal, local, and state partners year-round. GOHSEP has a system of conference calls with all these partners at the table. This occurs throughout and sometimes past the disruption.

Workforce

1. How does your agency manage work priorities during a disruption?

   OS: Our emergency operations staff that normally are engaged in planning, training, and exercise activities pivot and are then fully engaged in the management of the current incident.

2. How does your agency prepare its workforce for managing disruptions?

   OS: Response personnel are trained in their roles as responders. Plans are developed and continually revised. Response personnel exercise their response to situations.

3. What pre-disruption planning or preparations occur in your agency to ensure the workforce knows what to do in the event of a disruption?

   OS: We engage our staff and the nine LaDOTD districts in planning, training, and exercising the plan. We participate in Louisiana's Emergency Operations all-hazards planning, training and exercise activities.

4. What activities does your agency perform to manage and measure productivity and production management during a disruption?

   OO: During emergency events, the districts provide daily situational reports in order to track all issues and accomplishments.

5. How would you describe the human cost of disruptions (e.g., overtime, burnout, supplies, equipment, and productivity)? What does your agency do to address this cost?

   OO: The department has the employees work shifts to cover the emergency. We also try to manage the workforce by giving them a couple of days off after they have been working for an extended period of time. We do this by bringing in crews from nonimpacted areas.

6. How do you designate employees as essential workers during disruptions? Do you treat those workers differently with regards to your response?

   OO: All employees that are in positions that respond to events are considered essential. Also, employees whose work must go on during disruptions are considered essential (e.g., truck permit workers).

7. Do you have staff dedicated to managing or developing organizational resilience? Please explain.

   OS: See the answer to question 15 under General.

Knowledge Management/Continuity Assurance Program (PPM 62)

1. How did the Continuity Assurance Program (CAP) help to manage the disruption caused by COVID 19?

   HR: The program is designed to ensure continued operation should an individual employee leave the department. It focuses on identifying critical tasks, training others on those critical tasks (knowledge sharing), and developing standard operation procedures for critical tasks. The program was beneficial in ensuring that when an employee was out due to a COVID-related reason someone was available to perform the critical tasks.

2. How did the KM program help with resilience?

   HR: There are two parts to our Knowledge Management Program: a Continuity Assurance Program and Succession Planning. Both involve obtaining, storing, sharing, and applying institutional knowledge. Succession planning is position-focused; Continuity assurance focuses on critical tasks. The knowledge transfer that occurs within the programs allows us to be resourceful and adapt to short-term and long-term disruptions, which has a positive impact on the agency's resilience.

3. What should be changed in the program based on lessons learned?

   HR: We do not have a dedicated position to oversee, guide, monitor, and encourage using the Knowledge Management Program. Managers have stated that the program is too cumbersome due to the size and makeup of our workforce. They have limited time and resources to devote to the program.

Technology/Tools/Systems

1. How does your agency leverage technology to help manage disruptions?

   - *Extensive use of meeting/collaboration tools such as Zoom, Microsoft Teams, and other remote software*

   - *Strategy in place to move as many employees as practical to a mobile computing device (i.e., laptop) to facilitate remote work*

   - *Enterprise Virtual Private Networking (VPN)*

   - *Use of MiFi devices in situations where enterprise network connectivity is disrupted.* [Note: MiFi is a brand name used to describe a wireless router that acts as a mobile Wi-Fi hotspot.]

   - *Satellite communications are available to a limited number of critical LaDOTD executives/ employees in times of disruption.*

2. What is your agency's plan in the face of a technology-specific disruption?

   - *Leverage the mobile tools available to employees in times where a disruption occurs*

   - *Collaborate with OTS to execute actions necessary to restore LaDOTD business system availability*

3. What types of technology allow you to be flexible in your response?

   - *Meeting/collaboration tools such as Zoom, Microsoft Teams, etc.*

   - *Use of mobile devices, VPN, etc., to connect to enterprise resources*

4. What technology challenges do you face during a disruption?

   - *Potential extended loss of access to enterprise business systems*

   - *Lack of sufficient number of some mobile tools (e.g., MiFi devices, satellite communications access, etc.) to facilitate remote work*

5. What needs to be updated to be better prepared for future long-term disruptions?

   - *Ensure that OTS continues to provide mitigation tools, policies, and procedures that ensure LaDOTD has consistent and reasonable access to critical business resources in times of long-term disruptions*

   - *Ensure sufficient number of MiFi devices, mobile computing devices, etc., are available to critical LaDOTD business units in times of long-term disruptions*

6. What skills and/or tools are needed during times of disruption?

   Close collaboration/liaison with appropriate OTS contacts and critical LaDOTD business units

7. What is the role of risk management during a disruption?

   In terms of potential loss of LaDOTD intellectual property (e.g., critical business data lost due to a cyberattack), I understand that the department has some insurance protection.

8. What tools are available to manage a disruption?

   DOTD is able to manage the response to a disruption via collaboration tools such as e-mail, Microsoft Teams, Zoom, telephone, etc.

9. What role, if any, does contracting play during a disruption?

   OS: We maintain executed contracts with private companies for bus evacuation, debris management, etc., which can be activated in time of need.

10. How does your agency leverage asset management to assist with disruption response?

    OP: A complete set of roadway inventory, including their associated FHWA (federal-aid eligible) and FEMA (non-federal-aid) status, are maintained and provided in GIS and PDF formats. These GIS services and PDF maps can be accessed through the LaDOTD's Open Data Portal and LaDOTD's internet webpage (see below) and are available to both internal LaDOTD personnel and the general public.

    ### ArcGIS Rest Services

    Directory FederalAid (FeatureServer)

    Layer: Statewide Routes (LRM) (ID: 107)

    ### LaDOTD PDF Maps

    Emergency Relief Funding Eligibility Maps

    State, District & Parish Maps

Ohio

General

1. Agency information:

   a. Agency size and organizational structure, relevant workforce demographic data, union or right-to-work state

      Approximately 5,000 permanent staff; hire up to 500 seasonal staff for the winter season; hire other temporary staff (less than 500) during other parts of the year, including college interns and summer help. Insert large overall TO into slide here. Insert graphic from OAKS/Cognos with demographic information, particularly from classification make up perspective. We do have a union.

b. Y/N – Comprehensive Continuity of Operations/Government Plan

Yes.

c. Resilience-related regulations, policies, etc.

Ohio requires agencies to have a continuity of operations plan. IT resiliency: DAS 2100-16 Contingency Planning Policy (ohio.gov)

2. Outside Influencers

Cabinet-level agency, governor, state legislature, local governments, media, taxpayers, Department of Administrative Services, Office of Information Technology

3. What COVID-19 mandates do you have in place?

ODOT developed COVID-19 procedures. Since the pandemic has decreased, most mandates have been halted or reduced. We do still have a 75% capacity limit on training/conference rooms. This leaves half of the room for social distancing for those that choose to do so.

4. What geographical features in your state influence your ability to respond to disruptions?

Good: Not a huge state geographically (from Columbus/Central Ohio you can reach almost any part of the state in less than three hours.) Dense infrastructure.

Bad: SE Ohio is in Appalachia, which can present some communication challenges with communication due to poor cell signals. The physical terrain/routes available makes traveling to distances more challenging and takes longer.

5. What political concerns influence your ability to respond to disruptions?

To a degree, the restoration of technological services relies on enterprise-level decisions as to what services to restore first. While we, ODOT, might be in a position to support technologies, if the enterprise chooses not to restore the services we consume from them to us or places us at a lower priority, we will be impacted in the services we provide.

6. Do you consider regional/border states during your response?

The border states are always considered, as well as networking with states within the AASHTO Transportation Systems Security & Resilience (TSSR) Subcommittee on Emergency Operations.

7. How do you address organizational funding challenges during a disruption?

When COVID hit, our Finance Division adjusted our revenue expectations to account for fewer people driving during the pandemic. The new estimates ended up being close to actual revenues. This allowed ODOT to continue providing our necessary services without running out of money.

8. How do supply-chain issues affect your ability to respond?

If we have a supply-chain issue, ODOT will reach out statewide within the districts to assist with any unmet needs.

9. How does your agency define "resiliency" and what does it mean for you?

   Resiliency at ODOT means being able to withstand a wide variety of challenges and still being able to deliver our services and meet our mission for Ohio and the country. We define resilient delivery as the elimination of all single points of failure: equipment, people, places, and processes. Doing this provides us with the ability to adapt in the face of volatility or uncertainty.

10. In your opinion, what do resilient agencies do to be successful during periods of disruption?

    Having redundancy built into processes and operations (i.e., prevention) is the best approach. When you find yourself in a period of disruption, though, implement incident management style operations and communication for as long as it makes sense to do so. Communicate early and often. Stay ahead of the rumor mill. Have a plan (continuity of operations, continuity of government).

11. How does your agency plan to protect itself from future disruptions?

    Through a continuous evaluation of potential single points of failure; elimination or reduction of those puts us in a great position. Lessons learned from the pandemic. Implement successful practices into a continuity of operations plan and a continuity of government. Change things that didn't go so well.

12. What current strategies and practices promote resilience in the agency?

    Continue to plan for contingencies while things are calm. Empower people to make decisions within their authority.

13. Does your agency have any resilience performance measures? Which of your current performance measures are relevant to resilience (e.g., mobility measures, recovery measures, safety)?

    Not specifically related to disruptions, but we have critical success factors that are expected to be met even amidst difficulties.

14. Have you reviewed staff roles and responsibilities to identify how they relate to enhancing system resilience?

    As we were reviewing our people position by position to see who could effectively perform their job function from a different location than their assigned office. In the end we figured out how to adjust roles and responsibilities to make us more effective in the circumstances.

15. What policies does your agency have to address managing disruptions? Are there different protocols depending on the type of disruption?

Leadership

1. Does your agency have a crisis leadership team?

2. Is resilience an organizational goal?

3. Does your agency's leadership training include resilience-related training? If yes, is the training internal or external?

ODOT has a robust county manager training program. Some of the modules offer training on what to do in the event of disruptions.

4. What role does leadership/executive team play in managing disruptions?

Communication; ensuring that everyone understands what's going on and what their role is. Establishing and reestablishing priorities throughout the event(s).

Lessons Learned from the COVID-19 Pandemic

1. What policy or process changes has your agency made resulting from the COVID-19 pandemic?

COVID procedures; telework; much closer to paperless work environment

Which changes, if any, are deemed permanent?

Telework; paperless environment

2. Has your agency's executive team implemented ad hoc committees resulting from the COVID-19 pandemic?

HR and administrators during COVID with BHRAs.

3. What lessons about agency operations did your agency learn resulting from the COVID-19 pandemic?

IT had been preparing for a work-from-anywhere model prior to the pandemic; ODOT never had telework. Because of this preparation we were able to deploy approximately 1,600 people into a telework environment in two days.

How have these lessons been applied?

Being prepared for potential contingencies can greatly improve execution of plans when needed to do so.

4. What change(s) resulting from the COVID-19 pandemic has had the greatest impact on your agency?

Telework

5. How has the COVID-19 pandemic changed leadership's interaction with your agency?

6. What are some of the techniques your agency has employed resulting from the COVID-19 pandemic to ensure peak performance? Please describe.

7. How has your agency's pandemic response affected agency costs (e.g., savings in facility utility costs, expense in PPE and protective barriers, etc.)?

We tracked pandemic-related costs for reimbursement through any applicable funds. Facilities footprint is a longer term analysis; unsure if we have an estimate of that for the future.

8. Do you envision further changes resulting from the COVID-19 pandemic?

   Telework as a part of our workforce solution

9. What did your agency do to remain flexible and nimble in response the COVID-19 pandemic?

   Communication, daily at first, then adjusting to whatever was needed based on the circumstances. Telework was implemented in two days. Assisted other areas in transporting PPE and medical equipment across the state; hundreds of missions.

Communications

1. What role does leadership play in communications during a disruption?

2. How does your agency's approach to internal communication change during a disruption? Please explain.

3. What is your level of transparency during a disruption? Explain.

4. How do you reach employees, what information do you share, and who shares information in the face of a disruption? How does it change depending on the longevity or type of disruption?

5. Please describe resources you use to inform your workforce related to a disruption (e.g., federal regulations, CDC guidelines, National Weather Service guidelines, ISO).

6. How do you alert employees of emergencies and their role in the emergency response?

Work Environment (includes physical workplace, remote/teleworking) – Brian Brown

1. What role, if any, does the physical workplace play during a disruption?

   Adaptability is key. If the physical workplace is such that it's not adaptable to disruption, that can be a hinderance.

2. Is teleworking one of your agency's responses to a disruption?

   Yes.

3. What lessons were learned from expanding/instituting/implementing teleworking?

   ODOT never had it before so we learned that it could be done and done well. Approximately one-third of our workforce is telework-capable. We also learned that after adjusting to it, the majority of our workforce really likes it.

   Were any of those lessons implemented on a permanent basis?

   Yes. ODOT implemented a long-term telework policy effective August 2021. We've adopted a hybrid model, with employees coming into the office a minimum of two days per week. We're also finding that employees are making employment decisions based on telework capability. We view it as a necessary component of a modern workforce.

4. Does the remote work location extend beyond state borders?

Generally no. Employees working in a district bordering another state that live in the bordering state can telework from there. The telework policy also has a provision where a deputy director can allow a temporary change in telework location. An example of the expectation is an employee who travels to their parents' home to take care of them but may have extended periods of time where they can log in and work.

5. What limitations do you place on teleworking?

An employee has to have completed their initial training; be able to complete their job duties in a remote environment; cannot be a primary caregiver for anyone (We do allow provisions for a parent taking care of a dependent for a short period of time.); must have adequate internet capability; have a satisfactory work performance history; and have a satisfactory IT compliance history.

6. Will telework be a continued tool in response to a disruption?

Yes. It's now a permanent part of our workforce. The telework policy also has a provision where the director can allow telework without going through the normal process in the case of a disruption.

7. What activities/strategies does your agency employ to ensure employee engagement associated with teleworking or remote working?

Implementing the mandatory two days per week in the office was partially driven by the desire to maintain our organizational culture and engagement. We're also going to be reinstituting an employee engagement survey.

8. What challenges, if any, did your agency overcome related to teleworking? Please explain.

There were some minor technical issues early on, mainly just the first-time implementation issues that come along with a new practice. We did have some employees self-report some substance abuse issues that were exacerbated by telework. We also had to figure out on the fly how to do a reasonable suspicion test in a remote environment.

9. Please share lessons learned from your agency's experience with teleworking/remote working as it relates to long-term disruptions.

IT had been preparing for a work-from-anywhere technology approach for some time. That foresight was crucial to making a quick switch to telework happen smoothly. Telework has proved invaluable to our being better equipped to handle disruptions.

10. Please describe how your agency addresses re-entry to the worksite during and/or after a disruption that requires evacuation, remote work, etc.

Our leadership was active in going out and visiting our garages during COVID. At the onset there was some level of discontent that non-telework-eligible employees were being put at risk. Leadership did its best to ensure that everyone understood we were following the safety protocols advised by the CDC and Ohio Department of Health. Communication helped in this area. For teleworkers returning to the office, ODOT spent time trying to think through things that people would need to be aware of when coming

back to the office. We ensured that everyone knew the office was safe and that safety protocols were being followed.

11. What challenges does a hybrid work environment create for you and how do you address them?

    There is somewhat of a divide between those who can telework and those who cannot.

12. Other than teleworking, what arrangement do you use to allocate workspace (e.g., hoteling, hybrid)?

    We're exploring these areas but haven't really committed to anything yet.

    How does lease versus own impact your decisions and policies?

    ODOT owns its facilities so the urgency to shrink our facilities' footprint hasn't been as great as it might have been if we leased our facilities.

13. Has the pandemic caused you to rethink "modern workplace programs" such as infants at work?

    Just implementing telework was huge for ODOT. We are not envisioning infants at work.

Learning and Development – Daveen Goodman

1. How does your agency address remote training/learning and development?

    Prior to COVID-19, remote training was not widespread. During COVID-19, like many others, we rapidly pivoted training programs to the remote environment. ODOT's IT capabilities allowed this to happen quickly. The upskilling of our office staff was required to perform in the virtual world. We attended essential courses on virtual instructing and remote deployment to help instructors and district partners aid employees and be successful in their jobs in a new way. Many of our soft skill programs are now preferred as virtual and will remain in that format. The technical classes are transitioning back to in-person and/or hybrid as needed.

2. Please describe the systems, protocols, and policies your agency uses to ensure employees and contractors have the knowledge and skills needed to handle a disruption.

    ODOT has a Training, Employee Development and Education Assistance policy and procedure that guides training responsibilities. We have an LMS that can be used to communicate and assign trainings as needed in any situation. The office uses business processes for structure and administrative knowledge transfer.

3. Does your agency provide resilience-related training? If yes, is the training internal or external?

    Yes. The training is provided through an external training service.

    Does your agency have a training and exercise program for the emergency response and management program?

The agency has an Agency Safety & Security Action Plan and routine drills to address weather emergencies.

4. Does your agency conduct training, drills, and exercises on its continuity of operations plan/ disaster recovery plan, including response procedures and decision-making processes?

   Inside of the Agency Safety & Security Action Plan there are routine weather and evacuation drills.

5. Have you examined your training/professional development programs for their coverage of resilience?

   Not as a standalone exercise; however, the current inventory of resilience-related trainings and resources (books/audio books/videos) available to employees is over 1,000.

Organizational Culture – Brian Brown & others

1. What disruption did you experience that is now considered routine? How did the agency get to that point? Explain.

2. Does your agency respond differently to a local disruption than it does a global disruption? Please explain.

3. What role, if any, does organizational culture play during a time of disruption?

   The organizational culture and health of an organization plays a significant role in how it responds to a disruption. Organizations that instill empowerment in employees and encourage innovation are more likely to better withstand disruptions. If problem solving is an inherent part of the culture, a disruption can be seen as another opportunity to solve problems. Balance is important though as well. In a crisis, an incident-management approach may be beneficial and results in decisions being made higher up the organizational chain of command than they would be in normal circumstances. Getting people to quickly understand that change and communicating it through a large organization can be challenging. If an organization has a culture of a policy saying one thing and the practice being another, it can be additionally challenging to get people to really understand the importance of abiding by new rules and practices during a crisis. Trust and the ability to be honest are two critically important elements of organizational culture. The importance of these is only heightened during disruptions.

4. How do employees learn your organization's culture?

   Starting with new hire orientation, ODOT instructs its employees on our Mission and Vision. It's really learned, though, through each individual's supervisor and their co-workers. Training is important; however, the more informal mentoring and coaching employees receive early on is vital.

5. How does your organizational culture enhance or limit your response to disruptions?

   Pros: ODOT is very innovative, which helps with solving problems. It's a core part of what we do. Overall, people feel safe enough to be honest with managers and others, which is important for reliable feedback and healthy communication. There is also a healthy level of trust in each other, which feeds into the mindset of "we're all in this together."

Cons: As a large organization, getting communication out to everyone quickly with a clear, succinct message can be a challenge. Overall, I think we do well with communication; however, there are always going to be a number of staff that seem not to get the message. As a largely decentralized organization, getting a large group to turn on a dime in an incident management style operation can be a challenge. Overall, we performed well with this. However, if a situation were less severe than COVID and people didn't understand the importance of it, I could see potential challenges in this area.

6. How does your agency's culture change, if at all, because of long-term disruptions?

I'm not sure if ODOT's culture has changed significantly since COVID. How we work and communicate with telework is different. I would also offer that society in general has changed due to COVID. Some research suggest that it takes two years for a culture to take root, so perhaps we'll start to notice differences in the months ahead.

7. How does your agency interact with other transportation agencies, federal/state/local governmental entities, law enforcement, military, science organizations, etc., when responding to a disruption?

Workforce – Brian Brown and Others

1. How does management conduct welfare checks on employees during a disruption?

During COVID, ODOT encouraged a lot of manager calls/check ins with employees to see how they were doing. Some areas also did "virtual coffee/water cooler" talks to replace the social interaction that was missing from being in person. We were especially cognizant of employees who lived alone and might have been more isolated. We unfortunately also had to figure out how to do reasonable suspicion testing in a remote environment during the pandemic. We utilized the local ODOT resources available to accomplish it and it went smoothly.

2. How does your agency manage work priorities during a disruption?

Maintaining a focus on mission while keeping our workforce safe.

3. What practices does your agency use to address the human/emotional elements of a disruption (e.g., post-traumatic stress, compassion fatigue, loss, grief, depression, fear, anxiety, etc.)?

4. How does your agency prepare its workforce for managing disruptions?

5. What pre-disruption planning or preparations occur in your agency to ensure the workforce knows what to do in the event of a disruption?

ODOT has an annual Agency Safety & Security Action Plan and annual fire and tornado drills. ODOT also has a continuity of operations plan.

6. What activities does your agency perform to manage and measure productivity and production management during a disruption?

In periods of disruption or not, ODOT measures its performance through Critical Success Factors. (Microsoft PowerPoint - SFY 2022 Q12CSF Presentation (ohio.gov))

7. How does your agency foster employee engagement during a disruption?

8. How would you describe the human cost of disruptions (e.g., overtime, burnout, supplies, equipment, and productivity)? What does your agency do to address this cost?

9. Do you measure employee engagement?

   We have in the past but haven't measured this in a few years.

   How do you leverage employee engagement information during a disruption?

10. How do you designate employees as essential workers during disruptions? Do you treat those workers differently with regards to your response?

    ODOT conducts an annual exercise assessing which employees are essential workers. We only have one list as opposed to several different lists, depending on the situation. Telework did fundamentally change the makeup of the list. The overriding theme was that if you're telework-capable, you are most likely not on the essential report-to-work list.

11. Do you have staff dedicated to managing or developing organizational resilience? Please explain.

    We have employees responsible for certain activities, such as coordinating the annual essential employee review, Agency Safety & Security Action Plan training, maintaining the continuity of operations plan, etc. ODOT doesn't have one specific person dedicated only to organizational resilience.

Technology/Tools/Systems – Charles Ash

1. In the face of cyberattacks, which/what systems are being "hardened"?

   It is a general practice to harden all of our servers. We do tend to focus more on those servers that are public-facing than internal-facing machines. Most inbound network ports by default are closed unless there is a specific need for a port to be open. We are in the process of migrating from NTLM authentication to Kerberos authentication. In addition, for external access, we require all users to authenticate using two-factor authentication.

2. How does your agency leverage technology to help manage disruptions?

   For several years we have been moving toward a mobile workforce. To that end, we standardized our equipment list, deployed laptops enterprise-wide, and deployed Citrix to host applications (most office workers have access to what they need to be effective employees wherever they are). In addition, although we are moving away from it now, VPN (with 2FA) was deployed for use statewide by our employees.

   Equipment standardization included moving to about three models of laptops, three standard specs of PC (Spec 1, Spec 2, and Spec 3), and printers across the enterprise that use primarily one universal print driver. This last item helps us greatly when our disruption (the pandemic) was disrupted (by "PrintNightmare").

3. What is your agency's plan in the face of a technology-specific disruption?

   Our plan is to proactively make sure that our workforce is mobile so that our people can access any

application on any device from anywhere they have an internet connection.

4. What types of technology allow you to be flexible in your response?

   Citrix, VPN, DuoSec, Office 365, Avecto (privilege management), Citrix MDM, Citrix FileShare, Express Metrix (license management), Active Directory, and ServiceNow are the core technology pieces.

5. What technology challenges do you face during a disruption?

   - *Worker bandwidth – Available VPN bandwidth for workers who regularly access large data files that are stored on our network and who are attempting to manipulate those files on a local machine.*

   - *Machine capabilities – We need to have accessible to our staff machines with high graphics capabilities, regardless of whether they are physical machines or virtual machines, which can manipulate large files and are capable of high-resolution graphics manipulation.*

   - *Network impact – We have systematically reduced the network impact of disruptions. At this time, the location from where our people perform their work is not of much concern.*

   - *Patch management – We have limited ability to manage patches/updates while the machines are not on our network. There is a higher instance of machines being turned off during patch cycles than when they were PCs and when they were in the office buildings.*

6. What needs to be updated to be better prepared for future long-term disruptions?

   Out-of-band patch management – We need to deploy a reliable way to keep machines up to date regardless of their location. We also need improved access to cloud technologies to be able to leverage those technologies' connectivity and capabilities. Gov Cloud does not always have all the capabilities of the commercial cloud.

7. What skills and/or tools are needed during times of disruption?

   - *Communications – Two-way communications. We do have to rely on our customers being willing to follow status updates to inform them of changes in operation.*

   - *Monitoring skills*

   - *Troubleshooting skills – A remote workforce in large numbers presents new issues.*

   - *Tools tha*t enable users to access files and applications remotely

8. What is the role of risk management during a disruption?

   There is always a cost analysis in the deployment of tools. The value of the tools in most cases needs to exceed the cost of the deployment. While this is not always true in the case of security tools, we still do have limited funds, so we have to go through a similar analysis.

9. What tools are available to manage a disruption?

   Office 365, Teams, and telephones

10. What role, if any, does contracting play during a disruption?

We had no requirement to add or stop any contracting activity.

11. How does your agency leverage asset management to assist with disruption response?

The core use of asset management in the event of disruption is to determine who had what equipment already, and the amount of equipment we had on hand to deploy to those who needed it.

How Citrix Workspace is bringing Ohio Department of Transportation to the cutting edge - YouTube

Safety – Joe Phillips

1. How do you ensure employees have the proper PPE when responding to a disruption?

Standard PPE is issued when someone hired; it is updated periodically by the district safety staff. We issue to every garage PPE flip books and posters that lists the types of jobs and the PPE required. Training on specialized PPE is done on an as-needed basis.

2. How do you prepare employees for disruptions (e.g., power outage, severe weather event, natural disaster)?

The agency has an annual Agency Safety & Security Action Plan and annual fire and tornado drills.

How do you address psychological safety under a disruption?

This is discussed in the Agency Safety & Security Action Plan as well as in the Employee Assistance Program.

3. How did you modify your work environment to ensure worker safety?

Safety is paramount to the agency. Each district has a safety staff that conducts job hazard analyses, facility and job site inspections, daily tailgate talks, and specialized trainings.

4. What resources or support did you provide your employees during the disruption?

Daily discussions with the districts, frequently asked questions on safety items, CDC/ODH research and guidance, specific PPE (face coverings, sanitizer, nitrile gloves, wipes), noncontact infrared thermometers, and updating policies and procedures.

Utah

General

1. How does your agency define 'disruption"?

2. How does your agency define "resiliency"?

No known official definition

3. What does resilience mean for your agency?

Not defined at this time

4. Does your agency's approach to internal communication change during a disruption? Please explain.

    Yes. We have an emergency operations plan to help communicate during a disruption

5. In your opinion, what do resilient agencies do to be successful during periods of disruption?

    It really starts before the disruption happens. Having a plan in place to address the disruption is what successful agencies do.

6. How does your agency plan to protect itself from future disruptions?

    EOP, active risk mitigation

7. What current strategies and practices promote resilience in the agency?

    Annual risk assessment

8. Does your agency have any resilience performance measures? Which of your current performance measures are relevant to resilience (e.g., mobility measures, recovery measures, safety)?

    While some measures may indicate some form of resiliency, none address it directly. Delay and reliability may show resiliency after the fact.

Leadership

1. Does your agency have a crisis leadership team?

    EOP

2. Is resilience an organizational goal?

    No.

3. Does your agency's leadership training include resilience-related training? If yes, is the training internal or external?

    No.

Lessons Learned from the COVID-19 Pandemic

1. What changes has your agency's executive team made resulting from COVID? Which changes, if any, are deemed permanent or sustainable?

2. Has your agency's executive team implemented ad hoc committees resulting from COVID? Which, if any, are likely to be made permanent?

    Yes. The Executive Reporting Committee disbanded.

3. What work processes changed resulting from COVID? If any, please explain how they changed?

    This is a good question. While I believe there were minor changes to processes, I don't believe there were

any major changes.

4. What lessons about agency operations did your agency learn resulting from COVID? How have these lessons been applied?

5. What change(s) resulting from COVID has had the greatest impact on your agency?

6. How has COVID changed leadership's interaction with your agency?

   We had a few town hall webinars, but those have largely ceased.

7. What are some of the techniques your agency has employed resulting from COVID to ensure peak performance? Please describe.

8. How has your agency's pandemic response affected agency costs (e.g., savings in facility utility costs, expense in PPE and protective barriers, etc.)?

Communications
Work Environment (includes physical workplace, remote/teleworking)

1. What role, if any, does the physical workplace play during a disruption?

2. What lessons were learned from expanding/instituting/implementing teleworking?

   Our state began instituting teleworking pre-pandemic. With policies and guidance in place, it was easier to implement remote work.

3. What activities/strategies does your agency employ to ensure employee engagement associated with teleworking or remote working?

   No official strategies or activities were implemented.

4. What challenges, if any, did your agency overcome related to teleworking? Please explain.

5. Please share us lessons learned from your agency's experience with teleworking/remote working as it relates to long-term disruptions.

6. Please describe how your agency addresses re-entry to the worksite during and/or after a disruption that requires evacuation, remote work, etc.

Learning and Development

1. How does your agency address remote training/learning and development?

   Via virtual training events and ongoing learning modules via the UDOT learning portal.

2. Please describe the systems, protocols, and policies your agency uses to ensure employees and contractors have the knowledge and skills needed to handle a disruption.

3. Does your agency provide resilience-related training? If yes, is the training internal or external?

   No.

Organizational Culture

1. What disruption did you experience that is now considered routine? How did the agency get to that point? Explain.

2. Does your agency respond differently to a local disruption than it does a global disruption? Please explain.

3. What role, if any, does culture play during a time of disruption?

4. How does your agency interact with other transportation agencies, federal/state/local governmental entities, law enforcement, military, science organizations, etc., when responding to a disruption?

5. What role does leadership/executive team play in managing disruptions?

Policy

1. What policies does your agency have to address managing disruptions? Are there different protocols depending on the type of disruption?

2. Please describe resources you use to inform your related to a disruption (e.g., federal regulations, CDC guidelines, National Weather Service guidelines, ISO, etc.).

   EOP app

3. Please describe the communications policy/plan your agency utilizes during a disruption.

   EOP + ready Ops

4. Does your agency's continuity of operations plan for continuity of services during a disruption? Please describe.

Workforce (Engagement, Wellness, and Well-Being)

1. How does your agency manage work priorities during a disruption?

2. What practices does your agency use to address the human/emotional elements of a disruption (e.g., post-traumatic stress, compassion fatigue, loss, grief, depression, fear, anxiety, etc.)?

3. How does your agency prepare its workforce for managing disruptions?

4. What pre-disruption planning or preparations occur in your agency to ensure the workforce knows what to do in the event of a disruption?

5. What activities does your agency perform to manage and measure productivity and production management during a disruption?

6. How does your agency foster employee engagement during a disruption?

7. How would you describe the human cost of disruptions (e.g., overtime, burnout, supplies, equipment, and productivity)? What does your agency do to address this cost?

8. Do you run an engagement survey?

   Yes.

Tools/Systems/Processes

1. What skills and/or tools are needed during times of disruption?

   Laptops.

2. What is the role of risk management during a disruption?

   Continual assessment of risks.

3. What tools are available to manage a disruption?

4. What role, if any, does contracting play during a disruption?

   Contracts may help to speed the response and recovery time to the disruption.

5. How does your agency leverage asset management to assist with disruption response?

Technology

1. In the face of cyberattacks, which/what systems are being "hardened"?

2. How does your agency leverage technology to help manage disruptions?

3. What is your agency's plan in the face of a technology-specific disruption?

Washington State

General

1. Agency information:

   a. Agency size and organizational structure, relevant workforce demographic data, union or right-to-work state.

      WSDOT is the steward of an integrated, multimodal transportation system that helps to ensure that people and goods move safely and efficiently throughout the state. In addition to building, maintaining, and operating the state highway system, WSDOT operates the largest ferry system in the nation, manages the world's longest floating bridge, and recently completed the world's widest tunneling project. The people supporting WSDOT includes approximately 6,700 employees. This includes both union-represented (13 unions) employees and non-represented employees.

   b. Y/N – Comprehensive continuity of operations/government plan

      Yes. – See supplement document.

   c. Resilience-related regulations, policies, etc.

2. Outside Influencers:

    Naturally, we have the public, legislators, cities, counties, and federal entities like FHWA, FTA, CDC, and others.

3. What COVID-19 mandates do you have in place?

    On August 9, 2021, Governor Jay Inslee issued an emergency proclamation mandating that most state executive branch employees and on-site contractors and volunteers, along with public and private health-care and long-term care workers, must be fully vaccinated against COVID-19 by October 18, 2021. Exemptions from the vaccine requirement are allowed for those individuals who are entitled to a disability-related reasonable accommodation or a sincerely held religious belief accommodation.

4. What geographical features in your state influence your ability to respond to disruptions?

    Our natural threats according to the USGS include earthquakes, tsunamis, landslides, volcanic hazards, and more. The region relies heavily on several major federal highways with multiple mountain passes. The Puget Sound and the many waterways also create extensive challenges in responding to disruptions given the threats in our state. In the most recent pandemic, the proximity to international travel was a major impact to our initial involvement since we reported one of the first cases of COVID-19 in the United States. International trade and proximity to major technological firms also have influenced our response.

5. What political concerns influence your ability to respond to disruptions?

    Our political support within Washington State during times of disruption often revolves around how the public perceives our response to the situation. Rightly so, given the representative form of government within Washington State—the legislative bodies at the state and local level represent the communities and their support or concerns with respect to the agency response. In recent history, both the public and political elements have been largely supportive of the agency's responses to critical disruptions. These have included bridge falls, landslides, the pandemic, and the resulting service impacts. The closer the agency can get to the needs and concerns of the community with respect to the disruption, the more successful the outcome. This speaks to our goal to implement practical solutions and community engagement into our solutions and services. We rely heavily on the public to drive our services and how we respond, along with the professional staff that can guide our response.

6. Do you consider regional/border states during your response?

    Yes, including our international border to the north.

7. How do you address organizational funding challenges during a disruption?

    We work with our legislators and the governor's office to address any challenges during these times.

8. How do supply-chain issues affect your ability to respond?

    We utilize several different avenues to address supply-chain issues. We leveraged our procurement offices to assist in innovative ways to impact our ability to acquire resources. In some cases, our

Emergency Management construct can also assist by leveraging different resources at the state level Emergency Management construct to assist in telegraphing the needs of the agency at a federal level and throughout the rest of the state to prioritize resources when there is a supply shortage (e.g., masks and other PPE).

9. How does your agency define "resiliency" and what does it mean for you?

    The term "resilience" means the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions. (Adopted from: Presidential Policy Directive 21, February 12, 2013.) Secretary's EO 1113 states: "Resilience is the ability of facilities and operations to withstand threats and serve long-term needs" ([Washington State DOT Secretary's Executive Order E1113.00 Sustainability](#)). In 2021, resilience was added to the state's transportation system policy goals, [Washington State Legislature RCW 47.04.280 Transportation system policy goals](#) – Stewardship: "To continuously improve the quality, effectiveness, resilience, and efficiency of the transportation system."

10. In your opinion, what do resilient agencies do to be successful during periods of disruption?

    In times of disruption agencies must build a framework to minimize potential impacts that allows for rapid recovery from an incident that disrupts WSDOT operations. This requires us to identify key personnel who perform or manage the implementation of WSDOT essential functions at both the headquarters and regional level. Often this requires not just the right structure to support the response, but also understanding who is making what decisions in an emergent environment. Communication with the public and internal employees is vital. Understanding intent, planning, and how the response is going to affect people and services is important to delivering a consistent message to the public. Traditional organizational structures become less important. Units or organizations are "task organized" to respond directly to the threat or disruption while focusing on the most essential functions and services the agency provides and working back to normal operations or as close to what can be achieved moving forward.

11. How does your agency plan to protect itself from future disruptions?

    The agency intends to revise its goals to include "resiliency" as one of the three goal areas that incorporates preservation of assets, reduction of greenhouse gas, asset management, cybersecurity, seismic resiliency, and operational resiliency.

12. What current strategies and practices promote resilience in the agency?

    Our work in the areas of continuity of operations, emergency response planning, and asset management.

13. Does your agency have any resilience performance measures? Which of your current performance measures are relevant to resilience (e.g., mobility measures, recovery measures, safety)?

    This work is underway as we are incorporating resiliency into our strategic plan. However, risk management planning is conducted annually to review elements of these measures. It will be a matter of evaluating these risks and potential threats of disruption to determine how we go about mitigating these risks and what we measure along the way.

14. Have you reviewed staff roles and responsibilities to identify how they relate to enhancing system resilience?

    From the standpoint of continuity of operations and emergency management, yes.

15. What policies does your agency have to address managing disruptions? Are there different protocols depending on the type of disruption?

    See supplement document.

Leadership

1. Does your agency have a crisis leadership team?

   Ad hoc, yes. During the pandemic, the executive leadership team was expanded to include critical areas of IT, HR, Safety, and others to task-organize people and information to inform decision makers on what was happening along with what was needed and what decisions needed to be made. The Continuity of Operations (See supplement document) has its own structure and served to complement the executives' decision making.

2. Is resilience an organizational goal?

   This is in progress and under development as we speak.

3. Does your agency's leadership training include resilience-related training? If yes, is the training internal or external?

   Yes. These include everything from tabletop exercises to evaluate different courses of action based on policy and the agency response to a given situation to employee training. We've also provided online training to employees during the pandemic to help teach individual resiliency.

4. What role does leadership/executive team play in managing disruptions?

   They are vital to the response and make important decisions as to how the agency responds and what gets communicated and provides priorities on what gets accomplished.

Lessons Learned from the COVID-19 Pandemic

1. What policy or process changes has your agency made resulting from the COVID-19 pandemic? Several policy and procedures changes has occurred as a result. Some of those include:

   - *In-state telework for over 40% of the workforce*

   - *Redefined essential workers and what/where they perform their roles*

   - *Virtualized emergency management functions*

   - *Virtualized new employee orientation, training, meetings, interviews, and external stakeholder management*

   - *Allowed out-of-state and out-of-country telework*

   - *Provided remote work for employees to work outside of their regional boundaries*

- *Renewed and refreshed the agency commitment to cybersecurity*

- *Accepted digital signatures*

- *Consolidated facilities*

- *Reduced the footprint of facilities open to the public*

- *Moved many of our services online (mainly all permitting)*

2. Which changes, if any, are deemed permanent?

   See the items highlighted above to delineate ones that appear to be more permanent moving forward.

3. Has your agency's executive team implemented ad hoc committees resulting from the COVID-19 pandemic? Yes, several committees were established including a telework transformation committee, safety committee, etc. Which, if any, are likely to be made permanent?

   The telework transformation comprised 32 sprint teams. These teams only exist as long as they are needed. Twenty or so have served their purpose of evaluating things like:

   - *Performance dashboard*

   - *Policy directives*

   - *Ergonomics*

   - *Electronic records*

   - *Telework survey*

   - *Statewide telework guidance*

   The core team will likely stay active and consider implementing or tasking sprint teams to accomplish different agency needs to assist in modernizing our workplace and dealing with the new hybrid work environment we are attempting to implement.

4. What lessons about agency operations did your agency learn resulting from the COVID-19 pandemic? How have these lessons been applied?

   We learned that providing PPE and implementing protocols was challenging initially. It took time for people to adopt the protocols; however, as things got more serious and the disease spread, getting people to comply became much easier, especially when exposures began to take out workgroups. This taught us that helping people understand the why behind what we were giving them became very important. Sometimes people have to experience it to really get it to settle in. We were aggressive in our communication and dissemination of information rather frequently, especially when the protocols continued to shift.

5. What change(s) resulting from the COVID-19 pandemic has had the greatest impact on your

agency?

Hybrid work environment.

6. How has the COVID-19 pandemic changed leadership's interaction with your agency?

   Culturally, it has unified our leadership team behind the fight against COVID. The support and communication have also improved within the team based on the virtual interactions that have allowed us to meet more frequently across the state.

7. What are some of the techniques your agency has employed resulting from the COVID-19 pandemic to ensure peak performance? Please describe.

   Our approach has been to focus on the work product versus where it is accomplished. We have often found that most people are giving more hours to their work than they have in the past. We've tried hard to support leaders who are struggling with this new environment by providing training and coaching in this new environment. We recently taught 90 managers on "leading in a hybrid work environment." This is helpful in getting midlevel managers oriented as to how they can feel more comfortable as leaders.

8. How has your agency's pandemic response affected agency costs (e.g., savings in facility utility costs, expense in PPE and protective barriers, etc.)?

   Our delivery has slowed with the pandemic for a variety of reasons. First and foremost, the pandemic itself has simply slowed work down. People have been isolated, sick, or have had family members impacted by the same. This has collectively slowed down work. Additionally, we had temporary layoffs and a mandate that resulted in us losing about 400 permanent staff. As a result, delivery has slipped, but we have also not expended as much as we had imagined. Additionally, we have consolidated some facilities. This has allowed us to cancel leases and garners a greater level of collaboration between offices just given their proximity to one another.

9. Do you envision further changes resulting from the COVID-19 pandemic?

   Not at this point. The protocols continue to roll back to something of a new normal. The hybrid work environment will force our agency to review use of space and facilities.

10. What did your agency do to remain flexible and nimble in response the COVID-19 pandemic?

   We listened and communicated to our staff often. This allowed us to keep lines of communication open on concerns and helped us manage through our vaccination mandate.

Communications

1. What role does leadership play in communications during a disruption?

   It plays a vital role. Our leadership was tasked with communicating frequently to keep employees abreast of changes. We scheduled weekly meetings with both executive management and the senior managers in the organization to make sure information was disseminated as appropriate and the expectation was that the managers shared that information with their staff. For significant items we followed up with communication on both our intranet and via e-mail.

2. How does your agency's approach to internal communication change during a disruption? Please explain.

   Internal communications became a central point of our response. It was important to utilize their expertise and advice in communicating major changes to protocols relative to our COVID response. They also helped the organization think about the different ways in which we could communicate with staff based on demographic.

3. What is your level of transparency during a disruption? Explain.

   Transparency in communication was vitally important. Our theme was, "We will share what we know when we know it." In other words, as soon as we could fully understand the situation and impacts, we shared with staff.

4. How do you reach employees, what information do you share, and who shares information in the face of a disruption? How does it change depending on the longevity or type of disruption?

   Different ways: Teams meetings, e-mail, intranet, etc. For the ferry employees we utilized their normal fleet advisories and quick notices.

5. Please describe resources you use to inform your workforce related to a disruption (e.g., federal regulations, CDC guidelines, National Weather Service guidelines, ISO).

   Within the context of the pandemic, we utilized the CDC, state Department of Health, along with our Labor & Industries regulations and requirements to drive our protocols.

6. How do you alert employees of emergencies and their role in the emergency response?

   Primarily e-mail, cell phones, Teams and intranet. When everything goes down, we do have satellite phones for extreme emergencies.

Work Environment (includes physical workplace, remote/teleworking)

1. What role, if any, does the physical workplace play during a disruption?

   Remote work has been a vital capability in the face of the pandemic and beyond. It allows us to continue operations for vital services to the front-line employee without much disruption.

2. Is teleworking one of your agency's responses to a disruption?

   Yes.

3. What lessons were learned from expanding/instituting/implementing teleworking? Where any of those lessons implemented on a permanent basis?

   We learned that our telework policies needed to be updated almost immediately. While we had a rather progressive policy before COVID, it was not enough. With the changes we've made we've been able to sustain +40% of our total workforce teleworking. We had to enrich our IT policies, ergonomics support, electronic records guidance, policy directives, and several other items. It made implementing this much easier when the leader of the organization expected us to find solutions to the issues that arose and empowered us to make decisions to mitigate risks.

4. Does the remote work location extend beyond state borders?

   Yes.

5. What limitations do you place on teleworking?

   Telework is supported to the greatest extent possible whenever it is feasible regardless of job classification, pay rate, organization, or location. Key aspects of feasibility include:

   - *Business needs (delivering for the public)*

   - *Employee satisfaction*

   - *Safety (incl*uding ergonomics)

   Whether part-time or full-time, telework is encouraged, but not mandated, for employees. WSDOT continues its effort to ensure that telework and remote work are available to employees on an equitable basis while keeping business needs and safety in mind. Collective bargaining agreements take precedent. WSDOT focuses on job performance and results rather than work location. A telework arrangement may be approved as a form of reasonable accommodation.

   Employees in suitable positions may opt in and opt out of telework. Employees should consider the following factors:

   - *Sufficient portable work*

   - *Ability to be productive*

   - *Technology needed to telework*

   - *Effective communication with customers, co-workers, and management*

   - *A safe workspace conducive to getting work done*

   - *Social and professional needs*

   - *Flexibility to respond to unanticipated customer, supervisor, and workgroup needs*

   Some positions will be suitable for frequent and routine telework, others on an occasional basis, and others not at all. Suitability can change when job duties change. For example, some positions may be seasonally suitable for telework. Management determines suitability based on the essential job duties associated with each position. Telework suitability should be noted for each essential job duty in job position descriptions. When determining telework suitability, management should strive for consistency in positions with similar essential job duties throughout WSDOT but also account for duties unique to a position

6. Will telework be a continued tool in response to a disruption?

   Yes.

7. What activities/strategies does your agency employ to ensure employee engagement associated with teleworking or remote working?

We measure it through our engagement survey (questions 17 and 18 in the image below) with employees. Occasionally we conduct pulse surveys (See supplement document) to get an understanding of the situation or to help inform a decision.

#	**Department of Transportation** Question	2020 Percent Positive (WSDOT)	2021 Percent Positive (WSDOT)	2021 Enterprise Percent Positive (all agencies)
	Standard Questions			
1	I have the opportunity to give input on decisions affecting my work.	70%	64%	60%
2	I receive helpful communication from my agency.	73%	63%	61%
3	I find meaning in my work.	80%	73%	76%
4	I know what is expected of me at work.	89%	85%	84%
5	I have opportunities at work to learn and grow.	67%	64%	63%
6	I have the tools and resources I need to do my job effectively.	79%	73%	71%
7	My supervisor treats me with dignity and respect.	90%	88%	88%
8	My supervisor gives me helpful feedback.	74%	70%	76%
9	I receive recognition for a job well done.	59%	56%	60%
10	A spirit of cooperation and teamwork exists in my work group.	77%	72%	73%
11	I know how my agency measures its success.	61%	51%	53%
12	My agency supports a diverse workforce.	82%	75%	74%
13	My agency helps me navigate change.	66%	57%	54%
14	I am encouraged to come up with better ways of doing things.	64%	56%	56%
15	At my job, I have the opportunity to make good use of my skills.	78%	73%	71%
16	At my workplace, I feel valued for who I am as a person.	71%	64%	63%
17	How satisfied are you with your flexibility?	84%	78%	74%
18	How satisfied are you with your mobility?	79%	77%	74%
19	In general, I'm satisfied with my job.	80%	72%	69%
20	I would recommend my agency as a great place to work.	74%	64%	61%

8. What challenges, if any, did your agency overcome related to teleworking? Please explain.

Mostly cultural challenges or resistance from either employees or managers. As time went on and people realized the possibility, it got much better. We really benefited from our previous efforts in the area of telework and the areas that already had a strong commitment in this area. It helped other divisions in the organization realize what is possible.

9. Please share lessons learned from your agency's experience with teleworking/remote working as it relates to long-term disruptions.

Teleworking and remote working has been vital to our continued delivery in many of the support functions. It has created some strain on the field staff, who feel like they were in the field with greater exposure than others. We worked hard to mitigate that to the best of our abilities; most of it is really just situational and there is not much you can do.

10. Please describe how your agency addresses re-entry to the worksite during and/or after a disruption that requires evacuation, remote work, etc.

The COVID-19 pandemic has changed the way we work. We have learned a great deal about our capacity to perform many of our functions through telework and technology and remained clear about many essential services that must be done in our facilities and at our worksites. We also know that during the peak of the pandemic we were able to delay or create workarounds for some services to help us minimize the spread of COVID-19 while serving customers. We have attempted to continue to use what we have learned to close gaps that still exist in our business processes and improve services and access as we continue to assess the impact of COVID-19 and its variants. To safely reopen, our plan included ongoing support of a workforce that may continue to accomplish business outcomes through telework, while identifying the work that must be done on-premises or in-person in the community. A combination of on-site and telework may be the best option for many lines of businesses and employees (i.e., a hybrid model). As we moved into this next stage of recovery and reopening, this means further analysis of work functions and services that continued remotely and those that need to take place at worksites, facilities, or in person in the community to close business gaps, improve services, increase access, and better serve Washington State. It meant engaging with employees to determine what is working, what can be improved, and what can be done to further our goal to reduce unnecessary commute trips and be an employer of choice. The fact that most of our workforce is now vaccinated provides additional opportunities. Having a vaccinated workforce makes an important difference for workplace safety. It was our foundation on which all other measures will build upon. WSDOT was required to continue to consider strategies where there are unvaccinated people or their vaccination status is unknown. Guiding principles were as follows:

- *Assess and prioritize business gaps, workflow barriers, and customer needs resulting from closures*

- *Assess what business objectives are being met through telework, flexible schedules, and technology and embed those practices in your agency culture*

- *Assess how guidelines changed by county or local public health jurisdiction*

- *Collect and measure data relevant to reopening*

11. What challenges does a hybrid work environment create for you and how do you address them?

12. Other than teleworking, what arrangement do you use to allocate workspace (e.g., hoteling, hybrid)? How does lease versus own impact your decisions and policies?

13. Has the pandemic caused you to rethink "modern workplace programs" such as infants at work?

Yes. We basically abandoned it and allowed people to work from home after an infant is born. We've also become more flexible with work hours and when work was accomplished. This was not always true for a new infant, but maybe early childhood, where the child was not yet in school. Families have appreciated this approach and the savings on childcare costs until they reach the age to go to school.

Learning and Development

1. How does your agency address remote training/learning and development?

We are just restarting in-person training as of April 2022. Remote training and learning has been our primary mode, which has allowed us to teach a broader audience as it is more accessible; however, you lose the team-building aspects that you might get in developing relationships face to face.

2. Please describe the systems, protocols, and policies your agency uses to ensure employees and contractors have the knowledge and skills needed to handle a disruption.

It varies some, but generally we try to plan for certain scenarios we think could disrupt our agency. For example, we've done exercises where we assumed an earthquake and then practiced our response by activating the EOC, etc. This allows us to train for a possible scenario and learn about how we might better respond before the situation occurs.

3. Does your agency provide resilience-related training? If yes, is the training internal or external? Does your agency have a training and exercise program for the emergency response and management program?

Yes. We had multiple versions. Some were from an outside person at the Department of Health who was a qualified psychologist in the field. We also adapted the Department of Defense's resiliency training to fit the needs of our organization.

4. Does your agency conduct training, drills, and exercises on its continuity of operations plan/disaster recovery plan, including response procedures and decision-making processes?

Yes.

5. Have you examined your training/professional development programs for their coverage of resilience?

We have chosen to take an ad hoc or on-demand approach to this by implementing training we feel is needed based on what we hear from employees.

Organizational Culture

1. What disruption did you experience that is now considered routine? How did the agency get to that point? Explain.

The pandemic. It's been a long road like most, and we are still not done. However, being flexible, adaptive, and self-aware of our culture has helped get to a point where we are today. We continue to provide a robust construction and maintenance program while providing vital ferry service to the state of Washington. Most of the people who support these workers collaborate from home or offices other than where they were before the pandemic.

2. Does your agency respond differently to a local disruption than it does a global disruption? Please explain.

Of course. We have protocols that implement either a regional or statewide EOC approach, depending on the situation.

3. What role, if any, does organizational culture play during a time of disruption?

Leadership plays one of the most vital parts and our leaders have grown a ton under the pandemic. They've shown they can be dynamic in their style of leading and showing trust toward their employees to get the work done. The construct of our strategic plan (see below) helped guide our approach.

4. How do employees learn your organization's culture?

   Through our leadership and development program and onboarding process.

5. How does your organizational culture enhance or limit your response to disruptions?

   Having a workforce that is prepared for change is best.

6. How does your agency's culture change, if at all, because of long-term disruptions? How does your agency interact with other transportation agencies, federal/state/local governmental entities, law enforcement, military, science organizations, etc., when responding to a disruption?

Workforce

1. How does management conduct welfare checks on employees during a disruption?

   We utilize local law enforcement, assuming you mean an employee we have not heard from in some time. This is only after we have tried the supervisor and emergency contacts.

2. How does your agency manage work priorities during a disruption?

   Through our executive team.

3. What practices does your agency use to address the human/emotional elements of a disruption (e.g., post-traumatic stress, compassion fatigue, loss, grief, depression, fear, anxiety, etc.)?

Employee assistance program and webinars. We also have mentorship and peer support groups that have been beneficial. Here is an example of a webinar we conducted to help employees.

4. How does your agency prepare its workforce for managing disruptions?

    Mostly training via the EOC construct along with exercises.

5. What pre-disruption planning or preparations occur in your agency to ensure the workforce knows what to do in the event of a disruption?

    We train for the most common disruptions (e.g., earthquake and fire).

6. What activities does your agency perform to manage and measure productivity and production management during a disruption?

    We utilize our management structure to ensure work is getting done.

7. How does your agency foster employee engagement during a disruption?

    In many cases similar to the way we have done in the past but with more of a virtual approach.

8. How would you describe the human cost of disruptions (e.g., overtime, burnout, supplies, equipment, and productivity)? What does your agency do to address this cost?

    We listen to our employees and try to respond to their needs and concerns.

9. Do you measure employee engagement? How do you leverage employee engagement information during a disruption?

    Yes. State Employee Engagement Survey.

10. How do you designate employees as essential workers during disruptions? Do you treat those workers differently with regards to your response?

    This is primarily outlined in our procedure documents; however, we can adjust based on mission need.

11. Do you have staff dedicated to managing or developing organizational resilience? Please explain.

    No, but it is an expectation that supervisors support employees who pursue this training.

Technology/Tools/Systems

1. In the face of cyberattacks, which/what systems are being "hardened"?

    Our people and IT infrastructure. We've invested more heavily in cybersecurity, both in our infrastructure and repurposing internal staff to support this ongoing threat.

2. How does your agency leverage technology to help manage disruptions?

    To the greatest extend possible within existing resources.

3. What is your agency's plan in the face of a technology-specific disruption?

    We do not have a robust approach to this.

4. What types of technology allow you to be flexible in your response?

    Cisco Always On and Teams.

5. What technology challenges do you face during a disruption?

    In the event we lose connectivity to the state network, the fall back is office.com. However, this is not ideal if you don't have access to some of the internal systems that require the individual to do their work. We have backup access points, which we test occasionally, but they are capped on how many people can utilize them.

6. What needs to be updated to be better prepared for future long-term disruptions?

    Improving how new employees interact with our organization upon their arrival. We've all been able to depend on our relationships to get things done—new employees don't have that. We work hard to create those relationships, but it is much harder given we are multiple years into the pandemic.

7. What skills and/or tools are needed during times of disruption?

    Planning and decision making.

8. What is the role of risk management during a disruption?

    It is an expectation of every manager and leader.

9. What tools are available to manage a disruption?

    It depends on the disruption and the associated needs in the response.

10. What role, if any, does contracting play during a disruption?

    This is important in some cases, especially when it comes to repair based on slides or other disruptions. We have emergency contract provisions that allow us to gain access to resources, which is helpful.

11.   How does your agency leverage asset management to assist with disruption response?

    This is addressed in our TAMP.

Safety

1. How do you ensure employees have the proper PPE when responding to a disruption?

    This was done via our procurement and safety offices, which worked together to distribute PPE.

2. How do you prepare employees for disruptions (e.g., power outage, severe weather event, natural disaster)?

    We give safety notices on how employees can prepare.

3. How do you address psychological safety under a disruption?

    Employee assistance program, webinars, and our peer support group.

4. How did you modify your work environment to ensure worker safety?

   By providing the proper PPE and protocols to keep employees safe.

5. What resources or support did you provide your employees during the disruption?

   The normal employee assistance program, webinars, and peer support groups. We encouraged employees to lean on each other to get through the pandemic and gave people space for some of that along the way.

Appendix F:
Workshop Agenda

NCHRP 20-68 – US Domestic Scan Program
Domestic Scan 21-01
Lessons of Agency Resilience During Periods of Disruption
Virtual Workshop
April 25, April 26, April 27, and April 28, 2022
10 a.m. – 6 p.m. Eastern
(9 a.m.-5 p.m. Central, 8 a.m.-4 p.m. Mountain, 7 a.m. -3 a.m. Pacific)
AGENDA

WEBEX VIRTUAL WORKSHOP LINK FOR ALL FOUR DAYS:

https://aroraandassociates.my.webex.com/aroraandassociates.my/j.php?MTID=m6e251f4f45dca2502f-944f4a9f917b5a

Monday, April 25, 2022, 10:00 a.m. Eastern Time (U.S. and Canada)

Occurs every day effective 4/25/2022 until 4/28/2022 from 10:00 a.m. to 6:00 p.m., (UTC-04:00) Eastern Time (U.S. and Canada)

Meeting number: 2632 529 9867

Password: XAgcF4kkF44 (92423455 from phones and video systems)

Join by phone

+1-650-479-3208 United States Toll

Access code: 263 252 99867

Monday 25-Apr	Day 1		
Time	**Session**	**Speaker**	**Moderator**
* 10:00 am- 11:00am ET (9:00 - 10:00 am CT, 8:00 - 9:00 am MT, 7:00 - 8:00 am PT)	Introduction --Principal Investigator --Team Chair --Self introduction for all participants	Harry Capers Amanda Holland	
*11:00am-1:00pm ET (10:00am -12:00pm CT, 9:00-11:0am MT, 8:00-10:00am PT)	Iowa DOT Presentation	Troy Jerman Linda Anderson Lee Wilkinson	Karen Bobo
*1:00pm - 1:30pm ET (12pm - 12:30pm CT, 11am-11:30am MT, 10am-10:30am PT)	Break		
*1:30pm - 5:30pm ET (12:30pm - 4:30pm CT, 11:30am - 3:30pm MT, 10:30am -2:30pm PT)	Vermont Agency of Transportation Presentation	Jayna Morse Mike Touchette Christine Hetzel	Lee Wilkinson
*5:30pm - 6:00pm ET (4:30pm 5:00pm CT, 3:30pm-4:00pm MT, 2:30pm-3:00pm PT)	Daily Wrap up (roundtable)	Amanda Holland Rick Smith	

Breakout Room 1 Ideaboardz link:
https://ideaboardz.com/for/Domestic%20Scan%202021-01%20Day%201%20Breakout%20Room%201/4445781

Breakout Room 2 Ideaboardz link:
https://ideaboardz.com/for/Domestic%20scan%202021-01%20Day%201%20breakout%20room%202/4445785

Breakout Room 3 Ideaboardz link:
https://ideaboardz.com/for/Domestic%20scan%202021-01%20Day%201%20breakout%20room%203/4445787

Tuesday 26-Apr	Day 2		
Time	Session	Speaker	Moderator
* 10:00 am- 12:00pm ET (9-11am CT, 8-10am MT, 7-9am PT)	Utah DOT presentation	Patrick Cowley	Jeff Pelton
* 12:00 am- 12:30pm ET (11:00am - 11:30am CT, 10:00am - 10:30 am MT, 9:00 - 9:30am PT)	Break		
*12:30pm - 2:30pm ET (11:30 am-1:30pm CT, 10:30am-12:30pm MT, 9:30-11:30am PT)	North Dakota DOT Presentation	Terra Miller Bowley Nikki Sackman	Brian Robinson
*2:30pm - 3:00pm ET (1:30pm - 2:00pm CT, 12:30 pm-1:00pm MT, 11:30am-12:00pm PT)	Break		
*3:00pm - 5:00pm ET (2:00pm - 4:00pm CT, 1:00pm-3:00pm MT, 12:00pm-2:00pm PT)	Ohio DOT Presentation	Charles Ash Meghan Altier Brian Brown	Troy L. Peterson
*5:00pm - 6:00pm ET (4:00pm - 5:00pm CT, 3:00pm-4:00pm MT, 2:00pm-3:00pm PT)	Daily Wrap up (roundtable)	Amanda Holland Rick Smith	

Breakout Room 1 Ideaboardz link:
https://ideaboardz.com/for/Domestic%20scan%2021-01%20Day%202%20breakout%20room%20 1/4445789

Wednesday 27-Apr	Day 3		
Time	Session	Speaker	Moderator
* 10:00 am- 12:00pm ET (9-11am CT, 8-10am MT, 7-9am PT)	DeLoitte Presentation	Britni Saunders Nicole Overley Rob Cary	Jayna Morse
* 12:00 am- 12:30pm ET (11:00am - 11:30am CT, 10:00am - 10:30 am MT, 9:00 - 9:30am PT)	Break		
*12:30pm - 2:30pm ET (11:30 am-1:30pm CT, 10:30am-12:30pm MT, 9:30-11:30am PT)	Washington State DOT Presentation	Jeff Pelton	Troy L. Peterson
*2:30pm - 3:00pm ET (1:30pm - 2:00pm CT, 12:30 pm-1:00pm MT, 11:30am-12:00pm PT)	Break		
*3:00pm - 5:00pm ET (2:00pm - 4:00pm CT, 1:00pm-3:00pm MT, 12:00pm-2:00pm PT)	Louisiana DOTD Presentation	Candace Rustad Belinda Barron Don Johnson	Karen A. Bobo
*5:00pm - 6:00pm ET (4:00pm - 5:00pm CT, 3:00pm-4:00pm MT, 2:00pm-3:00pm PT)	Daily Wrap up (roundtable)	Amanda Holland Rick Smith	

Breakout Room 1 Ideaboardz link:
https://ideaboardz.com/for/Domestic%20scan%2021-01%20Day%203%20breakout%20room%20 1/4452770

Thursday 28-Apr	Day 4		
Time	Session	Speaker	Moderator
* 10:00 am- 12:00pm ET (9-11am CT, 8-10am MT, 7-9am PT)	OrgShakers Presentation	Anna Butrico Andy Parsley Anya Clitheroe Lauren Kincaid	Jayna Morse
* 12:00 am- 12:30pm ET (11:00am - 11:30am CT, 10:00am - 10:30 am MT, 9:00 - 9:30am PT)	Break		
*12:30pm - 2:30pm ET (11:30 am-1:30pm CT, 10:30am-12:30pm MT, 9:30-11:30am PT)	George DOT Presentation	Brian Robinson Kyle Mote	Jeff Pelton
*2:30pm - 3:00pm ET (1:30pm - 2:00pm CT, 12:30 pm-1:00pm MT, 11:30am-12:00pm PT)	Break		
*3:00pm - 5:00pm ET (2:00pm - 4:00pm CT, 1:00pm-3:00pm MT, 12:00pm-2:00pm PT)	Group discussion		Amanda Holland Rick Smith
*5:00pm - 6:00pm ET (4:00pm - 5:00pm CT, 3:00pm-4:00pm MT, 2:00pm-3:00pm PT)	Daily Wrap up (roundtable)	Amanda Holland Rick Smith	

Breakout Room 1 Ideaboardz link:
https://ideaboardz.com/for/Domestic%20scan%2021-01%20Day%204%20breakout%20room%201/4445802

Breakout Room 2 Ideaboardz link:
https://ideaboardz.com/for/Domestic%20scan%2021-01%20Day%204%20breakout%20room%202/4445803

Breakout Room 3 Ideaboardz link:
https://ideaboardz.com/for/Domestic%20scan%2021-01%20Day%204%20breakout%20room%203/4445805

NCHRP 20-68 – US Domestic Scan Program
Domestic Scan 21-01
Lessons of Agency Resilience During Periods of Disruption
Final Team Meeting
April 29, 2022
AGENDA
10 a.m. – 5 p.m. Eastern
(9 a.m.-4 p.m. Central, 8 a.m.-3 p.m. Mountain, 7 a.m. -2 a.m. Pacific)

Webex meeting link:

https://aroraandassociates.my.webex.com/aroraandassociates.my/j.php?MTID=m63b2063598a15ff96c-c590184c8d751f

Meeting number: 2631 583 8081

Password: 2BJyYuMu3a3 (22599868 from phones and video systems)

Join by phone

+1-650-479-3208 United States Toll

Access code: 263 158 38081

29-Apr	TEAM ONLY	
Time	Session	Speaker
* 10:00 am- 10:30am ET (9am - 9:30am CT, 8am - 8:30am MT, 7am -7:30am PT)	*Principal Investigator Opeing comments *Team Chair and SME comments	Harry Capers Lee Wilkinson Rick Smith
*10:30am - 12:00pm ET (9:30am -11:00am CT, 8:30am -10:00am MT, 7:30am -9:00am PT)	Scan Team discussion and finalization of Significant Findings, Conclusions and Recommendations	Rick Smith Lee Wilkinson
12:00 pm - 12:30 pm ET (11:00am -11:30 am CT, 10:00am -10:30am MT, 9:00am -9:30am PT)	Break	
*12:30pm - 2:00pm ET (11:30am - 1:00pm CT, 10:30am - 12:00pm MT, 9:30am -11:00am PT)	Scan Team - Development of Report Outline	Rick Smith Lee Wilkinson
*2:00pm – 2:30pm ET (1:00pm - 1:30pm CT, 12:00pm -12:30pm MT, 11:00am-11:30am PT)	Break	
*2:30pm - 3:30pm ET (1:30pm -2:30pm CT, 12:30pm - 1:30pm MT, 11:30am - 12:30pm PT)	Scan Team - Development of Report Outline (continue)	Rick Smith Lee Wilkinson
*3:30pm - 4:45pm ET (2:30pm -3:45pm CT, 1:30pm - 2:45pm MT, 12:30pm - 1:45pm PT)	Scan Team - Development of Draft Dissemination Plan	Kirsten Seeber, CTC and Associates
*4:45pm - 5pm ET (3:45pm - 4pm CT, 2:45pm - 3pm MT, 1:45pm - 2pm PT)	Adjorn the final team meeting	Lee Wilkinson

Appendix G:
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Appendix H: Glossary

Compassion Fatigue

The physical and mental exhaustion and emotional withdrawal experienced by those who care for traumatized people over an extended period

Apathy or indifference toward the suffering of others as the result of overexposure to tragic news stories and images and the subsequent appeals for assistance (Merriam-Webster online)

Disruption

A break or interruption in the normal course or continuation of some activity, process, etc. (Merriam-Webster online)

For purpose of this scan, disruption affects the DOT workforce and HR practices

For purpose of this scan, disruptions can include but are not limited to:

- Weather events (e.g., hurricanes, tornados, heat waves, earthquakes, and freezing rains/ice storms)
- Economic (e.g., downturns, recessions, and upsweeps)
- Public health (e.g., pandemics, water contamination, and sewage)
- Technological (e.g., cybersecurity, outages, new systems, and system glitches)
- Societal (e.g., protests and riots)
- Mass system failure (e.g., equipment breakdown, and bridge failure)
- Workforce instability (e.g., unions on strike, layoffs, and mass retirement or resignation)
- Political (e.g., change in administration's priorities)

Disruptions may be local, statewide, regional, national, or global in scope

Individual Resilience

Ability to bounce back from adversity[18]

Resilience

The ability to recover quickly from illness, change, or misfortune; buoyancy (American Heritage dictionary online)

The 2009 AASHTO–TRB Transportation Hazards & Security Summit proposed a comprehensive definition of resilience: "The ability of a system to provide and maintain an acceptable level of service or functionality in the face of major shocks or disruptions to normal operations." From "AASHTO Understanding Transportation Resilience: A 2016-2018 Roadmap" (January 2017).

The ability to prepare for changing conditions and withstand, respond to, and recover rapidly from disruptions. From "FHWA Transportation System Resilience to Extreme Weather and Climate Change - Technical Staff"

18   BetterUp, Resilience in an age of uncertainty. Website: www.betterup.com

FHWA defines resilience as the "ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions."

Resilience-Oriented Agency

An organization able to prepare, plan for, manage, and recover from unexpected transportation system disruptions.[19]

Risk

"The potential for adverse effects from the occurrence of a particular hazardous event, which is derived from the combination of physical hazards, the exposure, and vulnerabilities" (The National Academy of Sciences, 2012)

"The positive or negative effects of uncertainty or variability upon agency objectives" (FHWA, 2013b)

Term

- Short-term – Less than three months' duration
- Mid-term – Three to nine months' duration
- Long-term – Over nine months' duration

Workforce Resilience

As a critical component of institutional capacity, workforce resilience includes both the staff mindset toward accepting and supporting agency resilience efforts and the physical and mental health of the workforce.[20]

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19   Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide. Page 7, National Academies of Sciences, Engineering, and Medicine 2021.
20   Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide. Page 8, National Academies of Sciences, Engineering, and Medicine 2021.