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# Utilizing the Work Zone Capability Maturity Framework to Improve Work Zone Management Capabilities and Process Review Efforts



U.S. Department of Transportation  
Federal Highway Administration

FHWA Work Zone Management Program



# Webinar Presenters

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- Jawad Paracha – FHWA Office of Operations
  - Work Zone Management Program Manger
- Jerry Ullman – Texas A&M Transportation Institute
  - Senior Research Engineer, Work Zone and Dynamic Signs
- Bill Oldenburg – New Hampshire Department of Transportation
  - Assistant Director of Project Development



# Webinar Agenda

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- Work Zone Capability Maturity Framework (WZ CMF) Background and Overview
- Using the WZ CMF to Improve Process Reviews
- New Hampshire DOT Experience with WZ CMF
- Work Zone CMF Workshop Deployment and Trends
- Future Opportunities and Resources



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# Work Zone Capability Maturity Framework Concept and Process



# Capability Maturity Frameworks

## Process Matters

Projects fail or do not achieve desired functionality for a variety of reasons unrelated to the technology

## Prioritizing the right actions

Is your agency ready?  
How would you know?  
What should you do next?

## Focus on the weakest link

What is holding the agency back in becoming a leader in this area?

## Capability Maturity Frameworks for Transportation Operations

### Process

- Adapted from software development world
- A consensus-driven consistent structured evaluation or assessment of a process.
- Guides an agency towards a higher level of implementation, standardization, and return on investment.

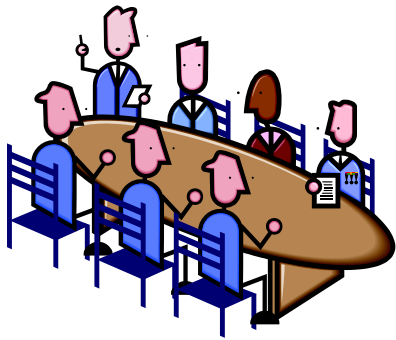
### Outcomes

- Clear identification of weak links in the process
- Prioritization of areas of improvement
- List of process-oriented actions that an agency can implement



# CMF Products

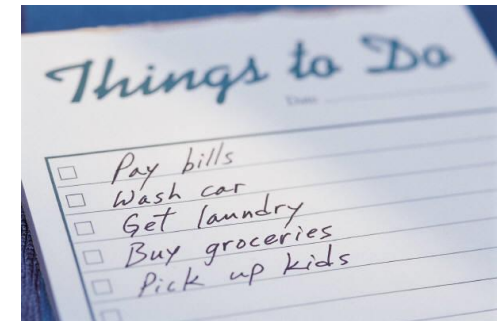
- Agency or regional findings related to capability
- Capability assessment by dimension
- Suggested actions for improvement



Consensus-based Assessment

Dimensions or Process Area	What is it	Level 1 Ad-Hoc, Low Level of Capability	Level 2	Level 3	Level 4 Optimized, High level of capability
Business Process	Plans, Programs, Budgets	Statement of capability	..	..	..
Systems & Tech	Approach to building systems	..	..	..	..
Perf. Measurement	Use of performance measures	..	..	..	..
Workforce	Improving capability of workforce	..	..	..	..
Culture	Changing culture and building champions	..	..	..	..
Collaboration	Improving working relationships	..	..	..	..

Current Capability



Prioritized Actions for Improvement



# CMF Outcomes

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- Jumpstarts the improvement process
  - Focus is on immediate weaknesses
  - Helps prioritize key organizational changes that can have major impact
- Provide justification for actions
  - Actions are based on sound rationale and a consistent assessment of capability
- Improve consistency and collaboration



# Program Area Frameworks

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- Traffic Incident Management
- Planned Special Events
- **Work Zone Management**
- Road Weather Management
- Traffic Signal Management
- Traffic Management

- More focused actions
- Bottom-up improvement in capability
- Engagement of program-specific stakeholders

[https://ops.fhwa.dot.gov/tsmoframeworktool/available\\_frameworks](https://ops.fhwa.dot.gov/tsmoframeworktool/available_frameworks)





# Work Zone Management CMF

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- Assesses the institutional capacity of an agency or a region to effectively manage the ***safety and mobility impacts*** that result from work zones
- Involves agency personnel from multiple divisions, field offices, and other stakeholders (law enforcement, contractors, other public-sector agencies, etc.)
- Goal is to identify a set of prioritized actions for improvement that address institutional barriers for effective work zone management



# WZM Dimensions

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Business Processes

Culture

Systems and  
Technology

Organization and  
Workforce

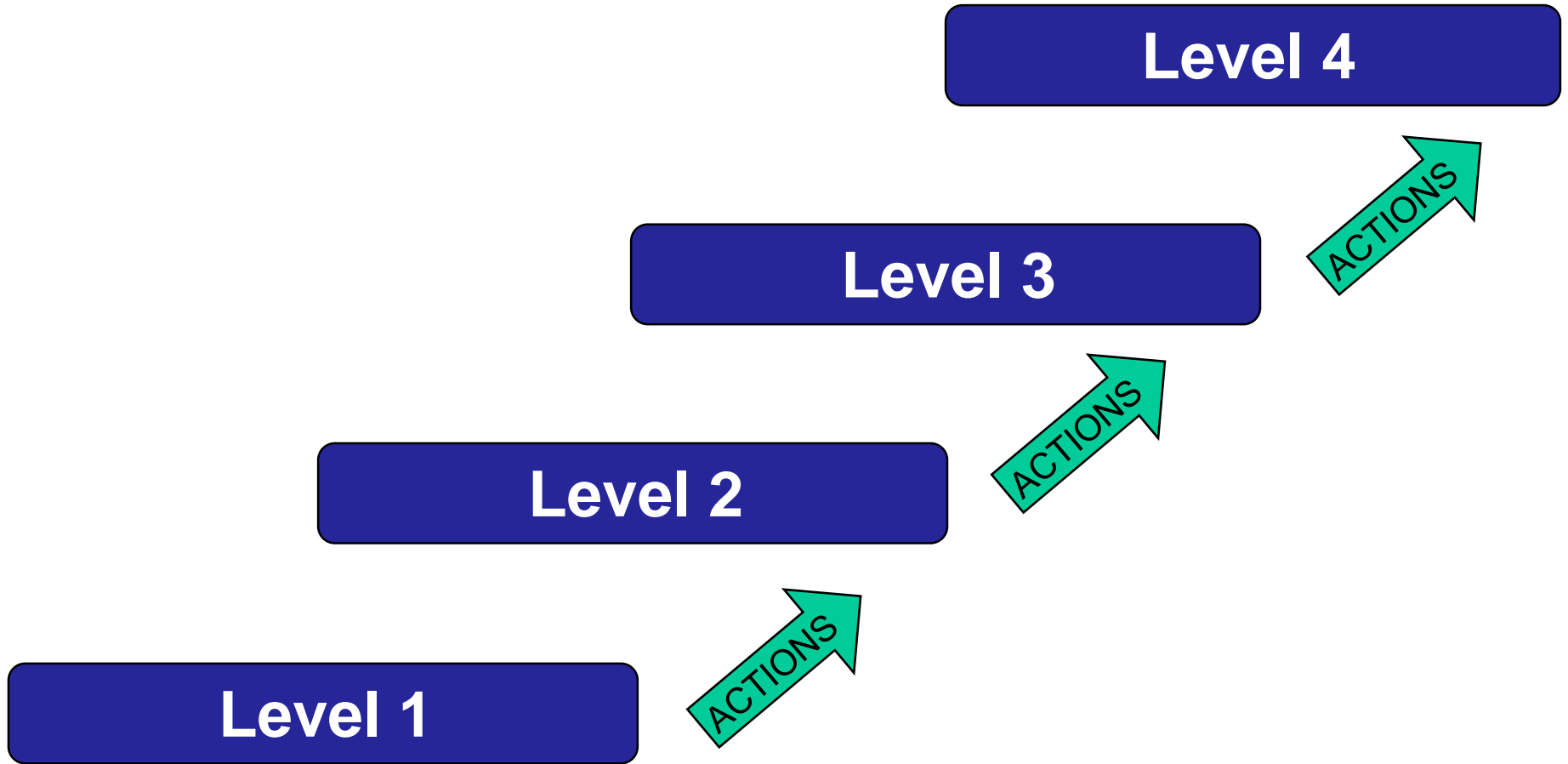
Performance  
Measurement

Collaboration



# Levels of WZM Capabilities

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# Online Tool

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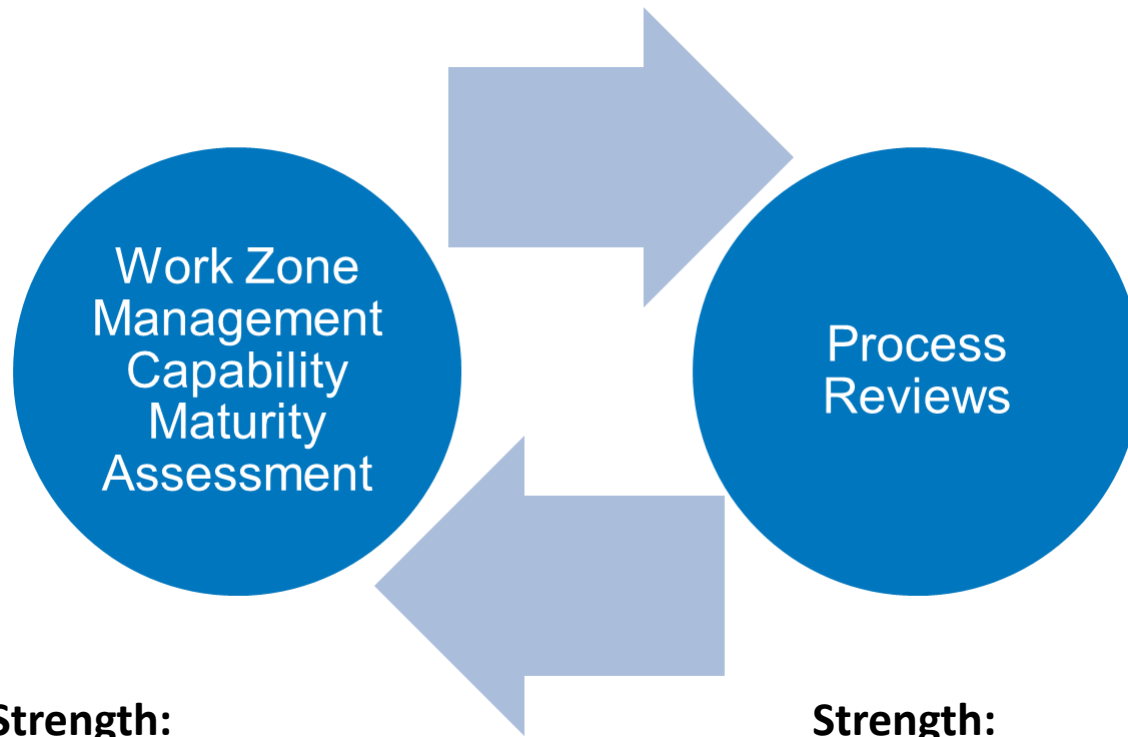
- Available at:  
<http://www.ops.fhwa.dot.gov/tsmoframeworktool/tool/wzm/>
- Full Assessment or a quick 1-Minute Assessment
- Answers saved for access from same computer
- Questions, answers, results, and actions can all be printed



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# Incorporating the Work Zone Capability Maturity Framework into Process Reviews





**Strength:**

- Assessing capabilities
- Identifying how best to improve capabilities

**Challenges:**

- Data needed to assess capabilities and improvement needs

**Strength:**

- Information/data gathering

**Challenges:**

- Assessing capabilities
- Figuring out how to improve capabilities



# Using the WZ CMF to Initiate a Process Review

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- Conduct a WZ CMF to assess current capabilities and identify any uncertainties about capabilities
- Identify information/data that are needed to improve understanding of capabilities
- Use process review to gather needed information and data
- Use WZ CMF action item list to tailor process review recommendations and roadmap for future process reviews



# Using the WZ CMF as a Process Review is Being Completed

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- Use the WZ CMF to verify whether the focus areas of the current process review targeted the dimensions/areas with improvement needs
- Align selected actions from WZ CMF with conclusions and next steps of process review
- Establish roadmap and goals for next process review(s)





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# New Hampshire Department of Transportation Experience

Bill Oldenburg– Assistant Director of Project Development



# NHDOT Experience

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- Workshop Motivation
  - Offer an objective outside view of our procedures.
  - Allow us to review our procedures against the requirements.
  - Allow us to development opportunities for improvement.
  - Allow us to prioritize our future bi-annual Process Reviews.
- Workshop Outcomes
  - Update our Procedures
  - Develop Guidance on which Projects are Reviewed
  - Develop Designer Guidance Documents



# NHDOT Experience

Business Processes	
1	Revisit, review, and update significance exemption list.
2	Update checklist of projects that must be brought before Work Zone Traffic Control Committee for a determination of significance.
3	Review traffic control plan review processes currently in place in other agency units, such as Districts, Utilities, and LPAs.
4	Develop guidance on developing presentations for Work Zone Traffic Control Committee significance determination meetings.
Organization and Workforce	
5	Develop guidance for designers on reasonable accommodation for pedestrians in work zones.
6	Utilize the Work Zone Traffic Control Committee to inform designers on newly available pedestrian accommodation guidance.
7	Review available work zone management training resources on Work Zone Safety Information Clearinghouse and utilize these materials to develop a comprehensive work zone management training module to set expectations for staff on work zone management requirements.
Performance Measurement	
8	Evaluate at which stage in the Project Development process each project is coming before the Work Zone Traffic Control Committee.
9	Improve the percentage of projects that are coming before Work Zone Traffic Control Committee sufficiently early in the Project Development process.
10	Investigate newly available work zone crash data to identify work zone crash trends.
11	Utilize new crash data and work zone crash data trends to develop work zone safety performance metrics and set performance goals.
Collaboration	
12	Finalize work zone speed limit determination flow chart in collaboration with Association of General Contractors.



# NHDOT 2018 Process Review

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1. Update Work Zone Mobility Policy (Policy)
2. Update Work Zone Safety and Mobility Policy and Implementation Guidelines. (Manual)



# NHDOT 2018 Process Review

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1. Revisit, review, and update significance exemption list (Item #1),
2. Update checklist of projects that must be brought before Work Zone Traffic Control Committee for a determination of significance. (Continued effort from our 2016 Self-Assessment)(Item #2),
3. Review traffic control plan review processes currently in place in other agency units, such as Districts, Utilities, and LPAs. (Item #3),
4. Develop guidance on developing presentations for Work Zone Traffic Control Committee significance determination meetings. (Item #4),
5. Develop guidance for designers on reasonable accommodation for pedestrians in work zones. (Continued effort from our 2016 Self-Assessment)(Item #5),



# NHDOT Experience

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## 2018 Process Review

- ✓ Business Processes
- ✓ Organization and Workforce
- ✓ Collaboration

## 2020 Process Review:

- ✓ Performance Measurement



# NHDOT Contact

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## Bill Oldenburg

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New Hampshire Department of Transportation

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# Work Zone Capability Maturity Framework Workshop Deployment





# Workshops Conducted to Date

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Missouri Department of Transportation

Florida Department of Transportation

Colorado Department of Transportation

Virginia Department of Transportation

Kansas Department of Transportation

Pennsylvania Turnpike Commission

Tennessee Department of Transportation

Kentucky Transportation Cabinet

Washington State Department of Transportation

Arkansas Department of Transportation

Arizona Department of Transportation

Iowa Department of Transportation

California Department of Transportation

Delaware Department of Transportation

New Mexico Department of Transportation

Vermont Agency of Transportation

Oklahoma Department of Transportation

Minnesota Department of Transportation

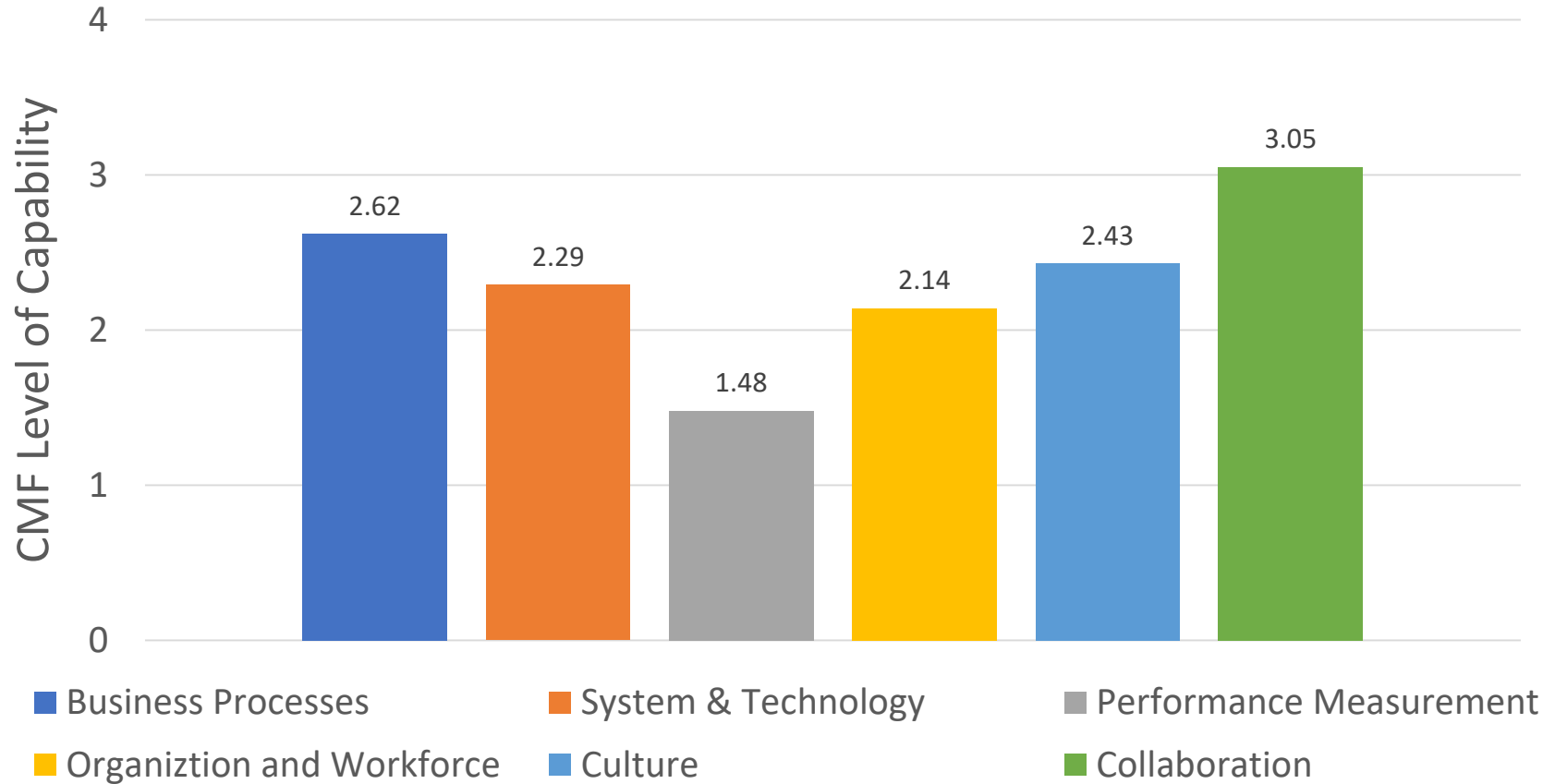
New Hampshire Department of Transportation

South Carolina Department of Transportation

Montana Department of Transportation



# Average CMF Scores



# Lowest Rated Questions

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- **Performance Measurement**
  - How well does your agency quantify WZM performance?
  - How are WZM performance measures used by your agency?
- **Culture**
  - What type of agency WZM outreach and reporting exists?



# Lowest Rated Questions (Continued)

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- **Organization and Workforce**

- How well are WZM knowledge, skills, and abilities developed amongst staff within the agency?
- How well is institutionalized WZM knowledge in various parts of the agency captured and shared?

- **Systems and Technology**

- How well does your agency assess and adopt new technology, procedures, and strategies to help meet WZM needs?



# Highest Rated Questions

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- **Collaboration**

- How does the agency utilize law enforcement for WZM needs?
- How does the agency consider private-sector input (e.g., contractors, affected businesses) when addressing WZM needs?
- How does the agency incorporate other stakeholders (general public, schools, business, emergency medical services, etc.) into the WZM process?



# Highest Rated Questions

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- **Culture**
  - How is WZM innovation encouraged within the agency?
- **Business Processes**
  - How well does your agency develop, implement, and evaluate transportation management plans (TMPs)?
- **Systems and Technology**
  - How does your agency apply existing technology already in place to address WZM needs?



# Commonly Selected Action Items

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- **Performance Measurement**
  - Identify outcome measures relative to mobility, safety, customer satisfaction, and/or work productivity/efficiency that are specified or implied in agency's work zone safety and mobility policy.
  - Identify available data sources and data collection methods needed to develop measures of interest to the agency.
  - Determine number of projects to include in assessment and select projects for which measures will be computed.
- **Culture**
  - Create a WZM steering committee of key agency champions and WZM core staff.



# Commonly Selected Action Items (Continued)

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- **Organization and Workforce**

- Assemble basic WZM training and capability-building activities available within agency and region.
- Identify organizational units within agency where critical WZM knowledge and skills are required.
- Develop a formal and ongoing training program on WZM that is offered and supported by the agency
- Develop a process for collecting and synthesizing de-briefing notes from major projects at a central location and share key lessons learned with staff in appropriate units.
- Regularly assess compiled lessons learned and determine which should be incorporated as best practices into agency standards, manuals, guidance, etc.





# Contact Information

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If you are interested in learning more about the WZ CMF, improving process review efforts using the WZ CMF, or hosting a WZ CMF + Process Review workshop:

**Jawad Paracha**

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Work Zone Management Program

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# Thank You!

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## Questions?

