

Are You Ready? Emergency Preparedness for Water Utilities



American Water Works Association
Pacific Northwest Section

AGENDA

- AWIA Section 2013
- Preparedness Culture
- Risk and Resilience Assessment
- Developing an Emergency Response Plan
- Mutual Aid and Partnerships
- Recent Emergencies
- Emergency Communications
- Training and Exercises
- Mitigation
- Funding Opportunities
- Closing, Q&A, Feedback

Recent Emergencies Impacting Water Utilities

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America's Water Infrastructure Act Section 2013: Risk and Resilience Assessments and Emergency Response Plan

Requires community drinking water systems serving more than 3,300 people to develop and update a risk and resilience assessment and emergency plan

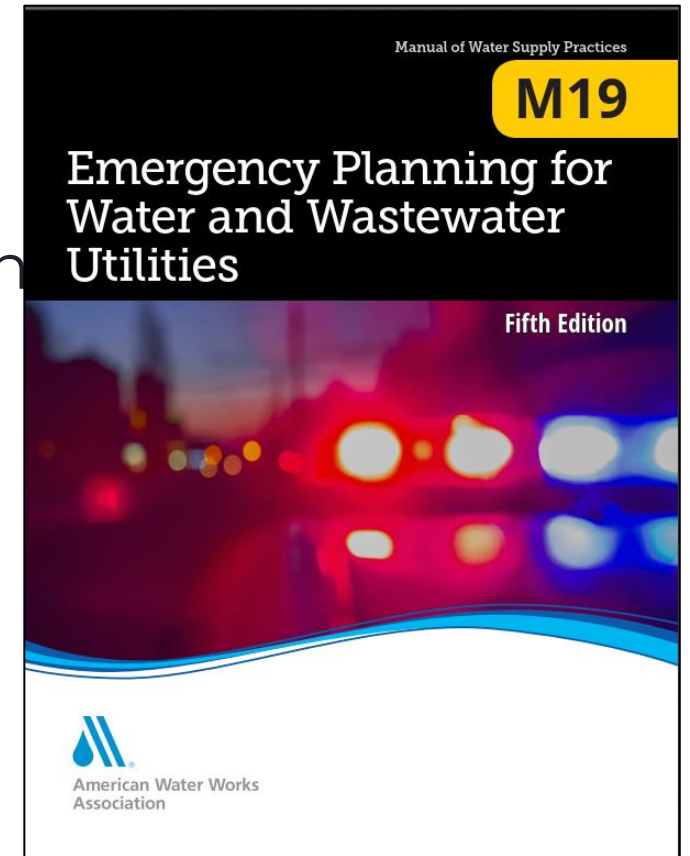
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Population Served	Previous RRA Deadline	Next 5-Year Submission Cycle RRA Deadline
≥100,000	March 31, 2020	March 31, 2025
50,000-99,999	December 31, 2020	December 31, 2025
3,301-49,999	June 30, 2021	June 30, 2026

Population Served	Previous ERP Deadline*	Next 5-Year Submission Cycle ERP Deadline*
≥100,000	September 30, 2020	September 30, 2025
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AWWA M19: Emergency Planning for Water and Wastewater Utilities

1. Preparedness Culture
2. Risk and Resilience Assessment
3. Developing an Emergency Response Plan
4. Mutual Aid and Partnerships
5. Emergency Communications
6. Training and Exercises
7. Mitigation



Preparedness Culture

Preparedness Culture:
When being prepared is highly valued



Preparedness Culture: When being prepared is highly valued

- ERP is kept current
- Staff are trained on their responsibilities
- Resources to implement the ERP are in budget
- Staff participate in emergency preparedness activities
- An explicit organizational commitment is made
- Process is in place to incorporate improvements identified
- Employee preparedness in the workplace and at home



Risk and Resilience Assessment

Reviewing, Revising, and Recertifying RRAs and ERPs

CWSs must review, revise where applicable, and re-certify their RRA and ERP to EPA every five years from the original deadlines specified in the law.

- Must sign and submit certification statement
 - *EPA website has “how to” guidance*
- Note: 5 years from date of **your original submission**
- Any changes to assets, threats or vulnerability?
- EPA recommends expand or bolster existing sections:
 - *Cybersecurity*
 - *Supply chain risk*
 - *Climate change*

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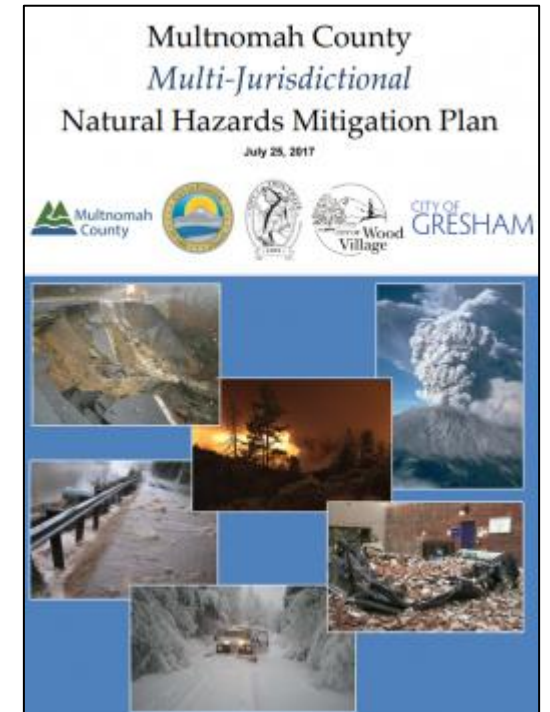
Risk and Resilience Assessment

RRA Overview



Risk = Threat Likelihood \times Vulnerability \times Consequence

- Threats
 - *Natural Hazards*
 - *Dependency and Proximity Hazards*
 - *Malevolent Threats*
 - Cybersecurity
- Likelihood
 - *Natural Hazards Mitigation Plan*
 - *EPA Baseline Info for Malevolent Acts*
- Consequence
 - \$
- Vulnerability
 - *Percent*



Risk and Resilience Assessment ANSI/AWWA J100 Process



Risk and Resilience Assessment

Tools and Resources

- RRA Methods
 - *ANSI/AWWA J100 Method*
 - *EPA's Small System Risk and Resilience Assessment Checklist*
 - *EPA Vulnerability Self Assessment Tool (VSAT)*
- Cybersecurity Assessment
 - *EPA's Water Sector Cybersecurity Evaluation Program (free!)*
 - *EPA's Cyber Assessment Tool (WCAT)*
 - *AWWA Cybersecurity Assessment Tool*
- Training
 - *AWWA Risk and Resilience Certification*
 - *More free training/Workshops on EPA Website*

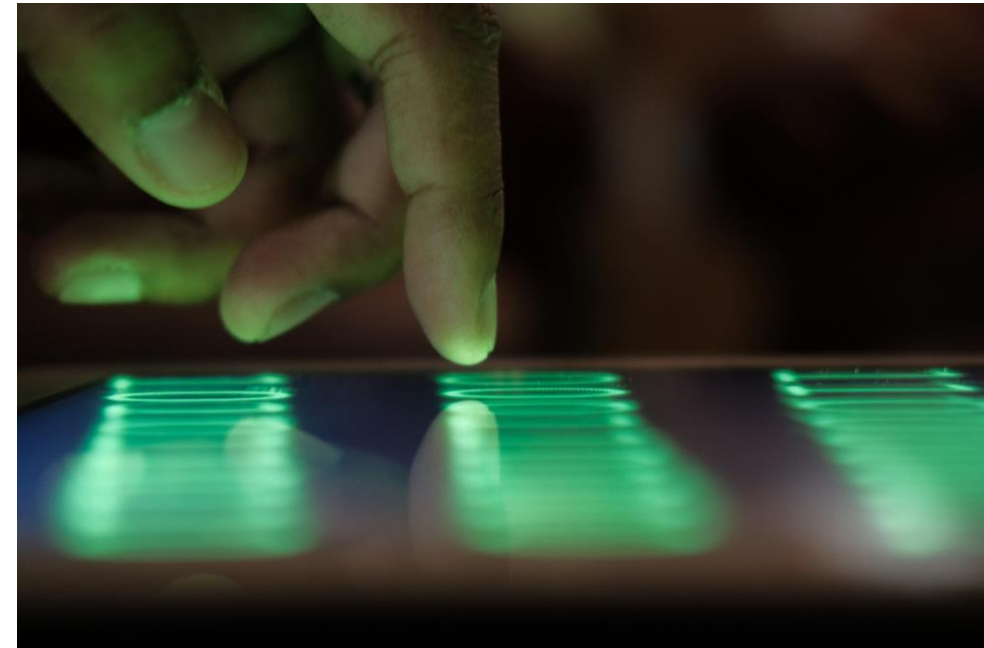
Cyber Security

— Nov 2023

— In the stretch of a few days, two municipal water facilities that serve more than 2 million residents in parts of Pennsylvania and Texas have reported network security breaches

“...facility had neglected to change a default manufacturer password.”

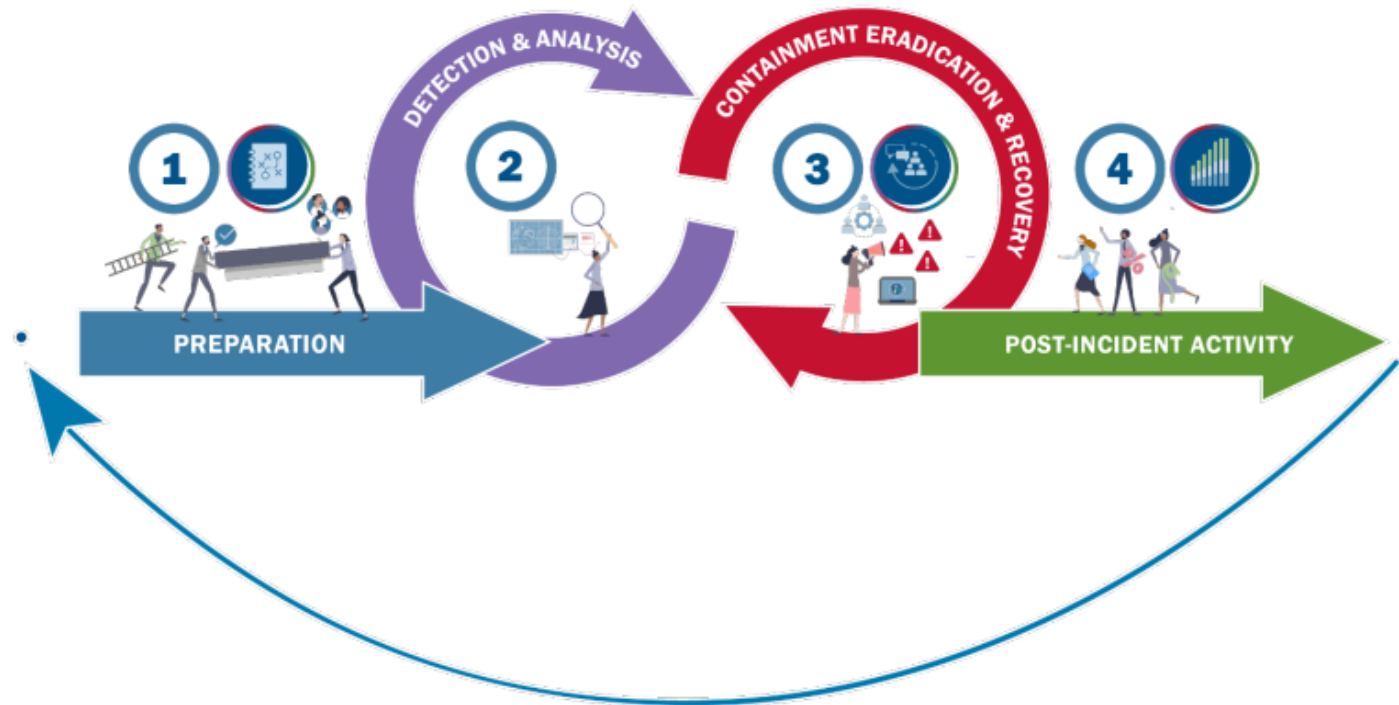
[Exploitation of Unitronics PLCs used in Water and Wastewater Systems | CISA](#)



Cyber Security

— January 2024

— The CISA, EPA and FBI recently released joint guidance to the water and wastewater sector, citing variable cyber maturity levels and potential cybersecurity solutions.



[Incident Response Guide: Water and Wastewater Sector \(rackcdn.com\)](https://www.rackcdn.com)



Network Complexity

1



System Maintenance

2



Network Segmentation

3



Data

4



Ransomware

5

OT SYSTEMS

System owners should ensure that OT systems that help water systems control valves and pumps and monitoring are properly protected through patching and proper network mapping. Human machine interfaces, through which operators typically control OT systems, should be a priority for securing.

IT/OT CONVERGENCE

Properly segmenting IT/OT systems, and ensuring that no part of OT systems connect directly to the internet, can greatly reduce the possibility of a successful attack upon Industrial Control Systems (ICS)/SCADA systems that support the supply water function.

IT SYSTEMS

Implementing cyber hygiene and best practices within IT networks can protect water systems from cyber attacks such as ransomware and data theft, and reduce the risk of lateral movement within water systems or networks.

RESOURCES

AVAILABLE RESOURCES INCLUDE: CISA's **Cyber Resource Hub** provides a range of free, immediately available cybersecurity resources. CISA's **Cyber Essentials Toolkit** for non technical leadership. **Securing Networking Devices** provides guidance on Segmenting and Segregating Networks. **Stopransomware.gov** contains best practices for preventing or responding to ransomware. The **Industrial Control Systems Joint Working Group (ICS JWG)** has links to trainings and resources related to the securing and safe operation of ICS systems. CISA also provides no cost **cybersecurity assessments**. The **WaterISAC** produces physical and cyber threat alerts and best practices specifically for the water and wastewater sector. The **AWWA's Security Guidance and Tool** supports the sector in implementing the NIST Cybersecurity Framework and use of Cybersecurity Guidance and Assessment Tool.



Top Cyber Actions for Securing Water Systems

TLP:CLEAR



- Reduce Exposure to the Public-Facing Internet
- Conduct Regular Cybersecurity Assessments
- Change Default Passwords Immediately
- Conduct an Inventory of Operational Technology/Information Technology Assets
- Develop and Exercise Cybersecurity Incident Response and Recovery Plans
- Backup OT/IT Systems
- Reduce Exposure to Vulnerabilities
- Conduct Cybersecurity Awareness Training

[Top Cyber Actions for Securing Water Systems \(cisa.gov\)](https://www.cisa.gov)

Cyber Security

- CISA: [Water and Wastewater Cybersecurity](#)
- EPA: [Cybersecurity for the Water Sector](#)
- WaterISAC: [Resource Center](#)
- American Water Works Association: [Cybersecurity and Guidance](#)

Developing an Emergency Response Plan

Developing an Emergency Response Plan



Figure 3-1 Interconnection of various preparedness plans

Developing an Emergency Response Plan

Seven Steps

1. Establish a team to develop and review the ERP
2. Review results of the risk assessment and other available materials
3. Schedule and hold workshops with the team
4. Coordinate with other partner agencies
5. Write/revise the ERP
6. Adopt and roll out the ERP to staff and provide training
7. Revise and update the ERP at least yearly and after each exercise or event

Mutual Aid and Partnerships

Mutual Aid and Partnerships

- Mutual Aid
 - *Preestablished agreements*
 - *Some states have statewide mutual aid legislation; however, some require an emergency proclamation for activation.*
- Identify key partnerships
 - *Other critical infrastructure operators*
 - *First responders*
 - *Community representatives*
 - *Local, state and federal agencies*
 - *WARN*



Mutual Aid and Partnerships Interdependent Agencies

- Fuel
- Electricity
- Spare parts
- Chemicals
- Trained/credentialed staff
- Pump and motor services
- Big box stores
 - (e.g., Walmart, Target, Home Depot)
- City Services
- County Services
- Police
- Fire
- Labs



Mutual Aid and Partnerships



Source: National WARN

Figure 4-1 Water/Wastewater Agency Response Network program map (as of November 2015)

Case Study – Remove? Salmonella Outbreak in Alamos, Colorado



[WARNs in Action - YouTube](#)

Recent Emergencies

Recent Emergencies Impacting Water Utilities

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Lessons Learned

- People
 - *Common experience*
 - *Supportive of one another*
 - *Strong institutional knowledge*
 - *Learned about customer knowledge e.g., Chlorine*
- Operations
 - *Equipment vulnerabilities*
 - *Emergency plans need updating*
 - *People were key to success*
 - *Technology gaps exposed*
 - *Fuel needs highlighted*

Have you been in an emergency event?

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Emergency Communications

Emergency communication begins before a crisis!

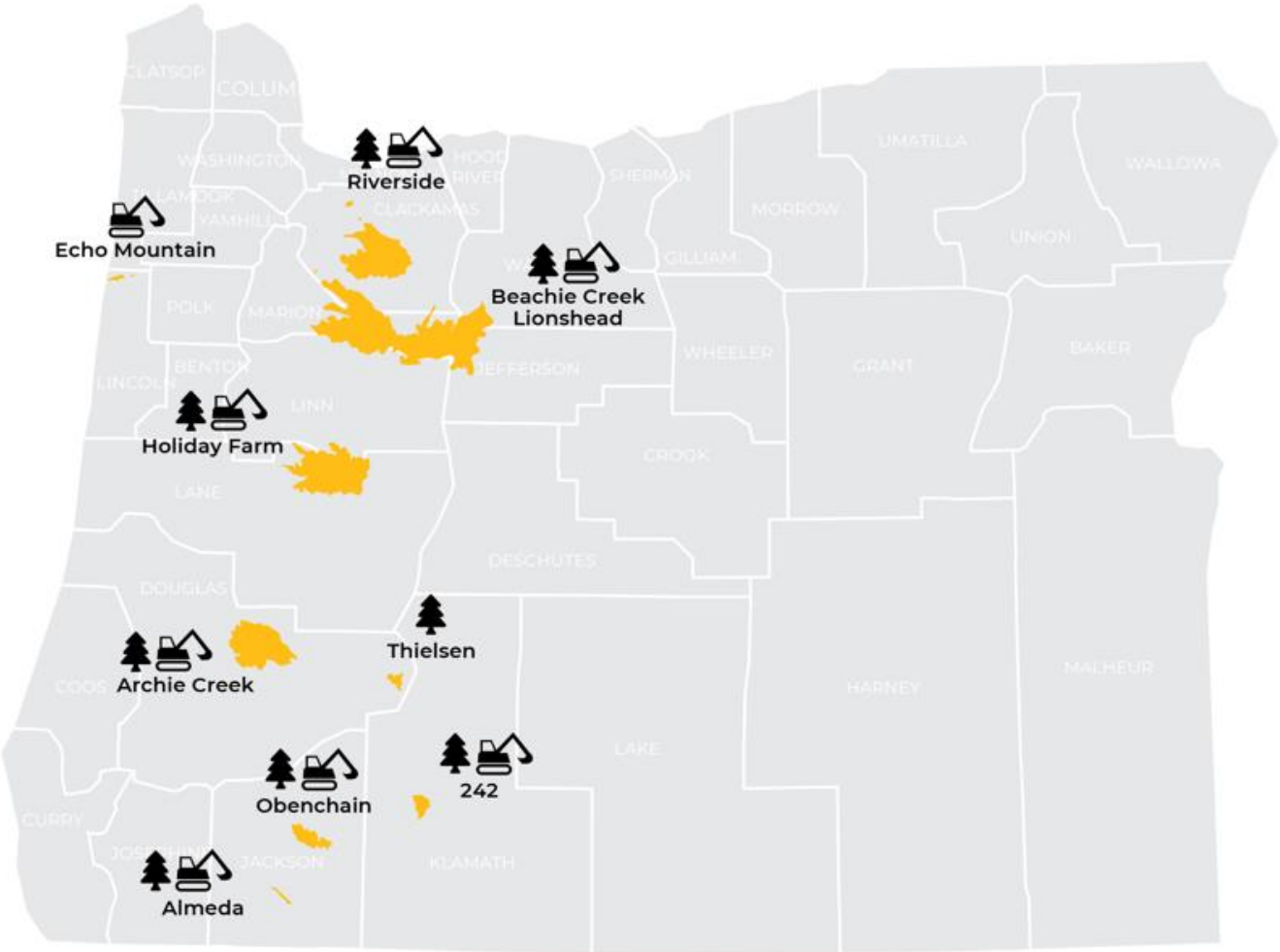
- Develop an emergency communications plan
- Create messaging templates talking points for staff
- Have translation services on-call
- Identify possible spokespeople – train!
- Maintain contact lists for customers, stakeholders, media, community and government partners.
- Maintain a utility web page/social media for providing updates quickly (could be hidden and ready to deploy)
- Prep field staff for how to respond to public
- Make sure your customers are prepared!

BEFORE THERE'S AN EMERGENCY



**Get ready.
Get water.**

Oregon Fires 2020: Scope and Scale



To lead this effort, Oregon Governor Kate Brown and the Wildfire Economic Recovery Council created a three-agency Debris Management Task Force, led by ODOT for their contract management expertise. **Initial total estimated cost: nearly \$660 million.**

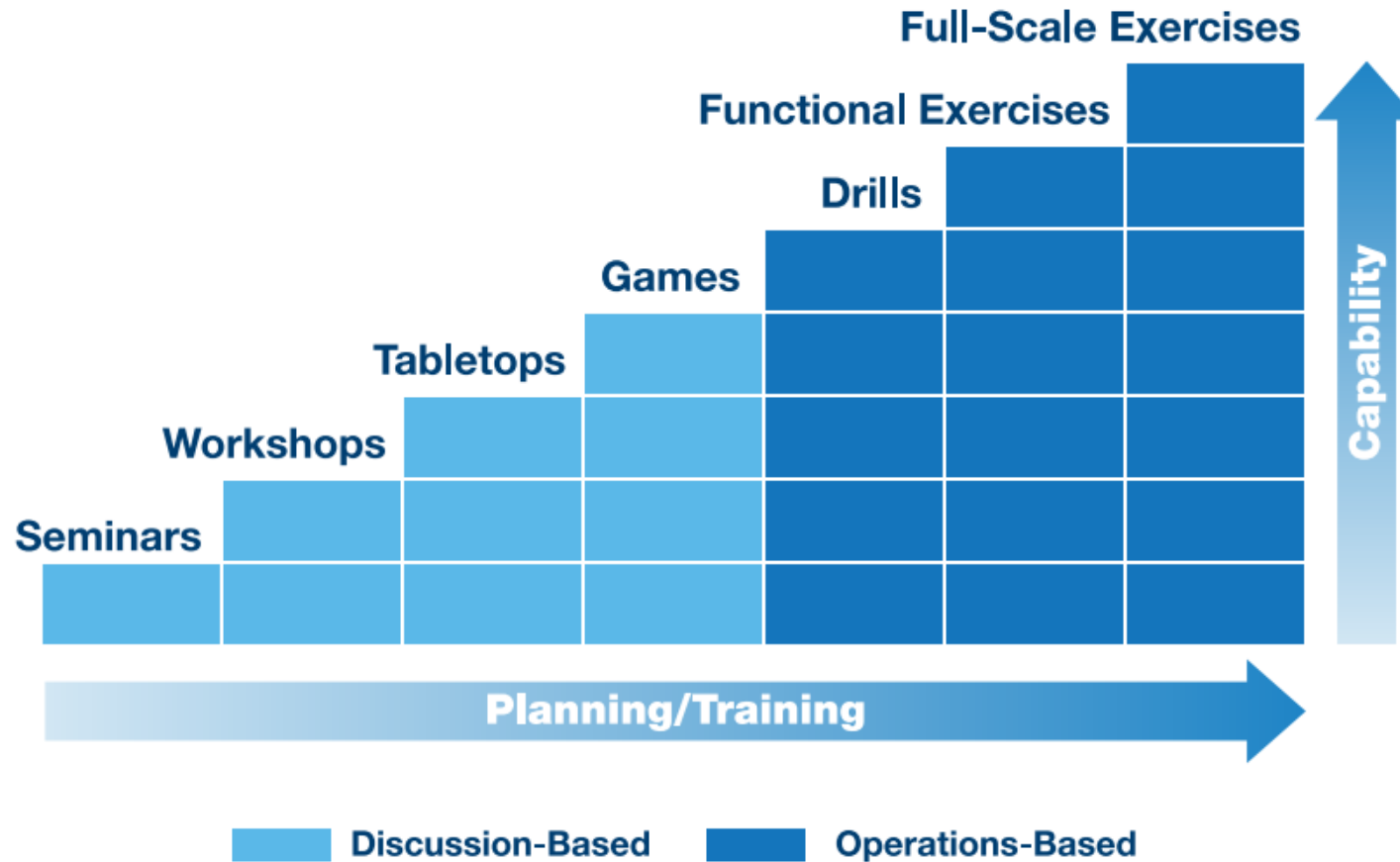


Strategic communication toolbox: a multi-channel approach

- Stakeholder and local coordination
- Traditional public info—talking points, press releases, one-pagers
- Education and local messengers
- Spokesperson strategy
- Media relations and relationships—earned content
- Digital strategy
- Email marketing
- Advanced marketing principles
- Graphic design and video capacity
- Content generation and strategic storytelling—owned content
- Data-informed content
- Paid content and paid targeting
- Equity lens and empathetic storytelling
- Events: virtual, in-person, roundtables, QA tours
- Strategic outreach and presentations
- Legislative relations
- Call center

Training and Exercises

Training and Exercises



Source: DHS (2007)

Figure 6-4 Discussion-based and operations-based exercises

Exercise Examples



Have you done a tabletop exercise or other?

Mitigation

Mitigation

- Long Term Plan to Reduce Risk from Specific Hazards
- Tie Mitigation Planning to Capital Improvements
- FEMA Hazard Mitigation Assistance Grant Programs



Fiscal Year 2024 Funding Opportunity

On Dec. 19, 2023, FEMA released a funding opportunity making available \$150 million for the fiscal year 2024 Safeguarding Tomorrow through On-going Risk Mitigation Revolving Loan Fund program (Safeguarding Tomorrow RLF).

FEMA will provide grants to eligible applicants to award low-interest loans to communities to reduce their vulnerability to disasters, foster greater resilience and reduce disaster impacts.

The program's capitalization grants provide low-interest loans to local governments most in need of financial assistance, including low-income geographic areas and underserved communities.

Grants

Oregon Emergency Management:

- [Oregon Office of Emergency Management : Hazard Mitigation Assistance : Grants : State of Oregon](#)
- [Oregon Office of Emergency Management : State Preparedness and Incident Response Equipment \(SPIRE\) Grant Program : Grants : State of Oregon](#)
- [Oregon Office of Emergency Management : Fuel Storage Facility Compatibility Fund Grant : Grants : State of Oregon](#) This program funds the installation of emergency generator connectors at fuel facilities that use card lock technology. The generator connectors will allow publically-owned generators to be connected in times of emergency, to provide fueling for life-saving and first responder needs.
- [Oregon Department of Emergency Management : Homeland Security Grant Program : Grants : State of Oregon \(State Homeland Security Program\)](#)
- [SPIRE_Guidance.pdf \(oregon.gov\)](#)

Oregon Health Authority

- [Oregon Health Authority : Infrastructure Projects : Drinking Water State Revolving Fund : State of Oregon](#)

Federal Grants:

- [www.epa.gov/fedfunds](#): Federal funding for water/wastewater utilities in natural disasters (side by side comparison of grants: [Side by Side Comparison of Funds | US EPA](#))
- [\(BRIC\) grant](#): Building Resilient Infrastructure and Communities
- [CyberGrants | CISA](#)

Resources

- AWIA: <https://www.epa.gov/waterresilience/awia-section-2013>
- EPA: <https://www.epa.gov/waterutilityresponse>
- AWWA: <https://www.awwa.org/Resources-Tools/Resource-Topics/Risk-Resilience/Emergency-Preparedness>
- WARN
 - OR: <https://orwarn.org/default.aspx>
 - WA: <https://www.wawarn.org/>
 - ID: <https://www.idwarn.org/>
- Regional Water Providers Consortium: <https://www.regionalh2o.org/>

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Questions, Comments, Feedback



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