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Strategic Foresight Initiative



Guidebook

Foresight Applications for Emergency Managers

April 2024



FEMA

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Overview

Guidebook Purpose

The emergency management field is facing an era of unprecedented change and uncertainty. As we strive to foster resilience in our teams, communities, and the Nation at large, foresight provides an invaluable framework for systematically, creatively, and boldly accounting for the unknown. This guidebook is for emergency management organizations at every scale. It describes methodologies of strategic foresight, including opportunities for integrating futures-thinking into emergency management planning workflows. It provides concrete examples from the Strategic Foresight 2050 Initiative executed by FEMA with the intent of sharing these approaches and their application with the broader emergency management community. The Guidebook is the backbone for the Strategic Foresight 2050 Toolkit, which includes resources designed to help emergency management organizations leverage foresight methods to enhance their strategic planning and long-term decision making. The content included here is intended to provide a starting place for strategic foresight initiatives; it can be adjusted and adapted to best serve your organizations capacity and priorities.

What is Strategic Foresight?

Strategic foresight is a multidisciplinary approach to understanding and anticipating future trends, challenges, and opportunities to inform decision-making and shape long-term strategy. Foresight initiatives leverage imaginative thinking to account for uncertainty in establishing long-term organizational postures and investments. Through implementing collaborative processes, targeted research, and creative mindsets, foresight practitioners anticipate future possibilities and make strategic decisions in a rapidly changing world.¹



Foresight is not about predicting the future; it's about minimizing surprise.”

-Karl Schroeder, Author and Futurist

The U.S. Air Force operationalized one of the first large-scale foresight initiatives in the 1950s. Nuclear developments during the Cold War challenged military strategists to navigate enormous uncertainty in their planning. Through scenario-based planning, the Air Force identified pathways to mitigate risk and determine priorities in a novel and rapidly evolving military landscape. Since the mid-20th century, the tools of foresight have been leveraged by thought leaders across the world,

¹ [“OMB Circular No. A-11 Section 230” 2023. Office of Management and Budget \(whitehouse.gov\)](#)

including the Intergovernmental Panel on Climate Change (IPCC),² the World Economic Forum,³ the U.S. Coast Guard,⁴ and the North Atlantic Treaty Organization (NATO).⁵

Why is Foresight Important?

Strategic foresight holds an important role in the emergency managers' toolkit, serving as a linchpin for effective preparedness and response. By systematically *scanning the horizon* for emerging threats, technological advancements, and societal shifts, emergency managers can enhance their capacity to anticipate and mitigate a robust portfolio of potential risks before they materialize as emergencies. This proactive stance not only bolsters community resilience but also facilitates the efficient allocation of resources and development of adaptive strategies. Furthermore, strategic foresight fosters a culture of continuous improvement and learning, ensuring that emergency response strategies remain agile and effective in the face of evolving threats. In pairing systematic monitoring with imaginative thinking, strategic foresight enables emergency managers to safeguard communities in the face of complex uncertainty.

² [“Climate Change 2023: Synthesis Report.” Intergovernmental Panel on Climate Change \(IPCC.ch\).](#)

³ [“Global Risks Report 2023.” World Economic Forum \(weforum.org\).](#)

⁴ [“Activities and Results from U.S. Coast Guard Project Evergreen V.” 2022. RAND Corporation \(RAND.org\).](#)

⁵ [“Strategic Foresight Analysis 2023.” NATO \(NATO.int\).](#)

Phases of Foresight

The discipline of foresight offers emergency managers a suite of tools to employ futures thinking across their work portfolios. These tools are far-reaching, and their usefulness is not dependent on comprehensive application of a foresight protocol. Rather, each of the steps described below offers a pathway into understanding the present and imagining the future. When applied in succession as described, these steps systematically account for the past, anticipate change, imagine the future, and assess risk to inform strategic planning initiatives. In isolation, these exercises can add value to any planning initiative concerned with change, risk, and uncertainty. The objectives, needs, and scope of a project should inform what included activities are applied to leverage future thinking.

There are many approaches and frameworks used to execute strategic foresight. Figure 1 presents a streamlined scheme of foresight phases and associated activities relevant to the field of emergency management and executed in FEMA's Strategic Foresight 2050 initiative. These phases include framing, scanning, forecasting, workshoping, and reporting. A worksheet to guide planning the implementation of foresight in your organization can be found in [Appendix A](#).

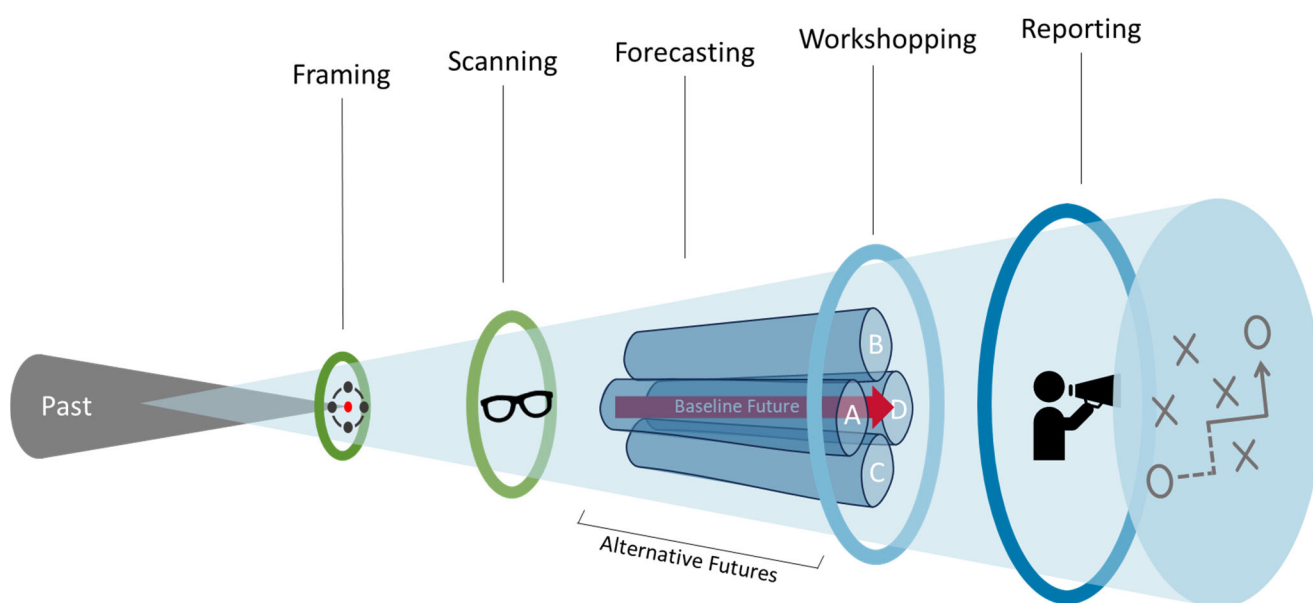


Figure 1. Closely adapted from Houston Foresight – Hines, Bishop, and Worrell, the cone of uncertainty outlines the sequential phases of a strategic foresight initiative.

1. Framing

The initial phase where the scope and boundaries of the strategic foresight exercise are established. It involves defining the purpose, objectives, and priorities for the foresight initiative. This phase sets the foundation for the subsequent steps in the strategic foresight process.

2. Scanning

The process of identifying signals of external change. This phase involves conducting environmental scans to identify current trends, emerging issues, and potential drivers of change. The goal is to understand the evolving landscape in which the organization operates.

3. Forecasting

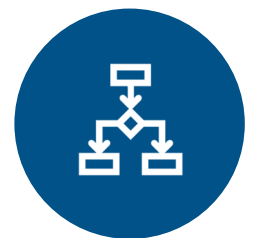
The phase where future scenarios are developed based on the signals and insights gathered during scanning. This involves imagining a variety of potential developments, trends, and uncertainties that could impact the organization or domain. Forecasting aids in creating a range of plausible futures that can inform strategic planning.

4. Workshopping

Workshopping is a collaborative and participatory phase where stakeholders come together to explore and discuss projected scenarios. Included stakeholders will depend on the objectives of strategic foresight exercise. This phase is generative and includes highly interactive activities. Workshopping leverages diverse perspectives, insights, and expertise to generate robust data and ensure rigor in the strategic foresight process.

5. Reporting

The reporting phase documents and communicates outcomes of the strategic foresight exercise. This includes synthesizing insights gained from previous phases, outlining key findings, recommending strategies, and identifying implications for decision-making within the organization. The method of reporting will depend on organizational context, audience, and desired impact.



Framing & Scanning

Through framing and scanning, a foresight practitioner defines an area of interest, gathers data to describe its present, and explores foreshadowing of change. These initial steps establish the bounds for imaginative thinking later in the process, ensuring process outcomes are useful.

Defining the Domain

As every domain has a future, foresight can be applied to any planning initiative. Framing the scope of a foresight project might include establishing geographic boundaries or articulating key questions or topic areas. Locating present conditions within their historical context may also be a useful component of this effort. The scale of the defined scope informs what frameworks and approaches are most useful throughout the foresight process. Through the Strategic Foresight 2050 initiative, the Office of Policy and Program Analysis developed Current Trend Papers to frame and explore key issues. These papers are included in the Strategic Foresight 2050 Toolkit.

Signals and Drivers of Change

In the realm of emergency management, being prepared for the future requires more than just reacting to current challenges—it demands a keen understanding of the subtle cues and powerful forces that shape the evolving landscape. Foresight identifies *signals* and *drivers* as tools for perceiving, anticipating, and interpreting the dynamic course of change.

Signals

Signals are early whispers of change—indicators that precede major shifts in the emergency management landscape. They do not significantly impact the present, but they hold potential for monumentally shifting the future. They may be an emerging trend, a behavioral shift, or a technological advance. Monitoring these cues provides an early warning system, enabling proactive response and informed decision-making.

Drivers

Drivers are the forces that propel and shape change in emergency management. These can be social, technological, economic, environmental, or political factors that exert influence on the direction and intensity of developments. Understanding these drivers is pivotal for crafting resilient strategies that stand robust in the face of evolving challenges.

FEMA's Strategic Foresight 2050 initiative employed the Social, Technological, Economic, Environmental, and Political Factor (STEEP) framework to identify significant signals and drivers of change. The STEEP framework is one of many tools that can guide a systematic assessment of trends, adding rigor to the scanning phase.

Forecasting

Forecasting is the development of plausible and varied future scenarios. It is not predicting, but rather narrating a wide range of potential future conditions. This iterative imagining of potential futures strives to encompass the extensive realm of uncertainty around future change. The key requirement of successful forecasting is imagination. The uncertainty facing emergency management is vast, and an effective tool for preparing for such unknowns is unhindered creativity in imagining the realm of the possible.

Engaging in forecasting can take many forms. Developed scenarios can serve as conversation starters for a team, providing a foundation as participants begin to imagine how their portfolios or roles may change over time. Teams may also collaborate to develop scenarios, employing their understanding of trends in the present to imagine what the future may hold.

A suite of future scenarios may be built around a *baseline future*, or a scenario developed from the strongest present indicators of change. This baseline represents a future with few unforeseen variables and acts as a starting place in imagining more unpredictable and deviating futures.

The Strategic Foresight 2050 initiative developed four scenarios of the emergency management landscape in 2050 (see Appendix B for methodology). The scenario narratives were crafted to evoke a sense of “living” in these hypothetical worlds, pushing readers to engage meaningfully with the challenges and opportunities inherent in each potential future. The complete scenario narratives are included in the Strategic Foresight 2050 Toolkit. Summaries are provided below.

Scenario A. Net Zero Revolution

Through a combination of assertive policies and market-driven innovations, the nation aligns with global efforts to reach net-zero emissions by mid-century, concurrently meeting the Sustainable Development Goals. This proactive approach positions the world to avert many, though not all, of the perilous consequences of climate change. Success is underpinned by a commitment to inclusive and equitable policymaking. The U.S. experiences a larger, older, better-educated, more diverse, and affluent population, reaping the benefits of a sustainable society. However, this shift comes at considerable public cost and accelerates the decline of certain industries.

Scenario B. Fragmented Futures

Rising inequity in the United States hampers economic growth, heightens poverty, and exposes communities to climate-related disasters. Crime and civil unrest become pervasive nationwide, straining social cohesion and eroding trust in government. A sudden decline in federal revenue prompts Congress to enact austerity budgets, worsening challenges for vulnerable populations. Resource constraints impede effective government responses to emerging threats. Despite these challenges, wealthier segments of society flourish and all Americans benefit from advances in 3-D printing, autonomous vehicles, and gene editing.

Scenario C. Transnational Tensions

The era of American exceptionalism concludes as population, economic growth, and innovation stall. Global rivals outpace the U.S. in economic, technological, and political leadership, while former allies drift away. Escalating damages from extreme weather strain resources, hindering both adaptation and the shift to cleaner energy. Widespread public mistrust in government is fueled by misinformation, social program cuts, and a lack of a clear vision for economic resurgence.

Scenario D. Going for Growth

The world grapples with escalating climate consequences due to prolonged fossil fuel reliance, exceeding Paris Agreement targets. Heatwaves intensify, coastal flooding becomes regular, and hurricanes displace communities. Economic prosperity thrives on innovation, immigration, and technology, yet traditional industries suffer, creating local economic disparities. Health advancements enhance the aging population's well-being. Technology companies operate freely, raising privacy concerns. The U.S. geopolitical influence grows through global economic success and free trade agreements. The intricate balance between global and regional priorities emerges in conflicts over federal policies, highlighting the evolving American landscape's complexities.

Workshopping

Workshopping incorporates the value of collaborative thinking and co-creation into foresight. Any structure and scope of futures thinking can hold value. However, planning intentional space to gather stakeholders, facilitate rigorous discussion, and build shared understanding of priorities looking to the far-term is an invaluable tool in informing strategic planning initiatives. Foresight workshopping aims to cultivate an innovative and adaptive forward-looking culture within the emergency management enterprise.

Foresight workshops serve as a platform to encourage meaningful dialogue among participants, fostering knowledge exchange and broadening perspectives. The framework of foresight provides a key value-add to collaborative planning in its focus on imagination. In analyzing the September 11 terrorist attacks, the 9/11 Commission Report articulated that “the most important failure was one of imagination.”⁶ The workshopping phase challenges planners to collectively think big, and including many relevant voices in these discussions augments the creative capacity of the group.



The most important failure was one of imagination.”

-Executive Summary, The 9/11 Commission Report

Workshops can have varied scopes and objectives depending on organizational needs. Through workshopping, a team might use relevant signals and drivers to describe a suite of future scenarios, leveraging their diversity of experience to amplify imaginative thinking. A workshop can also use pre-developed scenarios to jump-start participant thinking on the implications of change, cultivating conversation on how the team can evolve their priorities to meet a shifting context. Finally, workshops can play a crucial role in delivering rigorous reports on emerging trends, opportunities, and mission impacts to leadership.

To support your exploration of foresight workshopping, this toolkit includes an “Executing a Workshop Guide” to help frame process planning. Additionally, this section provides an overview of the activities conducted in FEMA’s Strategic Foresight 2050 workshops as well as brief instructions for replicating them in other contexts. These activities can be adjusted or adapted to best meet users’ capacity and needs. FEMA’s workshops used the scenarios included in the toolkit to foster conversation on emergency management’s future and direct participant ideation around personal and organizational capacities to foster resilience in the face of change.

⁶ [“9/11 Commission Report Executive Summary” 2004. National Commission of Terrorist Attacks Upon the United States \(unt.edu\).](https://www.fema.gov/9-11-commission-report-executive-summary)

Executing a Workshop Guide

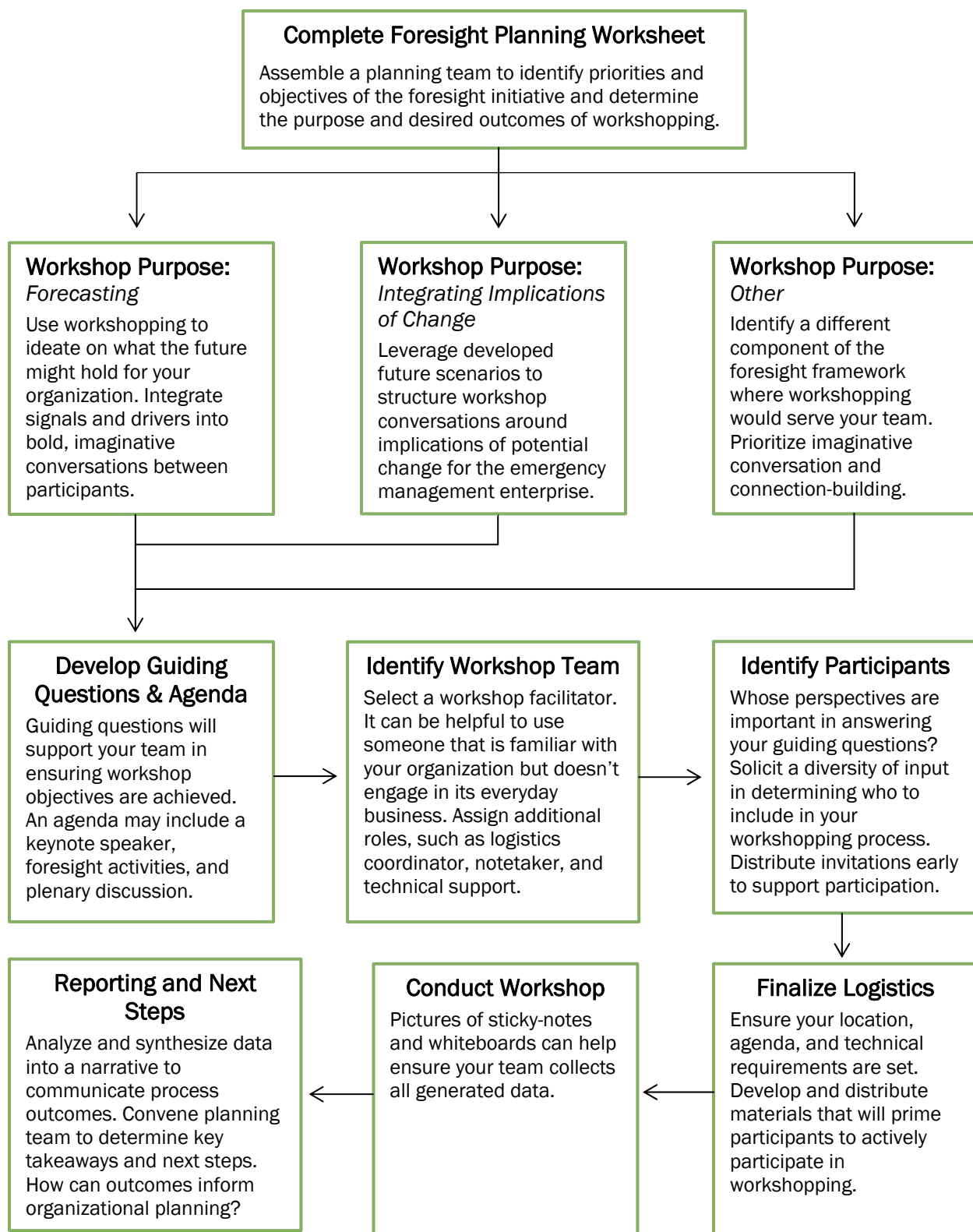


Figure 2. Process flow chart for executing a foresight workshop to achieve program objectives.

Workshop Exercise – *Focus on the Future*

The “Focus on the Future” exercise introduces participants to the process of thinking long-term, challenging them to confront their default perspectives about the future and their role within it.

Step 1: Identify Statements About the Future to Pose to Participants

Draft a series of user-friendly statements about the future. Examples of potential statements include:

- “The future is unknowable.”
- “The threats emergency managers will face in the future will be similar to those of today.”
- “In 2050, my organization will be better equipped to fulfill its emergency management mission.”
- “As an emergency manager, my focus should be on the real challenges we face today, not hypothetical challenges in the distant future.”

Step 2: Display Statements

Share each statement with participants one at a time. It may be helpful to simultaneously display the statement on a screen, board, or similar and read the statement out loud.

Step 3: Facilitate Participant Voting

Ask participants to briefly express their level of agreement with each statement. One way to accomplish this is using fist to five voting, using a raised hand to vote as depicted in Figure 3.

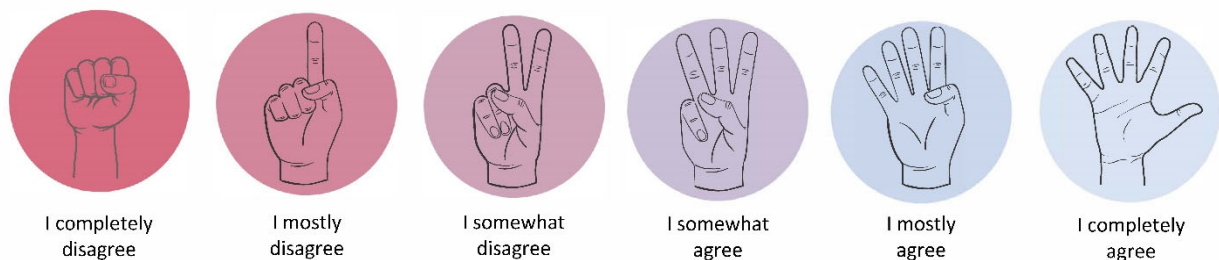


Figure 3. Fist to five voting allows participants to communicate their disagreement or agreement.⁷

Step 4: Discuss

Call on participants to explain their vote. Include both voters with extreme (i.e., fist or five fingers) and voters with more moderate opinions (i.e., three fingers). This enables participants to hear multiple perspectives on the future of emergency management and the role and value of foresight.

⁷ “Pedagogy that Aids Transition in Higher-Ed Students.” PATHS, York University ([Opentextbooks.yorku.ca](https://opentextbooks.yorku.ca/))

Workshop Exercise – *Futures Wheel*

The “Futures Wheel” exercise is a powerful tool for visualizing the potential consequences of a particular scenario or trend. In thinking systematically about the future and anticipating a range of possibilities, participants explore the direct and indirect outcomes that may arise as a scenario plays out.

Step 1: Identify Significant Implications

Ask participants to identify the most significant implications of the assigned scenario for the field of emergency management. These could be changes in technology, society, the environment, or any other factor they deem significant.

Step 2: Place the Scenario or Driver in the Center

Draw a circle in the center of your poster, whiteboard, or similar and write the name of the chosen scenario or driver of change inside it. This represents the core element you're exploring. Figure 4 illustrates how participants will build the wheel from this starting point.

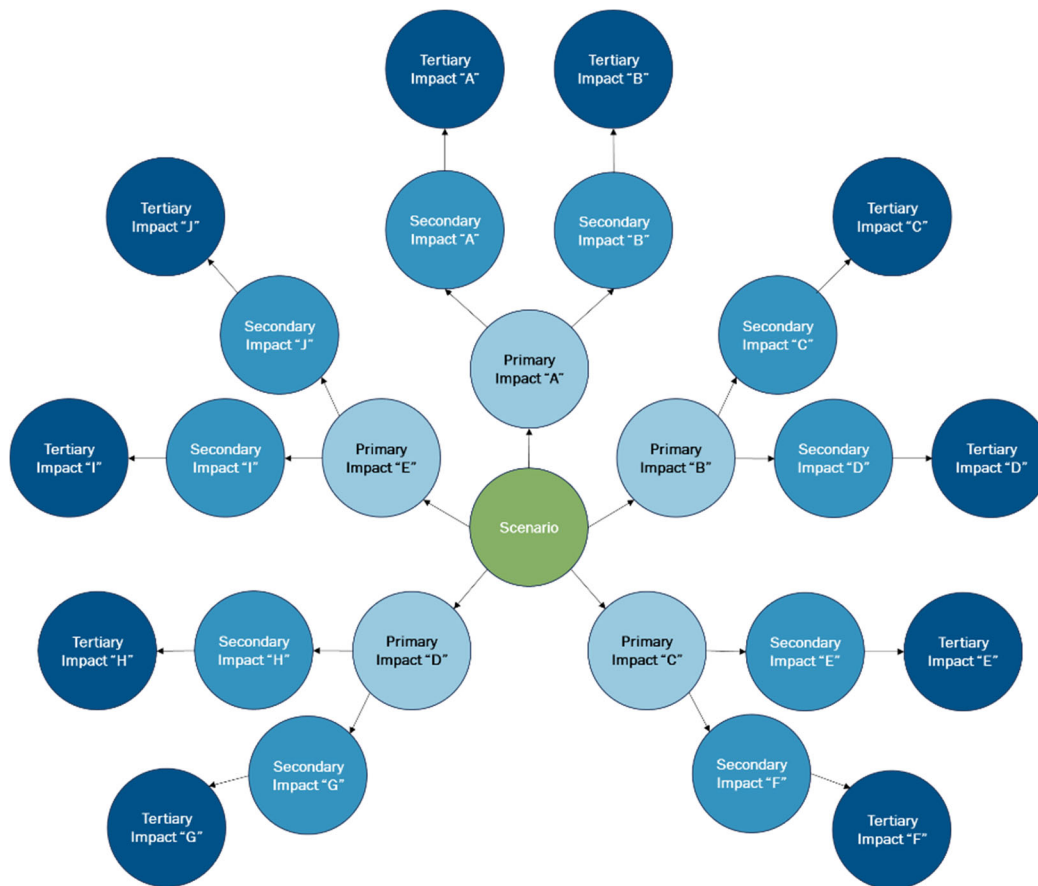


Figure 4. Futures Wheels build out from a future scenario or driver of change.

Step 3: Identify Primary Impacts

Identify the primary or direct impacts of the scenario for emergency management and place them on the Futures Wheel diagram surrounding the central scenario. Sticky notes (or similar) are a helpful tool to employ here to allow participants to brainstorm individually while building a shared diagram. Draw spokes radiating outward from the center that connect each impact back to the scenario.

Step 4: Explore Secondary, Cascading Impacts

For each primary impact, identify potential downstream secondary impacts or consequences. Label the wheel with these secondary impacts and organize them on the wheel as a second layer. Recording impacts on removeable paper (e.g., sticky notes) streamlines this organization. Draw additional spokes extending from the primary impacts illustrating their connection to the secondary impacts.

Step 5: Iterate the Process

Repeat the process to identify further downstream consequences, including tertiary or even quaternary impacts. Through this iterative approach, participants dive deeply into how the consequences of the primary impacts for a given scenario cascade across the emergency management landscape resulting in a comprehensive understanding of the future implications.

Step 6: Extract Insights

Once the Futures Wheel is complete, participants can use it to identify those impacts of greatest concern and highlight downstream, cascading impacts that might otherwise go unnoticed. Armed with that information, participants can explore actions that can be pursued over the near- and long-term to anticipate, avoid, and mitigate those impacts.

Tips for a Successful Futures Wheel Exercise:

- **Divergent Thinking:** Encourage creative and divergent thinking. Explore a wide range of possibilities and don't limit yourself to the most obvious outcomes.
- **Collaboration:** Conduct the exercise in a collaborative setting. Different perspectives can lead to a more thorough exploration of potential impacts.
- **Iterate and Refine:** The Futures Wheel is an iterative tool. As you uncover new insights or developments, revisit and refine your wheel to reflect the evolving understanding of potential futures.
- **Capture Insights:** Take photos of the completed “futures wheel” to allow for future data analysis and reflection.

Workshop Exercise – Scenario Stress Testing

This “Scenario Stress Testing” exercise is an activity that challenges futures thinking with specific events. Scenario “injects” are complimentary tools to developed scenarios. While scenarios describe a nuanced future world, “inject cards” describe a specific event or series of events that take place within that world. In challenging participants to respond to convergent disasters within the constraints and opportunities of a future scenario, “inject cards” can be used to crystallize the policies, practices, and/or programs that could be implemented to drive positive change. A series of “inject cards” were developed by FEMA’s Office of Policy and Program Analysis as part of the Strategic Foresight 2050 initiative and are included in the Strategic Foresight 2050 Toolkit. Unique “inject cards” can also be developed to stress test specific programs or lines of effort.

Step 1: Distribute “Inject Cards”

Provide participants with one or more “inject cards.” The Strategic Foresight 2050 “inject cards” have two sides. On one side is a “Situation Report” that provides information as the event unfolds; on the other side is an “After Action Report” that presents information on developments in the wake of the event, as displayed in Figure 5. Participants should organize into small groups with 3-5 individuals in each. Each group should receive a different inject card.

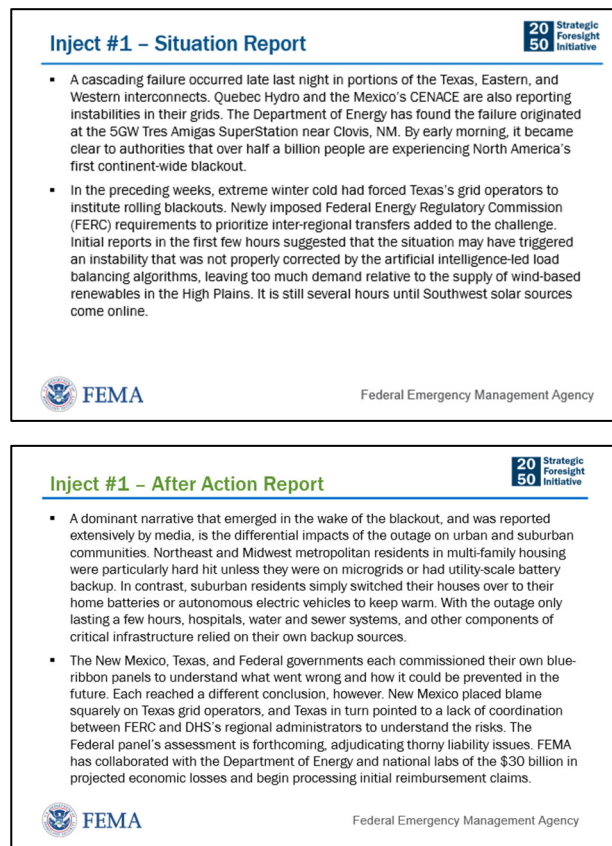


Figure 5. Strategic Planning 2050 Inject Cards

Step 2: Discuss “Inject Cards”

Task participants with discussing the “Situation Report” and describing implications for their organization. Once this discussion is complete, ask participants to integrate the “After Action Report” into the conversation, describing how this new information would alter their organization’s operations, opportunities, or challenges. In their small group discussions, participants should concentrate on addressing two questions:

- What would be the key challenge of managing the injects events given the underlying scenario?
- What actions could be taken to enhance mitigation, response, and recovery around the event?

As groups discuss each question, they should write down their insights, perspectives, and actions on a whiteboard, posterboard, or similar.

Step 3: Compare Insights and Actions

Facilitate group discussion, asking participants to summarize the inject card they received and talk through their responses to the questions above. Steer participants away from discussion of plausibility or likelihood, instead encourage open-minded futures thinking. Focus discussion on the question: how would the different events interact to create additional challenges for emergency management?

Tips for Successful Scenario Stress Testing:

- **Remember the Scenario:** Injects are intended to test how your scenario affects your ability to manage different kinds of emergencies. Incorporate what you learned from the Futures Wheel exercise about the consequences of your scenario in discussing the injects.
- **Stages of Emergency Management:** In thinking through the significance of the injects for emergency management, participants should consider implications and potential actions before, during, and after the event.

Workshop Exercise – World Café

The “World Café” exercise is a dynamic group activity designed to facilitate meaningful conversations about the future. Through round robin discussion, participants will explore threats and opportunities for emergency management, considering how these vary among alternative versions of the future. This can help deepen appreciation for the varied implications of different futures and identify tangible actions to strategically position the emergency management field for whatever the future brings.

Step 1: Assign Breakout Rooms

Assign participants to small breakout rooms. Ensure diversity in each group to capture a wide range of perspectives. Separate each room into small groups of 3-5 participants. These can be the same breakout rooms and small groups used in the preceding exercises.

Step 2: Introduce Purpose and Central Question

Start the session with an introduction to the purpose of the World Café. Ask each small group to address a central question or set of questions related to future challenges and opportunities for emergency management. Some potential questions include the following:

- What is one new insight and one new uncertainty that you’ve gained from the foresight exercises?
- What specific future challenge OR opportunity for your organization stands out to you? Why?
- Should this future unfold, what can you do today to help influence and then set the conditions for successful emergency management?

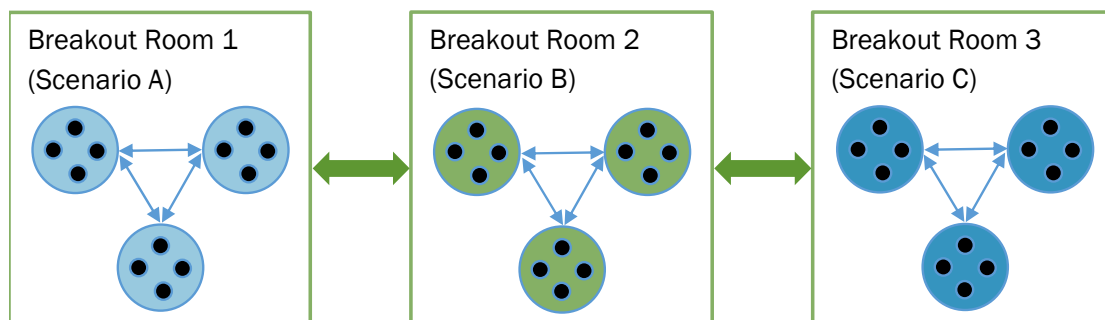


Figure 6. Through the “World Café” activity, participants discuss key takeaways both within their breakout room and with other breakout rooms to add nuance and context to their conclusions.

Step 3: Prompt Round-Robin Discussions

Allocate a set time for each round of discussions (e.g., 15-20 minutes). As illustrated in Figure 6, participants will first rotate within their own breakout room, taking turns sharing the perspectives they have written down in their own small group with other groups working with the same scenario.

Next, members of each breakout room can rotate to another breakout room and share their perspectives with another room that worked with a different scenario. This process can be repeated until all participants have rotated through all the breakout rooms.

Step 4: Facilitate Plenary Session

Once participants have had an opportunity to share and discuss their insights and perspectives among the breakout rooms, bring them all back together for a plenary session. During this session, each breakout room should present the most significant observations from their discussions. This could include insights regarding the key opportunities or uncertainties that emerged, the actions that could be taken to better anticipate the future, or the potential benefits of strategic foresight for the organization. Identify and record the key themes that emerged across all groups regarding the future of emergency management and the value of foresight more broadly. These represent valuable ideas, which could point to opportunities for quick wins that enhance organizational performance as well as potential long-term risks that should be closely monitored.

Tips for a Successful World Café:

- **Encourage Open Dialogue:** Foster an open and inclusive environment. Encourage participants to actively listen, share their experiences, and explore diverse viewpoints. Emphasize the importance of generating collective intelligence.
- **Capture Insights:** Make sure and designate a scribe to capture key insights, themes, and notable ideas discussed within the World Café groups. Use white boards or other collaborative tools for documentation. Take photos of insights captured on boards in the room.
- **Watch the Clock:** Discuss the timing of the World Café in advance with participants and designate one individual to track the time spent on each rotation to allow sufficient time for all perspectives to be shared.

Reporting

The overarching objective of implementing a foresight initiative is to incorporate robust futures-thinking into strategic planning, policy development, and operations. In the face of significant uncertainty, imagination is a tool of risk mitigation. Foresight provides a framework to operationalize the asset of our collective creativity. Leveraging the value of foresight requires both engaging with the thought-exercises offered by the framework, and communicating, integrating, and prioritizing generated data and outcomes.

The reporting phase of the foresight framework tasks a practitioner with determining impactful next steps for the data and insights they have gathered through earlier steps. The content of this phase will be closely tied to project objectives and earlier framework phases. Outcomes may include high priority drivers and signals of change. If workshoping explored scenarios, patterns of organizational opportunities or challenges that arose across futures may be valuable outcomes. Outcomes may also include surprising ideas or novel questions that arose through collaborative discussions.



The metric of success for scenario work is not whether or not you got the future ‘right;’ it’s whether or not [the process] inspired and informed action that, years later, you are happy to have taken.”

-Dr. Richard A.K. Lum PhD, Futurist

Beyond documenting process and outcomes, foresight practitioners should consider next steps through the reporting phase. What actions should the generated insights inspire or inform? In addressing this question, a foresight report might propose organizational adaptation, advocate for the prioritization of a specific innovation, or recommend a strategic pathway forward.

Appendix A. Planning Worksheet

This worksheet is designed to assist you in navigating the initial stages of developing your own foresight workshop. It is intended for use by the team responsible for creating and executing the workshop, rather than the participants. However, it may be beneficial to share worksheet outcomes, such as defined workshops objectives, with workshop participants once the workshop is complete.

PURPOSE

- Why are we doing this exercise?
- How does this exercise link to other activities in our organization (e.g., strategic planning)?

OBJECTIVES

- What goals do we have in completing this exercise? What do we hope to achieve?
- How will we know when we've been successful?

SCOPE

- What parameters will we use to bound our scenarios (e.g., time, geography, mission)?
- What assumptions will we make about future trends that are relevant to our mission?

KEY PLAYERS

- Will preparing the scenarios require engaging internal or external subject matter experts?
- Who should participate? Do we need an outside facilitator?

PROJECT MANAGEMENT & NEXT STEPS

- What type of planning meetings will we need to prepare for the exercise?
- What is the first thing we need to do to start this process?

Appendix B. Overview of Foresight Methodology

As part of the FEMA Strategic Foresight 2050 initiative, FEMA's Office of Policy and Program Analysis developed a set of four scenarios. Each scenario presents a plausible, alternative vision of the future out to the year 2050. Over that time horizon, there are a wide variety of ways in which society, the economy, and the environment could evolve. As such, rather than select a "best guess" of what the future could look like, the use of alternative scenarios allows one to explore the uncertainty regarding the future as well as test assumptions and planning against different challenges and opportunities. These scenarios were developed by first identifying signals and drivers of future developments relevant to FEMA's mission and/or the broader context shaping the future of emergency management. A library of signals and drivers is included in the Strategic Foresight 2050 Toolkit. Signals and drivers were organized around five dimensions of change (see also [Table 1](#) below):

- Environmental change
- Societal change
- Technological change
- Economic change
- Political change

These dimensions were based on the STEEP (Social, Technological, Economic, Environmental, Political) foresight framework.⁸ This approach is extensively used within the federal government⁹ including the U.S. Coast Guard's Project Evergreen foresight initiative.¹⁰ Signals and drivers corresponding with each dimension of change were developed through literature review, based on academic and popular media databases, as well as analysis of prior foresight and scenario development exercises in the public domain (see [Table 1](#) below). In addition, FEMA developed a set of white papers on current trends relevant to the future of emergency management, which are included in the Strategic Foresight 2050 Toolkit.

Signals and drivers were subsequently mapped onto an existing scenario framework. Specifically, a scenario framework has been in use for over a decade as foundation for projecting future changes in global, national, and regional climate conditions as well as the accompanying global socioeconomic

⁸ ["Environmental uncertainty, foresight and strategic decision making: An integrated study." 2012. Technological Forecasting and Social Change \(Sciencedirect.com\).](#)

⁹ ["Strategic foresight in the federal government: a survey of methods, resources, and institutional arrangements." 2019. World Futures Review \(Sagepubs.com\).](#)

¹⁰ ["Activities and Results from U.S. Coast Guard Project Evergreen V." 2022. RAND Corporation \(RAND.org\).](#)

conditions that are consistent with those futures.¹¹ This framework supports Earth system modeling activities, including those assessed by the Intergovernmental Panel on Climate Change (IPCC) and the U.S. National Climate Assessment, as well as a broad range of climate change risk assessments and adaptation and resilience planning efforts. As a result, this framework provides a robust, credible, and climate-relevant scenario foundation with a rich supporting literature of analysis.¹² Moreover, this approach enables FEMA’s foresight efforts to be used alongside of other climate studies including the National Climate Assessment.

The parallel process couples a scenario of radiative forcing (Representative Concentration Pathway or RCP; measured in watts per meter squared) with a socioeconomic storyline (Shared Socioeconomic Pathway or SSP).¹³ The RCP largely represents future greenhouse gas emissions from human activity that drive climate change. The SSP represents the social, economic, technological and policy assumptions that drive those emissions and explore futures where there are different challenges for adapting to the impacts of climate change and/or challenges for reducing greenhouse gas emissions that contribute to climate change. When applied in a climate model, this results in a future projected climate that is grounded in a specific societal context. Overall, this framework allows for a more comprehensive understanding of how the climate is likely to change in the future, as well as the potential implications for society.

Dimension of Change	Core Elements Included in Scenario Narrative
<p><i>Environment</i></p> <p>How do trends in demography, migration, and social norms influence U.S. capacity to cope with and adapt to climate and other risks?</p>	<ul style="list-style-type: none"> ▪ Greenhouse gas emissions trends ▪ Sensitivity of the climate system to greenhouse gases ▪ Impacts of climate change and climate-related hazards ▪ Societal responses to climate risk
<p><i>Society</i></p> <p>How do trends in demography, migration, and social norms influence U.S. capacity to cope with and adapt to climate and other risks?</p>	<ul style="list-style-type: none"> ▪ Population growth ▪ Population aging ▪ Movement of people ▪ Social solidarity ▪ Cultural attitudes toward the environment and sustainability

¹¹ The scenario framework in question is referred to as the Parallel Scenario Process. The outline of the framework was originally published in 2010 by the climate change research community. Since that time, the research community has been operationalizing the framework in research and assessment.

¹² [“Achievements and needs for the climate change scenario framework.” 2020. Nature Climate Change \(Nature.com\).](#)

¹³ [“The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century.” 2017. Global Environmental Change \(Sciencedirect.com\).](#)

Dimension of Change	Core Elements Included in Scenario Narrative
<p><i>Technology</i></p> <p>How does technology create opportunities and/or challenges for society and emergency management?</p>	<ul style="list-style-type: none"> ▪ Rates of technological change ▪ Autonomous Systems ▪ Artificial Intelligence and machine learning ▪ Clean energy technologies ▪ Advanced manufacturing ▪ Quantum computing ▪ Internet of things¹⁴ ▪ Innovations in medicine and public health
<p><i>Economy</i></p> <p>How does the U.S. economic situation impact society's resilience to climate and other social and economic challenges?</p>	<ul style="list-style-type: none"> ▪ Rates of economic growth ▪ Government spending ▪ Status of the social safety net ▪ Economic disparities ▪ Food security (manufactured protein, alternate food sources, improved farming methods) ▪ Insurance access and cost
<p><i>Politics</i></p> <p>How does the relationship between the U.S. and the rest of the world shape opportunities and challenges at home?</p>	<ul style="list-style-type: none"> ▪ Globalization trends ▪ Competition among nation states ▪ The role of international institutions ▪ Access to critical resources ▪ Cooperation on sustainability and climate action

Table 1. Details on the various dimensions of change used in scenario development and the core elements addressed within each dimension.

For Strategic Foresight 2050, FEMA selected four different RCP/SSP combinations, as described in IPCC Sixth Assessment Report, to provide a foundation for each of the scenarios:¹⁵

- Going for Growth (RCP 8.5/SSP 5)
- Transnational Tensions (RCP 7.1/SSP 3)
- Fragmented Futures (RCP 3.7/SSP 4)

¹⁴ [“Securing the Internet of Things \(IoT\)” 2021. Cybersecurity & Infrastructure Security Agency \(cisa.gov\).](#)

¹⁵ [“Climate Change 2021: The Physical Science Basis. Summary for Policymakers.” Intergovernmental Panel on Climate Change \(IPCC.ch\).](#)

- Net Zero Revolution (RCP 2.6/SSP 1)

The above combinations were selected due to a) their ability to reflect quite different climate and socioeconomic futures and therefore allow the exploration of a wide range of uncertainty about the future and b) the availability of climate, social, and economic data and projections that can be used to help illustrate different aspects of the scenarios.

Different drivers and signals (or different magnitudes of those drivers and signals) were mapped to different RCP/SSP scenarios in a manner consistent with the high-level socioeconomic storyline. Where possible, dimensions of change were quantified, based on prior studies using the RCPs and SSPs or by extrapolation from historical data.

FEMA subsequently developed detailed narratives that reflected the drivers and signals, while remaining consistent with the broader climate and socioeconomic futures outlined by the RCP/SSP framework. Those narratives were structured around the five change dimensions to facilitate ready comparison among scenarios. Each scenario therefore represents a tool for exploring the future drivers and events that could shape FEMA's mission and how FEMA could respond to these projected changes.

The Strategic Foresight 2050 Toolkit contains comprehensive descriptions of the scenarios. Each description contains a thumbnail summary of the scenario, quantitative elements to help illustrate key developments relevant to emergency management, headlines from the year 2050, and a detailed narrative.