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Monterey, CA; Naval Postgraduate School

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**NAVAL  
POSTGRADUATE  
SCHOOL**

**MONTEREY, CALIFORNIA**

**THESIS**

**EMERGENCY MANAGEMENT  
—A WICKED SOLUTION?**

by

Michael A. Giardina

December 2022

Co-Advisors:

Glen L. Woodbury  
Carolyn C. Halladay

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**EMERGENCY MANAGEMENT—A WICKED SOLUTION?**

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Submitted in partial fulfillment of the  
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES  
(HOMELAND SECURITY AND DEFENSE)**

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**NAVAL POSTGRADUATE SCHOOL  
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## ABSTRACT

Emergency management agencies nationally are increasingly involved in the management of wicked problems in their communities. This thesis explores how the government can use emergency management agencies in response to wicked problems. To answer this question, this thesis takes a multi-step approach that compares the collaborative approach to wicked problem-solving and the ways in which emergency management fosters collaboration for disaster response. The comparison shows that emergency management's tools can support collaborative responses to wicked problems, but capacity problems in the field of emergency management hinder involvement. This thesis's conclusion recognizes that concerns about emergency management's existing workload, underfunded and limited budgets, and the potential negative impacts of a new mission balanced with existing missions are valid. Ultimately, this thesis recognizes four possible outcomes for decision-makers. If emergency management is assigned the wicked problem space without additional resources, both mission areas will falter. If properly resourced, emergency management can adequately address wicked problems and their current workload. The third outcome leaves emergency management outside of the wicked problem mission, while the fourth outcome is to take what works from emergency management and apply it across the government. Ultimately, each outcome alters emergency management's ability to respond to major disasters.



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## LIST OF ACRONYMS AND ABBREVIATIONS

DEM	Department of Emergency Management
EOC	emergency operations center
FEMA	Federal Emergency Management Agency
GAO	Government Accountability Office
ICS	Incident Command System
MAC	multiagency coordination group
NEMA	National Emergency Management Association
NIMS	National Incident Management System

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## EXECUTIVE SUMMARY

Across the nation, emergency management agencies are increasingly becoming involved in the management of so-called wicked problems in their communities. Wicked problems are those that evade resolution and are difficult to manage through normal means.<sup>1</sup> Jurisdictions such as San Francisco; Washington, DC; Los Angeles; Chicago; and Philadelphia have turned to their emergency management agencies to manage the wicked problems of homelessness, drug addiction, and gun violence.<sup>2</sup> This thesis explores how the government can use emergency management agencies in response to wicked problems.

To answer this question, this thesis takes a multi-step approach. First, a historical assessment of emergency management's past evolution is undertaken to determine whether the field has a history of evolving to meet society's urgent needs. The assessment is also paired with a review of emergency management trends in the present to see whether that evolution is already underway, and an examination of barriers to such evolution. Ultimately, this first step finds that not only does the profession have a history of evolving to meet society's needs, but the next phase of that evolution may be occurring due to concurrent rises in traditional disasters such as hurricanes and new mission assignments outside the current scope of emergency management, some of which are wicked problems. This growth is not without pain points, as limited budgets and a stressed workforce stand as barriers to continued growth and expansion.

---

<sup>1</sup> Brian W. Head, *Wicked Problems in Public Policy: Understanding and Responding to Complex Challenges* (Cham: Springer, 2022), 14, <https://doi.org/10.1007/978-3-030-94580-0>.

<sup>2</sup> James F. Kenney, Philadelphia Mayoral Executive Order 3–18, “Opioid Emergency Response” (comp. 2018), <https://www.phila.gov/media/20210602145015/executive-order-2018-03.pdf>; “Mayor Bowser Launches First-of-Its-Kind Gun Violence Prevention Emergency Operations Center,” Executive Office of the Mayor of Washington, DC, February 17, 2021, <https://mayor.dc.gov/release/mayor-bowser-launches-first-of-its-kind-gun-violence-prevention-emergency-operations-center>; “Confronting the Homelessness Crisis,” Office of the Mayor of Los Angeles, accessed August 28, 2022, <https://www.lamayor.org/ConfrontingTheHomelessnessCrisis>; Rich Guidice, “OEMC Executive Director Guidice’s Budget Remarks,” Office of Emergency Management and Communications, accessed August 28, 2022, [https://www.chicago.gov/content/dam/city/depts/obm/supp\\_info/2021Budget/DepartmentStatements/OEMC.pdf](https://www.chicago.gov/content/dam/city/depts/obm/supp_info/2021Budget/DepartmentStatements/OEMC.pdf); London Breed, “A Safer San Francisco,” *Medium* (blog), December 14, 2021, <https://londonbreed.medium.com/a-safer-san-francisco-eb40d9d502e4>.



The next step involves determining how emergency management can support a response to wicked problems. Within the literature, the prevailing information indicates that collaborative approaches to wicked problem management is the most effective approach. Building on the findings of the literature review, the analysis identifies and explores three tools that emergency managers use to create collaborative environments in preparation and response to disasters. Whole community planning, the Incident Command System (ICS), and emergency operations centers (EOCs) are assessed to determine how they create these collaborative environments in line with suggestions from the wicked problem management literature, but notably, interactions with some of the defining criteria may transform an ordinary problem into a wicked one. To further demonstrate effectiveness in creating collaborative environments that lead to success, responses to the Boston Marathon bombings, the 2001 Howard Street tunnel fire in Baltimore, the 2001 Pentagon 9/11 response, and the 2014 Ebola crisis are explored for whole community planning, ICS, and EOCs, respectively. The thesis finds that the aforementioned tools of emergency management are both effective at creating the collaborative environment required for wicked problem management and addressing most of the criteria that create a wicked problem.

Ultimately, however, emergency management's ability to create a collaborative environment for wicked problems is not without difficulty. The conclusion of this thesis recognizes that widespread concerns about emergency management's existing workload, an underfunded and limited budget for those agencies, and the potential negative impacts from a new mission balanced with existing missions are valid. In balancing these concerns with the noted ability of emergency management to assist with wicked problem management, this thesis presents four options for government decision-makers.

The first option is to use emergency management agencies to assist with wicked problem management without additional staffing or funding to address the limiting factors of workload, budgets, and negative effects of mission expansion. This option notes that while there may be consequential benefits in the fight against wicked problems, the otherwise negative effects of such action without shoring up emergency management ultimately harm the nation's ability to respond to and recover from disasters. Alternatively,

a second option discusses emergency management's becoming involved in wicked problem management yet supported by a growth in funding and staffing to support this new work. Under this option, the wicked problem mission can be supported with dedicated staffing and funding while emergency management agencies can continue to work diligently on their existing responsibilities to prepare for, respond to, and recover from large disasters.

Two alternatives are presented as well. In the third option, emergency management can simply remain uninvolved in wicked problems despite the benefit it may provide. This option allows emergency management agencies to focus all of their staff, budgets, and operational bandwidth on the rising numbers of increasingly destructive disasters nationally. The final option presented by this research is, once again, a slight alteration of the prior option. Under the fourth option, emergency management agencies remain uninvolved with wicked problem management, yet the wider government adopts the tools that emergency management brings to bear for incident response and collaboration. In this case, emergency management remains focused on its primary mission, but the benefits of whole community planning, ICS structures, and EOCs can still be applied to wicked problems.

These options display that while emergency management may be capable of the wicked problem mission, several barriers hamstring emergency management's involvement in wicked problems. Without addressing these barriers, the benefit gained by applying emergency management to wicked problems is erased by a reduced ability to withstand and recover from disasters and other emergent situations. Ultimately, the answer to emergency management's involvement with wicked problems emerges as a balancing act of deploying the skillset while accounting for a multitude of barriers.

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## I. INTRODUCTION

Across the United States, elected leaders have turned to emergency management agencies in response to complex societal challenges known as wicked problems. Wicked problems are those social issues that are ever-present and difficult to resolve through normal governmental means.<sup>1</sup> Numerous states, for example, have declared a state of emergency, or equivalent state power, to manage the growing number of deaths and societal impacts caused by opioid addiction.<sup>2</sup> City leadership in Philadelphia placed the Office of Emergency Management in a coordinating role in response to the opioid crisis in 2018.<sup>3</sup> Similarly, Los Angeles Mayor Eric Garcetti established the Unified Homelessness Response Center within the Los Angeles Emergency Operations Center to lead the response to citywide homelessness in 2019.<sup>4</sup> In 2020, the Chicago Office of Emergency Management and Communications opened a Summer Operations Center with partner agencies to focus on gun violence reduction.<sup>5</sup> Likewise, Washington, DC, initiated a measure in February 2021 to manage the same gun violence crisis across the city through an emergency operations center activation.<sup>6</sup> In December 2021, San Francisco Mayor London Breed declared a state of emergency in the city’s Tenderloin district, placing the Department of Emergency Management in charge of city efforts to improve the quality of life for residents of that neighborhood.<sup>7</sup> All of these actions to resolve complex societal

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<sup>1</sup> Brian W. Head, *Wicked Problems in Public Policy: Understanding and Responding to Complex Challenges* (Cham: Springer, 2022), 14, <https://doi.org/10.1007/978-3-030-94580-0>.

<sup>2</sup> Lauren Dedon, *Using Emergency Declarations to Address the Opioid Epidemic* (Washington, DC: National Governors Association, 2018).

<sup>3</sup> James F. Kenney, Philadelphia Mayoral Executive Order 3–18, “Opioid Emergency Response” (comp. 2018), 2, <https://www.phila.gov/media/20210602145015/executive-order-2018-03.pdf>.

<sup>4</sup> Office of the Mayor of Los Angeles, “Confronting the Homelessness Crisis.”

<sup>5</sup> Rich Guidice, “OEMC Executive Director Guidice’s Budget Remarks,” Office of Emergency Management and Communications, accessed August 28, 2022, 1, [https://www.chicago.gov/content/dam/city/depts/obm/supp\\_info/2021Budget/DepartmentStatements/OEMC.pdf](https://www.chicago.gov/content/dam/city/depts/obm/supp_info/2021Budget/DepartmentStatements/OEMC.pdf).

<sup>6</sup> “Mayor Bowser Launches First-of-Its-Kind Gun Violence Prevention Emergency Operations Center,” Executive Office of the Mayor of Washington, DC, February 17, 2021, <https://mayor.dc.gov/release/mayor-bowser-launches-first-its-kind-gun-violence-prevention-emergency-operations-center>.

<sup>7</sup> London Breed, “A Safer San Francisco,” *Medium* (blog), December 14, 2021, <https://londonbreed.medium.com/a-safer-san-francisco-eb40d9d502e4>.

ills become a new mission for emergency management agencies to oversee, coordinate, and execute through their standard response tools, such as whole community planning processes, incident management frameworks, and emergency operations centers.

Such an approach to these complicated wicked problems has numerous potential advantages and disadvantages. Emergency management’s demonstrated ability to coordinate the response to large, complex disasters may prove advantageous in the fight against wicked problems. However, these actions occur when conventional disasters facing emergency managers are also rising. The severe sequential impacts of Hurricanes Harvey, Irma, and Maria—amid the most damaging hurricane season on record—prompted more individuals to seek disaster assistance for that season than combined in the preceding 10 years.<sup>8</sup> Natural disasters are historically high across the nation, with dollar-value impacts nearing records. Twenty-two separate billion-dollar weather events occurred nationwide in 2020 alone.<sup>9</sup> The COVID-19 pandemic caused all 50 states to declare federal disasters simultaneously—a first in U.S. history.<sup>10</sup> In response to these collective crises, emergency managers are spread increasingly thin—balancing large workloads, drawing on limited budgets, and missing opportunities to train and maintain skills. A taxed workforce stands as a potential disadvantage in relying on emergency management to respond to wicked problems.

Overall, understanding the balance and interactions of the advantages and disadvantages of the wicked problem mission has important implications for the emergency management system within the United States. A proper understanding of the government’s options to use emergency management can influence the nation’s ability to prepare for, respond to, and recover from disasters and wicked problems.

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<sup>8</sup> Federal Emergency Management Agency, *2017 Hurricane Season FEMA After-Action Report* (Washington, DC: Federal Emergency Management Agency, 2018), ii, [https://www.fema.gov/sites/default/files/2020-08/fema\\_hurricane-season-after-action-report\\_2017.pdf](https://www.fema.gov/sites/default/files/2020-08/fema_hurricane-season-after-action-report_2017.pdf).

<sup>9</sup> Adam Smith, “2020 U.S. Billion-Dollar Weather and Climate Disasters in Historical Context,” National Oceanic and Atmospheric Administration, January 8, 2021, <https://www.climate.gov/disasters/2020>.

<sup>10</sup> Earlene K. P. Dowell, “Every State Declared Federal Disaster Areas during COVID-19 but Other Natural Disasters Are Happening,” U.S. Census Bureau, January 11, 2021, <https://www.census.gov/library/stories/2021/01/challenge-of-mapping-disaster-areas-during-national-emergency.html>.

## A. RESEARCH QUESTION

How can the government leverage emergency management agencies in response to wicked problems?

## B. LITERATURE REVIEW

The extensive literature on wicked problems agrees that they exist, but widespread contention remains on how best to manage the problems and their effects. This literature review examines the premise of society's wicked problems, the criteria of a wicked problem, and proposed collaborative approaches to resolving them. The idea of wicked problems first appeared in the literature with a 1973 paper by Horst Rittel and Melvin Webber, who identified some social problems as unique and unsolvable.<sup>11</sup> Since then, numerous issues facing the public have been identified as wicked problems—but without consensus on the proper application of that label or how best to manage them.

### 1. History and Premise of Wicked Problems

In the social sciences, the concept of wicked problems originated in the late 1960s and early 1970s. The idea was proposed in 1967 by German social scientist and University of California professor Dr. Horst Rittel, albeit in a rough form and loosely defined.<sup>12</sup> Rittel's initial definition, brought to the public during a seminar lecture, was first documented in a publication by his colleague C. West Churchman. Rittel suggested in this seminar that the term “wicked” was for problems facing society that are “ill-formulated, where information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing.”<sup>13</sup> Essentially, Rittel described the parameters of the most challenging problems for public policy professionals to tackle and the essential characteristics that differentiate these issues from those easy to solve.

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<sup>11</sup> Horst W. J. Rittel and Melvin M. Webber, “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4, no. 2 (1973): 155–69, <http://www.jstor.org/stable/4531523>.

<sup>12</sup> Head, *Wicked Problems in Public Policy*, 23.

<sup>13</sup> C. West Churchman, “Guest Editorial: Wicked Problems,” *Management Science* 14, no. 4 (1967): B141, <http://www.jstor.org/stable/2628678>.



Rittel later fleshed this idea out with colleague Dr. Melvin Webber in their landmark 1973 publication, “Dilemmas in a General Theory of Planning.”<sup>14</sup> In the article, they take the idea of wicked problems much further than any of Rittel’s prior work and provide various areas of expansion and definition. The pair first attribute the apparent increase in visibility of these complex problems to society’s successes in resolving almost all the easy problems, leaving behind only the most difficult ones.<sup>15</sup> For example, the easy-to-solve problems, like clean water distribution, are resolved through advances in chemical water treatment, engineering-supported pipelines to distribute water, and education on sanitary conditions, while the more challenging-to-solve issues, like homelessness, are left behind. Rittel and Webber also attribute changes in society’s increasing interconnectedness, acting like a network, as another notable contributing factor to the emergence of wicked problems. Various connecting points between different aspects of society make it more challenging for policymakers to identify a problem, locate the probable cause within society’s networks, and identify either the action needed to resolve the issue or the effect that attempted actions might have.<sup>16</sup>

The work done by Rittel and Webber to develop the concept of wicked problems carries more weight than simply serving as an identifying tag or title for the most significant of societal ills. B. Guy Peters and Matthew Tarpey claim that the very label of a wicked problem serves to mark the hardest problems to manage, while signifying that for these problems, the government lacks an essential capacity to achieve resolution.<sup>17</sup> This resistance to resolution can be tied to how the policy problems deemed wicked are difficult to understand and, thus, challenging to solve.<sup>18</sup> In this light, the label becomes a framing device for the various actors concerned with wicked problems, such as lawmakers, policymakers, and the affected citizens. Brian Head concurs, noting that in policy work,

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<sup>14</sup> Rittel and Webber, “Dilemmas in a General Theory of Planning,” 155.

<sup>15</sup> Rittel and Webber, 156.

<sup>16</sup> Rittel and Webber, 159.

<sup>17</sup> B. Guy Peters and Matthew Tarpey, “Are Wicked Problems Really So Wicked? Perceptions of Policy Problems,” *Policy and Society* 38, no. 2 (June 2019): 219, <https://doi.org/10.1080/14494035.2019.1626595>.

<sup>18</sup> Peters and Tarpey, 219.

the wicked problem label serves a valuable purpose by presenting and defining concerns in a specific manner to change the perception of those problems.<sup>19</sup> By changing the frame, the approach taken toward resolving an issue will change, as will the potential public discourse of those approaches. Elevating a concern to the wicked problem level results in different approaches or a more unified approach, or it can be used to explain resistance to a solution.

## 2. What Makes a Problem Wicked?

When Rittel and Webber first defined wicked problems in their seminal 1973 article, they identified 10 defining criteria that mark a problem as “wicked.” These criteria explain what turns a common problem from easily solvable by normal means to resistant to any resolution and, therefore, wicked. These criteria are also important in that they fuel some of the analysis regarding emergency management’s effectiveness in managing wicked problems. Lönngren and Von Poeck note that this overall premise of wicked problem as first described has changed very little since emerging.<sup>20</sup> While this observation may be true, it does not mean alternate proposals that rearrange or simplify the criteria are absent in the literature.

Since their original conception, wicked problems have comprised 10 criteria:

1. Wicked problems do not have a definitive formulation.
2. They do not have a stopping rule.
3. Solutions are not true or false, only good or bad.
4. There is no way to test a solution to a wicked problem.
5. They cannot be studied via trial and error.
6. There is no limit to the number of solutions or approaches for a wicked problem.

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<sup>19</sup> Head, *Wicked Problems in Public Policy*, 9.

<sup>20</sup> Johanna Lönngren and Katrien van Poeck, “Wicked Problems: A Mapping Review of the Literature,” *International Journal of Sustainable Development & World Ecology* 28, no. 6 (2021): 482, <https://doi.org/10.1080/13504509.2020.1859415>.

7. All wicked problems are unique.
8. Wicked problems can always be described as symptoms of other problems.
9. How a wicked problem is described determines the possible solutions.
10. Planners working on wicked problems have no right to be wrong.

While summarized above, an in-depth understanding of the 10 criteria set by Rittel and Webber is key to grasping the original concept of wicked problems as well as the alternate options presented by others.

The first of the criteria attributed to a wicked problem focuses on the composition or makeup of the problems. As noted by Rittel and Webber, the first criterion of wicked problems is that “they do not have a definitive formulation.”<sup>21</sup> This might seem contradictory in a discussion around defining criteria. Still, this criterion focuses not on wicked problems as a larger concept but on the actual composition of the specific wicked problems. While wicked problems lack definitive formulation, the tame problems can be dissected and sorted into composing parts consistently time after time, regardless of the evaluating party.<sup>22</sup> In other words, what disparate parts compose a wicked problem, such as rising gun violence or crippling poverty, may vary depending on source materials, the identifying party of the problem, lenses through which it is evaluated, and so on. Rittel and Webber took care to contrast this criterion of wicked problems against the so-called tame, mundane problems society deals with daily to highlight their point.

The second criterion focuses on responsible parties’ knowing when to stop their attempts at resolving the problem. According to Rittel and Webber, wicked problems lack “stopping rules” and “an inherent logic that signals when they are solved.”<sup>23</sup> Essentially, problem-solving when dealing with society’s wicked problems never stops due to success; the mission simply continues. In “Exploring Wicked Problems,” Bentley and Toth agree

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<sup>21</sup> Rittel and Webber, “Dilemmas in a General Theory of Planning,” 161.

<sup>22</sup> Rittel and Webber, 161.

<sup>23</sup> Rittel and Webber, 161.

with this logic and identify that common stopping rules for wicked problems are often untethered from the issue but driven by external factors such as personnel giving up higher priorities for government or a loss of funding streams.<sup>24</sup> To put this precept into perspective, consider the wicked problem of gun violence. Suppose efforts to stem gun violence do cease. In that case, it may be because the police department or government leadership has determined that combating the sale of drugs is a higher priority. It could also result in legislators' deciding that a federal grant for overtime or personnel is no longer necessary, thus eliminating the financial resources to resolve the wicked problem. Finally, gun violence could fall to a level deemed acceptable by members of the public, even if it is not fully resolved. In all the preceding actions, a resolution is not achieved for reasons driven by stakeholders.

The third and fourth criteria focus on possible solutions to wicked problems and are best described in concert. The third criterion recognizes that solutions to wicked problems are neither true nor false, but rather good or bad.<sup>25</sup> The intent here is to signify that there are no correct solutions or answers that can be described with a “yes” or “no” response. Instead, outside observers judge potential solutions as good or bad through their unique perspectives of the problem.<sup>26</sup> Bentley and Toth once again agree, noting that the concept of a correct answer is heavily determined by various factors outside a scientific, defined methodology.<sup>27</sup> Revisiting the example of gun violence, a social scientist who believes that more tightly knit communities are the answer to gun violence might view an increase in police forces to reduce violence as “bad,” while a police commander might view that option as “good.” Similarly, the fourth defining criterion suggests that just as there is no “yes” or “no” answer to potential solutions, there is no good way to test solutions either.<sup>28</sup> Rittel and Webber note here that understanding and evaluating or testing whether

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<sup>24</sup> Joseph Bentley and Michael Toth, *Exploring Wicked Problems: What They Are and Why They Are Important* (Bloomington, IN: Archway Publishing, 2020), 21.

<sup>25</sup> Rittel and Webber, “Dilemmas in a General Theory of Planning,” 162.

<sup>26</sup> Rittel and Webber, 163.

<sup>27</sup> Bentley and Toth, *Exploring Wicked Problems*, 21.

<sup>28</sup> Bentley and Toth, 22.

a solution is working are nearly impossible, as the ripple effects from actions might not be readily apparent for quite some time.<sup>29</sup> If an attempted solution is implemented, it might take too long for the results to show themselves to prove that the option has worked, or there may be so many factors at play that the unfolding of the complex interaction might be hard to decipher and isolate. Drawing on the gun violence example, a surge in law enforcement might be hard to test or assess due to the number of contributing factors to gun violence, such as poverty, gun sales, or community engagement efforts to reduce violence.

The fifth criterion set forth by Rittel and Webber again focuses on solutions, only this time on how they may be applied and tested. Trial and error cannot explore options since every applied option has a subsequent result.<sup>30</sup> Seemingly contradictory considering the preceding criteria on testing solutions, this aspect focuses more on the outcome of solutions and how they affect a wicked problem. This fifth criterion is that the entire landscape of the problem changes due to the ripple effects described previously. After applying a solution, the wicked problem has evolved and morphed into a slightly different problem with new defining aspects. Thus, a subsequent attempt with the same solution tries to solve an ever so slightly different societal problem than the previous attempt.

The sixth criterion stipulates that the number of solutions and approaches to managing wicked problems is endless with no boundaries.<sup>31</sup> Essentially, in working to resolve or manage wicked problems, the possibilities for solutions are infinite. The lack of limitations is attributable to two differing causes. First, it could be that since the problems are unique or varied in their composition, no limitations can be placed on a possible solution or combination of solutions. If, under the first criterion, the formulation might be incredibly broad, so too are the combination of solutions available for application. The other consideration that abolishes any limitations on potential solutions is the importance and the effects of wicked problems on society. If one subscribes to the belief that these

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<sup>29</sup> Rittel and Webber, “Dilemmas in a General Theory of Planning,” 163.

<sup>30</sup> Rittel and Webber, 163.

<sup>31</sup> Rittel and Webber, 164.

problems are the scourge of the modern world, then all possible solutions are worth trying, and all novel approaches are opportunities.

A wicked problem is also one of a kind when it presents itself. Such problematic issues are unique, like snowflakes or fingerprints, with no two wicked problems alike. The problems might resemble other very similar problems, said Rittel and Webber, but there is always one aspect, apparent or not, that sets it apart from prior wicked problems.<sup>32</sup> Harkening back to the first criterion's stipulations of formulation and makeup, all of the various components and connections ensure each wicked problem is unlike any other in the world, no matter how similar they appear at face value.<sup>33</sup> These characteristics also change potential solutions given the uniqueness of each wicked problem—what worked on another similar issue may only slightly apply to the next.

The eighth criterion ties wicked problems to one another across society. These societal problems can often be described as symptoms of other wicked problems in society.<sup>34</sup> The problems may comprise other more minor wicked problems or be caused by wicked problems. Rittel and Webber liken this aspect to a general fact about how society is built and a sense of perspective. From the standpoint of the lowest level of an organization or society, the problem may have limited connections or correlations to other problems, but the higher in an organization or society one moves, the increasingly apparent connections become.<sup>35</sup> A broader perspective on the problem will inherently reveal more connective tissue under the enormous scope. For example, a problem-solver at the leadership level may see how the wicked problem and potential solutions tie into the efforts of another agency or level of government while an entry-level employee may not.

Within the confines of the ninth criterion, it becomes clear that words and descriptions matter when talking through wicked problems. How a wicked problem is described will determine the possible solutions available to the policymakers tasked with

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<sup>32</sup> Rittel and Webber, 164.

<sup>33</sup> Bentley and Toth, *Exploring Wicked Problems*, 21.

<sup>34</sup> Rittel and Webber, "Dilemmas in a General Theory of Planning," 165.

<sup>35</sup> Rittel and Webber, 166.

seeking resolution.<sup>36</sup> Again examining gun violence as an example of this criterion in action, it becomes clear how descriptions and perspectives can change the available options. Suppose the policymaker ties gun violence to a specific causative factor, such as poverty. In that case, all the options for resolving gun violence focus on reducing poverty. In turn, that policymaker is inherently against anything that focuses on other realms, such as weak gun laws. Alternatively, colleagues who believe that weak gun laws perpetuate gun violence will reject any poverty-focused solutions since they do not align with their perspectives on the cause.

The final and perhaps most important criterion identified by Rittel and Webber concerns policymakers' possible solutions for and attempts at resolving wicked problems. Planners or personnel tasked with taming wicked problems "have no right to be wrong" when it comes to their work.<sup>37</sup> Given the importance and effect of wicked problems on the larger societal good, planning personnel must be prepared to live with their actions and understand the consequences for people whose lives are touched by this work.<sup>38</sup> Bentley and Toth once again agree, framing this criterion within the outcomes tied to planners, who are responsible for any lasting results, whether positive, or negative, or neutral.<sup>39</sup> Unlike other professions, and considering the prior criteria, the actions of wicked problem-solvers do not occur in a vacuum. A mathematician, for example, might work on a proof or change a formula, but those events are self-contained and do not affect societal well-being. Failure for mathematicians and similar individuals is an option. On the other hand, wicked problem-solvers need to understand how their work changes the world around them, for better or worse, and keep that thought in mind while working toward a resolution.

While Rittel and Webber may have presented the original 10 criteria marking a wicked problem, these defining marks are not perfect. In application, the criteria are extensive and often require additional explanations to be effectively understood. In a space

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<sup>36</sup> Rittel and Webber, 166.

<sup>37</sup> Rittel and Webber, 167.

<sup>38</sup> Rittel and Webber, 167.

<sup>39</sup> Bentley and Toth, *Exploring Wicked Problems*, 23.

concerning complicated social issues, these criteria potentially add more confusion than useful guideposts for identifying the complex problem. Simplifying the criteria seemingly conveys the same principles set forth by Rittel and Webber while making the concept infinitely more digestible for any audience.

Two notable examples present easier-to-digest sets of criteria. Nancy Roberts, in her 2000 work “Wicked Problems and Network Approaches to Resolution,” simplifies the 10 criteria delineating a wicked problem.<sup>40</sup> Rather than an exhaustive list of criteria, Roberts classifies wicked problems using two rather straightforward criteria—a lack of agreement on the problem’s composition and a lack of agreement on the problem’s solutions.<sup>41</sup> Termeer, Dewulf, and Biesbroek find that Robert’s criteria form a combination of Rittel and Webber’s criteria in that a lack of consensus on the problem’s composition comprises the first, sixth, seventh, eighth, and ninth criteria while a lack of consensus on the problem’s solutions incorporates the second, third, fourth, and fifth criteria.<sup>42</sup> Robert’s proposal to simplify the criteria meets the mark in expanding the understanding of wicked problems to a wider range of involved parties.

John Alford and Brian W. Head also provide alternative criteria in “Wicked and Less Wicked Problems: A Typology and A Contingency Framework.”<sup>43</sup> Rather than proposing 10 criteria, the authors identify six for a likely wicked problem: structural complexity, knowability, knowledge fragmentation, knowledge framing, interest differentiation, and power distribution.<sup>44</sup> Although different from the original 10 criteria, the alternative proposed by Alford and Head remains tied to issues of information availability, perspectives and conflict among stakeholders, and interactions with other

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<sup>40</sup> Nancy Roberts, “Wicked Problems and Network Approaches to Resolution,” *International Public Management Review* 1, no. 1 (2000), <http://hdl.handle.net/10945/55330>.

<sup>41</sup> Roberts, 1.

<sup>42</sup> Catrien J. A. M. Termeer, Art Dewulf, and Robbert Biesbroek, “A Critical Assessment of the Wicked Problem Concept: Relevance and Usefulness for Policy Science and Practice,” *Policy and Society* 38, no. 2 (May 2019): 170, <https://doi.org/10.1080/14494035.2019.1617971>.

<sup>43</sup> John Alford and Brian W. Head, “Wicked and Less Wicked Problems: A Typology and a Contingency Framework,” *Policy and Society* 36, no. 3 (2017): 397–413, <https://doi.org/10.1080/14494035.2017.1361634>.

<sup>44</sup> Alford and Head, 407.



components of society. Ultimately, however, the alternate six-criteria model as presented falls short of Robert's superior simplification. What Alford and Head propose, while simpler than Rittel and Webber's original 10 criteria, still features some drawbacks in that it requires expansion on the characteristics for a wider audience to access them.

Beyond disagreements on the content or number of criteria and discourse on how to reduce or simplify the original 10 criteria, some scholars have explored adding criteria. Levin et al. propose adding four new criteria to the original 10 to create an additional tier of super-wicked problems to differentiate the most complex problems.<sup>45</sup> These four additional criteria lead to three types of problems—the tame, the wicked, and the super wicked. The proposed additional criteria by Levin et al.—time is running out, those seeking to end the problem are also causing it, there is no central authority, and policies discount the future irrationally—all mark super-wicked problems, which are even more complicated or pressing.<sup>46</sup> The addition of four more criteria seems to complicate the original 10 without achieving much benefit, especially in reflection of literature that indicates simplification is the way forward. Of the proposed four criteria, only the addition of a time-based criteria seems useful, as it may spur participants in the management of a wicked problem to work harder toward resolution. In line with discourse on simplification, a middle ground thus emerges between expansion and simplification of criteria, in which the time-focused criterion proposed by Levin et al. is paired with Robert's recommendation of two criteria. A combination of these retains the easy-to-identify wicked problem, Roberts's contribution, and allows a classification for super-wicked or urgent-wicked problems, the contribution of Levin et al.

Although scholars do not universally concur on the defining criteria used to mark a problem as wicked, the divergence focuses less on the criteria or their contribution to wickedness than on the organization of such criteria. This partial consensus endorses

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<sup>45</sup> Kelly Levin et al., "Overcoming the Tragedy of Super Wicked Problems: Constraining Our Future Selves to Ameliorate Global Climate Change," *Policy Sciences* 45, no. 2 (June 2012): 124, <https://doi.org/10.1007/s11077-012-9151-0>.

<sup>46</sup> Levin et al., 127–29.

identifying wicked problems with accepted standards, even if those criteria are organized differently or merged for simplification.

### 3. Wicked Problem Management

Perhaps the greatest variety in the literature on wicked problems concerns managing them. Nadeera Ranabahu's 2020 evaluation of available solutions identifies the need to develop "wicked solutions"—innovative, radical, or transformative means outside the normal ones available to problem-solvers.<sup>47</sup> Beyond wicked solutions, the literature cites the concept of small wins as another successful management strategy. Advanced by Termeer and Dewulf in 2019, the small-wins framework proposes incremental progress toward chipping away at wicked problems, with wins inspiring other future small wins in a continual cycle.<sup>48</sup> This strategy ultimately reduces the wicked problem's effect.

Within the literature, a collaborative approach appears rather frequently. In a 2017 review of wicked problem strategies, Falk Daviter notes that works often indicate the best way to tackle wicked problems is by working together among many stakeholders from across society.<sup>49</sup> He finds that recommendations across the literature include a need for increased knowledge-sharing, community-inclusive problem-solving, collaborative settings focused on problem-solving, and significantly increased participation from stakeholders.<sup>50</sup> While scholars call for collaboration as a solution, they incorrectly assume that such collaboration is difficult to achieve for many reasons. According to Daviter, barriers include difficulties in relationship building between partners for problem-solving,

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<sup>47</sup> Nadeera Ranabahu, "'Wicked' Solutions for 'Wicked' Problems: Responsible Innovations in Social Enterprises for Sustainable Development," *Journal of Management and Organization* 26, no. 6 (November 2020): 1009, <https://doi.org/10.1017/jmo.2020.20>.

<sup>48</sup> Catrien J. A. M. Termeer and Art Dewulf, "A Small Wins Framework to Overcome the Evaluation Paradox of Governing Wicked Problems," *Policy and Society* 38, no. 2 (June 2019): 298, <https://doi.org/10.1080/14494035.2018.1497933>.

<sup>49</sup> Falk Daviter, "Coping, Taming or Solving: Alternative Approaches to the Governance of Wicked Problems," *Policy Studies* 38, no. 6 (November 2017): 574, <https://doi.org/10.1080/01442872.2017.1384543>.

<sup>50</sup> Daviter, 574.

the failure of collaboration to hold in the face of problem complexity, and challenges in introducing and managing collaboration—essentially a failure of implementation.<sup>51</sup>

One of the most straightforward calls for collaboration in the face of wicked problems comes from the Australian government. The Australian Public Service Commission’s 2007 *Tackling Wicked Problems* broadly outlines how government entities can leverage a collaborative approach to manage wicked problems.<sup>52</sup> As with other literature, the commission’s report wrongly assumes that these capacities for collaboration do not already exist within government and need to be bolstered in response to wicked problems. While the Australian Public Service Commission report pushes for governmental capacity growth and formalization in these areas, emergency management agencies have already established these capabilities in the United States, making them prime for navigating wicked problems.

The report highlights in-depth methods for the government to improve collaboration, which are summarized in a handful of smaller areas, many of which parallel existing emergency management mechanisms in the United States. First, the report calls for “supportive structures and processes” that can be matched and adapted to fit the wicked problem needing resolution, resulting in task forces with shared leadership to avoid conflict in wicked problem management.<sup>53</sup> The call for these flexible structures and processes for problem-solving points to the Incident Command System currently in use by emergency management agencies across the United States to manage run-of-the-mill emergencies and some of the most significant crises the nation has faced, such as the 9/11 attacks. Following this initial suggestion, the report calls for a “supporting culture and skills base” in government to foster collaboration, cut across organizational boundaries, incorporate all partners, and ultimately support unified decision-making for wicked problem management.<sup>54</sup> Within the emergency management space, the mantra of whole community

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<sup>51</sup> Daviter, 575–76.

<sup>52</sup> Australian Public Service Commission, *Tackling Wicked Problems: A Public Policy Perspective* (Canberra: Australian Public Service Commission, 2007).

<sup>53</sup> Australian Public Service Commission, 18.

<sup>54</sup> Australian Public Service Commission, 18.

planning and response, which drives emergency managers' plans for and responses to events large and small, readily meets the need for this culture to tackle wicked problems. Finally, the report identifies an area of "facilitative information management and infrastructure" to support "better information-sharing," complete with the appropriate structures and methodologies to ensure smooth information transfer for enhanced decision-making and conflict resolution.<sup>55</sup>

Other proposals agree with borrowing crisis management knowledge and applying it to wicked problems. In their 2018 work, George Carayannopoulos and Allan McConnell discuss using crisis skills to manage, but not entirely solve, wicked problems by avoiding standard political or business means.<sup>56</sup> The authors claim policymakers can make significant progress by copying crisis frameworks that discard typical reporting structures and labeling wicked problems as emergencies to spur action and escalation since a crisis increases political leverage.<sup>57</sup> Additionally, by drawing parallels across several standard features of wicked problems, challenges, and the differing management styles for each, the authors create a convincing narrative for their argument. While Carayannopoulos and McConnell may explain why government leadership has recently turned toward crisis management agencies to resolve several high-profile societal problems, their work merely aligns with other sources in that wicked problems still have no actual, settled state but only a lessening of impacts.

#### 4. Summary

Ultimately, this literature review has identified several findings. First, scholars agree on the history, premise, and purpose of wicked problems with little variation, as first identified by Rittel and Webber, with their purpose as a framing device or label for difficult concerns remaining intact. The literature review has found disagreement, however, on the composition of wicked problems. While the original 10 criteria set out by Rittel and

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<sup>55</sup> Australian Public Service Commission, 18.

<sup>56</sup> George Carayannopoulos and Allan McConnell, "Bringing Lessons from Crisis Management into the Realm of Wicked Problems," *Australian Journal of Political Science* 53, no. 3 (July 2018): 366, <https://doi.org/10.1080/10361146.2018.1450067>.

<sup>57</sup> Carayannopoulos and McConnell, 365.

Webber are widely accepted, subsequent work has frequently noted the way in which the criteria can be organized or otherwise combined to enhance understanding and use by policymakers. These propositions in the literature are effective and make a complex idea much simpler to understand and implement. Finally, a review of how to solve and manage wicked problems rounded out the literature review, with findings that indicate collaborative approaches are the preferred methodology. These collaborative approaches, while reported in the literature as having no existing match in government, are noted to reflect some emergency management approaches to problem-solving. The content of this literature review altogether sets up the subsequent analysis of emergency management's involvement in the wicked problem space.

### **C. RESEARCH DESIGN**

This research project determines how well emergency management tools apply to wicked problems and which barriers may hinder local and state emergency management agencies as an option for dealing with wicked problems. This research relies on publicly available data from scholarly research, government reports, official documents, and other publications. In short, this thesis performs a policy analysis in which an alternative method to the status quo approach to wicked problems is presented, followed by an assessment of the drawbacks, barriers, and detrimental consequences from the employment of those methods.

This thesis begins by evaluating emergency management's capacity for evolution into a new mission space. The history of the profession's consistent growth since the early 1800s is explored until the post-9/11 era. Historical documents, laws, and scholarly articles are examined to show that the profession continually evolves and accepts new responsibilities to meet the needs of society. This evaluation concludes with assessing emergency management trends to identify where the next phase of evolution may occur.

Following the history and evolution of emergency management, this thesis next explores how three tools common to emergency management can be used in response to wicked problems. The three tools explored are the whole community planning approach, the Incident Command System, and emergency operations centers. Each tool is assessed in

two different manners. First, the tool's capacity to create a collaborative environment for problem-solving, in line with recommended collaborative approaches to wicked problem management, is explored. Second, how the tool can manage the environment that allows a wicked problem to materialize is also explored. Specific criteria from the 10 defining criteria of wicked problems identified by Rittel and Weber that can be managed by emergency management are noted for each tool. Each tool's successful use by emergency management in response to a challenging emergency that features similarities to a wicked problem is also documented.

This policy analysis closes by examining several barriers to emergency management as an applicable solution to wicked problems. Upon reviewing the effects of increased workloads, limited budgets, and concerns over the negative effects of an expanded mission set, this thesis offers several options in response to the research question.

#### **D. CHAPTER SUMMARIES**

This thesis comprises four chapters, including this one. Chapter 1 served as an overall introduction to the thesis. It identified the problem space, research question, and design. Additionally, it featured an extensive literature review that explored the history of wicked problems, their composition, and different proposed management techniques, especially those of a collaborative nature. Chapter II explores the background and history of emergency management, along with future trends in the profession. Notable evolutionary moments from the profession's past dating back to the early 1800s are identified and documented, concluding with the terrorism focus of the post-9/11 era. Additional information on rising workloads facing emergency management agencies, both in traditional disasters and new mission spaces, is highlighted, along with barriers to this growth. Chapter III examines how three tools of emergency management can be used for wicked problem management. The collaborative problem-solving nature of whole community planning, the Incident Command System, and emergency operations centers is discussed, along with the wicked problem criteria that the tools address. Chapter IV concludes this thesis by expanding on barriers to emergency management's involvement in wicked problems and presenting four options for government decision-makers to

consider. These options address outcomes, both positive and negative, while considering the barriers presented.

## **II. BACKGROUND—EMERGENCY MANAGEMENT**

This chapter demonstrates that emergency management has consistently expanded its mission space since the early 1800s and that this trend is likely to continue as the workload rises and government officials seek new ways to apply emergency management resources to pressing societal issues not originally in the realm of emergency managers. Such critical developments in emergency management as the Freedmen’s Bureau, the Federal Civil Defense Act, growth of the Federal Emergency Management Agency (FEMA), and a post-9/11 focus on terrorism demonstrate that emergency management has grown over the years to meet society’s needs. This trend indicates a capacity for continued growth into the space of wicked problems as emergency management’s next evolution.

This chapter also provides an assessment of the workload of emergency managers nationally to understand how the profession is evolving in the present and finds expansion occurring on two different fronts. The assessment finds that in addition to an increasing number of workload-generating natural disasters, government officials are interested in expanding emergency management’s role into new areas of concern. This chapter also considers how funding mechanisms interact with this new workload and evolution.

### **A. A BRIEF HISTORY OF EMERGENCY MANAGEMENT**

The field of emergency management was formalized only recently within the government, and the scope and scale of the mission space continue to grow. This section first explores the historical trend of the field’s continued evolution to meet a new mission area. This development shows a capacity and expectation to move toward the next step to meet societal needs. Second, some notable events have either created some problem-solving tools to be leveraged by emergency management against wicked problems or framed some limitations to those actions.

The 1802–1803 Portsmouth, New Hampshire, fire marked the start of emergency management in the United States, as it was the first time the government acknowledged



and acted in response to a disaster situation.<sup>58</sup> The federal actions also highlight how limited emergency management was at its beginnings, constrained to reactive financial aid, in contrast to the hands-on multi-phase approach spanning five key mission areas that modern-day emergency managers are familiar with today.<sup>59</sup> Starting in the early morning of December 26, a fire that ignited in a structure near the market square devastated most of Portsmouth, destroying 114 buildings and causing \$200,000 in damages.<sup>60</sup> In the wake of this calamity, the fledgling U.S. legislature passed the Congressional Act of 1803, suspending the collection of bond payments from city residents to ease the financial burden of post-disaster reconstruction in addition to bond repayment.<sup>61</sup> Because the bill was the first passed by Congress to provide for relief after a disaster, FEMA, in its official history, identifies the 1803 act as the first federal effort in emergency management.<sup>62</sup> Still, the bill calls for little aside from providing financial relief through the suspension of bond repayments from affected citizens and businesses in the Portsmouth region.<sup>63</sup> In other words, while the Portsmouth relief bill may have been the first step toward emergency management in the United States, it lacked direct action with the population or response at the incident location.

The change of the government’s stance—to direct relief instead of purely financial aid—after the Civil War marked the first evolution of emergency management to meet society’s needs. Developed in reaction to the post–Civil War carnage affecting the nation, the Freedmen’s Bureau was notable as one of the first federal organizations focusing on

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<sup>58</sup> Bruce R. Lindsay, *Stafford Act Assistance and Acts of Terrorism*, CRS Report No. R44801 (Washington, DC: Congressional Research Service, 2019), 1, <https://sgp.fas.org/crs/homsec/R44801.pdf>.

<sup>59</sup> Federal Emergency Management Agency, *National Preparedness Goal* (Washington, DC: Federal Emergency Management Agency, 2015), 3, [https://www.fema.gov/sites/default/files/2020-06/national\\_preparedness\\_goal\\_2nd\\_edition.pdf](https://www.fema.gov/sites/default/files/2020-06/national_preparedness_goal_2nd_edition.pdf).

<sup>60</sup> “Portsmouth Fire Relief Papers, 1802–1803—MS071,” Portsmouth Athenaeum, accessed November 30, 2022, <https://portsmouthathenaeum.org/portsmouth-fire-relief-71/>.

<sup>61</sup> A Bill, for the Relief of the Sufferers by Fire, in the Town of Portsmouth, H.R. 11, 7th Cong. (January 14, 1803), <https://www.congress.gov/bill/7th-congress/house-bill/11/text>.

<sup>62</sup> “History of FEMA,” Federal Emergency Management Agency, accessed March 28, 2022, <https://www.fema.gov/about/history>.

<sup>63</sup> Relief of the Sufferers by Fire.

recovery from a catastrophic event.<sup>64</sup> Originally established to help recently freed slaves establish themselves in society, the bureau later stepped in to aid citizens affected by several subsequent natural disasters—including floods, drought, and famine—that struck the southern United States in 1866 and 1867.<sup>65</sup> It was the first time that a government entity provided the populace with direct aid instead of financial aid in the form of tax or bond relief.<sup>66</sup> This approach of direct relief became a permanent part of the government’s response efforts moving forward.

The Federal Civil Defense Act of 1950 pushed the profession into a new mission and showed a willingness for government officials to repurpose emergency management for other pressing needs.<sup>67</sup> The threat of nuclear war in the 1950s significantly increased federal involvement in response efforts and expanded the focus from natural disasters to humanmade catastrophes and conflicts. The Federal Civil Defense Act of 1950 expanded the powers and responsibilities of emergency management to focus on preparing for nuclear war instead of solely natural disasters.<sup>68</sup>

While civil defense activities were explicitly intended to counter the effects of a nuclear blast or other activities by an enemy state, many in government began to note the applicability of concepts and equipment to other more frequent and pressing needs, for example, weather events.<sup>69</sup> When funding was provided to the states for civil defense purposes due to the Civil Defense Act, there was more significant interest in using those funds for natural disaster response.<sup>70</sup> This repeated action of using resources allocated for

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<sup>64</sup> Lucien G. Canton, *Emergency Management—Concepts and Strategies for Effective Programs*, 2nd ed. (Hoboken, NJ: Wiley, 2020), 22, <https://app.knovel.com/hotlink/toc/id:kpEMCSEPE3/emergency-management/emergency-management>.

<sup>65</sup> Gareth Davies, “The Emergence of a National Politics of Disaster, 1865–1900,” *Journal of Policy History* 26, no. 3 (July 2014): 307, <https://doi.org/10.1017/S0898030614000141>.

<sup>66</sup> Canton, *Emergency Management*, 21.

<sup>67</sup> Federal Civil Defense Act of 1950, Public Law 920, *U.S. Statutes at Large* 64 (1952), <https://www.hsdl.org/c/tl/federal-civil-defense-act-1950/>.

<sup>68</sup> Canton, *Emergency Management*, 28; Federal Civil Defense Act of 1950.

<sup>69</sup> Scott Gabriel Knowles, *The Disaster Experts: Mastering Risk in Modern America* (Philadelphia: University of Pennsylvania Press, 2013), 165, ProQuest.

<sup>70</sup> H. Quinton Lucie, “How FEMA Could Lose America’s Next Great War,” *Homeland Security Affairs* 15 (May 2019): 3, ProQuest.

civil defense for natural disaster response led to altering the act in 1980 to allow the formal dual use of resources.<sup>71</sup> Overall, by providing funds for nuclear war preparedness and response, the Civil Defense Act inadvertently grew emergency management by providing local government officials with the tools, funding, and know-how to manage natural disasters, even if the intent was nuclear war survival.

On the heels of these federal legal developments came the formation of FEMA, which eventually grew into a national guidepost for emergency management's function at all levels of government through policy publications and incident management and planning frameworks. Established in 1979 by President Carter with Executive Order 12127, FEMA consolidated a multitude of federal agencies with disaster response functions into one program.<sup>72</sup> Local and state emergency management offices now had a focal point for policy, training, and guidance in performing their work.<sup>73</sup> Furthermore, emergency management's responsibilities grew to include activities before, during, and after a disaster rather than simply post-event response.<sup>74</sup>

Traditionally, emergency management's focus was on preparing for and responding to disaster situations through traditional response actions. In fact, there was often some disagreement about whether the focus of emergency management was on effective preparation or effective response, though not both.<sup>75</sup> This response-heavy focus changed under the purview of FEMA's first administrator to possess actual emergency management experience, James Lee Witt, who led the agency from 1993 through 2001.<sup>76</sup> Witt's oversight of FEMA heralded a transition into a new mission space for the organization and the field—mitigation actions—which worked to prepare communities for disasters and reduce risk. Witt also set FEMA's first strategic growth plan, emphasizing mitigation over

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<sup>71</sup> Lucie, 8.

<sup>72</sup> Jimmy Carter, Executive Order 12127, "Federal Emergency Management Agency," *Code of Federal Regulations*, title 3 (1979 comp.): 376, <https://irp.fas.org/offdocs/eo/eo-12127.htm>.

<sup>73</sup> Canton, *Emergency Management*, 29.

<sup>74</sup> Canton, 30.

<sup>75</sup> Knowles, *The Disaster Experts*, 165.

<sup>76</sup> Canton, *Emergency Management*, 30.

response actions.<sup>77</sup> In this evolving space, FEMA focused on preparing for various disasters by lessening their impact before they occurred rather than responding reactively after the event.<sup>78</sup>

Thus, new efforts involved building emergency management via training and preparedness before disasters.<sup>79</sup> Witt and his team also emphasized the communities that FEMA served, particularly because the end of the Cold War seemed to lessen the likelihood of nuclear war.<sup>80</sup> Indeed, FEMA and, in turn, the field of emergency management underwent a significant pivot during the 1990s away from national and civil defense and toward comprehensive, all-hazards planning for disasters that supported the public good.<sup>81</sup> Events like the first World Trade Center attack in 1993 followed by the Oklahoma City bombing in 1995, however, put the focus on emergency management's role in the terrorism space.<sup>82</sup> Witt and FEMA leadership made a notable determination to remain out of the terrorism mission when the question of who would be responsible for leading government efforts in terrorism arose via the Nunn-Lugar legislation.<sup>83</sup> The decision to let other agencies focus on terrorism efforts was tied to other federal agencies wielding much better knowledge and equipment in the realm of weapons of mass destruction.<sup>84</sup> The mindset and transition to all-hazards planning eventually informed many guidance documents and theories that drive emergency management planning today, for example, whole community planning.

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<sup>77</sup> Canton, 30.

<sup>78</sup> Canton, 30.

<sup>79</sup> Lucie, "How FEMA Could Lose America's Next Great War," 4.

<sup>80</sup> R. Steven Daniels and Carolyn L. Clark-Daniels, *Transforming Government: The Renewal and Revitalization of the Federal Emergency Management Agency* (Arlington, VA: PricewaterhouseCoopers, 2000), 7.

<sup>81</sup> Knowles, *The Disaster Experts*, 276.

<sup>82</sup> George D. Haddow, Jane A. Bullock, and Damon P. Copolla, *Introduction to Emergency Management*, 4th ed. (Burlington, MA: Elsevier, 2011), 11.

<sup>83</sup> George D. Haddow et al., *Introduction to Emergency Management*, 3rd ed. (Burlington, MA: Elsevier, 2009), 9.

<sup>84</sup> Haddow et al., 9–10.

The aftermath of the 9/11 attacks found the profession expanding into the space of terrorism and homeland security while solidifying several important emergency management constructs. For example, the blending of emergency management and terrorism response and preparedness was one of many constructs to emerge.<sup>85</sup> What had previously been a comprehensive all-hazards approach for emergency management became a homeland security focus, very much driven by terrorism concerns, with the federal emergency management apparatus leading this charge.<sup>86</sup> The new focus on terrorism meant that it took precedence over traditional natural disasters in documents such as the post-9/11 *National Response Framework*, the *National Incident Management Systems*, and other federal doctrines.<sup>87</sup>

This marriage of emergency management, homeland security, and terrorism, while then and now a controversial decision, was a net positive for the profession as the increased responsibility and changes were not solely applicable to terrorism.<sup>88</sup> Many of the changes driven by terrorism to funding structures, practices, and equipment applied to the traditional work emergency managers performed.<sup>89</sup> Examples of improvements pushed after the 9/11 attacks included enhanced and nationally standardized incident management practices, new training focused on credentialing personnel, and better interoperable communications, all of which were intended solely for terrorism response but applied to emergency managers' responsibilities.<sup>90</sup> Again, FEMA and other practitioners found themselves innovating emergency management processes, materials, and staff for a new, still-forming mission.

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<sup>85</sup> Haddow, Bullock, and Copolla, *Introduction to Emergency Management*, 297.

<sup>86</sup> Thomas A. Birkland, "Disasters, Catastrophes, and Policy Failure in the Homeland Security Era," *Review of Policy Research* 26, no. 4 (July 2009): 429–30, <https://doi.org/10.1111/j.1541-1338.2009.00393.x>.

<sup>87</sup> Birkland, 430.

<sup>88</sup> Haddow, Bullock, and Copolla, *Introduction to Emergency Management*, 299.

<sup>89</sup> Haddow, Bullock, and Copolla, 299.

<sup>90</sup> Haddow, Bullock, and Copolla, 299.

## **B. GROWING APPLICATIONS OF EMERGENCY MANAGEMENT**

The mission space of emergency management is undergoing an expansion on two separate fronts. First, increases in disasters create additional work within existing responsibilities of emergency management agencies. Second, emergency management has been asked to intervene in an ever-increasing number of new missions. In both instances, how operational budgets do or do not support this new workload is noted. These increases in workload also stand as potential indicators of the next evolution of emergency management—toward wicked problem management.

### **1. Increased Traditional Disasters**

Since the 1950s, the number of federally declared disasters in response to such incidents as floods, hurricanes, and wildfires has steadily increased nationwide. The 1960s averaged approximately 19 federal disaster declarations per year while the first decade of the 2000s averaged 57 declarations per year.<sup>91</sup> This uptick is likely tied to a corresponding rise in severe weather events nationally, as the two trends are closely and causally linked.<sup>92</sup> Additionally, evidence suggests that the disasters themselves are becoming much more consequential in their impact.<sup>93</sup> Changes in demographics, environmental factors, technology, and economics across the globe are contributing to a rise in more complex and damaging disasters globally.<sup>94</sup> Aspects like increasingly connected technological and electrical networks mean disasters involving those networks increasingly impact more people while rising globalization allows for the quicker spread of contagious diseases and disaster victims.<sup>95</sup> The Congressional Budget Office indicated in 2016 that the dollar value of damages and the number of individuals impacted by hurricanes alone would

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<sup>91</sup> Bruce R. Lindsay, *Stafford Act Declarations 1953–2016: Trends, Analyses, and Implications for Congress*, CRS Report No. R42702 (Washington, DC: Congressional Research Service, 2017), 1, <https://crsreports.congress.gov/product/pdf/R/R42702>.

<sup>92</sup> Lindsay, 14.

<sup>93</sup> Hans De Smet, Patrick Lagadec, and Jan Leysen, “Disasters Out of the Box: A New Ballgame?,” *Journal of Contingencies & Crisis Management* 20, no. 3 (September 2012): 146, <https://doi.org/10.1111/j.1468-5973.2012.00666.x>.

<sup>94</sup> De Smet, Lagadec, and Leysen, 139.

<sup>95</sup> De Smet, Lagadec, and Leysen, 140–41.

continue to increase, other events notwithstanding.<sup>96</sup> For example, climate change and continued coastal development will contribute 45 percent and 55 percent of the gross domestic product increase noted by the Congressional Budget Office.<sup>97</sup> Additionally, by 2075, 2.1 percent of Americans will live in areas at risk of hurricane damage, up from 0.4 percent of the population in 2016.<sup>98</sup> Finally, in a 2022 report, the Congressional Research Service pointed out that an increasing frequency of severe weather events coupled with a rise in population will result in both more impactful and costlier disasters.<sup>99</sup> Thus, it is likely that increasingly damaging disasters of a grander scale are likely to spur a further rise in issued disaster declarations.

The limited availability of federal grant funds that provide most of emergency management's budget compounds the concerns of such a rising workload. At the state level of emergency management, federal grants fund approximately 70 percent of the average agency.<sup>100</sup> Furthermore, the various federal grants that provide funds have been stagnant over the last several years, experiencing little to no increase or, in some instances, posting decreases.<sup>101</sup> Additionally, any further reductions or eliminations in the federal emergency management or homeland security grant programs put local emergency management capabilities at risk.<sup>102</sup> Ultimately, the stagnation or removal of funding amplifies the impact of a rising workload as agencies are then forced to do more with less.

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<sup>96</sup> Congressional Budget Office, *Potential Increases in Hurricane Damage in the United States: Implications for the Federal Budget* (Washington, DC: Congressional Budget Office, 2016), 22–23, <https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/51518-hurricane-damage-onecol.pdf>.

<sup>97</sup> Congressional Budget Office, 2.

<sup>98</sup> Congressional Budget Office, 2.

<sup>99</sup> William L. Painter, *The Disaster Relief Fund: Overview and Issues*, CRS Report No. R45484 (Washington, DC: Congressional Research Service, 2022), 23, <https://crsreports.congress.gov/product/pdf/R/R45484>.

<sup>100</sup> National Emergency Management Association, *2022 Biennial Report* (Lexington, KY: National Emergency Management Association, 2020), 12.

<sup>101</sup> National Emergency Management Association, 13.

<sup>102</sup> Amy Gillespie, “An Effective Funding Strategy for Washington State Emergency Management Programs” (master’s thesis, Naval Postgraduate School, 2020), 24, <https://apps.dtic.mil/sti/pdfs/AD1126435.pdf>.

As emergency managers are responsible for much of the work involving disasters and subsequent declarations, these trends of increasingly frequent and expensive disaster responses portend a burgeoning workload for those in the field. Limited funding further raises the alarm on this increasing trend, potentially signaling trouble for the profession moving forward.

## **2. Increases in Other Missions**

Government officials' reliance, desired or realized, on emergency managers for non-traditional disasters or alternate missions is increasing the workload of the field just as traditional disasters are. In Philadelphia, Pennsylvania, Mayor James Kenney turned to the Office of Emergency Management in 2018 to coordinate the response to the growing opioid epidemic gripping specific neighborhoods.<sup>103</sup> His executive order directed the use of the office's Emergency Operations Center, processes for information sharing and resource coordination, and incident management structures to reduce the effects of the opioid crisis in the Kensington neighborhood and beyond.<sup>104</sup> The Philadelphia opioid crisis and emergency management intersection was again brought to the forefront of discourse in April 2022, with a resolution entered by Councilman Alan Domb to declare the Kensington neighborhood a disaster zone.<sup>105</sup> The resolution called on city, state, and federal emergency management bodies to release funding and resources usually reserved for natural disasters.<sup>106</sup> For both initiatives, city leadership recognized that the skills and tools frequently leveraged for natural disasters and other catastrophic events could be leveraged for other disruptive events within their jurisdiction.

Philadelphia is not alone in using emergency declarations and the local emergency management agency to resolve non-traditional emergencies. San Francisco Mayor London Breed issued an emergency declaration in December 2021 to improve the quality of life in the Tenderloin neighborhood, placing the Department of Emergency Management in

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<sup>103</sup> Kenney, Philadelphia Mayoral Executive Order 3–18.

<sup>104</sup> Kenney.

<sup>105</sup> Phila. City Council Res. 220330 (2022).

<sup>106</sup> Res. 220330.



charge of coordination efforts.<sup>107</sup> The declaration allowed the city government to sidestep laws and “eliminate bureaucratic barriers” that were hampering the response to the opioid crisis in the Tenderloin.<sup>108</sup> Citing the San Francisco Department of Emergency Management’s successes in navigating burdensome bureaucracy during the COVID-19 to “get things done and make real, tangible progress,” Breed requested those same coordination and problem-solving skills be used to solve the problems occurring in the Tenderloin district.<sup>109</sup> The *Tenderloin Emergency Initiative Strategic Plan and Operations Guide*, released shortly after Breed’s early December announcement, highlights many of the expected skills that the Department of Emergency Management (DEM) brought to the table. Many of DEM’s disaster skills—given its overall strategy, operational coordination, situational assessment, solution planning, and situational reports developed by an incident management team—readily applied to the opioid emergency.<sup>110</sup> Overall, San Francisco’s use of an emergency declaration to cut red tape and expedite city services indicates the attractiveness of emergency management’s problem-solving abilities to local government leadership.

While the examples in Philadelphia and San Francisco suggest a widening mission space for emergency management at a local level, the prospect of similar actions at the federal level exists. In a 2021 report, the Congressional Research Service examines how the Stafford Act and, by extension, FEMA could be utilized in response to protests or civil unrest instead of the existing disaster applications.<sup>111</sup> The report notes that the intentionally limited scope of the Stafford Act prevents its application in non-disaster

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<sup>107</sup> San Francisco Department of Emergency Management, *Tenderloin Emergency Initiative Strategic Plan and Operations Guide* (San Francisco: San Francisco Department of Emergency Management, 2021).

<sup>108</sup> “Mayor London Breed Declares State of Emergency in the Tenderloin,” Office of the Mayor of San Francisco, December 17, 2021, <https://sfmayor.org/article/mayor-london-breed-declares-state-emergency-tenderloin>.

<sup>109</sup> Office of the Mayor of San Francisco.

<sup>110</sup> San Francisco Department of Emergency Management, *Tenderloin Emergency Initiative*.

<sup>111</sup> Bruce R. Lindsay et al., *Stafford Act and Selected Federal Recovery Programs for Civil Unrest: Historical Perspectives and Policy Observations*, CRS Report No. R46665 (Washington, DC: Congressional Research Service, 2021), 1.

societal concerns.<sup>112</sup> The report also indicates that Congress could consider several options to expand and modify the Stafford Act to increase its applicability in impactful events nationwide.<sup>113</sup>

On a grander scale, another Congressional Research Service report from 2021, *Climate Change, Slow-Onset Disasters, and the Federal Emergency Management Agency*, explores modifying the Stafford Act to encompass many longer-term issues facing the nation.<sup>114</sup> The report examines the difficulty in applying the Stafford Act and FEMA to assist with slower, longer-duration, yet highly impactful events such as drought or erosion.<sup>115</sup> Similar to the first report, the Congressional Research Service recommends that both FEMA and the Stafford Act need expansion to counter these new threats.<sup>116</sup> These reports, among others, signal the potential growing workload for federal emergency managers in areas that, at the moment, are not considered the realm of the federal government.

Once again revisiting the intersection of workloads and budgetary concerns, these new and unusual missions pose financial difficulties for some agencies. In the case of state and local emergency management agencies, federal grant funds can limit their capacity to absorb the workload. This capacity concern is tied to the requirement that a portion of the funding be tied to specific missions or metrics. The Urban Areas Security Initiative and State Homeland Security Program grants are focused on terrorism-related expenditures and missions.<sup>117</sup> Another federal grant, the Emergency Management Performance Grant, is focused less on the specific mission and more on specific functions.<sup>118</sup> Essentially, because

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<sup>112</sup> Lindsay et al., 20.

<sup>113</sup> Lindsay et al., 32.

<sup>114</sup> Diane P. Horn, Elizabeth M. Webster, and Erica A. Lee, *Climate Change, Slow-Onset Disasters, and the Federal Emergency Management Agency*, CRS Report No. IN11696 (Washington, DC: Congressional Research Service, 2021), 1, <https://crsreports.congress.gov/product/pdf/IN/IN11696>.

<sup>115</sup> Horn, Webster, and Lee, 2.

<sup>116</sup> Horn, Webster, and Lee, 4.

<sup>117</sup> Federal Emergency Management Agency, *Fiscal Year 2022 Preparedness Grants Manual*, FM 207–22–0001 (Washington, DC: Federal Emergency Management Agency, 2022), [https://www.fema.gov/sites/default/files/documents/fema\\_fy-2022-preparedness-grants-manual.pdf](https://www.fema.gov/sites/default/files/documents/fema_fy-2022-preparedness-grants-manual.pdf).

<sup>118</sup> Federal Emergency Management Agency.

these new missions fall outside the frameworks of existing federal grants, funds are possibly barred from use given grant parameters and restrictions.

### **C. CONCLUSION**

Since its formation in the early years of the United States, emergency management has continually evolved to support the needs of society, and this evolution continues to the present day. A rising workload and a recognition that emergency management's skills apply to problems outside of traditional disasters are driving the next phase in this evolution, although the workload may not be appropriately supported from a budgetary or capacity standpoint. The history and continued evolution of emergency management highlight the pivotal and essential role played by emergency management practitioners in coordinating the response to society's new and complex problems as they emerge. It is also notable here that wicked problems are found in the historical mission spaces, with the Freeman's Bureau addressing poverty and famine. Likewise, the emerging mission is marked heavily by wicked problems, with Philadelphia's emergency management approach to the opioid crisis and San Francisco's use of emergency management to mitigate homelessness and drug use standing as examples.

### III. EMERGENCY MANAGEMENT AS AN OPTION

From within government, emergency management agencies collaboratively prepare for and facilitate the response to crises of the most significant magnitude, such as hurricanes, wildfires, acts of terrorism, and pandemics. To accomplish this feat, emergency management agencies leverage several approaches to building a collaborative problem-solving environment. When used appropriately, emergency management’s whole community planning process, the Incident Command System (ICS), and emergency operations centers (EOCs) create collaborative environments that assist with problem-solving during complex disaster environs, some of which feature commonalities with wicked problems. In turn, these tools may assist with wicked problems occurring outside the traditional disaster and crisis space familiar to emergency management agencies.

This chapter reviews how the government can use emergency management to facilitate the collaborative approach to wicked problems. It examines three tools frequently employed by emergency management—whole community planning, ICS, and EOCs—to demonstrate their alignment with aspects of collaborative problem-solving for wicked problems, as identified across the wicked problem literature, particularly the Australian Public Service Commission’s 2007 report *Tackling Wicked Problems*. How collaboration is fostered and how the criteria of wicked problems are managed are demonstrated for each of the identified emergency management tools. Additionally, the chapter provides examples of each tool’s fostering collaboration in response to a significant crisis, which demonstrates a track record. Altogether, the three tools leveraged by emergency management agencies can provide a successful collaborative approach to managing wicked problems.

The emergency management approach to collaboration via whole community planning, ICS, and EOCs can assist the government in managing wicked problems. Having successfully responded to a range of significant crises across the country, these three tools and emergency management agencies have demonstrated an ability to face unique situations, such as wicked problems, head on. By fostering a collaborative approach to problem-solving in ways that mitigate many of the criteria that indicate wickedness,

emergency management offers a viable pathway for the government to follow in response to these problematic, entrenched issues.

#### A. WHOLE COMMUNITY PLANNING AND RESPONSE

Emergency management's whole community planning process is an effective way to ensure all involved stakeholders have a seat at the table for problem-solving. The response to the Boston Marathon bombing in April 2013 provides a notable example of emergency management's successes in utilizing whole community planning to prepare for and respond to significant crises. In several ways, the bombing and subsequent manhunt resembled a wicked problem due to the overall incident's complexity. The response involved an array of state, local, private-sector, and federal partners tasked with balancing a range of priorities such as healthcare for victims, evacuation of the race route, the manhunt for the terrorists, crime scene processing, and overall city security.<sup>119</sup> The Boston Office of Emergency Management's approach to emergency management planning utilized a systematic whole community approach, ultimately resulting in a timely and effective response to the events that unfolded.<sup>120</sup> A social network analysis of the Boston response performed by emergency management researchers indicated that "collaborative emergency management networks greatly contributed to the effective communication, coordination, and collaboration efforts that manifested immediately following the Boston Marathon bombings."<sup>121</sup> The city's *Emergency Operations Plan*, which incorporated all of the necessary community partners for disaster response in the planning process, provided the foundation for these partners to work collaboratively toward the common goal of emergency management once the event occurred.<sup>122</sup> Altogether, the collaborative environment and whole community planning were responsible for the immediate

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<sup>119</sup> Massachusetts Emergency Management Agency et al., *After Action Report for the Response to the 2013 Boston Marathon Bombings* (Framingham, MA: Massachusetts Emergency Management Agency, 2014), 3–5, <https://archives.lib.state.ma.us/handle/2452/264302>.

<sup>120</sup> Qian Hu, Claire Connolly Knox, and Naim Kapucu, "What Have We Learned since September 11, 2001? A Network Study of the Boston Marathon Bombings Response," *Public Administration Review* 74, no. 6 (2014): 699, <https://doi.org/10.1111/puar.12284>.

<sup>121</sup> Hu, Knox, and Kapucu, 755.

<sup>122</sup> Hu, Knox, and Kapucu, 707.

successful response to the Boston Marathon bombing and the subsequent manhunt for the perpetrators.<sup>123</sup>

The most significant emphasis within the literature regarding the collaborative approach to wicked problem management involves an inclusive framework that incorporates all public and private stakeholders. Revisiting the report *Tackling Wicked Problems*, the Australian Public Service Commission identifies a need for a “supportive culture and skills base” in government that will foster collaboration, cut across organizational boundaries, incorporate all partners, and ultimately support unified decision-making in response to wicked problems.<sup>124</sup> The report further identifies numerous case studies across the Australian government indicating that the process works. However, as the report notes, this collaborative, inclusive approach does not come naturally to governmental employees.<sup>125</sup>

This call for inclusion mirrors emergency management’s whole community planning process. Like wicked problems, emergency management requires the participation of all partners to prepare for, respond to, and recover from emergencies and disasters across the country. In 2011, FEMA administrator Craig Fugate first acknowledged “that a government-centric approach to disaster management will not be enough to meet the challenges posed by a catastrophic incident. That is why we must fully engage our entire societal capacity.”<sup>126</sup> Fugate’s comments initiated a pivot toward the practice of whole community planning for emergency managers.<sup>127</sup> Described as a “philosophical approach on how to think about conducting emergency management” in the initial 2011 guidance issued by FEMA, whole community planning incorporates “residents, emergency management practitioners, organizational and community leaders,

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<sup>123</sup> Hu, Knox, and Kapucu, 709.

<sup>124</sup> Australian Public Service Commission, *Tackling Wicked Problems*, 18.

<sup>125</sup> Australian Public Service Commission, 18.

<sup>126</sup> Federal Emergency Management Agency, *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action* (Washington, DC: Federal Emergency Management Agency, 2011), 2, [https://www.fema.gov/sites/default/files/2020-07/whole\\_community\\_dec2011\\_\\_2.pdf](https://www.fema.gov/sites/default/files/2020-07/whole_community_dec2011__2.pdf).

<sup>127</sup> Federal Emergency Management Agency, 2.

and government officials.”<sup>128</sup> On its face, the initial push for whole community planning is designed to build collaboration across the community for better disaster response and to guide emergency managers’ daily work. However, the mantra of whole community planning permeates much further than the 2011 initial guidance, appearing in nearly all FEMA’s documents that drive emergency management work since then.<sup>129</sup> This prevalence makes emergency managers extremely familiar with this style of collaboration as a tool, positioning them to foster such an approach for wicked problems.

The whole community planning process involves several actions intended to create (or foster) a collaborative environment. One of the first actions is for emergency managers to understand the community, such as the population’s makeup and the resources available in the community.<sup>130</sup> Understanding the community makeup helps increase collaboration, identify partners for inclusion in planning efforts, and lets emergency managers determine the feasibility of proposed actions.<sup>131</sup> If the community lacks the resources or ability to perform a planned action, the action cannot be done and should not be considered a viable path forward during the planning process. Once demographics are established, the next step in whole community planning is to create a collaborative team that includes representatives from all members of the community—businesses, civic groups, residents, and government agencies, among others—who may contribute to or be affected by planned actions.<sup>132</sup> Increasing the participation of these partners makes support and acceptance of the planned actions more likely.<sup>133</sup> Including public partners from non-governmental entities in developing response options for emergencies is vital because it ensures that community

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<sup>128</sup> Federal Emergency Management Agency, 3.

<sup>129</sup> Whole community planning is included as a key function in the national prevention, protection, mitigation, response, and disaster recovery frameworks, as well as the *National Incident Management System* and the *Comprehensive Preparedness Guide*.

<sup>130</sup> Federal Emergency Management Agency, *Developing and Maintaining Emergency Operations Plans*, Comprehensive Preparedness Guide 101 (Washington, DC: Federal Emergency Management Agency, 2021), 1, [https://www.fema.gov/sites/default/files/documents/fema\\_cpg-101-v3-developing-maintaining-eops.pdf](https://www.fema.gov/sites/default/files/documents/fema_cpg-101-v3-developing-maintaining-eops.pdf).

<sup>131</sup> Federal Emergency Management Agency, 1.

<sup>132</sup> Federal Emergency Management Agency, 1–2.

<sup>133</sup> Federal Emergency Management Agency, 1–2.

members validate any assumptions.<sup>134</sup> Altogether, using a whole community planning approach creates a collaborative effort whereby all parties to a problem—as opposed to only those tasked with implementing the solution—are involved in determining and validating planned solutions. This inclusion of all parties ultimately increases the possibility of success against complex emergencies.

Once in place, an emergency management approach of whole community planning can chip away at the criteria of wicked problems. The chief benefit of whole community planning is a “shared understanding of community needs and resources” for better incident resolution and a stronger community, resilient against many different threats and vulnerabilities.<sup>135</sup> In other words, whole community planning develops a shared perspective among all stakeholders—emergency managers, government officials, community members, and organizations involved in disaster response. This primary benefit can help mitigate the four criteria of wicked problems rooted in different perspectives. The first, third, eighth, and ninth criteria of wicked problems have their basis in conflicts among stakeholders whose differing perspectives either hamper resolution or foster disagreement about whether a solution is working.<sup>136</sup> Under a whole community planning effort leveraged by emergency managers, the common perspective developed among all stakeholders around threats and resources readily applies to efforts to resolve wicked problems. Emergency managers can approach wicked problems in the same manner, using the planning processes and tools that support whole community planning to reach a consensus on the formulation of wicked problems and place all involved stakeholders on the same page.

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<sup>134</sup> Federal Emergency Management Agency, 4–6.

<sup>135</sup> Federal Emergency Management Agency, *A Whole Community Approach*, 3–4.

<sup>136</sup> The first criterion of a wicked problem stipulates that it is hard to agree on what comprises the problem, which makes identifying management options difficult. The third criterion discusses how solutions are judged based on the observer’s perspective or role in problem management. The eighth criterion discusses how perceived linkages between problems, wicked or otherwise, depend on the observer’s place in society or an organization. The ninth criterion states that the different descriptions, cause attributions, or labels for a specific wicked problem can influence management options or potential solutions.



Emergency management’s whole community planning approach is also beneficial in unraveling the intricate social web identified by Rittel and Webber as contributing to the wickedness of specific problems. The growing interconnectedness in the systems of society can make locating the root causes of issues or the best option for resolution challenging to identify, both contributing to wickedness. Emergency management’s whole community planning process assists with navigating this increasingly complex and interconnected social web. FEMA’s whole community doctrine recognizes that “communities are unique, multi-dimensional, and complex” which necessitates an approach focused on “developing a better understanding of a community.”<sup>137</sup> The approach, in turn, provides an opportunity to identify pathways for more unified actions to counter disasters while informing emergency managers on how best to work within that community to meet needs.<sup>138</sup>

## **B. THE INCIDENT COMMAND SYSTEM AND THE NATIONAL INCIDENT MANAGEMENT SYSTEM**

The use of ICS and the National Incident Management System (NIMS) has been proven successful time and time again since the initial inception in the 1970s. Beyond providing a framework in which agencies can manage larger emergencies, ICS and NIMS have demonstrated an ability to tame incidents that feature competing priorities, multiple unmet needs, agencies operating against one another, and a general lack of coordination and collaboration. Several examples have recently highlighted this ability to create a collaborative problem-solving approach. Success in deploying a collaborative approach in management operations for significant crises shows that these benefits carry over to wicked problems.

One example of ICS’s success was the 2001 Howard Street Tunnel fire in Baltimore, Maryland. Described as “everyone’s worst nightmare” by city leadership, the fire, caused by a CSX freight train underground in downtown Baltimore and leading to a water main break, involved staff from multiple states as well as federal and city agencies

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<sup>137</sup> Federal Emergency Management Agency, *A Whole Community Approach*, 6.

<sup>138</sup> Federal Emergency Management Agency, 6.

working with private companies and contractors to manage the incident.<sup>139</sup> The fire was truly complex—burning underground; possibly involving hazardous materials in a densely populated area; triggering a massive water main break that flooded streets, businesses, homes, and other infrastructure; and adding power outages to the mix of issues officials had to contend with.<sup>140</sup> An ICS structure deployed several hours into the incident eased decision-making and shored up collaboration and cooperation in addressing the variety of issues caused by the fire. The Unified Command established among all the partners built trust and cooperation while addressing the concerns of the agencies and organizations involved, allowing them to work in unison rather than against each other.<sup>141</sup> ICS’s ability to bring together diverse partners during a complex incident translates well to the complexity of wicked problems.

ICS also proved capable of navigating the complexities caused by the 9/11 attacks on the Pentagon in Arlington, Virginia. After hijackers flew a fully loaded airliner into the side of the building, first responders from Arlington County were met with a complex scene that involved numerous public safety agencies, federal partners, and military assets.<sup>142</sup> Initial leadership faced disagreement and conflict regarding the priorities of fighting a large fire, performing search and rescue, investigating a crime, sharing intelligence, and keeping military operations running smoothly.<sup>143</sup> Instituting an ICS structure that included a unified command structure and specific functional areas was the route taken by the

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<sup>139</sup> Esther Scott, “The Baltimore Tunnel Fire of 2001 (A): The Crisis Unfolds,” in *Managing Crises—Responses to Large-Scale Emergencies*, ed. Arnold M. Howitt and Herman B. Leonard (Washington, DC: CQ Press, 2009), 202–3.

<sup>140</sup> Esther Scott, “The Baltimore Tunnel Fire of 2001 (B): Responding to the Fire, Bracing for a Flood,” in *Managing Crises—Responses to Large-Scale Emergencies*, ed. Arnold M. Howitt and Herman B. Leonard (Washington, DC: CQ Press, 2009), 218–19.

<sup>141</sup> Esther Scott, “The Baltimore Tunnel Fire of 2001 (C): Struggling to Bring the Crisis to an End,” in *Managing Crises—Responses to Large-Scale Emergencies*, ed. Arnold M. Howitt and Herman B. Leonard (Washington, DC: CQ Press, 2009), 227.

<sup>142</sup> Pamela Varley, “The 9/11 Pentagon Emergency (A): Command Performance—County Firefighters Take Charge,” in *Managing Crises—Responses to Large-Scale Emergencies*, ed. Arnold M. Howitt and Herman B. Leonard (Washington, DC: CQ Press, 2009), 234–35.

<sup>143</sup> Varley, 247–48.

Arlington County Fire Department to resolve these issues.<sup>144</sup> In the end, the ICS structure—established and used to reduce conflict between partner agencies, coordinate resources, and manage the complex scene at the Pentagon—was deemed highly successful.<sup>145</sup>

While whole community planning fosters collaboration before incidents occur, emergency management’s use of ICS and NIMS provides a helpful framework for collaboration in an operational setting. First conceived in response to large California wildfires in the 1970s, ICS was expanded, formalized, and publicized across the nation over the subsequent years, with FEMA further formalizing the concept nationally under NIMS in the aftermath of 9/11.<sup>146</sup> NIMS provides a comprehensive framework that enables organizations to work collaboratively toward, among other functions, sharing resources, facilitating information flow, and ultimately collaborating to manage concerns of all shapes and sizes.<sup>147</sup> ICS and NIMS feature several strong commonalities with the recommended approaches to wicked problems delineated by the Australian Public Service Commission and research on collaborative approaches to wicked problems.

The large, modular incident management structure of ICS is the most vital component of the system that applies to wicked problem management. Under the ICS and NIMS framework, various components allow for “flexible and standard processes and systems” to help manage incidents of any size or complexity.<sup>148</sup> ICS further provides a “standardized approach to the command, control, and coordination” of incidents that allows mixed personnel, regardless of organization, to work together effectively.<sup>149</sup> This approach aligns with the Australian Public Service Commission’s recommendation that

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<sup>144</sup> Pamela Varley, “The 9/11 Pentagon Emergency (B): The Shift to Unified Command,” in *Managing Crises—Responses to Large-Scale Emergencies*, ed. Arnold M. Howitt and Herman B. Leonard (Washington, DC: CQ Press, 2009), 250.

<sup>145</sup> Varley, 267–68.

<sup>146</sup> Federal Emergency Management Agency, *National Incident Management System*, 3rd ed. (Washington, DC: Federal Emergency Management Agency, 2017), 3–4, [https://www.fema.gov/sites/default/files/2020-07/fema\\_nims\\_doctrine-2017.pdf](https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf).

<sup>147</sup> Federal Emergency Management Agency, 1.

<sup>148</sup> Federal Emergency Management Agency, 19.

<sup>149</sup> Federal Emergency Management Agency, 24.

structures and processes for wicked problems be “matched to the task.”<sup>150</sup> This common framework can be expanded, contracted, activated, or deactivated, all in the name of issue resolution, helping to organize the government’s various lines of effort against a wicked problem. Under ICS, a framework during an incident activates five potential functional areas—command, operations, planning, logistics, and finance and administration—as required to organize and administer actions.

At the top of the ICS hierarchy is a concept of shared incident management ownership that enables collaboration and the first of five functional areas. The concepts of unified command and multiagency coordination (MAC) groups from NIMS allow for the management of conflicting perspectives in wicked problem management. Unified command enables the direct operational leadership of multiple organizations, such as firefighters and police officers, to make decisions jointly toward incident resolution, collectively filling the role of the incident commander and following agreed-upon goals or objectives. In contrast, MAC allows the organizations’ executives and elected officials, such as departmental commissioners and the mayor, to agree on high-level policy, coordinate limited resources for allocation, and make unified policy decisions.<sup>151</sup> These bodies reduce conflicting points of view and decision-making based on one viewpoint only, ensuring that all decision-making involves parties working together in agreement rather than against each other. For example, under the concept of unified command, a police chief and fire chief work together during a major flooding event to determine where to deploy resources, what actions to take, and when those actions will occur, as opposed to assigning police officers and firefighters to different areas of a city to facilitate rescues at different times. Such coordination and cooperation are beneficial in reducing some of the harmful criteria that turn a tame problem into a wicked one.

An examination of the unified command and MAC structures vis-à-vis several of Rittel and Webber’s defining criteria of wicked problems lends a straightforward approach to emergency managers’ leveraging ICS and NIMS to organize participants in wicked

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<sup>150</sup> Federal Emergency Management Agency, *National Incident Management System*, 19; Australian Public Service Commission, *Tackling Wicked Problems*, 18.

<sup>151</sup> Federal Emergency Management Agency, *National Incident Management System*, 4–5.

problem management. Unified command and MAC can facilitate common ground among decision-makers by empowering them to set the boundaries and formulate an issue to move forward. This common ground counters the first criterion of wicked problems, which dictates that individuals dealing with the issue cannot agree on the formulation of the problem, ultimately hindering resolution. Unified command and MAC structures under ICS also allow decision-makers to agree on solutions before their implementation rather than working in operational silos that unknowingly challenge or directly counteract each other. Working in a management framework that enables consensus in decision-making before acting helps counter the effects of the third and ninth criteria of wicked problems identified by Rittel and Webber. The third criterion stipulates that stakeholders with differing perspectives view approaches to wicked problems as “good” or “bad” based on their viewpoint rather than on outcomes while the ninth notes that disagreements about the problem’s root cause may hinder resolution. Both and MAC diminish these harmful criteria that foster wickedness.

Directly under the unified command and MAC structures at the top of the ICS hierarchy is the ability to further organize the response to an incident by function, geographic location, or goal. Such organization occurs regardless of the background or agency of participating parties, fosters a collaborative approach, and offers benefits for wicked problem management. The activation of these organizational pieces occurs on an as-needed basis to meet incident-specific requirements. At the top of this expanded organizational structure are the sections that support ICS, divided into four functional areas—operations, planning, logistics, and finance/administration—all of which comprise specific positions or units with dedicated tasks for incident management.<sup>152</sup> Each of these areas further supports incident resolution and fosters collaboration. The operations section organizes operations while considering the incident’s needs, goals, and organizations involved, intending to manage tactical activities, develop and implement strategies to meet incident goals, and organize resources for best use.<sup>153</sup> The planning section likewise has a

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<sup>152</sup> Federal Emergency Management Agency, 24.

<sup>153</sup> Federal Emergency Management Agency, 28.

variety of purposes—supporting incident planning meetings to determine the next steps; collecting, processing, and disseminating incident-related information to key stakeholders; and tracking all documentation for an incident.<sup>154</sup> The logistics section concerns itself with the various wraparound support services for incident management—facilities to assist with the incident; transportation resources; and the ordering, management, and distribution of resources that others are using.<sup>155</sup> Rounding out the last of these incident-specific sections is the finance/administration section, which focuses on contracting for services, managing vendors, managing funds from multiple sources, and tracking expenses.<sup>156</sup> All of these sections work in tandem, seamlessly supporting the overall goal of the response and fostering collaboration during large wicked-problem management activities.

Each of these sections can be further divided across several lines that allow for the seamless integration of resources and functions, once again regardless of resource origin or ownership. The operations section is further divided into broader functional areas, such as the law enforcement branch or fire suppression branch, to allow units functioning toward that goal to work together under shared leadership.<sup>157</sup> Divisions, however, concentrate on geographic or physical areas so that units working in a particular area, such as a neighborhood or regional terrain, can be organized together for cohesion.<sup>158</sup> Groups are yet another organizational tool under ICS that ensure organization around similar activities to foster cooperation—for example, an evacuation group or a medical treatment group.<sup>159</sup> Finally, under ICS, resources themselves can be organized in two manners. Task forces are formed by mixed resources, regardless of origination or agency, working together to accomplish a common task—such as a mix of dump trucks, a backhoe, and personnel to clean up during a storm.<sup>160</sup> Alternatively, strike teams take similar resources, again

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<sup>154</sup> Federal Emergency Management Agency, 28–29.

<sup>155</sup> Federal Emergency Management Agency, 29.

<sup>156</sup> Federal Emergency Management Agency, 29–30.

<sup>157</sup> Federal Emergency Management Agency, 87.

<sup>158</sup> Federal Emergency Management Agency, 88.

<sup>159</sup> Federal Emergency Management Agency, 88.

<sup>160</sup> Federal Emergency Management Agency, 89.

regardless of origination or agency, and organize to accomplish a common task—such as police officers from multiple jurisdictions working together to search abandoned properties.<sup>161</sup> This focus on organization driven by task and purpose through branches, divisions, groups, task forces, and strike teams, rather than organizational or administrative boundaries, creates a collaborative environment dedicated to the mission, which helps deal with wicked problems fraught with disagreement.

ICS and its various components that enable collaborative approaches to incident management also overpower singular or authoritative approaches that often falter in dealing with wicked problems. Under an authoritative approach to wicked problems, sole experts count on only their experiences or knowledge to set a path forward, ultimately missing critical components of potential solutions. An authoritative approach cultivates conflict rather than collaboration, resulting in disagreements on resource allocation, cost-sharing, and best options and, finally, a lack of progress in resolving the issue.<sup>162</sup> Utilizing an ICS- and NIMS-based structure organized by emergency managers places all relevant decision-makers on an equal footing for unified decision-making in a recognized structure used by all participants. Such a structure is the most effective route to manage the wicked problem. Working with “the whole system in the room” helps others equally understand the problem and potential solutions from each other’s point of view.<sup>163</sup>

### **C. EMERGENCY OPERATIONS CENTERS**

Emergency management’s use of EOCs during the response to the 2014 Dallas Ebola cases demonstrates an ability to tackle some of the most challenging problems and the benefits of using an EOC. In 2014, Dallas, Texas, faced the first case of the Ebola virus in the United States, prompting the activation of an Emergency Operations Center to coordinate a response.<sup>164</sup> Described as a complex event involving many different

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<sup>161</sup> Federal Emergency Management Agency, 89.

<sup>162</sup> Roberts, “Wicked Problems and Network Approaches to Resolution,” 6.

<sup>163</sup> Roberts, 13.

<sup>164</sup> Kirsten Lundberg, “Fears and Realities: Managing Ebola in Dallas,” in *Public Health Preparedness: Case Studies in Policy and Management*, ed. Arnold M. Howitt, Herman B. Leonard, and David W. Giles (Washington, DC: American Public Health Association, 2017), 29.

stakeholders facing rapidly changing information, the Ebola challenge in Dallas involved a response unlike any other.<sup>165</sup> The 2014 Ebola outbreak was a wicked problem, given the complex nature and number of stakeholders involved, the volume of rapidly changing information, and the difficulty in resolving it.<sup>166</sup> In response to the Ebola threat, an EOC was activated, incorporating partner agencies from all levels of government and healthcare to handle information coordination and resource management, and implemented guidance to potentially affected partners such as healthcare and schools.<sup>167</sup> The EOC later became a common location for operational- and policy-level coordination in response to the Ebola outbreak, organizing along the lines of specific functions similar to an ICS structure, such as logistics coordination, planning, medical operations, and policy development.<sup>168</sup> Overall, the Dallas EOC activated in response to Ebola and handled a significant number of tasks to manage this wicked problem of a disaster.

Issues with the effective flow of information between stakeholders are yet another barrier to managing and resolving wicked problems. A lack of information or conflicting information during decision-making processes leads to conflict among stakeholders working to solve the wicked problem.<sup>169</sup> Resolving barriers to information sharing is essential for success in the face of a wicked problem, as the barriers can only be effectively managed when the interactions between stakeholders in the name of information coordination are strong.<sup>170</sup> These barriers may be the result of several different factors. Limited access between informational networks and staff might stymie the flow of

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<sup>165</sup> Abraham David Benavides et al., “The Logic of Uncertainty and Executive Discretion in Decision Making: The Dallas-Fort Worth Metroplex Ebola Response,” *Journal of Public Management & Social Policy* 24, no. 1 (Spring 2017): 4, ProQuest.

<sup>166</sup> Louise K. Comfort, Jennifer Bert, and Jee Eun Song, “Wicked Problems in Real Time: Uncertainty, Information, and the Escalation of Ebola,” *Information Polity: International Journal of Government & Democracy in the Information Age* 21, no. 3 (July 2016): 273–74, <https://doi.org/10.3233/IP-160394>.

<sup>167</sup> Lundberg, “Fears and Realities,” 29.

<sup>168</sup> Lundberg, 42.

<sup>169</sup> Ellen M. van Bueren, Erik-Hans Klijn, and Joop F. M. Koppenjan, “Dealing with Wicked Problems in Networks: Analyzing an Environmental Debate from a Network Perspective,” *Journal of Public Administration Research and Theory* 13, no. 2 (2003): 194, <http://www.jstor.org/stable/3525710>.

<sup>170</sup> Van Bueren, Klijn, and Koppenjan, 194.



information needed for problem-solving.<sup>171</sup> The issue with information flow could be that too few people have it, limiting who can contribute to the resolution of issues, or too many people have access to the information, resulting in an inability to reach a consensus.<sup>172</sup> The final barrier is traced back to differing perspectives as well. If stakeholders utilize different perspectives and information in their approach to the wicked problem unbeknownst to others, they are less likely to progress in their attacks on the problem.<sup>173</sup> Enhancing information sharing can, therefore, contribute to more effective management of wicked problems.

Emergency managers, their EOCs, and associated situational awareness tools such as incident management software and video displays coordinate and distribute incident information. EOCs are locations where agencies, including those outside the traditional public safety sphere, such as non-profits or businesses, work together to coordinate information to support effective incident response.<sup>174</sup> Once activated, EOCs serve as locations for incident leaders to coordinate or gather information, jointly make decisions, and communicate effectively.<sup>175</sup> Overall, the EOC's primary functions include information gathering, policy-making, operations management, resource and activity coordination, and public information distribution.<sup>176</sup> After an EOC has been activated or operationalized, it helps to create a common operating picture of the incident for those making decisions.<sup>177</sup>

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<sup>171</sup> Van Bueren, Klijn, and Koppenjan, 203.

<sup>172</sup> Roberts, "Wicked Problems and Network Approaches to Resolution," 4.

<sup>173</sup> Australian Public Service Commission, *Tackling Wicked Problems*, 27.

<sup>174</sup> Department of Homeland Security, *National Response Framework*, 4th ed. (Washington, DC: Department of Homeland Security, 2019), 16–17.

<sup>175</sup> David A. McEntire, *Disaster Response and Recovery: Strategies and Tactics for Resilience*, 3rd ed. (Hoboken, NJ: Wiley, 2022), 155.

<sup>176</sup> McEntire, 426.

<sup>177</sup> Department of Homeland Security, Federal Emergency Management Agency, and Department of Justice, *Considerations for Fusion Center and Emergency Operations Center Coordination*, Comprehensive Preparedness Guide 502 (Washington, DC: Department of Homeland Security, 2010), 15, [https://permanent.fdlp.gov/gpo79210/cpg\\_502\\_eoc-fusion\\_final\\_7\\_20\\_2010.pdf](https://permanent.fdlp.gov/gpo79210/cpg_502_eoc-fusion_final_7_20_2010.pdf).

EOC designs and operations vary by mission, location, and jurisdiction, yet all should share standard features that help accomplish their mission. In the 2021 *National Incident Management System Emergency Operations Center How-to Quick Reference Guide*, FEMA provides all-hazards guidance for jurisdictions on establishing and operating an EOC operation, including which features an EOC needs to function.<sup>178</sup> It reiterates that the EOC, a “structure for collecting, analyzing, and sharing information,” ultimately results in decision-makers’ having the best information possible and field staff “greater insight into their work.”<sup>179</sup> Regarding physical designs, the guide identifies that EOCs can take several forms that organize personnel for effective collaboration, facilitate informational exchange, and provide access to information from large visual displays.<sup>180</sup> These large visual displays, or status boards, are essential as they facilitate information exchange and understanding without interrupting other activities, such as meaningful conversations.<sup>181</sup> Including crisis information management technology in an EOC further supports information exchange and collaboration. These technological solutions may include commercial products or internally developed processes and support resource tracking, response management, and data exchange across participating users in the EOC.<sup>182</sup> Robust communications systems that include phones, internet access, radios, and various other means of collecting and exchanging information between field components of the EOC and the response are the final physical feature that supports a collaborative environment within the EOC.<sup>183</sup> Essentially, EOCs are fixed operational facilities that feature a design, technology, and tools to foster collaboration and information management in support of operations.

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<sup>178</sup> Federal Emergency Management Agency, *National Incident Management System Emergency Operations Center How-to Quick Reference Guide* (Washington, DC: Federal Emergency Management Agency, 2021), 9.

<sup>179</sup> Federal Emergency Management Agency, 10.

<sup>180</sup> Federal Emergency Management Agency, 33.

<sup>181</sup> Federal Emergency Management Agency, 30.

<sup>182</sup> Federal Emergency Management Agency, 39.

<sup>183</sup> Federal Emergency Management Agency, 24.

This informational network created by EOCs helps to facilitate a collaborative environment for managing wicked problems. In dealing with wicked problems, teams require networked information created by such concepts as shared spaces and displays—common locations for information storage, exchange, and viewing—to create a shared understanding of the problem across all stakeholders.<sup>184</sup> Jeff Conklin asserts that when these networked information systems are implemented, the problem-solving team has access to the “bigger picture of the complex issue they are trying to discuss,” as well as the individual components that create that picture, which enables problem-solving and reduces conflict.<sup>185</sup> Emergency managers within an EOC can utilize various informational tools with partners in wicked problem-solving to facilitate such a network. While activated, an EOC and its staff can provide information on the effectiveness of management activities to decision-makers, connect information between units working on similar tasks or responsibilities for coordination purposes, and track information for short-term and long-term planning of issue management.<sup>186</sup> The EOC and its various representatives from agencies involved in managing a problem are often better at facilitating a shared understanding than relying on disparate communication systems to stay connected and share information.<sup>187</sup>

The function of information coordination provided by emergency managers working in an EOC specifically counteracts several criteria that form a problem wicked. Regarding the first criterion of wicked problems, which focuses on the difficulty in determining the components, the EOC’s ability to shape a common operating picture can prove beneficial.<sup>188</sup> A common operating picture allows those involved in an operation to have a complete understanding of the incident to focus on decision-making, and EOCs are

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<sup>184</sup> Jeff Conklin, *Dialogue Mapping* (Chichester, UK: Wiley, 2006), 46–47.

<sup>185</sup> Conklin, 50.

<sup>186</sup> Ronald W. Perry, “The Structure and Function of Community Emergency Operations Centres,” *Disaster Prevention and Management* 4, no. 5 (1995): 39–40, <https://doi.org/10.1108/09653569510100983>.

<sup>187</sup> Roger C. Huder, *Disaster Operations and Decision Making* (Hoboken, NJ: Wiley, 2012), 88, ProQuest.

<sup>188</sup> The first criterion of a wicked problem stipulates that it is hard to agree on what comprises the problem, which makes identifying management options difficult.

responsible for building and maintaining that focus.<sup>189</sup> EOCs can also assist with the third and fourth criteria of wicked problems, related to a common understanding of whether the solutions are working, and the fifth criterion, which indicates that attempts at resolution change the problem. Importantly, EOCs fill the role of collecting and processing information on the incident, which further enables correct decisions in managing the issue.<sup>190</sup> EOCs are also valuable in mitigating different perspectives on the wicked problem at different levels of government, such as between executive leadership and those tasked directly with problem-solving, thus hindering the resolution—the eighth criterion. EOCs should account for the presence of elected officials and leadership, so they can stay informed and access all the information they need, just like those working directly on the issue.<sup>191</sup> By working with whole community planning and ICS, as described in this thesis, EOCs can tame the aspects that turn a problem wicked.

#### **D. CRITERIA AND COLLABORATION REVIEW**

Depicting the findings of this chapter, Table 1 succinctly summarizes the emergency management tools identified and indicates whether the tools create a collaborative environment for wicked problem-solving and which of the specific wicked problem criteria are counteracted. In sum, six of the original 10 criteria are managed through emergency management tools while all three tools create collaborative environments.

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<sup>189</sup> Gregory T. Brunelle, “Achieving Shared Situational Awareness during Steady-State Operations in New York State: A Model for Success” (master’s thesis, Naval Postgraduate School, 2010), 2, <https://calhoun.nps.edu/handle/10945/5375>; “Unit 5: Situational Awareness and Common Operating Picture,” Mississippi Emergency Management Agency, December 2012, 6, [https://www.msema.org/wp-content/uploads/2018/10/05\\_sm\\_awarecop\\_dec2012.pdf](https://www.msema.org/wp-content/uploads/2018/10/05_sm_awarecop_dec2012.pdf).

<sup>190</sup> Huder, *Disaster Operations and Decision Making*, 83.

<sup>191</sup> Huder, 88–89.

Table 1. Emergency Management Tools: Collaboration and Criteria Review

Emergency Management Tool	Collaborative Environment Created	Wicked Problem Criteria Counteracted
Whole Community Planning	Yes	First Criterion Third Criterion Eighth Criterion Ninth Criterion
ICS Structures	Yes	First Criterion Third Criterion Ninth Criterion
EOC	Yes	First Criterion Third Criterion Fourth Criterion Fifth Criterion Eighth Criterion

## E. CONCLUSION

This chapter concludes that the tools emergency managers can bring to bear against wicked problems create an environment of collaboration that is also beneficial in managing the criteria of wicked problems. If better management of wicked problems is rooted in enhanced collaboration focused on including partners, unifying decision-making, and enhancing information sharing, then whole community planning, ICS, and EOCs leveraged by emergency managers provide those services for government.

## IV. CONCLUSION

This thesis has identified that emergency management's tools of whole community planning, ICS, and EOCs can navigate complexity and create collaborative environments in response to disasters. These traits are transferable to wicked problem management. Still, any implementation of emergency management in assisting with wicked problems must consider the substantial barriers emergency management agencies face: an already high workload, budgetary limitations facing the field, and the possible adverse effects of such an expanded mission. Overall, this thesis finds that emergency management agencies possess the capability to foster the collaboration necessary to tackle wicked problems.

This chapter identifies and explores these barriers, as well as provides mitigation actions for each area that relevant government decision-makers might consider. This chapter—and the present research—ultimately concludes that there are four possible answers and outcomes in response to the research question with which this thesis began.

### A. ANALYSIS: THREE BARRIERS

The following three barriers of workload, budget, and overuse—if not adequately accounted for throughout emergency management agencies' involvement with wicked problem management—can result in adverse effects on the agencies' primary mission of disaster preparedness, response, and recovery.

#### 1. Emergency Management Workload

If an organization is already operating at its maximum capacity, it is unlikely to expand into a new operational space. Emergency management agencies are currently facing various issues that inflate their workload. Beyond the increasing frequency and severity of disasters, mounting administrative burdens over the last 20 years have also affected the time personnel can expend for actual emergency management work. The increased workload makes it unlikely that an emergency management agency can take on an additional mission of wicked problems.

In December 2021, FEMA released its 2022–2026 *Strategic Plan*, which addresses how the agency expects to tackle various emergency management issues as well as grow in the coming years.<sup>192</sup> The *Strategic Plan* also addresses the past and current workload facing emergency managers nationally, noting that every year since 2016 has seen the agency deploying double the staff it did in 2016 to respond to disasters.<sup>193</sup> Additionally, the document reports that FEMA had managed 166 emergency and major disaster declarations by November 2020—compared to 26 in 2016—while FEMA’s involvement in fire incidents had increased by 120 percent.<sup>194</sup> Recognizing that its personnel are working at maximum capacity, FEMA identifies a need to “increase the nation’s overall emergency management capabilities at all levels of government, as well as the private sector, the nonprofit sector, and among individuals.”<sup>195</sup> In other words, emergency management must expand its footprint across the nation to meet the imminent demands facing the profession and the nation from disasters.

The most recent biennial report from the National Emergency Management Association (NEMA) echoes FEMA’s *Strategic Plan*, particularly regarding the troublesome and burgeoning workload already taxing personnel.<sup>196</sup> NEMA’s *2022 Biennial Report* takes a broader governmental look at the emergency industry, examining state, local, and federal emergency management agencies’ workloads in 2021. This report, too, cites the trend of an increasing workload facing emergency managers across the nation.<sup>197</sup> State-level emergency declarations issued by governors saw a 70 percent increase over the previous fiscal year while a 40 percent increase in non-declaration events

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<sup>192</sup> Federal Emergency Management Agency, *2022–2026 FEMA Strategic Plan: Building the FEMA Our Nation Needs and Deserves* (Washington, DC: Federal Emergency Management Agency, 2021), 3, <https://www.fema.gov/about/strategic-plan>.

<sup>193</sup> Federal Emergency Management Agency, 19.

<sup>194</sup> Federal Emergency Management Agency, 19.

<sup>195</sup> Federal Emergency Management Agency, 19.

<sup>196</sup> The National Emergency Management Association is a nonprofit association “of and for emergency management directors from all 50 states, eight U.S. territories, and the District of Columbia.” National Emergency Management Association, *2022 Biennial Report*.

<sup>197</sup> National Emergency Management Association.

still involved emergency management services.<sup>198</sup> NEMA’s report differs from FEMA’s *Strategic Plan* in that it asserts the problem facing emergency management personnel has already begun to take its toll: staff are reporting burnout and leaving the emergency management workforce.<sup>199</sup> A large workload and shrinking workforce indicate a limited capacity to manage wicked problems.

Significant administrative burdens further constrain emergency management’s ability to get involved with wicked problems in addition to disaster rates. Indeed, emergency managers are responsible for many other tasks—for example, developing plans, crafting guidance documents, managing grant funds, and ensuring compliance with national standards and guidelines. Starting in the months and years after the 9/11 attacks, emergency managers began to face a significant increase in work responsibilities by managing large grants focused on combating terrorism.<sup>200</sup> A 2022 RAND Corporation report commissioned by FEMA explores the harmful effects of the administrative complexity faced by emergency management personnel.<sup>201</sup> According to the report, emergency managers are responsible for digesting an incredible amount of FEMA-provided information to guide response operations, mitigate hazards, and develop grant funds, among other tasks.<sup>202</sup> The report also notes that in some cases, the complexity and reading level of the provided materials make this burden even worse.<sup>203</sup> Finally, the report identifies that frequent changes to materials and long timelines to implement these large constructs continue to pile on administrative burdens.<sup>204</sup> The RAND report concludes that this burden is so significant that FEMA should work to simplify much of its processes to

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<sup>198</sup> National Emergency Management Association, 15.

<sup>199</sup> National Emergency Management Association, 10.

<sup>200</sup> Richard T. Sylves, “Civil–Military Relations in Emergency Management,” *Public Manager* 38, no. 3 (Fall 2009): 79, ProQuest.

<sup>201</sup> Jason Thomas Barnosky et al., *Streamlining Emergency Management: Issues, Impacts, and Options for Improvement*, RR-A1440-5 (Santa Monica, CA: RAND Corporation, 2022), <https://doi.org/10.7249/RRA1440-5>.

<sup>202</sup> Barnosky et al., 6–7.

<sup>203</sup> Barnosky et al., 7.

<sup>204</sup> Barnosky et al., 7–8.



allow emergency management personnel to focus on actual emergency management duties.<sup>205</sup>

Altogether, while wicked problem management may be operationally within the capabilities of emergency managers, the capacity does not appear to be present for a new mission due to an increasing workload and a high administrative burden. As a result, government decision-makers who choose to commit emergency management agencies to the mission of wicked problems must make another commitment simultaneously, the assignment of additional staffing. Adding new emergency managers explicitly assigned to the wicked-problem management mission would ensure that the disaster workload retains dedicated focus and personnel within emergency management agencies.

## **2. Emergency Management Funding**

The limited budgets of emergency management agencies at the state and local levels further impede the ability of these agencies to engage in wicked problem management. Emergency management agencies across the nation operate on limited budgets heavily tied to federal funds or with budgets that are generally small compared to their governmental counterparts.

At the local level of government, emergency management's funds are minimal and much smaller than their governmental counterparts, meaning existing funds are likely to be focused on the increasing rate of disasters rather than on wicked problems. Los Angeles serves as an example. The FEMA National Risk Index indicates Los Angeles as having a "very high" risk rating compared to the rest of the country due to the threat of wildfire and earthquakes paired with low community resilience, going as far as stating that 100 percent of counties in the United States have a lower level of risk than Los Angeles.<sup>206</sup> Yet funds allocated in the city budget for DEM total \$3,597,093 for fiscal year 2023, making up only

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<sup>205</sup> Barnosky et al., 31–34.

<sup>206</sup> "National Risk Index Map," Federal Emergency Management Agency, accessed July 22, 2022, <https://hazards.fema.gov/nri/map>.

0.03 percent of the total budget.<sup>207</sup> In contrast, entities receiving more funds than DEM include cannabis regulation at \$7,592,851 (0.06 percent of the budget); animal services, receiving \$26,941,178 (0.23 percent of the budget); and the Los Angeles Zoo, receiving \$27,722,232 (0.24 percent of the budget).<sup>208</sup> Meanwhile, the funds in Los Angeles specified for managing the wicked problem of homelessness exceed \$1 billion.<sup>209</sup> Some of the dedicated homeless initiative’s line items far exceed DEM’s total budget; for example, nearly \$92 million is set aside for such homeless services as hygiene needs, coordination efforts, and diversion programs.<sup>210</sup> This small DEM budget starkly contrasts the level of risk faced by Los Angeles and comes at a time when the DEM’s Emergency Operations Center sees continued use as a coordination point for the larger homeless response.

Budgetary limitations within emergency management extend beyond purely dollar amounts and include administrative restrictions on funding administration and use. First, the administration of some federal grants relies on state governments to pass the funds through to local agencies. This passthrough action from state to local entities is not required, allowing states to skim from, divert, or hold back the funds—or even to cut off local emergency management agencies.<sup>211</sup> Additionally, some grant funds that drive emergency management budgets are mission specific. For example, the Urban Areas Security Initiative and State Homeland Security Program grants are used for terrorism preparedness, prevention, and response as opposed to general emergency management and homeland security functions, while the Emergency Management Performance Grant program lists specific priorities for emergency management agencies.<sup>212</sup> This mission-specific focus is a limitation on two accounts. First, it restricts what grant funds are used

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<sup>207</sup> “Open Budget,” City of Los Angeles, accessed July 16, 2022, [https://openbudget.lacity.org/#!/year/2023/operating/0/departments\\_name?vis=pieChart](https://openbudget.lacity.org/#!/year/2023/operating/0/departments_name?vis=pieChart).

<sup>208</sup> City of Los Angeles.

<sup>209</sup> Eric Garcetti, *City of Los Angeles FY 22–23 Budget Summary* (Los Angeles: City of Los Angeles, 2021), 32, <https://cao.lacity.org/budget22-23/BudgetSummary/>.

<sup>210</sup> Garcetti, 34.

<sup>211</sup> Gillespie, “Strategy for Washington State Emergency Management Programs,” 23.

<sup>212</sup> Federal Emergency Management Agency, *Fiscal Year 2022 Preparedness Grants Manual*.

for—supplies or equipment needed for an emergency management approach to wicked problems might not be eligible. Second, the narrow focus of these grants does not account for the wicked problems aspect of emergency management operations, which means that portion of the workload is not accounted for in federal funding.

Government decision-makers can resolve budgetary concerns by allocating dedicated funding for emergency management agencies to use toward their new wicked problem mission. Dedicated funding for this mission space has two primary benefits. First, just as a dedicated workforce allows emergency management agencies to keep personnel focused on disaster response, a specific wicked problem budget ensures that funds for disaster response personnel and equipment remain focused solely on that mission. Additionally, funds focused on wicked problems will be free of the restrictions and limitations presented by emergency management funds drawn from federal grants, often limiting how dollars can be used. Having independence from federal grants can also ensure that changes in federal priorities or allocations do not compromise the ability to perform the new wicked problems mission or the normal disaster-focused emergency management activities.

### **3. Emergency Management Overuse**

With new mission assignments comes the concern that overuse of an entity may result in harmful negative effects on an organization’s primary mission. In the case of emergency management, two concerns emerge. First, government officials may look to emergency management for other missions that are difficult to resolve or could be perceived as emergencies. Such assignments can resemble the concept of Maslow’s hammer, which posits that “if the only tool you have is a hammer, it is tempting to treat everything as if it were a nail.”<sup>213</sup> In other words, if every issue becomes an emergency, then the only logical choice is to engage emergency management. The other concern that may emerge is a loss of mission capability through overworking—basically, a hyperfocus on new missions leaves little to no time for primary missions. Both concepts are relevant

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<sup>213</sup> “Why Do We Use the Same Skills Everywhere?: Law of the Instrument Explained,” Decision Lab, accessed December 6, 2022, <https://thedeisionlab.com/biases/law-of-the-instrument>.

to the emergency management and wicked problem discussion and have emerged in the area of military operations as well.

Researchers have explored the negative effects, both hypothetical and realized, of the overuse of the armed forces in areas other than warfighting, which may provide a reason for emergency management leaders to be hesitant to begin engaging in wicked problem management. A notable work by Charles Dunlap describes the potential negative impacts of the military's becoming ingrained in everyday civilian life and responsibilities.<sup>214</sup> In Dunlap's thought experiment, the general public, frustrated with the U.S. government's inability to solve entrenched problems, has turned to the military, fresh off a victory in the First Gulf War, as the solution to all problems.<sup>215</sup> The armed forces are eventually tasked with providing the services of law enforcement, healthcare, drug rehabilitation, education, transportation, road construction, and a wide range of other non-military operations.<sup>216</sup> Dunlap notes these added missions harm military readiness.<sup>217</sup> Consequently, in the fictionalized Second Gulf War, the armed forces perform horribly, as their attention is scattered among its various new duties rather than focused on training for and performing their primary role of fighting wars.<sup>218</sup> Ultimately, the armed forces stage a coup—not from any desire to enter politics but to alleviate the mission creep.

Dunlap's theoretical concerns have real-world confirmation: the armed forces have displayed a reluctance to move into new spaces, such as crisis and disaster management, fearing that it would divert time and funding from warfighting.<sup>219</sup> Two Government Accountability Office (GAO) reports highlight the stress and detrimental effects of the

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<sup>214</sup> Charles J. Dunlap, "The Origins of the American Military Coup of 2012," *Parameters* 40, no. 4 (Winter 2011/2010): 107–25.

<sup>215</sup> Dunlap, 109.

<sup>216</sup> Dunlap, 111–112.

<sup>217</sup> Dunlap, 115.

<sup>218</sup> Dunlap, 115.

<sup>219</sup> Jean-Loup Samaan and Laurent Verneuil, "Civil–Military Relations in Hurricane Katrina: A Case Study on Crisis Management in Natural Disaster Response," in *Humanitarian Assistance: Improving U.S.–European Cooperation*, ed. Julia Streets and Daniel S. Hamilton (Berlin: Global Public Policy Institute, 2009), 428, [http://www.disastergovernance.net/fileadmin/gppi/RTB\\_book\\_chp22.pdf](http://www.disastergovernance.net/fileadmin/gppi/RTB_book_chp22.pdf).

military's new role in homeland security in the years after 9/11.<sup>220</sup> While acknowledging that the missions assigned in the aftermath of 9/11 were both legal and a valid use of resources, the first report recognizes that these operations inhibited training for the primary warfighting mission.<sup>221</sup> Additionally, the report notes that "forces are not adequately structured for some current domestic missions, and military readiness may erode."<sup>222</sup> In serving such functions as border patrol, air defense services, base security, and infrastructure protection, military units remained busy; however, these tasks provided a different experience from the various defense training put on hold.<sup>223</sup> Units tasked with a domestic mission "received limited training benefit from the domestic mission," and in one case, a unit was "prevented . . . from completing required training for its primary overseas combat mission."<sup>224</sup> Both reports conclude that these time-intensive commitments to homeland defense erode the military's primary mission—fighting wars—due to missed training opportunities, equipment and personnel overuse, and general unavailability to fight wars.<sup>225</sup>

As far as emergency management's potential involvement in wicked problems goes, two cautionary lessons emerge from Dunlap's article and the GAO reports. First, success spurs further use, which creates a cycle of expanded workload following each success. Further expansion of emergency management's mission may compound the already increasing workload facing the field. The second concern is that by focusing heavily on alternative missions beyond the traditional emergency management role, personnel will be ill-prepared to handle hurricanes, floods, wildfires, or acts of terrorism

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<sup>220</sup> Raymond J. Decker, *Preliminary Observations on How Overseas and Domestic Missions Impact DOD Forces*, GAO-03-677T (Washington, DC: Government Accountability Office, 2003); Janet A. St. Laurent, *Observations on Recent National Guard Use in Overseas and Homeland Missions and Future Challenges*, GAO-04-670T (Washington, DC: Government Accountability Office, 2004).

<sup>221</sup> Decker, *How Overseas and Domestic Missions Impact DOD Forces*.

<sup>222</sup> Decker, 3.

<sup>223</sup> Decker, *How Overseas and Domestic Missions Impact DOD Forces*, 9; St. Laurent, *National Guard Use in Overseas and Homeland Missions*, 4–5.

<sup>224</sup> Decker, *How Overseas and Domestic Missions Impact DOD Forces*, 9.

<sup>225</sup> Decker, *How Overseas and Domestic Missions Impact DOD Forces*, 9; St. Laurent, *National Guard Use in Overseas and Homeland Missions*, 22.

when they occur. Just as the armed forces had little time to train and prepare for war in Dunlop’s hypothetical, emergency managers may lose opportunities to perform emergency management duties—chiefly whole community planning—as well as train and exercise ICS concepts or familiarize themselves with EOC functions. Spread too thin, these agencies may start to post failures in response to the next earthquake, hurricane, or fire.

Developing solid boundaries around emergency management agencies is an option to prevent further overuse if they are assigned to wicked problems. With parameters in place that identify which situations emergency management can or cannot assist with, government leaders cannot assign the agencies further responsibilities. Parameters can be designed in one of two ways. First, assignments could be based on criteria that indicate sufficient complexity to justify a need for emergency management’s coordination and collaboration-building skills. If a situation lacks complexity, it is best to leave emergency management uninvolved. On the other hand, acknowledging and considering existing workloads before assigning emergency management to assist with coordinating a response to a wicked problem, or another pressing need, will address concerns about bandwidth. Still, increases in staffing and funding to accommodate new mission areas may negate concerns of overuse due to increased capacity.

## **B. ANSWERS AND OUTCOMES**

There are four possible answers to the research question that opened this thesis: How can the government leverage emergency management agencies in response to wicked problems?

### **1. The Government Uses Emergency Management to Coordinate Collaborative Responses to Wicked Problems without Additional Funding or Staffing**

The first of four possible answers is for government decision-makers to assign emergency management agencies a role in enhancing the collaboration needed for wicked problems by utilizing the same tools leveraged during disasters. However, this assignment and use of whole community planning, ICS structures, and EOCs are not augmented with increased funding or staffing to handle a new area of work. The outcome in this

circumstance can best be described as short-term gains with long-term losses. Emergency management's services will no doubt create a collaborative environment and facilitate progress against the wickedness presented by some entrenched issues facing society, but at a cost. Without the additional funding and staff dedicated to this new mission, the result will be a system that is already overtaxed by disasters and must contend with a new role. Emergency management personnel will miss opportunities to train and prepare for their existing roles in responding to events like hurricanes, floods, and wildfires. They cannot perform both roles if a disaster occurs while committed to a wicked problem. Ultimately, emergency management's ability to handle actual emergencies will suffer, as will society's ability to withstand disasters.

## **2. The Government Uses Emergency Management to Coordinate Collaborative Responses to Wicked Problems with Additional Funding or Staffing**

The second possibility is that emergency management agencies receive a funding and staffing boost to undertake the new mission space focused on wicked problems. The new staffing and funding allocated for wicked problems allow emergency management agencies to undertake their new mission while still focusing on their existing operations without sacrifice. In such a case, emergency management can focus on both wicked problems and disaster situations without compromising on either front. In the long run, this approach has the most benefit to society with few detrimental effects on emergency management capabilities within a community.

## **3. The Government Allows Emergency Management to Focus on Disaster Response**

The third possible answer is to limit emergency management agencies' focus strictly to their current role, considering the numerous concerns raised by FEMA, RAND, and the Congressional Research Service that emergency management's workload is going to increase due to disasters that are intensifying in frequency and devastation. While emergency management has demonstrated a continual evolution since the early days of the United States, adapting the emergency management system to the increase in disasters rather than a new mission space of wicked problems may be the next phase in that

evolution. The limited funding and operational bandwidth concerns documented in this chapter will remain concentrated on disasters rather than expand to a new mission space, and any concerns of potential overuse are addressed by not assigning emergency management a new mission space.

#### **4. The Government Incorporates Emergency Management Practices across Agencies Tasked with Managing Wicked Problems**

A final option for government decision-makers is to incorporate the features and practices that make emergency management agencies uniquely equipped to handle wicked problem management across all government agencies. Incorporating whole community planning, ICS structures, and the EOC concept into more entities across government can enable the benefits of emergency management in several agencies. Such a presence will in turn provide the benefits of emergency management for wicked problems without having to commit emergency management's limited capacity. Additionally, this approach could increase disaster response capacity across government by having a larger number of personnel who are familiar with emergency management practices.

### **C. SUGGESTIONS FOR FURTHER RESEARCH**

This thesis highlights opportunities for future research on wicked problems and how emergency management can assist. Some cities—for example, Philadelphia, Los Angeles, and San Francisco—have already used emergency management agencies to manage such wicked problems as homelessness and drug addiction within their boundaries. Future research on this topic can examine the circumstances of those use cases in depth to further inform emergency management's involvement in wicked problems. Areas for future research may involve exploring the following questions:

1. Which decision-making process led to emergency management's involvement in a wicked problem response?
2. How successful were the efforts to manage the wicked problem once emergency management became involved?



3. Were any detrimental effects to emergency management operations observed because the agency became involved in wicked problem response?

#### **D. CONCLUSION**

While setting out to answer the research question of how the government can leverage emergency management agencies in response to wicked problems, this thesis has found that emergency management agencies can be leveraged to create the collaborative environment needed for wicked problem management. First and foremost, emergency management's tools of whole community planning, ICS, and EOCs foster a collaborative environment emphasizing problem-solving, which is necessary when combating a wicked problem. Each of the tools encourages individuals to work collaboratively, focus on the mission at hand, and enhance information sharing, all with a goal of resolving complex issues. Emergency management agencies can use these tools to help the government and community organize a response to wicked problems that resembles calls for a collaborative approach, as seen in the literature.

While emergency management may be capable of the wicked problem mission, this thesis also identifies several barriers that hamstring emergency management's involvement in wicked problems. Without addressing these barriers, the benefit gained by applying emergency management to wicked problems is erased by a reduced ability to withstand and recover from disasters and other emergent situations. Ultimately, the answer to emergency management's involvement with wicked problems emerges as a balancing act of deploying the skillset while accounting for a multitude of barriers.

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