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Standard Guide for Climate Resiliency Planning and Strategy¹

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INTRODUCTION

This guide provides a set of options for planning climate resiliency management. This includes adapting local business and government infrastructure to chronic, extreme weather events and sea level rise. It may not apply to entities where such assessment and risk management is already widely available through standard sets of guidance, such as the construction of green buildings. This guide provides a voluntary framework of the risk management options and steps that may be beneficial to evaluate climate resiliency solutions. It provides strategies for existing organizations, even those currently operating outside of various voluntary and regulatory schemes. The environmental assessment and risk management strategies contained in this guide recognize the overall value of existing responses. This guide references and blends similar, effective programs and extends them to provide a consistent approach that will facilitate communication and preparation for extreme weather events.

Background—This guide presents a series of options for an individual, group or entity to use. The goal is a strategy or plan to address extreme weather.

1. Scope

1.1 *Overview*—For the purposes of this guide, ‘resiliency’ refers to efforts by entities, organizations, or individuals to prepare for or adjust to future extreme weather and related physical conditions. The primary purpose is to reduce negative economic impacts associated with extreme weather.

1.1.1 This guide presents a generalized, systematic approach to voluntary assessment and risk management of extreme climate related events and conditions. It helps the user structure their understanding of the climate related vulnerabilities and consequences they seek to manage. It helps the user identify adaptive actions of both an institutional (legal), as well as engineering (physical) nature. Options for analysis provide a priority ranking system to address the “worst first” risks of a municipality, local area or facility, addressing practicality and cost-benefit. Users may approach this analysis having initially undertaken a risk assessment to determine what they are seeking to manage, or use the guide to help determine the likely areas of greatest need.

1.1.2 These climate adaptations or adjustments may be either protective (that is, guarding against negative impacts of

extreme weather), or opportunistic (that is, taking advantage of any beneficial effects of extreme weather).

1.1.3 This guide addresses adaptation strategies and planning in response to various impacts that may occur to individuals, organizations, human settlements or ecosystems in a broad variety of ways. For example, extreme weather might increase or decrease rainfall, influence agricultural crop yields, affect human health, cause changes to forests and other ecosystems, or impact energy supply or infrastructure.

1.1.4 Climate-related impacts may occur locally within a region or across a country and may affect many sectors of the economy. In order to meet these challenges, this guide provides an organized, uniform approach to prepare for the impacts of extreme weather through planned “resiliency” strategies.

1.1.5 This guide addresses options to deal with risk factors that may be key drivers for the economy, human health, the environment, or ecosystems. The guide is aimed at helping users understand risks and potential losses, and offers options and a generalized approach to bolster human and ecosystem resiliency to a changing climate. This includes sustainability concepts such as support of economic stability and a good quality of life.

1.1.6 Adaptation can involve responses to extreme weather and long-term preparation for future events. Local conditions will require risk evaluation and analysis of both likely weather events and/or extreme weather trends.

1.1.7 This guide does not address the causes of extreme weather.

¹ This guide is under the jurisdiction of ASTM Committee E50 on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee E50.05 on Environmental Risk Management.

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1.2 Purpose—The purpose of this guide is to provide a series of options consistent with preparing for extreme weather events. This guide encourages consistent management of climate exposures and risks. The guide presents practices and recommendations for regions, zones, and planning horizons to address institutional and engineering actions for reduction of physical and financial vulnerability attributable to extreme weather. It reviews available technologies, institutional practices, and engineering actions that can be implemented by individuals and organizations seeking to increase their adaptive capacity.

1.2.1 The guide also provides some high-level options for the monitoring and tracking of performance of an individual or organization's chosen strategy in order to evaluate its effectiveness and ensure that the approach continues to be reasonable.

1.2.2 This guide ties into the ASTM E50 standards series related to environmental risk assessment and management.

1.3 Objectives—The objectives of this guide are to determine the conditions of the community, facility and/or property with regard to risks of extreme weather events and actions to be taken to manage those risks.

1.3.1 The guide presents information on planning and strategies for response to extreme weather events such as: drought, flood, fire, storms, landslides, tidal surge, and extreme temperatures.

1.3.2 The guide encourages users to set priorities, using a matrix based upon regions in the United States. For each region the guide identifies key climate vulnerabilities, requiring preparation for future events. These could be extrapolated to other regions if there are similar conditions.

1.4 Limitations of this Guide—Given the different types of organizations that may wish to use this guide, as well as variations in State and Local regulations, it is not possible to address all the relevant circumstances that might apply to a particular facility. This guide uses generalized language and examples to guide the user. If it is not clear to the user how to apply standards to their specific circumstances, it is recommended that users seek assistance from qualified professionals.

1.4.1 The guide assumes risks are already identified and is not intended to provide assistance with identifying or evaluating risks.

1.4.2 Insurance Industry—The effects of climate extremes on insurers are not clear. The definition of an insurable occurrence and a commencement point for when insurable claims are made, along with when conditions were discovered and the actionable information leading to an insurable loss is not clear. It may be inappropriate to speculate on climate effects that are highly uncertain for purposes of insurance related to specific events. While there are exclusions for “acts of God,” for example, claims associated with increasing extreme weather events may still have serious impacts on the insurance industry.

1.4.3 This guide does not take a position on the causes or science of extreme weather.

1.5 The guide uses references and information on the control, management and reduction of impacts from many cited sources.

1.6 Several national and international agencies served as sources of information on existing and anticipated levels and management of climate risks including: the Australian Ministry of Environment; the Federal Emergency Management Agency; the National Oceanographic and Atmospheric Administration; the Securities and Exchange Commission; the U.S. Army Corps of Engineers; the U.S. Department of Agriculture; the U.S. Department of Energy; the U.S. Environmental Protection Agency; and, the U.S. Department of Defense.

1.7 This guide relies on current regulatory information about risks from various state agencies, including the California Air Resources Board, the Massachusetts and Connecticut Departments of Environmental Protection, the Western Climate Initiative, and other published high-level strategies and guidance. For example, the National Academy of Sciences guidance and the Climate and Risk section of the Envision rating system published by the Institute of Sustainable Infrastructure.

1.8 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.9 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

E2114 Terminology for Sustainability Relative to the Performance of Buildings

E2432 Guide for General Principles of Sustainability Relative to Buildings

E2718 Guide for Financial Disclosures Attributed to Climate Change

E2725 Guide for Basic Assessment and Management of Greenhouse Gases

E3136 Guide for Climate Resiliency in Water Resources

E3249 Guide for Remedial Action Resiliency to Climate Impacts

E3312 Guide for Mitigation of Wildfire Impact to Source Water Protection Areas and Risk to Water Utilities

2.2 ISO Standards:³

ISO 14001:2015 Environmental management—systems — Requirements with guidance for use

ISO 14063:2020 Environmental management — Environmental communication — Guidelines and examples

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from International Organization for Standardization (ISO), ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <http://www.iso.org>.