NATIONAL RESILIENCE STRATEGY

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National Resilience Strategy:
A Vision for a More Resilient Nation

"[W]e're writing the next chapter in the great American story -- a story of progress and resilience. When world leaders ask me to define America...I define it in one word...Possibilities." —President Biden, 2023 State of the Union

"The future of America's success in the world depends upon our strength and resilience at home...Our success at home requires robust and strategic engagement in the world in line with our interests and values to make life better, safer, and fairer for the American people. That is why we must make far-reaching investments in the sources of our natural strength while building our resilience." —National Security Strategy, October 2022

The Need for Collective Action toward National Resilience

The United States faces an increasingly dynamic risk landscape for which we must build resilience to anticipate and respond. The challenges facing our communities — including, but not limited to climate change, emerging technologies, strategic competition, global pandemics, and the disproportionate effects of wealth inequality — have never been greater, and this is precisely why even stronger national resilience is needed.

Meeting these challenges will require communities to work together to find solutions that protect, enhance, and invest in four pillars of resilience: Governance, Social and Community, Economic, and Infrastructure. Achieving greater resilience demands a unified, whole-of-society approach that includes all levels of government, diverse community leadership, international institutions and partners, the private sector, and individuals.

We need to proactively build community capacity and capabilities to benefit, protect, and provide means for recovery for all Americans, including those who are most vulnerable, while also creating solutions that comprehensively address shocks and stressors today and for future generations. Moreover, systems must be adaptable, and able to withstand whatever human-caused and natural shocks and stressors the nation may face and recover from the consequences of disruptions that cannot be successfully managed. We must proactively prioritize activities and investments that account for complex risks, like cascading impacts and concurrent events, as well as approaches that account for differences in vulnerability and response capabilities within and across communities. As we focus on the four pillars laid out in the Strategy, we must intentionally invest in resilience initiatives that honor the social, ecological, cultural, and equity-based contexts of our communities. Through this approach, the population will be dynamic, adaptive, informed, and able to effectively address the threats and hazards that pose the greatest risks and recover from disruptions.

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Defining Resilience

Resilience is defined as "*the ability to prepare for threats and hazards, adapt to changing conditions, and withstand and recover rapidly from adverse conditions and disruptions*."

The following principles reflect the values and priorities the U.S. Government will use to guide the implementation of our vision for national resilience:

Adaptive: Maintain awareness of and a willingness to apply and implement innovative thinking, tools, and methods to quickly realign or take advantage of evolving circumstances.

Protective: Identify, reduce risk of, prepare for, resist, and respond to threats, shocks and stressors, prioritizing those that represent the greatest risks.

Collaborative: Seek input that engages and empowers the public, private, academic, and nonprofit sectors, and all community members; reflects a commitment to collective deliberation; and utilizes transparent processes, metrics, and goals for data-driven decision making.

Fair and Just: Pursue solutions that account for, and do not exacerbate, disparities between and within communities. Ensure strategies respond to the needs of all Americans, including those in underserved and marginalized communities that have historically borne the disproportionate burden of impacts and costs incurred through decisions made by both public and private actors.

Human-Centered: Position the well-being of individuals, families, communities, and society at the center of resilience goals, taking into consideration the needs of all community members.

Interdependent: Apply risk-informed approaches and integrated processes that account for the complexity and interdependencies of systems, prioritizing solutions and investments for the threats and hazards that pose the greatest risk and that can result in multiple benefits and enhance resilience over the long-term.

Sustainable and Durable: Implement solutions that serve current and future needs by considering the entire lifecycle of solutions. Seek to ensure that there is continuity of technical expertise and leadership as needed.

Understanding the Resilience Landscape

The United States and the rest of the world have entered an era characterized by a complex and increasing number of health, climate, economic, infrastructure, and national security challenges. In addition to multi-dimensional physical threats, the United States and its allies are increasingly challenged by the speed of change and vulnerabilities created by new technology and methods of communication, where information is regularly weaponized to undermine trust in public institutions.

As new and disruptive threats and hazards continue to emerge, it is more important than ever to improve national resilience. Disruptions from a range of acute shocks are becoming more frequent and intense, and the risk of physical and cyber attacks continues to rise. Chronic stressors such as deteriorating infrastructure, environmental degradation, climate change, social injustice, and persistent poverty negatively impact quality of life and intensify the effects of acute shocks, undermining our nation's prosperity and well-being. Climate-induced migration, in particular, will impose further pressures on communities and exacerbate challenges.

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The compounding effects of stressors that create community vulnerabilities and shocks that occur simultaneously or in quick succession have the potential to undermine national resilience and our ability to respond and recover.

Increasingly, shocks and stressors span across national boundaries, increasing the imperative for all nations to cooperate and confront shared challenges and threats from myriad sources ranging from natural hazards and pandemics to state and non-state actors aiming to destabilize governments, economies, and institutions.

Strategic Approach to Build Attributes of a Resilient Nation

The United States is advancing a strategic vision of resilience through four interconnected pillars: Governance, Social and Community, Economic, and Infrastructure. Individually, these essential elements of resilience provide unique and critical capabilities, and their benefits are maximized in combination with one another.

In the face of multi-dimensional threats and challenges, the United States and its international partners must act in partnership and leverage policies and tools that protect our shared values and economic and national security interests. The United States will cooperate with like-minded partners, through international institutions such as the North Atlantic Treaty Organization, to address systemic challenges and tackle the escalating and expanding risks resulting from a changing threat environment.

For the first time, the United States is outlining its vision and related priorities for increasing the nation's resilience which will have global impact/reverberation. The following are the foundational characteristics of a resilient nation, which span across all four pillars:

- All people and communities understand that they are key contributors/actors in building resilience. They have a strong sense of trust in the public systems and institutions that enable cohesive approaches to developing solutions to community and national challenges.

- Leadership, from local to national levels and across all pillars, intentionally participate in building capabilities that support resilience.

- Policies, funding, and practices to advance resilience are integrated across all pillars, produce flexible solutions, reduce vulnerabilities, protect critical functions, and help communities benefit from natural defenses to natural hazards.

- Research prioritizes advancements in technologies and adaptable solutions that are scalable, protecting infrastructure and communities from current and future hazards.

- Federal, State, and regional investment in and support for community-led resilience efforts are pervasive, collaborative, and equitable.

- Governments, businesses, organizations, communities, and individuals have access to timely, accurate, and authoritative information to inform their decisions.

- Natural habitats and resources are a core priority across pillars, guiding collaborative work across systems, and emphasizing communal responsibility and stewardship to protect ecosystems and build resilience.

- Information is readily available, transparent, and effectively communicated and leveraged to support dialogue within communities regarding the challenges and opportunities for action and investment that provide benefit and support our values in times of normal operations and when facing hazards.

- Infrastructure and technology are researched and applied with the future in mind, offering flexible scaffolding that can be used during regular operations and in times of disaster, are adaptable to future conditions, and support safe connection and advanced standards.

- Community coalitions are well-established and have developed contingency plans for governance, business continuity, and service provision during times of disaster, particularly for the most vulnerable populations.

- Recovery after a disaster is accelerated by sufficient, interoperable infrastructure that is upgraded and designed to support cross-system interdependencies.

- Climate resilience and environmental justice considerations are integrated into the DNA of Federal departments and agencies to prioritize the voices, perspectives, and lived experiences of communities with environmental justice concerns.

- Effective Tribal consultation, respect for sacred sites, and recognition of Tribal sovereignty are important components of resilience planning and hazard response.

Throughlines of a Resilient Nation

Achieving resilience also requires adopting throughlines, which are generally defined as *common or consistent elements or themes shared by items in a series or by parts of a whole.* In this Strategy, throughlines are shared dimensions and synergies across all the pillars that must be considered as we advance our vision for national resilience.

- *Cross-system and cross-sector use of resources.* National resilience is achieved when it is understood that all people, communities, and systems are owners of and contribute to building resilience, and that some risks, impacts, and responses transcend system, sector, and even national borders.

- *Resilience manifests in adaptive capacity and communities.* We understand and experience resilience through the interactions and engagement of diverse communities with unique assets and needs, and with the ability to quickly realign or take advantage of evolving circumstances.

- *Layered resilience.* Capabilities of resilience are stronger when intentionally understood, implemented, and reinforced across pillars, maximizing the ability for flexible response that can absorb shocks and support uninterrupted functions.

- *Cascading reliance.* Understanding that systems and communities are layered and interdependent, we achieve national resilience by building redundancies, safety nets, recovery capabilities, and adaptive solutions that reduce the drivers of vulnerability and have systemic effects through positive spillover across levels.

- *Environmental hazards, including climate change.* Climate-related and environmental hazards are impacting communities now. Flooding, droughts, heat, and other hazards are

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becoming more intense, more frequent, and often longer in duration. We must invest in and carefully manage resources to reduce the impacts of climate and environmental hazards on health, social, and economic systems.

- *Technology innovation and digital transformation.* As we modernize, electrify, and digitize our society, we need to be increasingly vigilant across all pillars about both the benefits and opportunities.

- *Cyber infrastructure.* Our society has deep interdependencies with computers and networks, information technology, operational technology, virtual reality, and the emerging capabilities of artificial intelligence. All pillars must build resilience leveraging these resources to accelerate capabilities while safeguarding against cyber threats and enhancing capabilities to facilitate essential functions.

- *Iterative continuous feedback loops.* Resilience capacity is honed and advanced through research and educational institutions. Investments in active learning and through use of iterative cycles of improvement using gathered data as knowledge will allow us to refine processes and models, improve outcomes, and learn to adapt and transform.

- *Supply chains.* Investment in healthy, well-resourced, cyber-secure, sustainable, and transparent supply chains and diversity of vendors ensures uninterrupted access to foundational and life supporting resources. Establishing resilient supply chains is critical to ensure sustained operations in times of stressors and shocks.

- *Robust safety nets.* Systems, products, or resources are in place to reduce risk and strengthen resilience when other risk management strategies fail to address the needs of all people.

Resilience Pillars

The following text outlines how each of the four pillars — Governance, Social and Community, Economic, and Infrastructure —is essential for building national resilience, articulates the United States' vision for each, and identifies opportunities for evolving beyond the current status quo. The pillars present a high-level, aspirational framework to guide all levels of government as we take actions to build resilience of our collective communities and systems.

Pillar I: Governance Systems

Vision Statement: Resilient governance systems unite our nation in a collaborative effort to ensure the continuous functioning of a government that provides leadership and services to its people. National resilience is built upon a foundation of prepared individuals and communities, including the private sector, nonprofit organizations, and critical infrastructure sectors that both support and are enabled by all levels of government.

Contributions to National Resilience:

It is the policy of the United States to maintain comprehensive and effective continuity of Federal government capabilities. However, governance at any level cannot be sustained without the support and integrated efforts of resilient social and community organizations as well as

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economic and infrastructure systems. Inclusivity, integration, and effective leadership that ensures investments and actions are appropriate, addresses the needs of a diverse community, and collectively creates a resilient nation, from the municipal level to the national level, are hallmarks of good governance. Inclusive processes emphasize the need for broad consultation with a wide range of stakeholders to create a sense of shared ownership and a joint vision. Integrated processes bring together systems and institutions, and can also catalyze additional benefits as resources are shared and actors are enabled to work together to achieve better outcomes and benefits.

Governments at all levels work to protect the health, safety, and welfare of all people in the communities and societies they represent, and their ability to do so is directly supported by collective efforts across the nation. However, government resources alone cannot meet all the needs of those impacted by disruptions, and coordination and collaboration between every level of government with non-governmental resources is essential to a resilience posture. The ability of governments to proactively engage with communities is essential for building and maintaining trust, addressing concerns, and ensuring that the needs of individuals and communities are met. This all-inclusive, whole-of-community approach enables a full range of stakeholders to participate in activities that foster and maintain a resilient nation. Engaging with community groups, while identifying and coordinating shared needs and capabilities, can serve as a force multiplier for governance systems. Resilient governance systems within communities are bolstered by multidisciplinary and whole-of-community coalitions that create unity of effort, increase efficiency, and expand the effective response capacity of all those involved. The Federal Government is also the conduit through which the United States engages with Tribes and other nations to promote an overall resilience effort.

Governance plays a crucial role in shaping and influencing economic systems. Effective governance provides the institutional framework, rules, and mechanisms necessary for an economy and for government operations to function, adapt, and respond to economic shocks and stressors. Governments are responsible for formulating and implementing economic policies as well as establishing regulatory methods to ensure fair, equitable, and ethical economic practices. Clear and enforceable laws contribute to stable economies that encourage investment and entrepreneurship. Transparent and accountable institutions help build trust among economic actors, including businesses and investors. Political stability and rule of law are essential for attracting investments and fostering economic growth, with resilience acting as a foundational element that enables an economy to adapt, withstand, and recover from adverse conditions.

Both governance and economic systems influence the procurement and allocation of resources that ensure the security and resilience of infrastructure. Government investments in transportation, energy, water supply, communication, public services, and other critical infrastructure sectors contribute to overall national resilience. Effective and resilient governance ensures that infrastructure projects continue to contribute to sustainable economic development, improve quality of life, and meet the needs of communities in a responsible and inclusive manner. Governance mechanisms can facilitate collaboration between the public sector and privately owned and operated infrastructure. These partnerships can enhance efficiency, bring in private sector expertise, and leverage resources for infrastructure improvement. The development and maintenance of infrastructure ensures that services can continue functioning during and after disruptions.

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Governments are ultimately responsible for serving the public through the provision of essential functions and services. If governments are not prepared, their critical executive, legislative, and judicial functions could be severely degraded, directly impacting the viability of the nation. During disruptions to normal operations, continuation of National Essential Functions is the responsibility of the Federal Government. But this is not practical or possible without the support of resilient social, community, economic, and infrastructure systems. Accordingly, national resilience depends on the stability of, collaboration with, and continuity of State, Local, Tribal, and Territorial (SLTT) government institutions which, with Federal institutions, preserve lives and property and uphold our enduring form of constitutional government at all levels.

Good governance is an integral part of national resilience, as it safeguards communities by proactively addressing risks, supporting decision making, providing visible leadership, executing essential functions, and enabling effective preparedness and response capabilities. Good governance requires resilience modeling that should strive to be threat agnostic and benchmark recovery pathways if and when a system is disrupted. Assuring those processes while protecting the authorities and the mechanisms for accountability contributes to effective and efficient government, as well as the health, safety, and welfare of the people it serves.

Opportunities for Action:

Resilient governments must be adaptable and flexible so that they can respond effectively to changing circumstances. Government systems at all levels need to work together with the people they serve to preserve and enhance our way of life. To be effective in doing so, the United States must strive to:

- Build and strengthen the capability to continue performing, maintaining, and reconstituting government functions and services to the population, including underserved and disadvantaged communities, during a disruption to normal operations. Federal Government preparedness is not enough. There needs to be a working partnership between government at all levels and nongovernmental organizations to achieve national resilience.

- Incorporate risk management strategies into day-to-day decision-making and resourcing so government actors at the State, Local, and Federal level can identify potential risks and vulnerabilities to their staff and organization, equipment and systems, information and data, and the sites where these resources exist before disruptions. This enables proactive measures to be taken to reduce risk and prevent or minimize potential impacts to the performance of essential functions.

- Foster equitable collaboration and coordination among various government entities, stakeholders, and communities to catalyze additional benefits, as resources are shared and actors are enabled to work together to achieve greater ends, maximize the effectiveness and equitable distribution of resources, minimize disruptions to communities from both shocks and stressors, and ensure a unified response to incidents that reduces duplication of efforts and interruptions to essential functions and critical services.

- Ensure decision-making processes include diverse stakeholders and are participatory and transparent in order to build trust and deliver policies and strategies that are comprehensive and reflective of the needs of the communities they serve.

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- Invest in developing civic knowledge of government processes, constitutional rights, and good governance practices. Promote the importance of civil discourse with those who have different perspectives. Encourage civic participation in activities like voting, volunteering, public meetings, and community engagement.

- Ensure continued, coordinated, and visible governmental leadership and the assurance and performance of essential functions, thereby maintaining a viable system of government supported by law. This requires appropriate emergency authorities legally vested in government leaders so that they have prescribed powers to act through delegations of authorities or orders of succession.

- Establish provisions ensuring that the mechanisms and systems for direction and control are resilient so that actions directed by leaders can be communicated and coordinated. Communications infrastructure must be resilient and interoperable so that all levels of government can relay essential information within the organization as well as externally, including keeping the public informed.

- Establish a transparent, scientific, and quantifiable approach that benchmarks the recovery and adaptation process. Effective governance requires explicit values and quantitative metrics that drive performance and goals and identify normatively desired thresholds for resilience in engineered and environmental systems.

Ultimately, a resilient government must have the capability to sustain essential functions, emergency services, and resources so that critical response and recovery actions can achieve the widest possible implementation, thereby ensuring support to the public.

Pillar II: Social and Community Systems

Vision Statement: As a resilient nation, we have strong social systems that sustain a community's ability to navigate adversity while maintaining its core identity. At the individual level, people have meaningful opportunities for community participation and access to resources that support well-being and optimal health. At a societal level, communities are equitable and have a sense of belonging, strong bonds, and a high degree of trust that contributes to greater social capital and common civic values that support collective action across the nation.

Contributions to National Resilience

Social and community systems are foundational to societal resilience and help improve quality of life and prosperity. Well-functioning social and community systems build the trust, social connectedness, and well-being that create a strong social fabric and strengthen our ability to manage adversity. While social and community systems have long been central to addressing hazards and building resilience, they have traditionally been viewed as a supportive rather than a core pillar.

Social and community systems are complex and composed of individuals with roles that are part of the larger community and fulfill the needs of society. On the micro level, social and community systems include families, friends, and neighborhoods; at the community, national, and global levels, social and community systems include religious groups, political organizations, and businesses. Successful social and community systems are interdependent

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with strong communal interaction, contribute to community development and improved policies and services, and can react quickly to emergent community needs and issues.

These systems are built on the unique strengths and assets of each community and therefore look different based on their values. They exist across scales from global and virtual social networks to the hyperlocal or community level, and address the cultural, linguistic, economic mobility, behavioral, health, and social safety needs of individuals and communities. Understanding, addressing, and satisfying these needs through accessible, welcoming, and effective social and community systems enables people to thrive, prosper, adapt, and recover from adversity, trauma, loss, and change across their lifespans.

These systems also promote and support lifelong learning and address cultural and historic resources, which are fundamental to building a sense of belonging and social capital, creating greater civic engagement. Both the built and natural environment provide critical space for social and community systems to thrive. Gathering places within community settings and in the natural environment play critical roles in providing places of grounding and supporting connection. Our ability to sustain ourselves and our relationships demands that we invest equitably, and develop sustainably in a way that protects, invests in, and nurtures the natural environment.

Social capital and civic engagement are richest at the hyperlocal level. Decades of research demonstrate the importance for individuals, as local community members, to have agency in decisions that affect long-term resilience. Community-informed planning that builds and maintains the capabilities of social systems and civic leadership over time is essential to a resilient nation. Successful planning means recognizing and investing in the fundamental role of social and community systems in contributing to a strong nation before disruptions. Establishing and actively employing bi-directional feedback loops between communities and systems support strengthening effective services, creating civic engagement, and building trust. In times of disruption, greater connectedness and trust means that critical decisions support the needs of the community, and communities can more effectively respond, quickly recover, and adapt for a better future.

Social and community systems are most effective in advancing resilience when they are understood and treated as the dynamic interactions that form the connective tissue between individuals, groups, and institutions. When reinforced and valued, these dynamic relationships advance beyond relational networks and become expressed through services that offer foundational support and essential resources to individuals, which in turn, reinforce relationships and cohesion. These relationships, networks, and resources extend across and benefit all systems and should be valued and supported by all sectors to advance resilience.

Networks of individuals, family members, friends, neighbors, and community members are typically first to respond to shocks within a community and are the networks of partners who remain long after external resources subside. At the local level, these networks are attuned to persistent stressors and best positioned to understand the most effective action to take to support the community. There is much to be done to ensure social and community systems are as understood as, and resourced at the level equal to, the other pillars outlined in this Strategy. Further, collective action across all pillars is needed to recognize and address how chronic stressors present within social and community systems affect lives, livelihoods, and quality of life.

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Ongoing efforts across all sectors and levels of government provide a strong foundation for building more resilient social and community systems. Communities across the United States have been working to build their resilience for years by leveraging community-based organizations and networks that provide supportive resources. These organizations and networks often serve as an important conduit for information, fostering social capital and connectedness, and empowering community members to contribute directly to resilience efforts. Government agencies, businesses, and non-profit organizations have engaged in data analysis, planning, and projects to mitigate chronic stressors, address vulnerabilities, and reduce risk to acute shocks.

Social and community systems are deeply interconnected with the other pillars of national resilience. For example, infrastructure systems provide services essential to health and well-being such as clean water and electricity. They facilitate the ability to connect to places of employment and other community services through communication (e.g., broadband) or transportation systems, and provide the public facilities for services such as schools, libraries, and hospitals. Resilient and diversified economies connect individuals to good paying jobs, increasing quality of life and supporting physical and emotional well-being. Strong, transparent, and responsive governance systems set the overall policy direction, provide investment in community and social systems (i.e., education, medical care, food, housing), and create meaningful opportunities for individuals to engage in civic life and decision making. At the same time, actions taken through social and community systems, including addressing chronic stressors, improve the resilience of infrastructure, economic, and governance systems in different ways. Coordination, collaboration, and integration across the pillars is therefore essential for building resilient social and community systems.

Opportunities for Action

Transformative change in the resilience of social and community systems requires an acknowledgement of our shared stewardship of the resources within this pillar and an understanding that we are responsible not only for our individual resilience, but for ensuring that others have the resources they need. Our interconnectedness and mutual dependence underscore the importance of enabling social connectedness and building social capital that can be drawn upon to fuel the work of building community resilience. All voices must be heard as decisions affecting a community's resilience are made. New ways of authentically engaging with people and understanding the needs and desires of all community members are needed.

Building strong social and community systems requires collective action across the nation. Agencies and organizations at all levels of government, non-profits, the private sector, academia, social service providers, and individuals should play a role and see these assets as central to resilience. Across Federal agencies and with the help of state, Tribal, and local governments and non-Federal cross-sector partners, there are opportunities to strengthen social and community systems to achieve national resilience, including the following:

- Support greater community understanding and access to combine funding and expand partnerships that are designed to concurrently address complex community needs.

- Align financial investments and the regulations that support them to create incentive structures that enable sustainable investments that address the root causes of chronic social and community stressors (including persistent poverty, chronic unemployment, and inequitable access to healthcare, transportation, and affordable housing).

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- Expand flexibility, compensation, and leadership at the community level to enable co-leadership and community participation in determining how resources and investments are targeted, especially engaging underserved populations.

- Reduce barriers to and ensure equity in both access to and benefit from resources, especially in under-resourced and vulnerable communities, supporting transparency and capacity building in communities.

- Expand understanding and build cross-pillar investment that enables leadership to protect natural infrastructure and the environment while deepening interpersonal cohesion, protection, creativity, and social capital.

- Incentivize partners working in all pillars to consider dimensions of environmental health, human well-being, and other non-monetary benefits as a part of cost-benefit analyses when making investments in resilience.

- Invest in intentional partnerships with arts, culture, education, and other trusted organizations that support the knowledge and active participation of individuals and communities as core to building social connectedness and developing resilience.

- Integrate and prioritize measurement of the strength of social and community systems across all Federal agencies and their networks.

Pillar III: Economic Systems

Vision Statement: A resilient economic system has the capacity to address underlying economic stressors, enable innovation, improve the quality of life and prosperity of communities and the nation to anticipate, prepare for, withstand, and recover from acute shocks and disruptions it may experience. Furthermore, resilient economic systems have the capacity to leverage opportunities for transformational recovery from occasional economic disruptions. A resilient U.S. economy is foundational to ensuring that our nation has the capacity to anticipate, prevent, and mitigate negative impacts resulting from national and global economic shocks.

Contributions to National Resilience:

Economic resilience contributes to the Nation's overall resilience by ensuring equitable and uninterrupted access to the critical necessities of everyday life. A resilient economic system helps to ensure all Americans are afforded an equitable opportunity for economic participation and self-determination, and that American businesses are strongly positioned to compete in global markets. At the individual and community level, this includes increased financial literacy, access to financial products and services, reliable supply chains, and the robust availability of good paying jobs across a variety of diverse sectors and professions. It also means that individuals and families have consistent access to basic goods and services such as healthy foods, clothing, shelter, education, and healthcare. Resilient, fair, and transparent government institutions that safeguard workers' rights and advocate on behalf of individual consumers are critical. Resilient, reliable, and accessible infrastructure facilitates the movement of people, goods, and information, all of which contributes to individual and community resilience by ensuring that some baseline level of economic activity can continue even in the wake of chronic stressors and acute shocks.

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Broader economic resilience can be achieved through strategic investments that: (1) are aligned with steady-state economic development and job creation strategies and initiatives; (2) are forward-looking, scientifically based, risk informed, and capitalize on opportunities for transformational economic growth, health, and diversification; and (3) address cyclical underinvestment in communities and sectors that result in lack of stability and perpetuate a cycle of ongoing uncertainty, leading to further disinvestment. Economic diversification positions the U.S. economy to remain resilient and nimble in response to known and novel threats and disruptions. Steady-state economic development and job creation are supported through comprehensive planning efforts that are the product of extensive involvement by neighborhood and community-based organizations and stakeholders who collaboratively define and implement a collective vision for economic growth, health, diversification, and participation.

Opportunities for Action

Establishing, maintaining, and enhancing resilient economic systems requires an understanding of which strategies and investments will generate the greatest benefit, including the following:

- Develop economic development plans, strategies, and investments that drive actions to broaden and diversify the local or regional industrial base and provide equitable access to capital to support job growth, worker retention, innovation, and diversification.

- Establish strong partnerships between economic development agencies, business associations, workforce development organizations, financial institutions, and small business development centers that support and provide opportunities for meaningful, well-paying work, resilient community development, and overall prosperity of communities.

- Ensure backups and operational plans for energy, transportation, telecommunications and broadband networks, including cyber systems (operational technology and information technology), to protect commerce and public safety in the event of economic disruptions resulting from natural or humanmade threats and hazards to reduce disruptions to the private sector.

- Promote continuity and preparedness planning through risk assessments — including workforce, cyber, and supply chain risks — to enable the private sector to rapidly recover and resume operations after a disruptive event. Continuity of operations is contingent on the resilience of the systems and infrastructure on which a business relies and operates. Effective continuity of the private sector is achieved through collaboration and coordination with community organizations, critical infrastructure owners and operators, and across the multiple levels of governments, and with the support of households that offer both the supply of labor and demand for goods.

- Employ safe development practices in business districts and surrounding communities. Strategies may include incentivizing locating structures outside of floodplains, preserving natural lands that act as buffers from storms, utilizing nature-based solutions, and protecting downtowns and other existing development from the impacts of extreme weather. Collectively, these efforts can reduce the severity of impacts and contribute to a rapid return to baseline operating levels, particularly among historically underserved communities, who are often exposed to disproportionate levels of place-based risk.

- Conduct pre-disaster recovery planning to define key stakeholders, roles, responsibilities, and actions to direct resources towards building adaptive capacity and facilitating coordination to contribute to resilience in this area.

- Establish a process for regular, interoperable, and resilient communication, monitoring, and updating of private sector community needs and issues that can then be used after an incident.

- Streamline the application and approval process for disaster recovery programs to reduce the administrative and resource burden on communities in a post-disaster setting.

- Establish/utilize an interoperable and resilient capability to rapidly contact key local, regional, state, territorial, Tribal, and Federal officials to communicate private sector needs and coordinate impact assessment efforts in the wake of a disaster. Developing this capability should be done in coordination with other emergency response and recovery communications tools and take into consideration community infrastructure that supports business functions.

Pillar IV: Infrastructure Systems

Vision Statement: As a resilient nation, the physical and cyber infrastructure that we rely on for the safety and security of our citizens and residents, a thriving economy, and provision of effective government and social services, is designed, built, operated, maintained, and protected such that services and resources provided by infrastructure can withstand and rapidly recover from the threats or hazards that pose the greatest risk, and disruptions can be managed without long-term impact. Further, as infrastructure (inclusive of buildings) is newly constructed, repaired, or replaced, and environmental systems are preserved, current and future threats and hazards are taken into account, fostering a culture of continuous adaptation and improvement to the resilience of local communities, regions, and the nation.

Contributions to National Resilience

Achieving resilience requires effective collaboration and coordination between the private sector and Federal and SLTT governments. Infrastructure collectively includes the physical, natural, and cyber assets and systems that underpin the services that society depends on daily. This all-encompassing framework therefore comprises a variety of assets and systems such as government facilities, healthcare and public health providers, the private sector, manufacturing, financial services, research and educational facilities, energy systems, residential buildings, and other services important to communities. No sector is truly independent; there are dependencies and interdependencies across all sectors. Ownership and operation of infrastructure varies depending on the sector. Communications and energy are dominated by private sector ownership, with limited ownership by Federal, state, local, Tribal, and territorial governments. Conversely, some important transportation and water/wastewater systems are owned and operated by state and local governments. Achieving resilience will require collective action among all stakeholders.

Infrastructure projects are sizeable investments that are made with the expectation that the project's expected service life is long, typically 50 years or more. Some projects, such as major bridges, roads, and dams, may be in service for over 100 years. Traditionally, these assets are

designed based on an understanding of the use cases and the likely threats and hazards that are known or anticipated at the time of construction. Often, knowledge and the understanding of risk evolves as new technologies are employed to enhance operational efficiencies, reduce costs, or prolong the operational lifespan of an asset, but these technologies may create vulnerabilities not evident at the time of construction. This evolution of our understanding of risk can result from changes to the natural and the built environment. Consensus-based codes and standards, as well as sector-specific industry best practices, can be cost-effective and serve as essential tools to reduce risks, including vulnerabilities and consequences in long-lifespan infrastructure projects. In addition to considering the impact that the environment may have on infrastructure, it is critical to consider the impact that physical infrastructure has on the environment. Infrastructure projects can consider how to achieve an environmental net gain that leaves the environment in a better state, avoiding negative impacts and minimizing unavoidable ones.

We are also increasingly becoming more dependent on information systems and operational technology. Some of those systems are used to control and operate infrastructure, and have become essential to the efficient operation of many infrastructure systems. Information system capabilities can allow operators to work remotely, which can promote the safety of workers during emergencies and ensure continued operation or allow for controlled management of infrastructure assets to protect them from damage and protect occupants from physical risk. While there are significant benefits to applying such technology capabilities, they introduce cyber risks that need to be understood and addressed when planning for security and resilience. Furthermore, in many cases information systems have become the infrastructure on which we depend – from financial systems to algorithms that control space-based navigation systems. Even billing systems and other business-related applications can provide a cyber attack vector to exploit and disrupt critical infrastructure. Understanding these interconnected architectures and systems, mitigation measures (including redundancies, response plans, and robustness measures), key dependencies, and the potential consequences that can result from their disruption or degradation is a key component of ensuring the resilience of infrastructure systems.

The health of the natural world and human thriving are highly interconnected, and a healthy environment offers many benefits for both ecosystems and human well-being. For example, clean air and water are essential for human health and reduce the risk of disease. Economies are reliant on natural resources for industries that provide jobs and economic opportunities. Nature-based solutions are critical for disaster risk reduction. For example, coral reefs, mangroves, and wetlands reduce flood risk and attenuate the severity of storms. Biodiversity is fundamental for healthy ecosystems that can help to regulate the Earth's climate, which is critical to agriculture and food security, among other things. Access to nature also provides important benefits for mental and physical health and cultural heritage and enrichment.

The resilience of all types of infrastructure – physical, cyber, social, and natural – is tightly intertwined with the other resilience pillars of governance, society and communities, and economy. Publicly-owned infrastructure is reliant on revenue from taxes and ratepayers to cover the cost of operations and maintenance of facilities. Decisions on publicly-owned infrastructure projects are frequently the responsibility of elected officials at the SLTT level, often with Federal support. Decisions on private or investor-owned infrastructure systems are often made based on business considerations, such as responding to consumer demand or developing new business opportunities, where there is profit motive. Privately-owned infrastructure is dependent on customers or consumers for operating and maintenance costs. Investments in new or upgraded

assets and systems depends on whether the investment costs can be recovered over time. Under-investment, dis-investment, or operating systems that cannot be maintained with available resources can lead to conditions where infrastructure does not perform as intended when exposed to shocks or stresses, leading to adverse outcomes. Further, the adoption and enforcement of land use regulations, consensus-based codes and standards, and nature-based solutions can influence the resilience of buildings and infrastructure systems. Hybrid projects that combine both public and private sources of funding (e.g., public-private partnerships) are becoming more prevalent and shift some of the risk of infrastructure projects from the taxpayer to a private entity that seeks to earn substantial profits and shifts costs directly to the users of the infrastructure project.

Similarly, infrastructure of all types can have a significant influence on social and community resilience. Social infrastructure is vital to strengthening community resilience and helps build social networks and trust. These networks can serve as a resource during a crisis that can mitigate the impacts of disasters. These shared community spaces are where informal but crucial connections are made that help establish common ground among diverse groups. Intentional planning is needed to create places where people spend time. Examples include libraries, recreation centers, local small businesses, farmers markets, and parks. Infrastructure can serve to connect citizens and communities to each other, to employment opportunities, to ecosystems, to essential goods and services, and to community practices and cultural decisions. When infrastructure serves to connect, it can contribute to resilient outcomes by ensuring needs are met during stresses and shocks. When infrastructure separates people and communities from services, employment, and ecosystems, it can hinder resilient outcomes and result in the impact of disruptions being disproportionately felt by those marginalized by underinvestment.

Economic resilience is similarly connected to resilient infrastructure and buildings, including housing. Supply chains depend on a highly reliable network of transportation systems, including roads, rail, maritime, and air transportation systems, coupled with a robust communications capability, the electrical grid, and fuel supply. Many supply chains lack redundancies. Disruptions in any one of these systems, whether due to natural hazards, accidents, deliberate physical or cyber attacks, or the introduction of untrusted equipment into critical infrastructure systems, can have cascading consequences that affect the lives of millions of people. Financial services rely on power and communications systems to affect domestic and international trade and investment, ensure payment of salaries, and transact payments for goods and services. Disruption of critical infrastructure and housing services can deny citizens access to earned income and prevent their ability to purchase goods that they rely on daily. Food and agricultural production and water and wastewater treatment are only possible with robust, reliable, and resilient energy, transportation, and communications systems. The resilience of these individual sectors and the services that depend on them are fundamental to the nation's ability to provide for its citizens' health, safety, and security, while contributing to societies internationally, competing in a global marketplace, and meeting international security and defense obligations.

Opportunities for Action

The Federal government has long recognized the significance of the nation's infrastructure to the life of the nation. That includes acknowledging a role for helping to identify, assess, prioritize, and manage the risk to the nation's critical infrastructure – that is, the physical and virtual assets

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and systems so vital that their incapacity or destruction would have a debilitating impact on national security, national economic security, or national public health or safety.

- **Develop technology that considers public safety, equity, security, and resilience through the life-cycle of the system.** With computer and information technologies being both critical infrastructure themselves and integral to other critical infrastructure, security and resilience are requirements and responsibilities that must be considered at all phases of a system, from design through decommissioning. It is imperative that these requirements and responsibilities not fall disproportionately on customers and small and medium enterprises, including infrastructure owners and operators, and that the requirements and responsibilities are shared by the producers of the systems and technologies. Critical cyber systems need to be designed and built with security and resilience in mind, with secure configurations enabled by default and security features such as multi-factor authentication, logging, and single sign on available. Resources should be available to customers and infrastructure owners and operators to encourage and ease adoption of best practices that continuously protect systems and data.

- **Implement modern, consensus-based, resilient, and energy efficient codes and standards for all new construction and major renovations to existing assets.** Consensus-based codes and standards are regularly updated, reflecting changes in the understanding of the environment and hazards and the consensus of the engineering community on how to design and construct buildings and infrastructure to reduce risk of damage or failure by future hazard and threat events. Buildings and infrastructure often have a design life of 50 years or more, during which time environmental conditions and other threats can change significantly, placing infrastructure at risk of failure or disruption. Future conditions may also include technology innovation and digital transformation and the risks and opportunities that accompany those changes. While the replacement rate for buildings and infrastructure is small, approximately 1-2 percent per year, the quality of these assets increases as the building and infrastructure stock is replaced.

- **Make infrastructure projects sustainable and compatible with available resources.** This means that operations, maintenance, repair, and replacement are performed on a regular basis to ensure infrastructure operates as intended throughout its design lifespan when exposed to anticipated threats and hazards, using existing revenues from ratepayer fees or other localized sources. Infrastructure decisions should include assessment of alternatives, both built and natural, weighing the advantages and disadvantages of investing in new infrastructure versus updating or improving existing infrastructure to ensure that current and future needs of the community can be met. Although there has been some advancement to build resilience into planning and implementation, many infrastructure assets were built before new and emerging risks were considered. It is now essential to consider these new risks as part of improving resilience. For example, as cyber systems are increasingly integrated into physical infrastructure systems, the possibility of cyberattacks disrupting services that the nation relies on daily must be considered as part of an overall resilience strategy. Collaboration among all levels of government and the private sector to improve information sharing and understanding of risks and vulnerabilities will be essential to improving resilience.

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- **Apply a systemic and cross-sector approach to infrastructure design, operation, and maintenance.** This includes considering dependencies and interdependencies with other infrastructure services, as well as cyber systems (operational technology and information technology) and governance, economy, natural, social, and community systems. Understanding the complex interactions that exist among these dimensions is essential to identifying effective resilience-enhancing actions for buildings and infrastructure. Furthermore, ensure that infrastructure systems are designed considering cyber risks, so the impact of any compromise is minimized, and operations can be quickly restored. Such cyber-informed engineering integrates cyber expertise with traditional engineering practices. This strategy acknowledges the need to strengthen operational collaboration between the government and industry to more quickly identify, mitigate, and respond to threats before they result in impacts to critical infrastructure.

- **Prioritize equity in designing, constructing, operating, maintaining, and restoring infrastructure systems.** Lack of certain types of infrastructure and infrastructure services can have disproportionate impacts on vulnerable and underserved communities that can lead to consequences in other parts of the community or the local or regional economy. Making decisions about development, operations, maintenance, upgrades, and service restoration following disruption with an equity perspective in mind can lead to better resilience outcomes for the entire community. Prioritize infrastructure design that incorporates sustainable practices and nature-based solutions to enhance the health of environmental systems and preserve them for future generations.

- **Keep recovery in mind and understand the minimum security and resilience requirements for restoring infrastructure services to achieve resilient outcomes.** Resilient outcomes can be achieved through risk management, inclusive of response operations, restoration of damaged infrastructure and disrupted or degraded infrastructure services, and recovery. Careful planning pre-event, including understanding dependency relationships, vulnerabilities, threats, and potential consequences, will inform minimum security and resilience requirements and other actions that can be taken to manage risks, enable response and restoration to quickly restore services, or inform recovery actions that achieve resilient outcomes.

- **Ensure government funding for infrastructure projects includes cybersecurity principles, best practices, and controls.** Cybersecurity goals and a project cyber risk assessment and security plan should be mandatory for every project that has a technology nexus. This includes technology assets and systems essential to the reliable operation of facilities, systems, and equipment that, if destroyed, degraded, or otherwise rendered unavailable, would affect the reliability or operability of critical infrastructure. These assets may include elements, components, and full systems of information technology, operational technology, industrial control systems, and supervisory control and data acquisition systems, among others.

- **Maintain a highly trained workforce.** A resilient infrastructure requires a highly trained workforce. In order to reduce risk and enhance resilience across their sectors in a modern, digitized society, critical infrastructure owners and operators would benefit from equipping the workforce with the right tools, skills, and training, to include cybersecurity training.

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Conclusion

This document sets forth a vision on how the United States can develop and maintain national resilience. It defines and enumerates a national approach for achieving this, focusing on building the necessary capacity and capabilities to address the hazards, acute shocks, and chronic stressors of today and tomorrow. The United States intends to continue building in resilience up front and by design to our national DNA to help us adapt, withstand, and recover rapidly from any adverse condition or disruption. The United States will also continue responding to transnational challenges and seek to engage other nations and international institutions in building both domestic and global resilience to the threats and hazards that pose the greatest risk, based upon the core principles defined in this document, and in line with other relevant national strategies. The road ahead will undoubtably be filled with fresh challenges and obstacles, but the commitments and investments we make today will ensure we will have the means and tools to meet them head on and emerge a more resilient nation.