HHS Climate Resiliency and Energy and Emission Reductions

Awarding Agencies are encouraged to integrate the below guidance to advance resilience and sustainability into their Federal financial assistance application instructions as well as the terms and conditions of the award, by proposing ways to:

1. Use energy and water efficient equipment and appliances
2. Increase the use of low embodied carbon
3. Advance resiliency and sustainability for new construction and major renovation

1 Use Energy and Water Efficient Equipment and Appliances

Awarding Agencies are encouraged to include information in their federal financial assistance application instructions about utilizing energy and water efficient equipment and appliances delivers cost-saving energy and water efficiency solutions that protect the climate, improve air quality, protect public health, conserve future resources for future generations, and reduce operating costs.

Awarding Agencies may require recipients to use Environmental Protection Agency (EPA) ENERGY STAR® or Department of Energy (DOE) | Federal Energy Management Program (FEMP)-designated equipment and appliances and EPA WaterSense products, if any such designation is available for the equipment or appliance.

2 Increase the Use of Low Embodied Carbon Materials

Awarding Agencies should encourage recipients to reduce embodied carbon and greenhouse gases as an important carbon mitigation strategy in their Federal financial assistance instructions. Agencies should also encourage recipients to reduce embodied carbon to cut greenhouse gases as an important carbon mitigation strategy. Embodied carbon[1] from building materials and construction account for at least 8% of global greenhouse gas emissions. Whether a project is new construction or renovation, recipients of federal financial assistance are encouraged to address and plan to reduce embodied carbon early during the planning and design phases of their project.

[1] See definition of embodied carbon as defined by EPA. https://www.epa.gov/greenerproducts/what; https://www.epa.gov/greenerproducts/what-embodied-carbonembodied-carbon

2.1 Guidance and Resources for Reducing Embodied Carbon

- Sustainable Facilities Tool | Embodied Carbon https://sftool.gov/learn/about/658/embodied-carbon
- Low Embodied Carbon concrete and Environmentally Preferred Asphalt Concrete and Asphalt Standard Training_0.pdf (gsa.gov)
- EPA Greener Products and Services Tools & Resources | US EPA

3 Advance Resilience and Sustainability for New Construction and Major Renovation Projects

Awarding Agencies are encouraged to incentivize high performance standards in their Federal financial assistance instructions to maximize resilience and sustainability simultaneously[2] for real property funded through federal financial assistance for new construction and major renovation[3] projects.

1. Integrate the latest consensus-based building and energy codes and standards
2. Incorporate High Performance Standards.
    a. Pursue high performance energy efficiency and net zero carbon operations
    b. Analyze climate hazard risks
    c. Mitigate climate hazard risks
        i. Incorporate above-code and stretch resilience requirements.
        ii. Leveraging nature-based solutions

3.1 Integrate the Latest Consensus- Based Building and Energy Codes and Standards

Recipients of federal financial assistance are strongly encouraged to adopt the latest natural hazard-resistant building codes. By doing so, real property funded through federal financial assistance will be able to better withstand more extreme weather conditions and natural

[2] Please refer to the U.S. Department of Energy Report: https://www.energycodes.gov/sites/default/files/2023; https://www.energycodes.gov/sites/default/files/2023-07/Efficiency_for_Building_Resilience_PNNL-32727_Rev1.pdf; 07/Efficiency_for_Building_Resilience_PNNL-32727_Rev1.pdf

[3] See HHS Facility Program Manual for Major Renovation, which is a construction project that results in either a change of occupancy of any space within a building, the modification of an entire occupancy within a building, or modification or reconfiguration of 50% or more of the total gross square feet of the building: https://www.hhs.gov/about/hhs-manuals/hhs-facilities-manual/glossary/index.html#m

hazards.[4] At a minimum for new construction and major renovation projects, the following guidance should be considered:

3.1.1 Single Family, Two-Family Dwelling, or Low-Rise Multi-Family (Three stories or less)

- Adopt the current published editions of the International Code Council (ICC) | International Residence Code (IRC).
- Meet or exceed the most recent International Energy Conservation Code.

3.1.2 Mid to High-rise Multi-Family, Commercial, and Other Buildings

- Adopt the current published edition of the ICC | International Building Code (IBC).
- Meet or exceed the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) 90.1.

4 High Performance Energy Efficiency and Zero Carbon Footprint Operations

Awarding Agencies are encouraged to pursue construction and major renovation projects that are highly energy efficient, free of fossil fuel emissions, and powered solely with carbon pollution free electricity by choosing one of three recommended paths:

1. minimum energy efficiency requirement,
2. minimum energy efficiency requirement + green and resilient building standard, and
3. certifications on path to net-zero buildings.

4.1 Path 1: Minimum Efficiency Requirement

- Commercial
  - Most recent versions of the Zero Energy or Emissions Appendices for IECC or forthcoming ASHRAE 90.1 once they receive an affirmative determination of energy savings from the Secretary of Energy (Highest Performance)
  - Most recent version of Phius CORE COMM or Phius ZERO COMM or equivalent efficiency standard or green building standard or a green building standard that has a zero energy or zero energy ready compliance path or equivalent efficiency standard (Highest Performance)
  - EPA's Forthcoming ENERGY STAR® NextGen (High Performance)
- Multifamily 4 story and above

[4] Federal Emergency Management Agency. "Building Code Basics." https://www.fema.gov/sites/default/files/documents/fema_building-codes-basics.pdf

- Most recent versions of the Zero Energy or Emissions Appendices for IECC or forthcoming ASHRAE 90.1 once they receive an affirmative determination of energy savings from the Secretary of Energy (Highest Performance)
- Most recent version of Phius CORE or Phius ZERO or equivalent efficiency standard or green building standard (that has a Phius CORE or Phius ZERO compliance path or equivalent efficiency standard) (Highest Performance)
- Most recent version DOE's Zero Energy Ready Homes (Higher Performance)
- EPA's forthcoming ENERGY STAR® NextGen certification (High Performance)

- Single Family and Low-Rise Multifamily (3 story and under)
  - Most recent version of Phius CORE or Phius ZERO or equivalent efficiency standard or green building standard (that has a Phius CORE or Phius ZERO compliance path or equivalent efficiency standard) (Highest Performance)
  - Most recent version of DOE's Zero Energy Ready Homes (Higher Performance)
  - EPA ENERGY STAR® V 3.2 or preferably EPA's forthcoming ENERGY STAR® NextGen certification (High Performance)

4.2 Path 2: Minimum Energy Efficiency Requirement + Green and Resilient Building Standard

Awarding Agencies are encouraged to help prospective financial assistance recipients identify actions to reduce energy consumption and climate change impacts comprehensively, including through energy efficiency, electrification,[5] the use of renewables, and the use of low-embodied carbon materials.

- Green and Resilient Building Standard means an industry-recognized standard incorporating both:
  - Meet Minimum energy efficiency and lower embodied carbon requirements as described in Path 1, use energy and water efficient equipment and appliances, and increase the use of low embodied carbon materials sections.

    AND

  - Certification under the most recent versions of one of the following:
    - Enterprise Green Communities

[5] See definition of electrification as defined by DOE and the rationale for electrification. https://www.energy.gov/electricity-insights/what-electrification

- Leadership in Energy and Environmental Design (LEED) (New Construction, Homes, Midrise, Existing Buildings Operations and Maintenance, or Neighborhood Development)
- ICC-700 National Green Building Standard Green+ Resilience
- The Living Building Challenge
- A regional standard such as Earth Advantage New Homes
- Green Globes
- An equivalent certification and consideration of new standards by request

AND

- No emissions from fossil fuel combustion

4.3 Path 3: Certifications on the Path to Net-Zero Energy Buildings

For new construction and major renovation projects, Awarding Agencies are encouraged to use industry-recognized green building certifications that support buildings on the path to net-zero and net-zero ready construction. Certifications on the path to net zero may be combined with a no emissions from fossil fuel combustion requirement if it is not part of the certification are listed as the following:

- National Green Building Standard: Gold or Emerald, with Green + Net Zero Energy or Resilience designation
- ENERGY STAR® NextGen with renewable energy capacity sufficient to offset annual energy consumption or emissions, plus GHG intensity (kilogram of carbon dioxide equivalent per square feet per heating degree day ($kgCO_2e/ft2/HDD$)) of 0
- Enerphit Premium with renewable energy capacity sufficient to offset annual energy consumption or emissions, plus GHG intensity ($kgCO_2e/ft2/HDD$) of 0
- Phius Plus ZERO or ZERO REVIVE
- LEED v4 Gold or Platinum, with LEED Zero Carbon or LEED Zero Energy designation
- LEED v4.1 Multifamily or Multifamily Core+Shell Silver or higher, with Zero Energy or Zero Carbon designation
- DOE Zero Energy Ready Multifamily + renewable energy capacity sufficient to offset expected annual energy consumption
- Enterprise Green Communities Plus 2020, complying with Criterion 5.4 Achieving Zero Energy
- Greenpoint Gold or Platinum with Net Zero 100% offset designation
- EarthCraft Multifamily Renovation Platinum, with renewable capacity to offset annual energy consumption
- International Living Future Institute Zero Energy Certification; or Zero Carbon Certification

5 Analyze Climate Hazard Risks

To better understand climate hazard risks and possible actions to mitigate losses of life, property, and function, clarification of terminology is provided below.

Both weather and climate describe the same thing, which is the state of the atmosphere, but in different time scales. Weather the state of the atmosphere at a particular location over the short-term. Whereas climate is the weather pattern in a location averaged over a period, often 30 years.[6] Weather phenomenon examples include snowfall or rainfall event, storm surge, thunderstorms, tornado, and heat or cold waves.

Assets include the people, real property, and natural systems that your community want to protect. A hazard is how weather or a climate phenomenon such as flooding or wind damage is experienced, which has the potential to injure people or damage assets.

An exposure occurs whenever assets and hazards overlap, resulting in the potential for the assets to be harmed from the hazard. An example of an impact may include a power outage, which is caused by exposure to a hazard such as a hurricane.

Agencies are encouraged to require that recipients of federal financial assistance follow the below steps to analyze climate hazard risk based on the US Climate Toolkit.

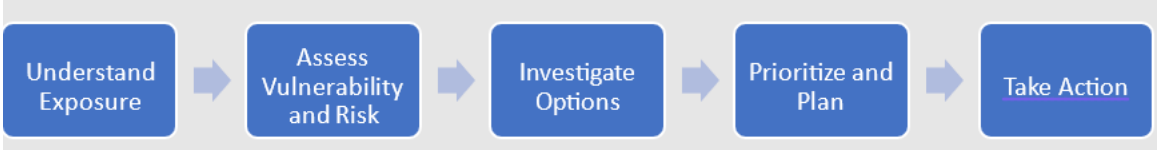

Figure 1: Example Process for analzying climate hazard risks based on U.S. Climate Toolkit

1. To understand exposure, make a list of assets that your community depends on to keep functioning and historic and future climate hazards to develop an exposure matrix to identify which assets are exposed to potential harm.
2. Assess the vulnerability and the risk for reach asset-hazard pair by plotting the probability that the hazard will occur against the magnitude of the potential loss it could incur.
3. Investigate the options through gathering stakeholder input to mitigate the risks. Approaches to mitigate impacts to real property is described in the Mitigate Climate Risks section.
4. Prioritize and plan the identified options through developing life cycle costs effectiveness analysis and identifying the monetized and non-monetized alternatives can assist in selecting the ideal alternative that mitigates the climate hazard risks.

[6] National Oceanic Atmospheric Administration. (March 9, 2016). What's the Difference Between Climate and Weather? https://www.noaa.gov/explainers/what-s-difference-betweenclimate-and-weather.

5. Take action through securing necessary funds and resources to implementing plan to mitigate against climate hazard risks. The Climate Projection and Hazard Exposure Tools and Resources sub-section offers resources that can aid grantees to develop workable solutions to reduce climate related risks.

5.1 Climate Projection and Hazard Exposure Tools and Resources

- American Society of Civil Engineers (ASCE) 7 Online Hazard Tool
- Climate Resilience Toolkit and resources therein
- National Oceanic Atmospheric Administration (NOAA) Sea Level Rise Viewer, Coastal Flood Exposure Mapper, and Weather and Climate Disaster Risk and Vulnerability Mapping Tool
- Climate Mapping for Resilience and Adaptation (CMRA)
- Federal Flood Standard Support Tool
- Federal Emergency Management Agency (FEMA) Building Code Adoption Tracking (BCAT)
- FEMA National Risk Index (NRI)
- Argonne National Laboratory Climate Risk and Resilience Portal (ClimRR)
- FEMA Resilience and Adaptation Planning Tool (RAPT)
- FEMA HAZUS
- United States Geological Survey (USGS) Hazard Exposure Reporting and Analytics Tool (HERA)
- United States Department of Agriculture (USDA)/United States Forest Service (USFS) Wildfire Risk to Communities Tool
- Climate and Economic Justice Screening Tool (CEJST)
- HHS Environmental Justice Index
- Centers for Disease Control and Prevention (CDC) Data Explorer

6 Mitigate the Climate Risks

Awarding agencies can mitigate identified climate risks by using high performance above-code and stretch requirements, nature-based solutions, or both.

6.1 High Performance above-code and stretch resilience requirements

Awarding Agencies are encouraged to include information in their federal financial assistance applications that incorporates the latest above-code and stretch resilience requirements (as described in Table 1 below) to mitigate the risks from likely or highly probable climate hazard exposure(s) like floods and wildfires.

Table 1: Above-Code and Stretch Resilience Resources

Hazard	Above-Code and Stretch Resilience Resources Exceeding Minimum Codes and Standards
Flood	• Federal Flood Risk Management Standard (FFRMS) • HHS FFRMS Procedures • American National Standard Institute (ANSI)/FM 2510 tested flood abatement equipment (Additional requirement where applicable) • American Society of Testing and Materials (ASTM)-E3075, Standard • Test Method for Water Immersion and Drying for Evaluation of Flood Damage Resistance (Additional requirement for construction material below Design Flood Elevation) • National Roofing Contractors Association (NRCA) Waterproofing Manual • Fannie Mae Flood Resilience Guide
Hurricane	• FEMA P-361, Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms
Wind	• Insurance Institute for Business and Home Safety (IBHS) FORTIFIED Home, IBHS FORTIFIED Multifamily, IBHS FORTIFIED Commercial
Tornado	• FEMA P-361, Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms
Tsunami	• FEMA P-646, Guidelines for Design of Structures for Vertical Evacuation from Tsunamis (Third Edition, August 2019)
Wildfire	• IBHS Wildfire Prepared Home • NFPA 1140, Standard for Wildland Fire Protection • NFPA Firewise USA • ICC International Wildland-Urban Interface Code (IWUIC)

Hazard	Above-Code and Stretch Resilience Resources Exceeding Minimum Codes and Standards
Seismic	• FEMA P-154, Rapid Visual Screening of Buildings for Potential Seismic Hazards: A Handbook (Third Edition, January 2015) • National Earthquake Hazard Reduction Program (NEHRP) Recommended Seismic Provisions for New Buildings and Other Structures Volume I and Volume II (2020) • FEMA P-749, Earthquake-Resistant Design Concepts and Introduction to Seismic Provisions for New Buildings (Second Edition, September 2022)

6.2 Leveraging Nature Based Solutions

Nature-based solutions are a fundamental pillar for mitigating the harmful effects from the climate crisis while making ecosystems more resilient. Agencies are encouraged to incorporate nature-based solutions for real property funded with federal financial assistance that supports the implementation of the White House Nature-Based Solutions road map.

7 Additional Resources

7.1 Technical Assistance

The Office of Climate Change and Health Equity (OCCHE) Health Sector Resource Hub is a place where organizations committed to working on climate resilience and sustainability can find helpful resources and supports, including:

- Protecting Vulnerable Patient Populations from Climate Hazards: A Referral Guide for Health Professionals. This resource is intended to inform education and referrals in clinical settings for patients who are vulnerable to climate change's health impacts and can be used by health and human services providers to address climate-related threats to their clients' well-being.
- Compendium of Federal Resources for Health Sector Emissions Reduction and Resilience. This resource features funding opportunities, tools, and supports from the federal government that can assist the health sector in the important work of climate resilience and greenhouse gas emission reduction.
- Quickfinder for Leveraging the Inflation Reduction Act (IRA) for the Health Sector. This resource is meant to help healthcare organizations seeking to increase climate resilience and reduce emissions. It is a digest of opportunities and IRA programs or initiatives that may be able to support them.

7.2 Tools to Prioritize Underserved Communities

- The Environmental Justice Index (EJI) ranks the cumulative impacts of environmental injustice on health for every census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. The EJI ranks each tract on 36 environmental, social, and health factors and groups them into three overarching modules and ten domains.

7.3 Tools to Forecast Climate-Related Threats

- OCCHE Climate and Health Outlook Portal forecasts and documents climate-related health threats in different regions of the country
- Emergency Medical Services Heat Tracker maps local emergency responses to heat-related illness.
- Centers for Disease Control and Prevention (CDC) Heat & Health Tracker provides real-time, local heat and health information so communities can better prepare for and respond to extreme heat events. With the latest update, you can track the annual rate of work-related injuries, illnesses, and deaths due to heat per 10,000 full-time workers by state.