



U.S. Department of Housing and Urban Development | Office of Community Planning and Development

Climate Resilience Implementation Guide

Resilient Public Facilities



Resilient Public Facilities



HUD grantees are in a unique position to increase community resilience to climate change. Community members with low and moderate incomes (LMIs) are disproportionately affected by climate change because they are less able to prepare for, respond to, and recover from the impacts of extreme events and natural hazards.^{1,2} Recognizing these risks, HUD promulgated a rule in 2016 that requires grantees to account for resilience to natural hazard risks in their Consolidated Plans. To support grantees in this work, HUD created a [Supporting Local Climate Action webpage](#), which houses resources on how to use HUD funding to build more resilient communities.

The **Community Resilience Toolkit** provides information on potential impacts from six climate hazards and identifies a broad range of resilience actions that local and state governments can implement to address these risks.

Six **Implementation Guides**, as listed, provide step-by-step instructions on how to implement specific resilience programs.

- Resilience Education and Outreach Activities
- Cool Roofs
- Nature-based Solutions
- Single-family Retrofits
- Resilient Public Facilities
- Community Driven Relocation

About this Resilience Action

This Implementation Guide provides step-by-step instructions on how to make public facilities more resilient to climate change impacts. The community examples featured in this guide are not necessarily funded using Community Planning and Development (CPD) resources, but they could be adapted to allow for CPD program support.

This guide defines public facilities as community-serving buildings such as recreation centers, schools, libraries, and fire and police stations (although CDBG defines public facilities more broadly,³ and many of the principles discussed here could also be applied to other public spaces including neighborhood facilities, parks, and transportation hubs). A resilient public facility is one that is designed, built, or retrofit with a focus on resilience, in line with community priorities. Where possible, grantees may consider alternative modes of access to resilient public facilities including public transportation and bicycles. Resilient public facilities could include one or more of the following features.

- **Sustainable features** that use fewer resources, emit less pollution, reduce environmental harm, and improve indoor and outdoor air quality.

COMMUNITY PLANNING AND DEVELOPMENT (CPD) CONSIDERATIONS

State and local governments may use CPD formula programs – including Community Development Block Grants (CDBG), HOME Investment Partnership Program (HOME) and Section 108 Loan Guarantee Program – to fund resilience actions. The principal purpose of CPD funding is to benefit low- and moderate-income persons.

Implementation of a resilient public facilities program may be an eligible activity and allowable cost under the following CPD-eligible activities categories:

-  **Public facilities and infrastructure improvements** with CDBG or Section 108.
-  **Economic development** with CDBG or Section 108.

- **Resilience features** that can help reduce impacts from climate-related hazards such as heat, flooding, drought, and wildfire.
- **Strengthen community cohesion and education efforts**, which improve a community's resilience to climate-related hazards by increasing their ability to respond to and recover from the hazards. A resilient public facility can serve as a safe community gathering place, offer climate change and hazard information in culturally appropriate ways and multiple languages, and offer a consolidated location for reliable post-disaster resources and as a place of refuge from extreme heat or cold.

Resilient Public Facilities



Resilient public facilities are particularly critical because LMI communities are often disproportionately affected by climate hazards. LMI communities may be at an increased risk from natural hazards because homes are more susceptible to the impacts of extreme weather events (e.g., located in areas with high heat or flood risk); residents may face increased burden responding to or recovering from disasters (e.g., inability to access English-only materials, not being fully insured, not feeling safe going to an evacuation center); and they may have limited options to adapt (e.g., unable to afford resilience upgrades, unable to take time off work to recover).⁴ Resilient public facilities that target LMI communities can help increase individual adaptive capacity and contribute to community-wide resilience.



Resilient public facilities are designed, built, or retrofitted with a focus on resilience, in line with community priorities

BENEFITS OF RESILIENT PUBLIC FACILITIES

Resilient public facilities provide many community benefits.

Community Cohesion

Public facilities can foster community belonging and cohesion by providing opportunities for neighbors to meet and gather.

Recreation

Public facilities that include or expand green spaces can enhance opportunities for local outdoor recreation, or public facilities could be used as recreation centers.

Education

Public facilities can offer education based on their resilient features; for example, include signage that highlights the sustainable and resilient features and their purpose, or offer classes on how to incorporate resilience practices at the household level.

Job Training

Public facilities can provide space for resilience-related job training; for example, a job training program around installing and maintaining resilient features such as solar panels or water-smart landscaping.

Health and Wellbeing

Resilient public facilities may provide aesthetic value and habitat. They may improve human interaction with nature, benefiting physical and mental health. They may also improve indoor and outdoor air quality, and lessen heat islands.

Equity

Resilient public facilities can help reduce hazard risk to LMI communities by providing features such as cooling, heating, shelter, backup power, and resources in multiple languages.

Reduced Greenhouse Gas Emissions

Resilient public facilities can leverage measures that also reduce cooling costs, energy use, and greenhouse gas emissions.



EXAMPLES OF FEATURES TO INCORPORATE IN A RESILIENT PUBLIC FACILITY

Increase sustainable design and operations

- Build or retrofit to create a tight building envelope, including using high-quality insulation, efficient cooling and heating such as [passive climate control](#), or non-flammable and wind-resistant roof materials.
- Apply green infrastructure approaches that manage stormwater.

Reduce impacts from increasing temperatures and extreme heat

- Use [passive climate control](#).
- Provide [energy-efficient heating or cooling](#).
- Install green or cool roof.
- Create a [community cooling center](#).

Reduce impacts from flooding

- Design natural flood barriers around facilities.
- Create or preserve green space around public facilities.
- Encourage the use of permeable paving, rain gardens, vegetation, landscaping, or other techniques that can “[Soak Up the Rain](#)” to manage stormwater runoff.
- Use dry floodproofing techniques.
- [Floodproof or elevate critical mechanical or heating, ventilation, and air conditioning systems](#).

Reduce impacts from drought

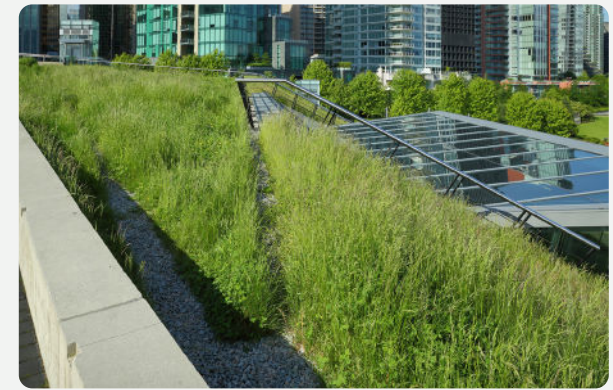
- Install [grey water systems](#).
- Use [water-smart landscaping](#) such as xeriscaping.

Reduce impacts from wildfire

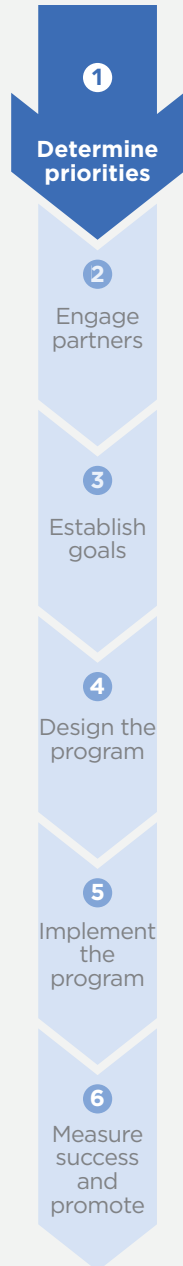
- Use non-flammable roofing and siding and install insulated windows to increase fire resistance, screen vents to keep embers out, and follow other best practices from the [National Fire Protection Association](#).
- Plant [fire-resistant vegetation](#).
- Create defensible zones.

Provide community benefits

- Provide space for community groups such as nonprofits or faith-based groups.
- Create a community gathering place by offering programming such as food distribution, healthcare, pro bono legal help, senior services, or early childhood education or afterschool programs.
- Create a safe community space during and after extreme events by designating it as shelter, or a post-disaster recovery center.
- Install backup power supplies that can be maintained during power outages.



Step 1: Determine Community Priorities



There are many features that support public facility resilience. Consider your community priorities and local context in the facility design. Many communities have existing policies, ordinances, or plans (e.g., comprehensive plan, climate or sustainability plan, energy plan), or they may have already identified areas underserved by public facilities. Look for synergies where resilient public facility activities could address the need for both community cohesion and natural hazard resilience. For example, existing facilities – such as community centers, [libraries](#), police stations, or fire houses – are used year-round for building community, fostering neighborhood cohesion, building trust with local government, and connecting residents. These public facilities can be retrofit to include resilience features - such as solar power and battery storage, flood proofing, and green building design - to ensure the facilities maintain operations during times of severe weather and disasters. During disasters, these facilities can be transformed further to serve in the response and recovery phases by allowing residents to charge phones, access the internet, apply for benefits, contact loved ones, or distribute sandbags, water, food, or other supplies and services. Engage partners and community members early on in your effort (Step 2 offers more detail).

Priorities that influence your public facility might center around a natural hazard or a funding opportunity. For example:

- Responding to community concern about a specific hazard such as extreme heat or flooding
- Addressing a gap in community services
- Meeting community-wide greenhouse gas emissions targets
- Receiving a grant to install solar power for a public facility or provide green job training

Priorities might also influence the scale at which you implement a resilient public facility; for example, focusing on one facility or implementing a community-wide resilient public facility program. Consider some of these factors when identifying the scale of your efforts (Step 4 offers more detail):

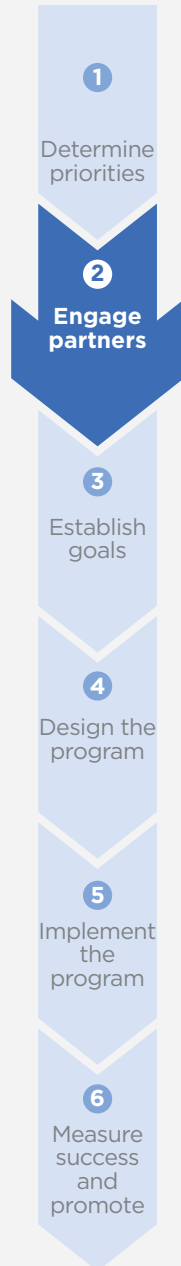
CPD CONSIDERATIONS

If your community is considering CDBG resources to fund a resilient public facility, ensure that it meets a [National Objective](#) by documenting impacts and program benefits to LMI communities. Each activity will likely be eligible either as a neighborhood facility (O3E) or as a recreational facility (O3F). Consider consulting with local experts to obtain data on local need and potential impact and with other public and private agencies – including code enforcement, permitting, planning, and public works – to help identify opportunities and barriers to implementing a resilient public facility. Ensure that community consultation is consistent with the established Citizen Participation Plan and Consolidated Plan requirements.

- Available financial resources and staff capacity to devote to the program and maintain the facility.
- Upgrading existing facilities versus building a new facility.
- Community support for the program.

To begin, research similar programs. There may be another community or agency with a similar program you can learn from, such as those profiled in the **Resilience in Practice** boxes in this guide. Also consider funding opportunities, if you do not already have resources set aside; many funding opportunities have requirements that may influence the program priorities. Identify funding opportunities for different aspects of the project including design, construction, operation, programming, and maintenance.

Step 2: Identify and Engage Partners, Collaborators, and Community



Community outreach and engagement throughout all steps of designing and implementing a resilient public facility builds a common vision by aligning relevant groups and trusted leaders. It is important to build community support, strengthen partner networks, add staff capacity, and obtain leadership buy-in early in the process. Start by working with a trusted network of partners if one already exists.

Developing effective partnerships that leverage each partner's strengths can enhance your program, ensure timely implementation, and help your community respond to climate change on a broader scale. To make the most of such partnerships, establish clear goals, focus on building trust, highlight common benefits, and create structured timelines and processes for communication.

Partners, collaborators, and other stakeholders might include:

- Community members
- Nonprofit, faith-based, or other organizations
- Academic institutions
- Energy auditors
- Renewable energy companies, such as solar installers
- Energy utilities
- State floodplain managers
- Professional associations including those for builders, realtors, or bankers
- Government departments such as building, environment, general services, health, public works, and transportation

Education and outreach are particularly critical for LMI communities, which may have fewer resources to cope with climate risks and increase their resilience. Keep in mind that LMI residents or organizations representing or comprising LMI community members may have higher priority concerns than a resilient public facility, such as meeting basic needs for housing, food, employment, childcare, or transportation. See where the facility can help address other needs and further contribute to community resilience.

The [Developing a Resilience Education and Outreach Activity Implementation Guide](#) provides more information about engaging partners, collaborators, and other stakeholders.

RESILIENCE IN PRACTICE Ann Arbor, MI



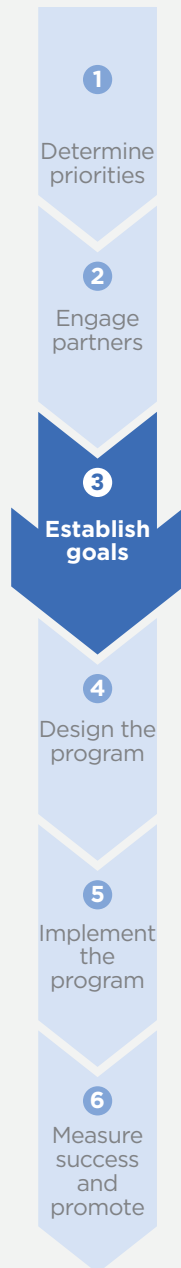
Building Community Resilience

Ann Arbor aims to be carbon neutral by 2030. Community leaders recognize the importance of making a just transition; that is, addressing poverty and other needs while achieving this goal to create a resilient community. To meet these objectives, Ann Arbor secured funding to install a solar power and energy-storage system at the Northside Community Center and Resilience Hub. The Northside Community Center houses two local nonprofits, Community Action Network and Catholic Social Services, and operates a food distribution program. The Center includes refrigerators and freezers that store food for the program and abuts a local school. In the event of a power outage, the solar power and energy storage system can provide 100% of the Center's electricity and up to three days of auxiliary power. By maintaining a reliable food supply for the community, the project helps to make the community more resilient in the event of a power outage. The project was funded by a grant from the [Solar Moonshot Program](#) and a Sustaining Ann Arbor Together city grant.



CPD Considerations: Resilient public facility retrofits, especially those targeted to support LMI communities, may be a CDBG-eligible activity under public facilities. Associated activities may be eligible under public services.

Step 3: Establish Goals and Identify Project Parameters



Informed by earlier steps, define the goals of your resilient public facility with your partners and collaborators, including how you will measure the success of activities against the goals.

Define the Goals. Consider having goal-setting workshops with community members and partners so that all voices are brought to the table. Identify what short- and long-term success would look like for your facility and set goals accordingly. Using the “SMART” goal approach can ensure your goals are Specific, Measurable, Attainable, Relevant, and Time-based. Resilience goals do not need to be constrained to natural hazards alone; consider where resilience solutions can address multiple objectives. For example, track job training opportunities from the facility, as well.

Identify Metrics. To determine what metrics to track, consider your goals and how you want to measure success. Identify what you will measure, how you will measure it, and what equipment or processes you need to collect and record the data. Consider whether you can draw on existing metrics rather than create new ones. Where appropriate and possible, track metrics by income, neighborhood, or race/ethnicity, which will allow you to identify the impact of your program on different sectors of your community. Identifying a team or point person in charge of metrics will help ensure consistency and success. Step 6 and the **Measuring Success** box later in this guide include information about measuring and evaluating outcomes.

Establish Baselines. Gather data on your metrics at the start of your program to establish a baseline against which you can measure the program impact. For a resilient public facility, baseline metrics may include energy and water bills, number of people visiting the public facility, demographic data of program participants, or number of community volunteers.

CPD CONSIDERATIONS

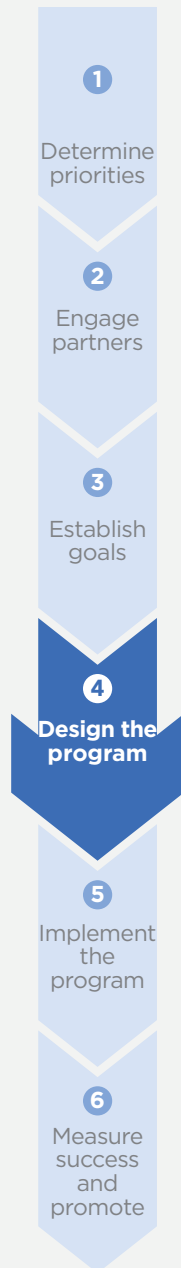
As you establish goals, keep in mind that resilient public facility measures can be incorporated into broader goals included in the Strategic Plan portion of the Consolidated Plan, such as “public facility or infrastructure activities other than low/moderate-income housing benefit” or “public facility or infrastructure activities for low/moderate-income housing benefit.” The measures associated with these goals include “persons assisted” and “households assisted.”

HUD strongly encourages grantees to consider environmental review requirements early in their planning, as this will allow for the broadest range of options to streamline the process and avoid delays. HUD [Field and Regional Environmental Officers](#) are available to help design a procedure to document efficient and effective environmental reviews.

Explore this sample resource on planning and goal setting.

[Develop SMART Objectives \(U.S. Centers for Disease Control and Prevention\)](#)

Step 4: Design the Resilient Public Facility Program or Project



The scope and function considerations in this step will help you design a facility that can effectively meet your community needs.

Scope

Consider whether a resilient public facility program or project is best for your community.

- **Programs** may be appropriate when you want to embed resilient facilities throughout your community, meet a community-wide target, or address a community-wide need. Programs are usually broader in scope and may have multiple instances of implementation. Examples include installing battery-operated solar panel systems at multiple public facilities across the community. Implementing facilities at scale may ultimately save per-facility resources and would provide equitable resources across the community.
- **Projects** are tailored in scope and may have only one or limited instances of implementation. In this case, a project could focus on one facility or neighborhood. A project may be appropriate when you want to focus on an underserved neighborhood, create a pre- or post-hazard gathering place, or need to fill a service or programming gap. A project may also focus on one feature, such as dry floodproofing. A project may be more financially and politically feasible and may allow more opportunity for local community engagement and input on design.

If you have limited staff resources, are unsure about which solution will be the most effective, or have limited experience with the type of solution you would like to try, consider starting with a pilot project or program and then expanding. A pilot can achieve quick wins, demonstrate success, and build support. A pilot also allows you to adjust more easily in the future.

Function

Your project or program function may influence the facility design. A public facility may offer one service, such as food distribution, or may be designed to offer multiple services. Consider what maintenance and upkeep the facility will need over time; ensure funding is secured for operations

CPD CONSIDERATIONS

If your community is considering CDBG or other CPD formula program funds, consider whether elements of a resilient public facility can be added to an existing program or activity, such as commercial/industrial rehabilitation, public facilities, or energy conservation. Grantees should also consider the applicable cross-cutting requirements, including compliance with HUD [labor standards](#) and [environmental review requirements](#).

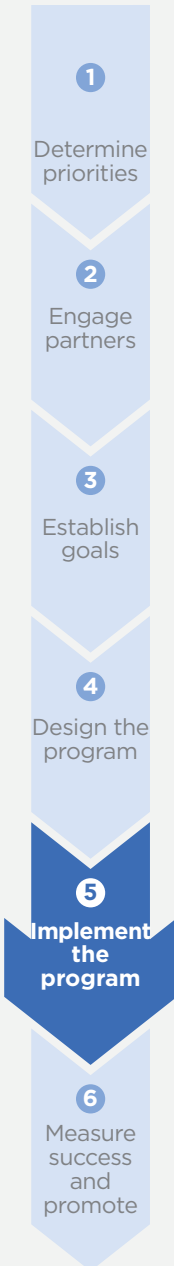
CDBG-eligible activities include “[improvements to increase the efficient use of energy in structures](#)” including replacement of heating and cooling equipment, use of solar energy equipment, and improvements to increase the efficient use of water.

and maintenance before moving forward with implementation. For both projects and programs, resources may be available from local, federal, state, philanthropic, and/or private sources. The Additional Funding Opportunities section of this guide provides additional resource ideas.



Continue with stakeholder engagement to gather input and feedback on your program or project design to make sure it aligns with community needs and values. For example, if you discover that limited transit routes service the proposed facility, an additional priority may be to enhance public transit options or identify a more accessible location.

Step 5: Implement the Resilient Public Facility Project or Program



Act on the design you articulated. First, consider what needs to happen before you can begin; for example, align your implementation team, training staff, volunteers, materials or vendors, policy reforms, or other operational protocols, as needed. Consider extending your capacity by partnering with university internship programs or with AmeriCorps service members.

Then build or retrofit your facility, ensuring your design complies with local codes. Secure building permits and complete an environmental review, ensuring compliance with HUD review requirements if CPD funding will be used. Post signage about what is happening during construction to raise awareness. If yours is a large construction project that will take several months to implement, consider awareness-raising programs in the community before the facility is finished to build excitement and engagement.

Finally, establish the services that will be offered at the facility. Consider supporting an established nonprofit to continue or expand existing services. An established nonprofit likely has trusted relationships within the community, which means people will be more likely to use the facility. Where possible, hire employees and staff from the community.

Throughout the implementation, continue the community education and outreach from Step 2. This will raise awareness about the facility and increase participation. If appropriate, target messaging on how facility programs and services can meet high-priority concerns related to housing, nourishment, employment, childcare, or transportation in addition to messaging around resilience benefits.


Where feasible, work with partner organizations to distribute shared messaging to promote the resilient public facility. Find details in the [Developing a Resilience Education and Outreach Activity Implementation Guide](#).

RESILIENCE IN PRACTICE Minneapolis, MN

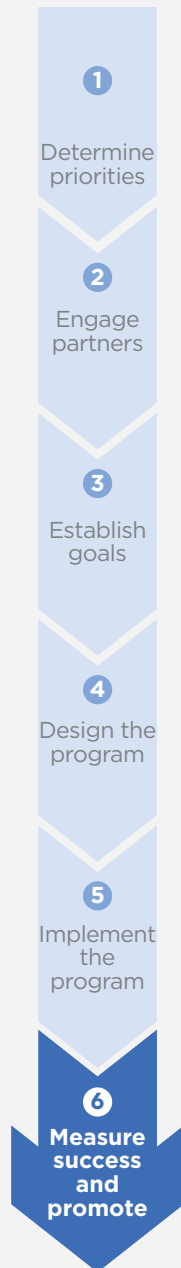


Building Community Resilience

In 2016, Minneapolis partnered with University of Minnesota Humphrey School of Public Affairs students to conduct a climate vulnerability study using extreme heat, flooding risk and socio-economic data. The city used the study to identify three neighborhoods to engage residents, based on different risk and vulnerability levels. One neighborhood was The Little Earth of United Tribes, the only Section-8 place-based housing community in the United States that offers preference to Native Americans. In 2018, the city's Sustainability Office and two Health Department divisions—Emergency Preparedness and Environmental Services—received a grant to partner with Little Earth to [create a climate and health resilience hub](#). By engaging residents in preparedness trainings, applying infrastructure investments, and facilitating relationship-building activities, the city applied the concept to the whole Little Earth community, helping residents prepare for disasters. With funding from the Health Impact Project, a collaboration of the Robert Wood Johnson Foundation and [The Pew Charitable Trusts](#), the partners conducted a solar feasibility study, emergency preparedness workshops, an energy efficiency analysis, and 60 asthma home health visits. In 2021, the energy and workforce nonprofit NativeSun received funding from the Minneapolis Climate Action and Racial Equity Fund to support a Lead for MN Fellow to continue weatherization and resilience work in the Little Earth community over two years, in close partnership with the city.

 **CPD Considerations:** These activities could be CDBG-eligible under public facilities (if associated with a specific structure or facility) or public services.

Step 6: Measure Success and Promote



Track and evaluate the metrics you identified during goal setting (Step 3) to measure the success of your program and identify areas for improvement. Tracking your metrics can also help you report progress and outcomes to funders and the public, especially as they relate to your original program goals. Identify a team or point person for tracking metrics. Determine how you will report outcomes to funders and the public.

Capture Data. Measure and record the data. Determine how the point person or team will collect data, how they will convey it, and to whom. For example, if data is collected on paper forms, establish a plan to collect the forms and record the data in a digital format. Where possible, turn qualitative issues into quantitative data so you can track progress consistently over time. The Measuring Success box provides specific examples of metrics to track.

Evaluate the Data. Determine how often you will analyze and evaluate the data. Some data may be reviewed annually (e.g., number of times the battery backup system was used), whereas you may review other data more frequently (e.g., number of participants in a particular program). Where possible, compare the data you collect over time to the baseline data.

Share the Data. Reporting success can solidify public, political, and financial support. Determine how you will share results. Think about your audiences, delivery methods, format, content, language, timing, and messengers.

Reassess the Solution. Use data to assess strengths and weaknesses and identify opportunities to improve. You may discover, for example, that you are not reaching your target population or that you need to increase community engagement. Give the community the opportunity to weigh in on program modifications. Strong engagement at every step will help increase transparency and build trust.

CPD CONSIDERATIONS

CPD-funded resilient public facility activities could be set up during the creation of the Annual Action Plan, or through an Action Plan/Consolidated Plan amendment, along with other proposed projects. The matrix code to use depends on the specific project and associated plan goal. All key reporting elements of the CPD formula grant programs should be integrated into HUD's [Integrated Disbursement and Information System \(IDIS\)](#). Grantees typically create new IDIS projects through the AP-35 Projects screens while setting up their Annual Action Plan. This is also the best way to ensure that any projects funded through CPD sources will be properly tied to the Action Plan.

MEASURING SUCCESS

It is important to assess the performance of the public facility solution. Monitoring metrics will depend on the specific public facility-based solution. If one of your goals is equity, consider tracking metrics by income, neighborhood, or race/ethnicity where appropriate and possible. This will allow you to identify the impact of your activity on different communities and subgroups.

Sustainability Metrics

- Amount of energy saved using sustainable design standards
- Amount of energy generated using renewable energy systems

Resilience Metrics

- Number of times the facility is used as a cooling center or evacuation shelter
- Annual financial damage to the facility during extreme events/storms

Participation and Communication Metrics

- Number of employment opportunities created for LMI community members
- Number of target individuals signing up for resilience training opportunities
- Communication metrics (e.g., number of mentions), including any content or events picked up by traditional, online, or social media

Financial Metrics

- Cost-benefit measures (e.g., estimated avoided damages from hazards mitigated, job creation)
- Value of rebates or incentives offered



Additional Resources

HUD Program Resources

- [How to Use CDBG for Public Facilities and Improvements \(HUD\)](#)

Non-HUD Resources

- [Adaptive Public Space: Places for People in the Pandemic and Beyond \(Knight Foundation\)](#)
- [Better Buildings: Design Resilient Buildings \(DOE\)](#)
- [Building Community Resilience with Resilient Public Facilities: A Guide for Local Communities \(FEMA\)](#)
- [Emergency Management Institute Trainings \(FEMA\)](#)
- [Establishing a Red Cross Shelter \(Red Cross\)](#)
- [Natural and Nature-based Flood Management Methods \(WWF\)](#)
- [New York City's Climate Resiliency Design Guidelines \(NYC\)](#)
- [Resilience Hubs \(Urban Sustainability Directors Network\)](#)
- [Returns on Resilience: The Business Case \(Urban Land Institute\)](#)
- [Climate Ready: Resilient Design Guidelines \(District of Columbia\)](#)
- [Wildfire Risk to Communities \(USDA Forest Service\)](#)

Additional Funding Opportunities

[Grants.gov](#) provides a centralized location for grant seekers to find and apply for federal funding opportunities.

Notes

1. U.S. Global Change Research Program. 2018. "Human Health" (Chapter 14). In Fourth National Climate Assessment. Volume II: Impacts, Risks, and Adaptation in the United States. doi: 10.7930/NCA4.2018.CH14
2. U.S. Environmental Protection Agency. 2021. Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts. EPA 430-R-21-0003.

3. CDBG regulation defines public facilities as "broadly interpreted to include all improvements and facilities that are either publicly owned or that are traditionally provided by the government, or owned by a nonprofit, and operated so as to be open to the general public. This would include neighborhood facilities, firehouses, public schools, and libraries. Public improvements include streets, sidewalks, curbs and gutters, parks, playgrounds, water and sewer lines, flood and drainage improvements, parking lots, utility lines, and aesthetic amenities on public property such as trees, sculptures, pools of water and fountains, and other works of art." Community Development Block Grant Program, Categories of Eligible Activities.

4. U.S. Global Change Research Program. 2018. [Impacts, Risks, and Adaptation in the United States \(Vol. II\)](#). In Fourth National Climate Assessment, edited by D.R. Reidmiller, C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart. doi: 10.7930/NCA4.2018.

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Minneapolis, MN

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