

# **BUILDING RESILIENCE AGAINST CLIMATE EFFECTS FOR LOCAL PUBLIC HEALTH DEPARTMENTS**

CDC-RFA-EH13-1305

*Empowering San Francisco Communities to address the health effects of climate change*

## **I. Project Narrative**

### **A. Background**

#### *A.1. History*

While climate change is a global problem, its impacts will be local, threatening the security and well-being of San Francisco. Climate change is expected to increase temperatures, change precipitation patterns, increase the frequency and severity of extreme weather events, and increase sea-level rise—all of which will have significant effects to San Francisco’s environment, health, and economy. California is already experiencing the effects of climate change. Since 1920, average annual temperatures have been increasing across California, including in the San Francisco Bay Area. The July 2006 California heat wave—which was felt in San Francisco—was the largest heat wave on record since 1948.

San Francisco is surrounded by coastline on three sides where dense population concentration exists. It is predicted that along the California coast, sea level may rise between 1.0-1.5 meters by 2100 - an estimate that is based on emission scenarios that are being outpaced by current emission rates. With a conservative 1.4 meter rise in sea level, it is estimated the number of San Franciscans at risk to a 100-year flood will increase significantly. Sea level rise threatens to increase risk of flooding at hospitals, schools, the San Francisco Airport, other key infrastructure, coastal wetlands, and even hazardous material sites, the latter of which can increase the risk of exposure to toxic chemicals of nearby residents and ecosystems.

Successful adaptation to climate change in San Francisco will not only benefit the city, but serve as a model for local health departments.

#### *A.2. Need*

For the last decade, cities have invested in developing climate action plans to reduce their greenhouse gas emissions, yet lesser attention has been paid to developing adaptive measures to protect the public’s health in the event of climate change-related extreme weather events or to expanding the capacity of public health departments to plan and prepare for such events. As such, the San Francisco Department of Public Health (SFDPH) began assessment and planning to develop climate change programs in 2010 with the support of funding from the CDC. We are now well positioned to conduct additional vulnerability assessments for climate-related environmental hazards, project the burden of disease associated with climate change and translate climate science into policy to develop and implement an adaptation plan with multiple-agency and community involvement. Proactively building resilience to climate change is a powerful opportunity to improve the health of our city’s residents.

#### *A.3. Purpose and Objectives*

The purpose of San Francisco's Climate and Health Program is to address the public health consequences of climate change and its implications on human health. The program will assess climate trends, define disease burden, develop specific intervention methods, and evaluate effects of change for at-risk populations within San Francisco to:

- Promote community resilience through education, empowerment and engagement to reduce vulnerability to climate change.
- Increase both local level capacity and internal department capacity to utilize climate health science.
- Incorporate stakeholder engagement in the development of climate change mitigation and adaptation actions.
- Implement adaptation efforts which achieve health co-benefits and improve health disparities.
- Serve as a model for local health departments.

The objectives of San Francisco's Climate and Health Program are to:

- Develop a Climate and Health Profile report and a community resiliency indicator system that qualitatively and quantitatively describes the climate related risk factors and health outcomes of concern for San Francisco over key future timeframes.
- Implement an epidemiological and statistical process to determine and project the trajectory, magnitude, and additional health burden of five or more health impacts and/or key risk factors associated with future climate change in San Francisco.
- Conduct an assessment to determine the effectiveness and suitability of public health interventions and adaptations for select health impacts and/or risk factors that are associated with climate change in San Francisco.
- Develop, disseminate and begin implementing a multi-year, climate-adaptation plan for the health sector that includes interventions and adaptations with performance measures that are focused on achieving a measurable health impact.
- Engage and educate stakeholders on health impacts of climate change and adaptation plans.

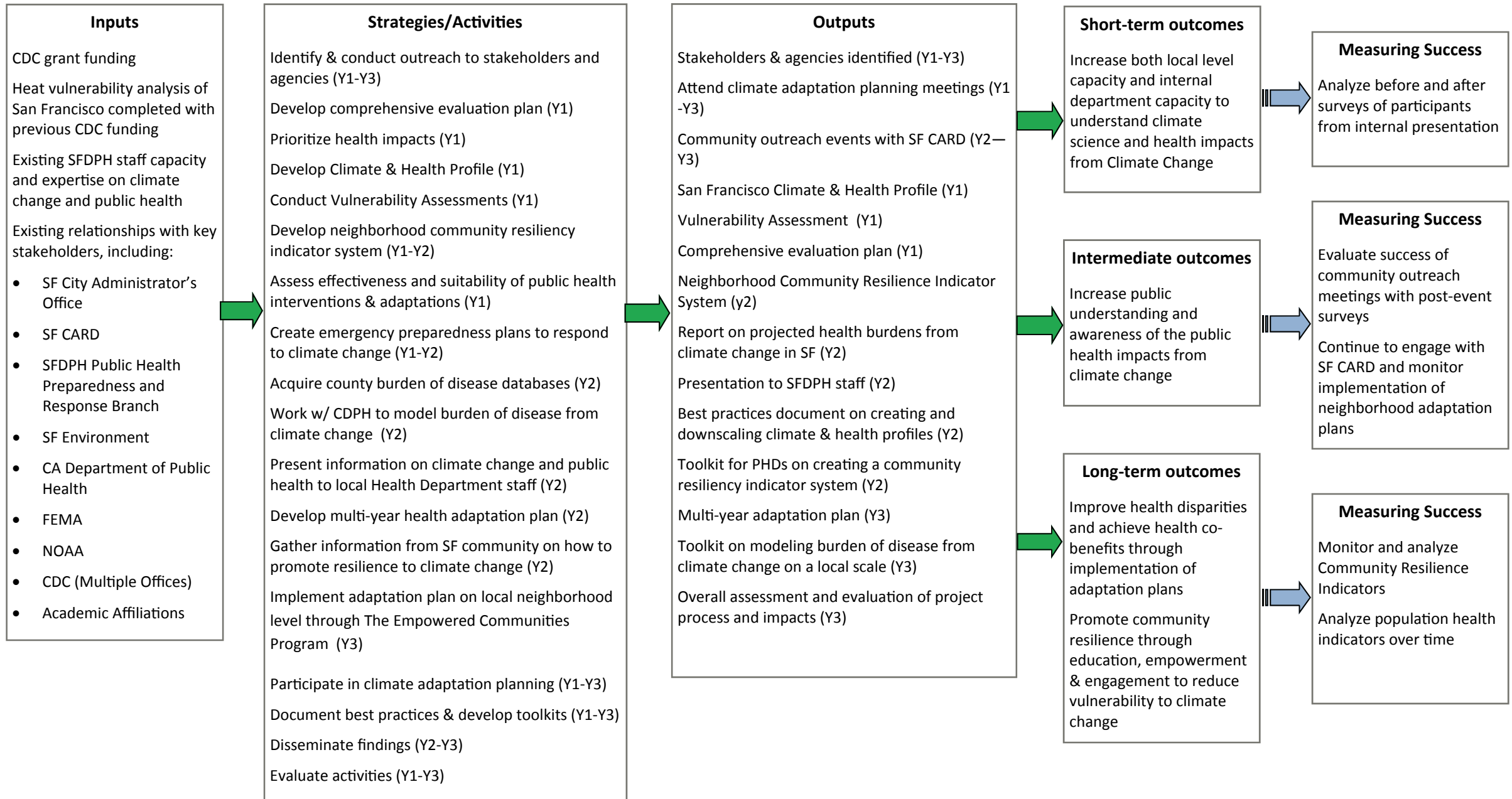
#### *A.4. Outcomes*

The outcomes of San Francisco's Climate and Health Program are to work with community based organizations and community members in disadvantaged areas to identify and describe current capabilities to respond and adapt to climate change. With an understanding of the social, environmental and economic conditions that enable these capabilities or create barriers, we will develop a model of community capacity and establish a set of indicators to describe community resilience. With a better understanding of community capacity, we will deliver public health interventions and adaptation plans specific to San Francisco communities that will mitigate increases in climate-related health impacts, help eliminate existing health disparities and develop local adaptive capacity.

## B. Approach

### Building Resilience Against Climate Effects for Local Health Departments: Empowering San Francisco communities to address the health effects of climate change

**Goal:** Address public health consequences of climate change and its implications on public health in San Francisco.



## C. Program Strategy

San Francisco's Climate and Health Program will use the public health framework (BRACE) to implement its program strategy (see the logic model on the previous page).

### C.1. BRACE Step 1

For the first part of this project, SFDPH will review how climate change is impacting the city, the associated effects on health, assess vulnerabilities and establish an indicator system to work with neighborhoods to understand adaptive capacity. The purpose of these steps is to detect and respond to potential health threats due to climate change and understand neighborhood conditions that have a significant impact on resiliency and adaptive capacity. The outcomes will be to develop a climate and health profile, use data to conduct vulnerability assessments and create a community resiliency index system.

SFDPH will work with climatologists within state agencies to review existing downscaled climate change scenarios and climate impact research intended for local planning efforts. We will review models developed by the California Energy Commission, the California Natural Resources Agency and the Public Interest Energy Research Program (PIER). SFDPH will also work with other city agencies such as the San Francisco Public Utilities Commission and the San Francisco Department of Environment to ensure there is consensus on climate forecasts and projections for climate impacts.

#### C.1.a Climate and Health Profile

The analysis of climate forecasts and projections will influence our prioritization of health burdens and risk factors for the Climate and Health Profile. We will also review findings from the California Department of Public Health (CDPH) to help guide our prioritization of health impacts. We will combine a growing body of literature from other city and state health agencies which has been completed over the last three years with the cooperative agreement from CDC. Based on our prior assessment, the main health impacts anticipated for San Francisco are: extreme heat illness and deaths; respiratory illness from increased air pollution; increased allergies and asthma from more exposure to pollens and molds; respiratory illness from regional wildfires; water and food-borne disease; shellfish poisoning; environmental infectious diseases; and direct and indirect health impacts from other extreme weather events, such as flooding and cold snaps. There are also longer-term critical issues, which we would like to explore, such as the reduction in income from increased food prices or decreased availability of healthy food, or relocation from populated coastal areas. Key risk factors for adverse health impacts from climate change include: lack of healthy built environments; health disparities; food insecurity; heat islands; lack of accessible and public transportation; living in vulnerable geographic areas; lack of community resilience; mental health conditions; economic dislocation; lack of access to care; poor adaptive capacity; and lack of institutional preparedness capacity.

We will review and summarize the findings from our previous work and new available information to prioritize the leading health impacts and risk factors to climate change.

### C.1.b Vulnerability Assessment

Based on our climate and health profile we will complete additional vulnerability assessments, similar to the heat vulnerability assessment completed in the first cohort of funding from the CDC. Our vulnerability assessment will be completed at the finest resolution possible in order to be used for neighborhood level planning. Predictions for neighborhoods that are especially vulnerable to climate impacts in San Francisco are critical for local government agencies' ability to adequately prepare for potential threats to public health resulting from climate change. Through our vulnerability assessment, we will identify the census block groups that are particularly vulnerable, so public health planning efforts can be targeted geographically.

In addition to identifying geographic areas that exhibit risk factors for relative vulnerability, our assessments will help identify potential risk factors for populations groups. Our vulnerability assessments will explore further how factors such as ethnicity, linguistic isolation, and low education contribute significantly to vulnerability. In light of this, and with the high percentage of minorities in the San Francisco Bay Area, protecting human health and safety of all communities from climate impacts will require ensuring emergency preparedness efforts reach the linguistically and culturally isolated. Successful strategies being adopted to reach minority communities include increasing community engagement through working with neighborhood councils and local community based organizations.

### C.1.c Community Resiliency Indicator System

Based on the Climate and Health Profile and vulnerability assessment, we will develop a neighborhood community resiliency indicator system. This will take scientific data and translate it into useable information on the neighborhood scale. Resilience is defined as "the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change." Scientists expect climate change to result in a number of stressors on both natural and human systems. The purpose of developing the indicator system is to assess resilience to climate change stressors in San Francisco using quantitative and qualitative approaches and advance both public and individual interventions that increase the city's collective adaptive capacity.

The intended outcomes are the identification and articulation of reasonably anticipated stressors resulting from climate change, a quantitative and qualitative assessment of community resilience to climate change for San Francisco and a public dialogue on actions to build community resilience.

We will synthesize the key findings from qualitative surveys and quantitative measurements along with additional recommendations gleaned from a literature review of best practices on increasing resilience to environmental stressors. Through a series of facilitated stakeholder and neighborhood meetings, we will test or "ground truth" findings from the qualitative and quantitative assessments and then deliberate on and prioritize recommendations for the indicator system.

The purpose of the assessment is not to create a static document or recommendation for policy makers; rather, it is to initiate and maintain an ongoing public conversation about the city's resilience. We will organize a description of the stressors as well as the key findings and

recommendations of the assessment into a social media site. The purpose of the site will be to stimulate and encourage additional contributions of ideas and commitments to action from the citizenry. Citizen contributions will be followed by responses from public officials. The social media site will recognize and applaud actions by citizens to build resilience in their own communities. Lastly, we will create a toolkit for local public health departments and cities for creating a community resiliency indicator system.

#### C.1.d Stakeholder Engagement

We will present a proposal of BRACE 1 to technical advisors, community based stakeholders and relevant city agencies. We will incorporate their feedback to improve and strengthen our ability to forecast climate effects and assess vulnerabilities.

Our technical advisors will include federal agencies such as NOAA, the EPA and CDC. We will work closely with CDPH to ensure our work is in line with state guidelines and established best practices for local public health agencies on creating downscaled climate and health profiles. Our technical advisors will also include academic institutions, such as UC Berkeley and San Francisco State University.

Our community based stakeholders will include San Francisco Agencies Responding to Disasters (SFCARD), local chapters of the Nature Conservancy and regional CBOs. The vehicle for stakeholder engagement will be through the attendance of regional planning meetings, attendance at relevant conferences and professional meetings. We will also hold meetings and encourage stakeholders to attend, provide feedback and disseminate report findings.

#### C.2. *BRACE Step 2*

The purpose of projecting the burden of disease from climate impacts is to quantify the additional burden of health outcomes due to climate change for the purpose of supporting prioritization and decision making.

##### C.2.a Projected Burden of Disease

We will project the disease burden using a comparative risk assessment methodology, which will be developed in partnership with CDPH. Our goal will be to adapt data, health outcomes and risk factors which will be relevant on a local downscaled level. We will conduct a literature review to identify exposure-response relative risks for health outcomes. Using projections in the Climate and Health Profile, we will assess the change in climate risk factor distribution and calculate the change in burden of disease for different climate change scenarios. The analyses will allow us to make comparisons of trajectory and magnitude of specific disease burdens, injuries and risk factors in the same geographies. The outcome will facilitate developing priorities based on disease burden.

The data will be assessed based on geographic availability and scale as well as the availability of additional demographic information and other key variables used in vulnerability assessment. Our goal will be to create a toolkit for public health departments on how to implement an epidemiological and statistical process to determine and project the health impacts and key risk factors associated with climate change at the local level.

Based on currently available data and modeling techniques, projecting climate effects and associated health outcomes on a small, city scale can be difficult. For this component of the grant, we will be heavily relying on technical assistance and guidance from CDPH and CDC – which have much greater capacity to perform this type of down-scaled climate model. This process will provide an excellent opportunity to evaluate how feasible and reliable climate impact models are at such a small scale.

#### C.2.b Stakeholder Engagement

We will work with CDPH and seek guidance from the CDC to identify data issues and propose alternate methodologies given the complexities in this analysis.

#### C.3. *BRACE Step 3*

The purpose of assessing public health interventions is to identify and develop the most suitable health interventions for the health impacts of greatest concern. The health impacts will have been defined and quantified in BRACE Step 1 and 2.

##### C.3.a Assessing Public Health Interventions

SFDPH will analyze existing risk assessments to inform climate related response efforts, align the Climate Grant activities with other ongoing community health assessment initiatives, and avoid duplication of efforts. Risk assessments and related data that will be analyzed include:

- Prior work developed in the past three years from the cooperative agreement with CDC.
- Public Health Hazard Vulnerability Assessment: The Public Health and Emergency Preparedness and Response (PHEPR) Branch of SFDPH is currently part of a CDC-funded project through which a jurisdictional and regional Hazard Vulnerability Assessment is being conducted. The project will be completed in August 2013. Once the risk assessment is complete, SFDPH will convene a jurisdictional multi-disciplinary team to rank and prioritize the public health threats and risks within the jurisdiction. Results from the risk assessment will be used to inform and prioritize PHEPR activities during future grant years, along with CDC and CDPH priorities.
- Medical Surge Assessment and Gap Analysis: Eight hospitals and six long-term care facilities in the city of San Francisco participated in the medical surge capability assessment that serves to identify both strengths and gaps across the city, inform future planning initiatives for SFDPH, and share best practices across the hospital community.
- Health Care Services Master Plan: Part of this project's overall goal was developing community-informed recommendations regarding equitable access to health care services and as part of this effort vulnerable populations in San Francisco were identified by neighborhood.
- Climate and Health Profile, Vulnerabilities Assessment and the Community Resiliency Indicator System.

We will produce a final report which summarizes key information contained in recent risk assessments conducted for SFDPH that focus on hazards and vulnerable populations. The

report will include an analysis on how the data should impact emergency preparedness efforts for climate-related extreme weather events.

### C.3.b Creating Public Health Emergency Response Plans

Based on the assessment, we will create additional emergency plans to respond to climate-related extreme weather events. The PHEPR Branch is responsible for maintaining the SFDPH Emergency Operations Plan (EOP). The EOP encompasses all hazards that may occur in the City and County of San Francisco in which SFDPH may play a response role. This includes hazards both natural and man-made, and range from planned events to large-scale disasters.

The EOP does not currently contain an Annex for several climate-related extreme weather events, including extreme cold and flood. As part of this grant, we will prepare additional annexes to supplement the EOP and provide specific response actions for each event. Each Annex will include the following sections: 1) an overview of the event detailing expected health conditions, triggers or thresholds for activation, activation phases, and potential city-wide impacts; 2) an overview of the San Francisco response, including agency roles and scale and scope of response; 3) an overview of the public health response, including functions to be activated in the Department Operations Center as well as goals, objectives, and operational activities; and 4) additional resources such as key contact information and educational/outreach material.

### C.3.c Stakeholder Engagement

We will perform outreach to stakeholders in order to advance disaster preparedness planning and response as it relates to climate-related extreme weather events. The PHEPR Branch already coordinates with a number of local planning partners via several current SFDPH project initiatives designed to advance community health in San Francisco. By leveraging these existing resources and expertise, SFDPH will be able to involve stakeholders in climate grant activities. We work closely with city-wide Disaster Preparedness and the San Francisco Department of Emergency Management. We also work closely with city hospitals and long term care providers through the San Francisco Hospital Council Emergency Preparedness Partnership. SFDPH is also working with neighborhood participants in eleven emergency response districts on a Community Health Emergency Planning project. This project involves 45 organizations and nearly 200 programs and includes Community Oriented Primary Care clinics, Consortium clinics, Community Behavioral Health Services sites, and community based organizations that provide mental health services and/or substance abuse services.

Regional stakeholders include the Bay Area Center for Regional Disaster Resilience and the Association of Bay Area Governments, which are partnering along with other regional stakeholders to develop a San Francisco Bay Area Disaster Resilience Action Plan.

Over the course of the grant, and in collaboration with other city agencies, we will conduct outreach to identified stakeholder groups in order to involve and educate members about SFDPH emergency preparedness efforts around climate-related extreme weather events. Outcomes will include stakeholder awareness of SFDPH activities and plans and the provision of input into plans by stakeholders when appropriate.



We will also develop and plan a presentation on climate change and public health impacts for internal health department staff to increase awareness and internal capacity to respond to climate-related events and impacts in the future.

#### *C.4. BRACE Step 4*

San Francisco is committed to empowering its neighborhoods to take an active role in increasing their resilience by developing local neighborhood level action plans that advance investments in both mitigation and preparedness strategies that will reduce the impact of climate change on resident's health. This project will leverage the Neighborhood Empowerment Network's Empowered Communities Program to implement a climate and health adaptation plan.

San Francisco's Neighborhood Empowerment Network (NEN) was created to align a wide variety of city wide stakeholders who are committed to building the resilience of its local communities. The primary initiative of the NEN is the Empowered Communities Program (ECP). The ECP is a capacity building initiative that brings together government, nonprofit, academic and private sector agencies to work side by side with neighborhood stakeholders to strengthen their community's ability to successfully negotiate and recover from disasters of any size and type. The ECP aligns the resources and expertise of the network members and deploys them in a coordinated manner that is reflective of the community's priorities. The outcome for the community is a pre-event condition and state of preparedness, physically and socially, that will allow them to perform at the highest level in times of stress. To date this program has been recognized as a best practice by the United Nations International Strategic Disaster Reduction Initiative (UNISDR), FEMA and the CDC Office of Public Health Preparedness and Response.

#### Key Program Tenets:

- Educates residents about the types of hazards climate change can generate.
- The program area is defined at the neighborhood level.
- Nurtures the creation of a community wide vision of resilience which is culturally competent and is customized to the unique goals and needs of the community
- Advances a culture of trust, ownership and cooperation within a community.
- Coordinates capacity building organizations resources at individual, organizational and community levels simultaneously.
- Advances FEMA's Whole Community Approach by introducing capacity building organizations that are not identified as traditional disaster preparedness agencies (i.e. Universities).
- Prepares communities to respond to both large and small events in their neighborhood
- Supports communities as they address the functional areas of mitigation, preparedness, response, restoration and recovery in the face of climate change.

- Emphasizes capacity building for local leadership as well as strengthening the amount of local social capital through enhanced communication networks and collective problem solving.

#### C.4.a Creation of Neighborhood Level Adaptation Plans

The ECP's role in this project will be to educate communities regarding their vulnerabilities, the potential burden of disease and potential interventions. As an extension of this risk awareness outreach, communities will receive comprehensive technical support from the ECP as they craft and implement resilience action plans to prepare them to successfully respond in times of stress generated by climate change.

#### Projected Community Benefits:

- Communities will be more prepared at the individual, organizational and community levels to respond to challenges in a more coordinated fashion across sectors.
- Communities will be better positioned to support the needs of the vulnerable members of their neighborhoods during times of stress (i.e heat events).
- Communities will participate more effectively in mitigation efforts (i.e. creation of cooling centers).

#### C.4.b Implementation of Neighborhood Action Plans

A community that leverages the NEN's ECP will generate a Resilience Action Plan that will address the projected health impacts of climate change and support the community in its self-identified mitigation, preparedness, response, restoration and recovery goals. As a result of this investment, communities will be far better positioned to address and respond to known, and unknown impacts on their neighborhoods residents' health and well being. In addition, they will have increased capacity to partner with organizations and agencies from a wide variety of sectors that engage them over time as the impacts of climate change escalate and unfold.

#### C.4.c Stakeholder Engagement

In addition to the agencies names aforementioned in BRACE STEP 4, outreach will be conducted with the San Francisco Human Services Agency (SFHSA) and the San Francisco Department of Environment (SFDOE). SFHSA is responsible for Mass Care, Housing, and Human Services, under Regional and Local Disaster Response Plans, which includes operation of cooling center shelters during extreme heat events and SFDOE is charged with creating the City's Climate Action Plan.

### C.5. *BRACE Step 5*

#### C.5.a Climate and Health Evaluation and Performance Measurement Plan

Through our evaluation efforts, SFDPH aims to ensure that we successfully meet all the short and long term goals and objectives of the grant. Our evaluation efforts will help us make sure that we meet project deadlines and stay on the right track to produce the desired outcomes of the project. With this grant, SFDPH hopes to build a foundation that strengthens community

resilience to climate change over time. By evaluating and monitoring our project outcomes, we will be better able to successfully maintain and build community resiliency in San Francisco after the project is over. Additionally, our evaluation efforts will provide insight into how our activities can be improved upon, which will serve as a model for other cities and municipalities seeking to build their community resiliency and capacity to respond to climate change.

Within the first year of the grant SFDPH, in collaboration with our partners at UC Berkeley, will develop a comprehensive evaluation work plan that will identify and evaluate short-term process outcomes and project goals, as well as long-term project goals (see logic model). Our UC Berkeley partners have extensive experience with program evaluation and can provide invaluable understanding and direction for successful evaluation planning.

Building off of work done for our previous CDC Climate and Health grant, SFDPH has already identified and engaged with stakeholders and partners that will provide key insights and best practices for evaluating this project's goals and outcomes. Additionally, program partners will play an integral role in reviewing and disseminating our evaluation findings.

On an annual basis, targeted partners will receive a short survey to ensure that project process goals are being met and that partners are actively involved with the evaluation process. The survey will address the following questions:

- What is important about this project to your organization?
- How do the goals of the project correspond to your organization's mission and goals?
- How much progress would you expect this program to have made at this time?
- Are you satisfied with the progress that has been made on this project at this point in time?
- Evaluation is a key component of our grant activities, how would you use the results of our evaluation of this project?
- What do you see as the critical evaluation questions that SFDPH should be asking right now?
- What resources (i.e., time, funds, evaluation expertise, access to respondents, and access to policymakers) might your organization contribute to our evaluation effort?
- Are there steps that SFDPH could be taking better meet the goals of this project?

Specific evaluation efforts will be targeted for each project outcome of the grant. The following summarizes the key questions our evaluation efforts will strive to answer, strategic partners to target, and potential and existing data sources that we can use in our evaluation.

Key questions to answer through our evaluation include:

### **BRACE Step 1**

#### *Climate and Health Profile*

- Does the climate and health profile sufficiently address the primary health impacts faced by climate change in San Francisco?

- Are the links between health impacts and a changing climate clearly explained in a way that is understandable to the general public?

*Create a Community Resiliency Indicator System*

- Do the proposed community resiliency indicators represent an exhaustive list of indicators that are measurable and appropriate to measure a community's resilience to climate change and other emergency events?
- How will this indicator system be implemented and maintained over time in order to measure a community's changing resilience?

**BRACE Step 2**

*Model projected burden of disease from Climate Change on San Francisco*

- Are state-wide models and projections useful for climate change modeling and climate action planning at a localized level?

**BRACE Step 3**

*Develop climate change disaster preparedness plans*

- Do the preparedness plans adequately address all potential public health threats from climate change in San Francisco?
- Do the preparedness plans have a well-defined and strategic implementation plan?

*Develop materials to present internally to health department on the potential impacts of climate change on public health*

- Did the presentation to local health department staff increase internal understanding and awareness on the potential health impacts of climate change?
- What short term or long term action steps were planned, if any, to increase capacity to respond to climate change based on this presentation?

**BRACE Step 4**

*Implement neighborhood adaptation plans*

- How successful were we in disseminating and implementing the climate change adaptation plan in San Francisco communities?
  - How many people attended community meetings where the plan was discussed?
  - How many people saw social media or news posts regarding the climate change adaptation plan?
  - What was the estimated total reach of communication efforts?
- Did community events increase awareness among the participants about the potential health impacts of climate change in their community?
- What follow-up actions are being taken by the community after being presented with the adaptation plans?

- Did the implementation of adaptation plans increase community resilience over time?

### **BRACE Step 5**

#### *Evaluate overall projects processes and impacts*

- Did SFDPH meet all project goals and complete the project outcomes?
- Was SFDPH successful in integrating project partners into the evaluation process?
- What were the significant challenges or barriers faced during this project?
- What best practices can be learned from this project?
- Did this project health increase community resiliency to risks posed by climate change?

Using the results from our evaluation efforts, SFDPH hopes to continually engage with its stakeholders and communities in a meaningful way to develop strong and resilient communities. We hope that our project will be used as a model for other municipalities in projecting health impacts from climate change at the local level and using that information to build strong and resilient communities at the neighborhood level.

#### C.5.b Potential and Existing Data Sources

- Qualitative information gathered from community outreach events in the form of transcribed notes
- Post-meeting follow-up surveys (paper or electronic)
- Community Resilience Indicator System
- Before and after survey of presentation participants
- Existing literature
- Focus groups and surveys
- The Sustainable Communities Index ([www.sustainablef.org](http://www.sustainablef.org)), a comprehensive set of performance indicators for livable and sustainable cities, could be utilized to track neighborhood resiliency progress over time.
- Existing Environmental Health regulatory data
- Metadata Access Tool for Climate and Health (MATCH)
- Modeled disease burden data from CDPH

#### C.5.c Stakeholder Engagement

Strategic partners will include - UC Berkeley, California Department of Public Health (CDPH), CDC, SFDPH Public Health Preparedness and Emergency Response, EMS SF CARD and The City Administrator of the City and County of San Francisco.

### **D. Organizational Capacity to Execute Approach**

San Francisco Department of Public Health (SFDPH), as a large department of the City and County of San Francisco (CCSF), has its own grants fiscal unit, information technology support

staff, human resources unit and contract staff, which will provide administrative support to this project.

The San Francisco Department of Public Health – Environmental Health Branch (SFDPH-EH) will be the lead coordinating agency with responsibility for this project. SFDPH-EH is a demonstrated leader in public health and climate change issues. SFDPH-EH has successfully created a Climate and Health Program within their section with the support from the CDC in the first cohort of funding through the Climate-Ready States & Cities Initiative. Over the last three years we have been working on planning initiatives to prevent heat stress morbidity and mortality from extreme heat events and associated air quality impacts. We have conducted strategic planning in the development of a City and County of San Francisco heat wave disaster response plan and appropriate surveillance and health education/outreach activities to protect San Franciscans. Through this process, we have engaged community partners to have a comprehensive approach to understanding vulnerability and interventions that will target those communities and populations at highest risk for illness in order to advance urban health, social and environmental justice.

Our Key Successes and Outcomes include:

- The development of an environmental health assessment methodology to map determinants of heat vulnerability to assess the spatial distribution of extreme heat and associated air quality impact vulnerability.
- Heat Wave Disaster Response Plan which will be an annex to San Francisco’s new Emergency Operation Plan.
- Developed a draft heat emergency educational curriculum.
- Developed environmental health Indicators for climate change.
- An assessment of the health co-benefits of San Francisco’s Climate Action Plan.
- A gap analysis of San Francisco's public health capacity and adaptations to reduce human health effects of climate change by National Environmental Public Health Performance Standards (NEPHPS) self-assessment instrument and the Ten Essential Services of Public Health
- Key informant interviews to inform education and outreach strategies and production of a Report of an Assessment of Community Perspectives about the Protection of Vulnerable Populations during a Heat Emergency in San Francisco.
- The dissemination of research, plans and information on climate health by presenting at the following:
  - The State of California’s Climate Action Team Public Health Workgroup
  - Bay Area Regional Energy and Climate Resilience - Public Health Sector Discussion
  - San Francisco's City agency meeting about climate adaptation in San Francisco
  - The 139th Annual American Public Health Conference in San Francisco

- The 2nd CDC/NOAA Climate Science Symposium in Atlanta.
- The Annual NAACHO Conference in Los Angeles.

As a result of our work, the SFDPH Heat Vulnerability Index was asked to be included in the State of California's Climate Adaptation Strategy as an example of local public health leadership in Adaptation Planning. The Heat Vulnerability Index is also being used in San Francisco Climate Action Planning efforts and was part of the San Francisco Planning Department's Urban Forestry Plan.

Through our work, we have established partnerships with other local, state and federal government agencies, nongovernmental organizations and universities to more effectively address U.S. and global health aspects of climate change. SFDPH-EHS has provided leadership to state and local governments regarding health protection from climate change effects, such that SFDPH-EHS is acting as a credible source of information on the health consequences of heat waves for the San Francisco population, including heat risks and adaptations for resilience. SFDPH-EHS will continue to share knowledge with CDC and other stakeholders, by conducting process evaluation that ensures implementation of program activities and compiling findings, promising best practices and lessons learned to serve as a model for local health departments. Adaptation planning is a long-term process that will evolve over time – SFDPH-EHS is committed to continuing an effective climate and health program to provide data, analysis, planning and implementation with other agencies and stakeholders.

#### *D.1. Collaboration Summary*

This cooperative agreement will be collaboration between the SFDPH-EH and The Public Health Emergency Preparedness and Response (PHEPR) Branch of the San Francisco Department of Public Health and The City Administrator of the City and County of San Francisco. San Francisco Collaborating Agencies Responding to Disaster (SF CARD) will be our supporting community based organization responsible for engaging community partners on climate change and public health and facilitating the deployment of San Francisco's Neighborhood Empowerment Network's Empowered Communities Program.

PHEPR serves the public, Department of Public Health, and partners by coordinating health emergency preparedness, response, and recovery efforts. PHEPR Branch activities include strategic planning, efficient allocation of resources, and leveraging of SFDPH and citywide capabilities. Through the development of regularly practiced emergency response plans, trainings, and exercises, the PHEPR Branch helps SFDPH foster a culture of preparedness that includes all staff and partners. The PHEPR Branch regularly partners with city agencies, healthcare providers, community organizations, businesses and the public to ensure that they are prepared and are well informed of the situation and response during emergencies.

The City Administrator of the City and County of San Francisco oversees 18 different city agencies, several of which play a key role in the effort to address Climate Change. Key agencies include the Department of Public Works which oversees the engineering, design and construction of most City buildings and infrastructure as well as the 10 Year Capital Plan which lays out the long term vision for the City in regards to large capital projects and bond

generation. The City Administrator also plays a leading role in the recovery of San Francisco in the event of a natural disaster.

SF CARD works with human service organizations serving vulnerable populations to ensure the continuity of their services to clients after a disaster. SF CARD will also be operational following a disaster and will coordinate resources among its network of non-profit human service organizations to meet the recovery needs of those served through these community-based organizations. Organizations currently working in the coalition with SF CARD include the American Red Cross, Salvation Army, Helplink, San Francisco Lighthouse for the Blind, the Volunteer Center, San Francisco Senior Center, Food Bank, Independent Living Resource Center, Project Open Hand, Episcopal Community Services, St. Anthony Foundation, and the San Francisco Interfaith Council.

#### *D.2. Project Management*

The San Francisco Department of Public Health Project Lead is Cyndy Comerford, Manager of Planning and Fiscal Policy in the Environmental Health Branch. She will serve as the primary contact for this grant and will have grant administrative responsibilities related to the budget and development of sub-contracts and related scopes of work. Since 2010, she has been the principal investigator of the CDC Climate Ready States and Cities Initiative and led the development of the San Francisco Climate and Health Program. She has led a multi-disciplinary team with expertise in biostatistics, emergency disaster response, emergency medical services, environmental epidemiology, atmospheric science, indicator development, and climatology. Cyndy will provide project oversight, strategic guidance, and coordinate collaboration with local and regional public agencies. She also is responsible for the research design, data analysis, environmental assessment and statistical analysis portion of this project. She holds a Master's Degree in Environmental Policy and Planning and has comprehensive experience planning and developing public health programs and providing technical assistance to incorporate public health considerations into federal, state and local planning decisions.

Shannon Limjuco, Program Manager, Public Health Emergency Preparedness & Response, will oversee the creation of the EOP Annex's Disaster Response Plan and the assessment of public health interventions. She will serve as a liaison between the Public Health Emergency Preparedness and Response Branch and city agencies and planning activities focused emergency response and medical capacity surge. She holds a Master's in Public Health and has extensive experience developing, testing, and implementing emergency response plans.

Tanya Bustamante, Health Program Coordinator I, Public Health Emergency Preparedness & Response Branch. Tanya Bustamante is a Planning Coordinator for the Public Health Emergency Preparedness & Response Team. She will play a key role on the maintaining the work plan for the team. She will also be responsible for researching and writing the Disaster Response Plan and coordinating exercises and implementation.

Rajiv Bhatia is the Director of Occupational and Environmental Health for the San Francisco Department of Public Health and an Assistant Clinical Professor of Medicine at the University of California at San Francisco. He will provide direction and expertise on all phases of the



cooperative agreement including analyses. Dr. Bhatia will also review and edit reporting documents, facilitate communication and collaboration with public agencies.

Lindsey Realmuto, Health Program Planner in the Environmental Health Section of SFDPH, will act as the community and evaluation liaison for this grant. She will work directly with collaborating partners in developing and implementing a comprehensive evaluation work plan. She will also interface with community partners and act as the SFDPH representative at community outreach events. Lindsey holds a Master's Degree in Public Health with a focus on Environmental and Occupational Health and has experience performing program evaluation and collaborating with community partners.

Naveena Bobba is the Director of the Public Health Emergency Preparedness and Response Section at the San Francisco Department of Public Health. She will serve to support and provide guidance for the grant in matters relating to public health emergency preparedness. Her section will work with partners to develop plans that integrate with local, state and federal agencies efforts.

Daniel Homsey, Director of Strategic Initiatives for the City Administrator's Office is the General Services Project Lead. He is also the Director of the Neighborhood Empowerment Network. He will oversee the community engagement portion of the grant and will have grant administrative responsibilities related to the budget and development of sub-contracts and related scopes of work. Daniel will provide project oversight and offer strategic direction on all program design and implementation elements. He will also coordinate with local and regional agencies and elected officials in the engagement and resilience action plan development cycles. Daniel holds a degree in Political Science from San Francisco State University and been working in the community organizing and capacity building field for a decade and is a specialist in the field of neighborhood resilience.

SFCARD will be hired as a contractor to engage community partners on climate change and public health. SFCARD will develop a framework to engage community partners in review of the adaptation plan and design of public education and outreach plan, with special attention to vulnerable populations, including those populations with known health disparities. SFCARD will work with community leaders and organizational liaisons, to assist them with developing and implementing an adaptation plan by organizing and facilitating working groups, capturing goals and priorities, and converting them into a program framework.

The San Francisco Public Health Foundation (SFPHF) will serve as a fiscal intermediary to hire staff for the cooperative agreement. SFPHF has previous experience working with SFDPH and CCSF, public health expertise, experience developing emergency response plans and assessment skills. The services provided SFPHF will include:

- A full time health data and geospatial analyst who will perform highly technical aspects of the project related to the analysis of health data and geographical information systems. This includes acquiring, organizing, editing, analyzing, and visualizing data through maps, charts, and graphs for the vulnerability assessment, burden of disease projections, and project evaluation. The analyst will also perform searches of bibliographic databases and data entry as needed.

- A communication specialist who will develop a communications strategy, educational materials and web content. This information will be deployed through multiple venues and media to share information we develop in the course of this project. The communication specialist will also create a social media networking site using our existing web resources.
- A climate consultant who will aid in the preparation technical reports and technical documentation, including the reports summarizing climate forecasts and health impacts, the vulnerability assessment, the burden of disease, adaptation interventions and their evidence basis, inventory of climate change adaptation plans and gap analysis, and the project evaluation.
- A geospatial database consultant who will support database management for tracking information on climate and health interventions and adaptation plans and develop the backend database system for our community resiliency indicator system.
- An evaluation design, implementation, and analysis of evaluation data for evaluation of process and impacts and recommendations for process improvement through UC Berkeley.
- A spatial web developer will web provide services to create our community resiliency indicator system.