# CLIMATE AND HEALTH STRATEGIC PLAN FOR MARICOPA COUNTY 2016-2021

**Maricopa County Department of Public Health**

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# ABOUT THE MARICOPA COUNTY DEPARTMENT OF PUBLIC HEALTH

The Maricopa County Department of Public Health's mission is "We make healthy lives possible." This mission is accomplished by providing residents and visitors with education and tools to prevent health threats, such as infectious diseases, natural and human-caused disasters, toxic exposures, and preventable injury. Public health also works to prevent chronic diseases, such as heart disease, cancer, and diabetes.

# ABOUT BRIDGING CLIMATE CHANGE AND HEALTH WORKGROUP

In 2015, the Maricopa County Department of Public Health was selected by the Public Health Institute to join *The Climate Change and Public Health Learning Collaborative for Urban Health Departments* and receive financial support to incorporate climate change mitigation, adaptation, and resilience work into local public health department program practice. As part of this project, Maricopa County hosted two meetings named *Bridging Climate Change and Public Health* on November 16, 2016 and May 18, 2017, which convened representatives from a diverse array of local community organizations, private businesses, government agencies, and academic institutions. Facilitated discussion helped identify local activities in the fields of climate and health, as well as stakeholders' perceived needs of the community and barriers to successful collaboration. A subset of meeting participants formed the *Bridging Climate Change and Public Health Strategic Planning Workgroup*, which developed a strategic plan with five priority actions for addressing environmental concerns affecting the health and well-being of the community over the months of August 2017 through January 2018.

# ABOUT THIS DOCUMENT

This report was developed by the *Bridging Climate Change and Public Health Strategic Planning Workgroup* in 2017, and published by the Maricopa County Department of Public Health in 2018.

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# EXECUTIVE SUMMARY

Maricopa County experiences extreme heat, which has adverse effects on community health and has been recognized as a serious public health issue. Therefore, the Maricopa County Department of Public Health (MCDPH) has conducted surveillance activities to assess morbidity and mortality due to extreme heat for the past 10 years. In 2016, MCDPH was interested in expanding their scope to include other climate-sensitive public health hazards. Subsequently, a network of stakeholders with an interest in the health effects of climate-sensitive hazards was established as the Bridging Climate Change and Public Health (BCCPH) stakeholder group. A smaller Strategic Planning Workgroup of key stakeholders from the BCCPH group was then convened over three sessions to work on a strategic plan for the group, which culminated in this document.

**Practical Vision**

The driving discussion question to identify the Strategic Planning Workgroup's practical vision was, "What do we want to see in place in the next 3-5 years as a result of our actions?" The goal of this question was to help the group develop concrete outcomes that the BCCPH workgroup would like to achieve through activities included in the strategic plan. The following goals were identified:

- A healthy community infrastructure design
- Reframed messaging for multiple stakeholder needs
- A coordinated multi-scale education effort
- Improved health strategies and outcomes
- A diverse network of partnerships for climate change adaptation and mitigation planning and development
- New funding opportunities
- Policy and research strategies, and private sector engagement.

**Underlying Contradictions**

The driving discussion question to identify underlying contradictions was, "What is blocking us from moving towards our practical vision?" The following challenges were identified:

- People act out of self-interest vs. common good
- Siloed effects lead to poor coordination
- Political partisanship delays unified action
- Conflicting information leads to biases
- Culture and convenience impacts action
- Vulnerable populations not represented, and normalization of climate change related negative effects

**Strategic Directions**

During the BCCPH Strategic Planning Workgroup meetings, participants identified five strategic directions for addressing environmental concerns affecting the health and well-being of the community. These strategic directions are in agreement with the climate and health adaptation strategies outlined in the Arizona Climate and Health Adaptation Plan.[1] The strategic directions for Maricopa County are:

- Fostering Environmental Action for a Healthier Community
- Coordinating Research and Collaborative Efforts to Catalyze Change
- Developing a Strategic and Targeted Communication Plan
- Promoting Community Awareness and Public Education about Climate and Health
- Celebrating Success and Champions

# BACKGROUND

Maricopa County, Arizona experiences extreme weather, including heat waves, dust storms, drought, wildfires, flooding, and poor air quality events. These climate-sensitive hazards pose a threat to public health and can lead directly to illness or death or worsen underlying health conditions. MCDPH Office of Epidemiology has been conducting heat-associated morbidity/mortality surveillance since 2006, and extreme heat has become a public health priority as temperatures continue to rise. Addressing heat-health impacts corresponds with MCDPH's vision and mission to "make healthy lives possible" by protecting and promoting the health and well-being of Maricopa County residents and visitors. MCDPH has led several heat surveillance and planning activities over the past decade that have resulted in long-standing partnerships focusing on heat and health between MCDPH and local governmental agencies, academia, and community organizations.

In 2015, MCDPH was awarded a grant from the Public Health Institute's (PHI) Center for Climate Change and Health to expand the focus from heat to other climate-sensitive hazards. Community stakeholders were identified and convened in a series of meetings to explore the current climate change and health landscape within Maricopa County. This group was formalized as the Bridging Climate Change and Public Health (BCCPH) stakeholder group and included a wide variety of community partners across many different sectors. Initial conversations among the BCCPH partners centered on defining what public health's role should be in community efforts to address climate-related health risks as well as what actions and resources participants would like to see from a collaborative group moving forward. As a result of those conversations, and other targeted outreach, it became clear that participants wanted more structure to the collaborative and that sustaining the collaborative would be a challenge if led entirely by MCDPH. Therefore, MCDPH convened a smaller

group of key BCCPH participants to begin a strategic planning process. This effort was aided by a grant from the Centers for Disease Control and Prevention's (CDC) Building Resilience Against Climate Effects (BRACE) program through the Arizona Department of Health Services (ADHS), which allowed for a professional facilitator for the strategic planning sessions. The strategic planning process focused on the human health effects of climate change. Therefore, the scope of discussion did not include climate change effects on animals, agriculture, oceans, or other ecosystems. This was purposeful in order to limit the scope of the plan, represent the primary action areas of the stakeholders, and allow it to be relevant for engagement with a public health department.

The strategic planning process began with brainstorming ideas and evaluating the ***current landscape*** of climate and health within Maricopa County. This included identifying basic information, current challenges, and advantages of starting a strategic plan at the time the workgroup was convened. Once the current landscape was determined, the practical vision was defined. The ***practical vision*** is defined as a set of positive changes resulting from implemented actions within the next three-to-five years related to climate and health. The next step was to assess the challenges, known as ***underlying contradictions***, which may hinder the progress towards achieving the practical vision. Using the underlying contradictions, corresponding priority actions known as strategic directions were created. A ***strategic direction*** is a priority action that will include innovative actions to address underlying contradictions and achieve goals defined in the practical vision. Each strategic direction is simplified into the current reality, first year accomplishments, and three-year goals. Next, a ***logic model*** was developed for each strategic direction in order to define a plan, the short term goals, and the long term goals. Furthermore, an ***implementation framework*** and tools (meeting agenda, quarterly progress reports, and annual progress reports) were then used to fulfill the strategic directions.

# CURRENT LANDSCAPE

## Climate and Health Environmental Scan

The scan was a level-setting activity whereby all participants could approach the planning process with the same level of information. The process identified basic information surrounding climate and health within the Maricopa County community, current challenges, and advantages of developing a Climate and Health Strategic Plan now.

### Basic Information

Comprehensive information about climate change in Maricopa County, and the greater Southwestern region of the United States can be found in the *National Climate Assessment Regional Technical Input Report Series: Assessment of Climate Change in the Southwest United States* (subsequently referred to as the Climate Assessment)[2] and reports generated by the Arizona Department of Health Services. Included in the report are notable findings of climate changes already seen in our region:

- ***"The Southwest is warming***. Average daily temperatures for the 2001–2010 decade were the highest in the Southwest from 1901 through 2010. Fewer cold waves and more heat waves occurred over the Southwest during 2001–2010 compared to average decadal occurrences in the twentieth century. The period since 1950 has been warmer than any period of comparable length in at least 600 years, as estimated on the basis of paleoclimatic tree-ring reconstructions of past temperatures." (p. 3)
    - The Arizona Extreme Weather, Climate and Health Synthesis Report[3] shows that extreme heat is a health hazard in Arizona, and some Arizona counties may see warming of up to 4.5 degrees Fahrenheit above current temperatures by 2060.
- ***"Recent drought has been unusually severe relative to droughts of the last century, but some droughts in the paleoclimate record were much more severe***. The areal extent of drought over the Southwest during 2001–2010 was the second largest observed for any decade from 1901 to 2010. However, the most severe and sustained droughts during 1901–2010 were exceeded in severity and duration by multiple drought events in the preceding 2,000 years." (p. 3)
- ***"Recent flows in the four major drainage basins of the Southwest have been lower than their twentieth century averages.*** Streamflow totals in the Sacramento-San Joaquin Rivers, Upper Colorado, Rio Grande, and Great Basin were 5% to 37% lower during 2001–

2010 than their twentieth century average flows. Moreover, streamflow and snowmelt in many snowmelt-fed streams of the Southwest tended to arrive earlier in the year during the late twentieth century than earlier in the twentieth century, and up to 60% of the change in arrival time has been attributed to increasing greenhouse-gas concentrations in the atmosphere." (p. 3)

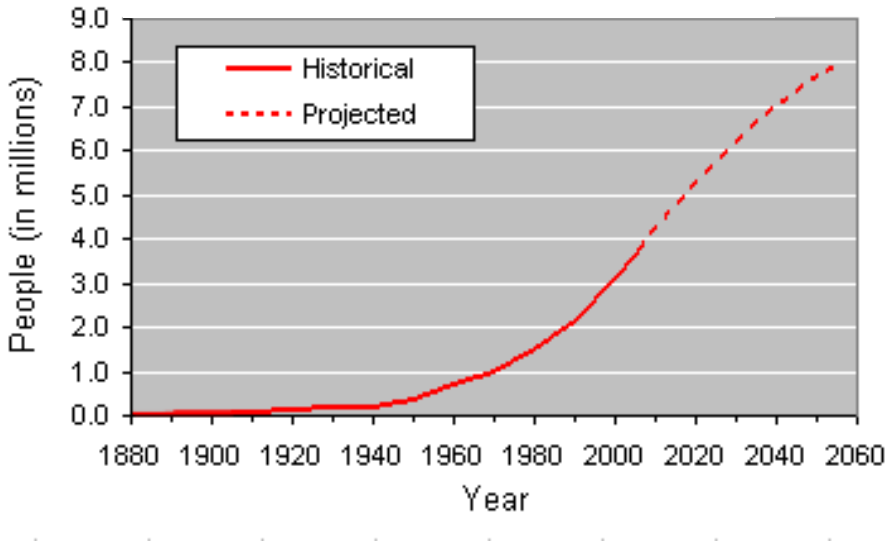
Additionally, the *Climate Assessment* and reports generated by the Arizona Department of Health Services highlights projected future climate change effects in our region. Projected effects are variable and depend on the models used as well as any interventions or mitigation strategies which are employed during the interim time period. Regardless, the *Climate Assessment* authors highlight a few predictions which they are confident will occur in the future:

- ***"Warming will continue, with longer and hotter heat waves in summer***. Surface temperatures in the Southwest will continue to increase substantially over the twenty-first century (high confidence), with more warming in summer and fall than winter and spring (medium-high confidence). Summer heat waves will become longer and hotter (high confidence). Winter cold snaps will become less frequent but not necessarily less severe (medium-high confidence)." (p. 5)
    - The Arizona Extreme Weather, Climate and Health Synthesis Report[3] supports this assessment. The largest temperature changes are likely to occur in Arizona's more rural areas. The majority of heat related illness cases in Arizona occur in Maricopa County. Between 2008-2012, Arizona saw a rise in the number of emergency room visits for Heat related illness.
- ***"Average precipitation will decrease in the southern Southwest.*** Precipitation will decline in the southern portion of the Southwest region, and change little or increase in the northern portion (medium-low confidence)." (p. 6)
    - The southwestern desert and lower Colorado River valley, including Maricopa County, receive less than 10 inches of annual precipitation with the driest areas nearer to 3 inches of annual rainfall.[3]
- ***"Precipitation extremes in winter will become more frequent and more intense (i.e., more precipitation per hour)*** (medium-high confidence). Precipitation extremes in summer have not been adequately studied." (p. 6)
- ***"Late-season snowpack will continue to decrease.*** Late winter-spring mountain snowpack in the Southwest will continue to decline over the twenty-first century, mostly because temperature will increase (high confidence)." (p. 6)
- ***"Declines in river flow and soil moisture will continue.*** Substantial portions of the Southwest will experience reductions in runoff, streamflow, and soil moisture in the mid- to late-twenty-first century (medium-high confidence)." (p. 6)

- ***"Droughts in parts of the Southwest will become hotter, more severe, and more frequent*** (high confidence). Drought, as defined by Colorado River flow amount, is projected to become more frequent, more intense, and more prolonged, resulting in water deficits in excess of those during the last 110 years (high confidence)." (p. 6)

In addition to climate changes, there are additional factors that may exacerbate their effects within Maricopa County specifically. First is population growth. As of 2017, the US Census Bureau estimates that there are over 7,400,000 residents in Arizona, an increase of 1.6% over the previous year, even lower-growth projections from the state office of Economic Opportunity point to a significant increase in the number of people living in Maricopa County in the coming decades (see figure 1).

**Figure 1. Historical and Projected Maricopa County Population**

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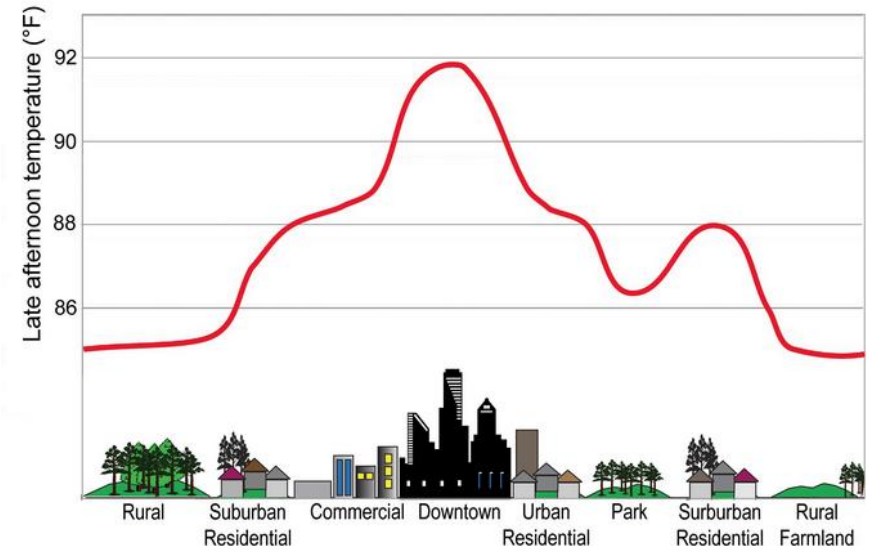
Additional people means more demand for water and electricity; increased development in the form of housing, roads, and other infrastructure; and increased pollutants from water runoff, transportation, and others. Increased development and other infrastructure also contribute to the Urban Heat Island Effect, which causes significantly higher temperatures in urban areas compared to the temperatures in surrounding rural areas. The differences in temperatures can be up to 10°F (see figure

2). The growth of the Phoenix metropolitan area since 1950 has led to a significant increase in nighttime temperature due to the urban heat island effect.[3]

**Figure 2. Urban Heat Island Effect**

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With these changes identified, what human health effects do we currently see and what do we expect to happen in the future? There are expected to be many effects on human health, but many of them are multi-factoral and therefore influenced by many different aspects of climate change and the urbanization and population growth in Maricopa County. Impacts identified in the *Climate Assessment* and other reports may include:

- ***"Climate change will drive a wide range of changes in illness and mortality.*** In particular, climate change will exacerbate heat-related human morbidity and mortality, and lead to increased concentrations of airborne particulates and pollutants from wildfires and dust storms. Climate change may affect the extent to which organisms such as mosquitoes and rodents can carry pathogens (e.g., bacteria and viruses) and transmit disease from one host to another (medium-high confidence)." (p.14)
    - ***Fluctuations in climate will impact vector-borne diseases.*** Projections in Arizona show an extension of mosquito activity season and location-specific changes in mosquito abundance for West Nile Virus. Phoenix might see an extension of the

season with a break in summer as the summer temperatures reach and exceed thresholds for survival. Changes in drought and high precipitation events will impact the incidence of Valley Fever cases.[4]

- ***"Allergies and asthma will increase in some areas.*** On the basis of data showing earlier and longer spring flower bloom, allergies and asthma may worsen for individual sufferers or become more widespread through the human population as temperature increases (medium-low confidence)." (p. 14)
    - ***Common allergic reactions and diseases are expected to increase.*** Poor air quality affects a large portion of Arizona's population living in regions that find it difficult to meet federal air quality standards for particulate matter and ozone, or that face challenges in maintaining compliance. Allergy season is likely to hit earlier and remain longer in Arizona. However, air quality in Arizona has generally improved over the past several decades due to technological advances and pollution control.[2]
- ***"Disadvantaged populations will probably suffer most.*** The health of individuals who are elderly, infirm, or economically disadvantaged is expected to decrease disproportionately to that of the general population (high confidence), due to their increased exposure to extreme heat and other climate hazards." (p.14)
    - ***In Arizona, populations at increased risk due to exposure of extreme heat and air quality include:*** low-income people, minorities, children, those engaged in outdoor work or recreation, the elderly, those without access to air conditioning and those living near heavily traveled roadways.[2]
- ***"Changes in land cover will be substantial.*** Observed changes in climate are affecting vegetation and ecosystem disturbance (Figure 1.8). Among those disturbances are increases in wildfire and outbreak of forest pests and disease. Death of plants in some areas of the Southwest also is associated with increases in temperature and decreases in precipitation (high confidence)." (p.11)
- ***"Climate change could further limit water availability in much of the Southwest.*** A large portion of the Southwest, including most of the region's major river systems (e.g., Rio Grande, Colorado, and San Joaquin), is expected to experience reductions in streamflows and other limitations on water availability in the twenty- first century (medium-high confidence)." (p.12)
- ***"Surface water quality will be affected by climate change.*** In some areas, surface water quality will be affected by scarcity of water, higher rates of evaporation, higher runoff due to increased precipitation intensity, flooding, and wildfire (high confidence)." (p. 14)
- ***"Energy supplies will become less reliable as climate changes and climate change will drive increasing energy demand in some areas.*** Delivery of electricity may become more vulnerable to disruption due to extreme heat and drought events that increase demand for home and commercial cooling, reduce thermal power plant efficiency or

ability to operate, reduce hydropower production, or reduce or disrupt transmission of energy (medium-high confidence)." (p.15)

- ***"Climate change will affect urban areas in differing ways depending on their locations and on their response or adaptive capacities.*** Climate change will affect cities in the Southwest in different ways depending on their geographic locations. Local capacity to address effects of climate change will also vary depending on governmental, institutional, and fiscal factors. Incidences of air pollution related to increased heat are likely to increase, and water supplies will become less reliable (medium-high confidence)." (p.15)
    - ***The Arizona Department of Health Services released their first version of the Arizona Climate and Health Adaptation Plan in 2018.*** This plan intends to support the development of interventions and enhancement of public health preparedness activities for climate change.[1]
- ***"Reliability of transportation systems will decrease.*** Climate change will affect transportation systems in different ways depending on their geographic location (e.g., changing sea level and storm surge affect coastal roads and airports), potentially impeding the movement of passengers and goods (medium-high confidence)." (p.15)
- ***"Climate change may disproportionately affect human populations along the U.S.-Mexico border.*** Climate changes will stress on already severely limited water systems, reducing the reliability of energy infrastructure, agricultural production, food security, and ability to maintain traditional ways of life in the border region (medium-high confidence)." (p.15)
- ***"Native American lands, people, and culture are likely to be disproportionately affected by climate change.*** Effects of climate change on the lands and people of Southwestern Native nations are likely to be greater than elsewhere because of endangered cultural practices, limited water rights, and social, economic, and political marginalization, all of which are relatively common among indigenous people (high confidence)." (p.15)

Residents and visitors of Maricopa County already experience a wide range of adverse health effects from climate-sensitive hazards. However, we do not need to wait for the future to see these human health effects. Previous work by the Maricopa County Department of Public Health identified that the number of heat related deaths is continuing to increase.[5] While heat related deaths occur to a wide range of individuals, those individuals who die from heat exposure indoors often have complications with air conditioning including not having their air conditioning functioning or turned on. Further research identified costs as a significant barrier to running air conditioning for many Maricopa County residents.[6]

### Current Challenges

The strategic planning workgroup identified a number of possible barriers to accomplishing the work identified during the strategic planning process. These barriers were initial level-setting challenges identified at the outset of planning, and additional barriers or challenges were identified late in the process of developing strategic directions. Those challenges are included within the logic models for each Strategic Direction and should be discussed as additional activities or objectives are added to this plan in the future.

- ***There is a lack of funding for public health agencies in general, and very little funding to support public health agencies working within the context of climate change.*** Without resources to support this work it is common for public health and other health organizations to be left out of climate change planning initiatives. This is not to say that human health is left out of these discussions, but rather that the agencies most equipped to distribute messaging around health outcomes, engage with health providers, and rally support for improving health, may not be part of the conversation.
- ***Many people are not aware of how their individual actions can have an effect on a global issue like climate change.*** This may lead individuals, or even organizations, to feel that they have no role in affecting climate change when the opposite is often true.
- ***Some aspects of the research community are not always engaged with non-profits or other key organizations to provide the necessary data for them to aid in the progression of climate-related efforts.*** There are often silos separating the research, policy, and action communities which can lead to disjointed progress and lack of mutual understanding of community-wide issues.
- ***Due to the sprawling nature of Maricopa County's urban environment, drastically changing transportation modalities may not be possible.*** Many people have cars and prefer to drive over taking public transportation. Although there is room to make significant progress in this area, human behavior change is difficult and this barrier should not be underestimated.
- ***Maricopa County has a growing population, including groups more vulnerable to climate change effects such as the elderly and homeless.*** This implies that focusing on disadvantaged or vulnerable populations will be critical in the success of any objectives or activities identified in this plan. These groups may need different implementation strategies and/or communication methods.
- ***Climate change is a political issue with varying degrees of interest across the political spectrum.*** This implies that an array of strategies will be needed in order to make the most impact for the most people.

**Advantages**

Advantages of completing a strategic plan for climate change and health were identified in order to solicit factors which might support the success of the strategic plan once implemented. The advantages identified were:

- A network of local community stakeholders and other connections that are interested in collaborating on climate change and health.
- Changes in federal funding and outlook on climate change will empower us as a local community to take the lead in this arena.

# PRACTICAL VISION

The driving discussion question to identify our practical vision was, "What do we want to see in place in the next 3-5 years as a result of our actions?" The goal of this exercise was to help the group develop concrete outcomes that we would like to achieve through activities included in the strategic plan. We revisited this practical vision throughout the planning process to keep our activities and objectives grounded within our original goals and purpose. Each piece of the practical vision is described below.

**Healthy Community Infrastructure Design is Employed**

People in our community spend ~90% of their time indoors in places such as homes, schools, and workplaces.[7] In addition, we use roadways and highways to reach these places. Growing research has shown that the built environment, including parks, sidewalks, and other features can significantly affect our physical activity, asthma, obesity, cardiovascular disease, lung cancer mortality, and mental health.[8-13] Many of these health outcomes will also be affected by the increasing human risks from climate change. One solution to both issues, poor health outcomes and climate change effects, is reexamining how our community infrastructure is designed and built.[14-16] Some examples of built environment interventions could be:

- Changing the color of urban surfaces, including asphalt and roofs to decrease urban heat island effect
- Improving drainage and reducing sources of standing water to decrease mosquito growth
- Increasing tree canopy, planting, and care

**Climate Change Messaging Has Been Reframed**

As will be discussed in the next section Underlying Contradictions, the current public understanding of climate change and its effects is mixed. We envision a community where there is a universal understanding of climate change risks, its effects, and actions that can be taken to mitigate or adapt to the effects of climate change. This is

facilitated by consistent and unified climate and health messaging across agencies and organizations.

**Coordinated Multi-Scale Education Effort**

Promoting climate change and health education in the community in general would be facilitated by inclusion of coordinated curriculum within formal education sectors from grade schools through university levels. This would include the science behind climate change and its impact on human health as well as how adaptation and mitigation strategies can be implemented. A particular effort would also highlight vulnerable populations.

**Improved Health Strategies and Outcomes**

Overall we would like to see decreased health effects from climate sensitive hazards. Whether this is from extreme heat, flash floods, dust storms, or any other locally relevant hazard. Additionally, for those strategies already in place in our community, such as hydration stations, cooling centers, utility assistance programs, etc., we would like to see these services strengthened and improved.

**A Diverse Network of Partnerships for Climate Change Adaptation and Mitigation**

In order for most climate change adaptation or mitigation strategies to be successful in any community, they require multi-sector collaboration and support. To facilitate the work included in this strategic plan to its best possible conclusion it will be necessary to increase public/private partnerships, engage non-traditional health partners, and promote institutional level change. We see this manifested as a diverse network of partnerships focused on climate and health topics.

**Activities Include New Financing Models and Strategies**

Funding will be required to effectively promote and support adoption of activities included in this strategic plan. As a result, we will need to be creative in implementing funding models and include that creativity within planning for each activity. Additionally, some interventions may be linked directly to financing in innovative ways such as reducing food waste within an organization, providing incentives to adopt policies or programs, or providing community grants for capital improvement projects.

# UNDERLYING CONTRADICTIONS

The driving discussion question to identify underlying contradictions was: "What is blocking us from moving towards our practical vision?" This significantly differed from the very first conversation during the Current Landscape activity where challenges were identified, because now the group had identified specific changes it would like to see in the community and were discussing barriers to motivating change or implementing interventions directed at those specific changes. These underlying contradictions were then either addressed directly by one of the Strategic Directions or were factors in refining the strategies proposed within a Strategic Direction. These should also be kept in mind as future activities or objectives are added to this strategic plan. Below is a brief summary of each of the concepts identified as underlying contradictions.

**Acting out of Self-Interest vs. Common Good**

On a business, organizational, and individual level there are well documented[17-21] conflicts between factors that can be termed self-interest and the common good. This could include things that we see manifested across daily life such as the medical system's focus on treating disease rather than preventing, [22] Americans' lack of savings for retirement, [23] or in businesses view of social responsibility.[24] In environmental sociology this is sometimes termed cosmopolitanism. More specifically as this conflict relates to climate change and health, this conflict manifests itself as:

- Businesses typically value revenue and profits as a primary arbiter of success. It is often secondary to think of a businesses' social responsibility- particularly as it relates to sustainability or other interventions which might cost the business money in the short term.
- Climate change needs short and long term goals to be realized in order to affect change but it is often difficult to balance the focus on disparate types of implementations in the same plan.

- Climate change itself is a very complex and overwhelming topic for many individuals and they can feel paralyzed to take action as a result.
- It is often difficult to fund prevention activities as it is typically difficult to show their effectiveness in a short timeframe- if at all. There is a common problem with accounting for the success of an intervention when the intervention's goal is to avoid something happening. How does an organization show that the intervention is what dispelled certain outcomes rather than random chance or issues with an original model or assumptions? Even if the workgroup is able to account for the intervention's direct outcomes, many climate change mitigation and adaptation activities may take decades to manifest measurable change.
- There will always be other local and national issues competing for money, time, or other resources.
- The general public, who would have to implement many activities included in this plan, may lack interest in this topic.

**Silo Effects Lead to Poor Coordination**

When individuals or organizations working within the areas of climate change research, mitigation, or adaptation are not mutually aware of each other's' efforts, do not communicate regularly, and are not complimentary, there can be inefficiencies and limitations to the results they can achieve alone. These can be manifested as:

- An unclear call to action for the public or decision makers
- Non-uniform messaging, or conflicting messages
- Inefficient programs, actions, or projects
- Unaddressed problems or sectors- "That's someone else's problem!"
- Duplicative efforts because organizations are unaware of what others are doing

**Conflicting Information Leads to Biases**

On a national and local scale, conflicting information in mass media messaging for climate change can affect the way the messages are received in the validity of climate science, the scale of ecological risk, the scale of climate politics, and support

for mitigation policy. These issues can lead to vastly different understandings of climate change by the consumers which can then bias their views of and support for actions contained here in this plan.[25-28]

**Culture and Convenience Impacts Action**

Research has shown that climate change mitigation and adaptation activities within a given community are influenced by our history, our social and cultural norms, economic factors, and political relations. These cultural values can promote or limit the effectiveness of climate change strategies, especially when the strategy focuses on an individual's need to change behavior or practices. Some examples of locally relevant cultural values which might limit the effectiveness of activities proposed in this plan include:

- The reliance on personal vehicles for routine transportation and attitudes towards mass transit options[29]
- The perception that climate change solutions are too hard or inconvenient[30]
- The historical focus on independence and self-determination[31]
- The historical preference for reduced rules, laws, and regulations[31]
- The cost of implementing strategies to the individual[32]

**Lack of Engagement with Vulnerable Populations**

The effects of climate change on individuals are not equally distributed around the world nor in our local community.[33-37] Risks to people can be unequal based on geography, politics, biology, economics, and other social factors. For example, seniors may be more vulnerable during a flooding event because they are not as capable of evacuating. Lower income individuals may not be able to repair their air conditioner or pay high electricity bills during the summer, leaving them more vulnerable to rising temperatures. Many times, those most likely to experience climate change effects now and into the future are not engaged as part of the climate change planning and implementation efforts.

**Normalization of Climate Change Negative Effects**

Many changes in our regional climate have been happening over decades and even lifetimes. As a result, it is often normal for people to no longer perceive the risks associated with those exposures. For instance, according to "Assessing Adaptation Strategies for Extreme Heat: A Public Health Evaluation of Cooling Centers in Maricopa County, Arizona," 50% of people in our community believe that their health is not at risk due to heat during the summer.[38] In addition, 36% of individuals surveyed in Maricopa County's Community Assessment for Public Health Emergency Response (CASPER) survey for Heat Vulnerability and Emergency Preparedness[39] stated that heat was not considered a perceived risk in their household despite the fact that 60% of heat-associated deaths in Maricopa County occur in individuals who have lived in Arizona for more than 20 years.[5] This lack of perception of personal risk to climate effects could pose problems in motivating individuals to take action around strategies included in this plan.

# STRATEGIC DIRECTIONS

The current landscape, underlying contradictions, and practical vision were then discussed jointly to group potential activities into overall strategies which were termed Strategic Directions. The five Strategic Directions were identified as:

- Celebrating Success and Champions
- Building Community Awareness through a Strategic and Targeted Communication Plan
- Fostering Environmental Action for a Healthier Community
- Coordinating Research and Collaborative Efforts to Catalyze Change
- Promoting Community Awareness and Public Education about Climate and Health

Each Strategic Direction includes first year accomplishments, three year goals, and a logic model.

## CELEBRATING SUCCESS AND CHAMPIONS

**First Year Accomplishments**

- Distribute 4 Climate and Health Champion awards
  - Youth
  - Citizen
  - Business
  - Organization
- Provide "experience prizes" to school age children

**Three Year Success Indicators**

- Increase number of businesses that implement sustainability measures
- Recognize businesses that contribute to common good via the Better Business Bureau (BBB) website

**Logic Model**

The logic model illustrates some of the activities, outputs, and outcomes to fulfill this strategic direction. *(See next page)*

# CELEBRATING SUCCESS AND CHAMPIONS

## SITUATION

The Phoenix metropolitan area is one of the hottest cities in the country. As a result, other environmental hazards are getting worse. Businesses often put revenues before eco-friendly practices leading to unsafe environmental conditions. There are little to no incentive programs to promote healthy practices. A recognition program may create motivation to adopt eco-friendly practices.

## PRIORITIES

Public Health Mission: We make healthy lives possible.

Public Health Vision: A healthy and safe community

Funding: CDC-BRACE Funding

Personnel:

- Maricopa County Department of Public Health staff
- Arizona State University staff
- University of Arizona staff
- Arizona Department of Health Services staff

Approach:

Use the recognition program to create public awareness, engagement, and empowerment.

| ACTIVITIES | OUTPUTS | OUTCOMES | | |
|---|---|---|---|---|
| | | Short Term | Intermediate Term | Long Term |
| Develop Champion recognition criteria | Introduce/discuss 'Celebrating Success and Champions' strategy to stakeholders:<br>• Teleconference<br>• E-mail | Criteria developed | Criteria reviewed and changed as necessary<br><br>Track information on nominations/ awards | |
| Research activities among businesses | Build a knowledge repository on work flow/activities on climate-sensitive hazards adaptation<br>• Website, social media, e-mail<br>• Identify new partnerships and resources<br>• Document steps in the written protocol<br>• Final process will be published on the website | Identify whether sustainability and adaptation activities exist | Evaluation of developed process and make appropriate changes | Create Climate and Health Champion Recognition Program |
| Publish the champion recognition criteria | | Notify and update new partners with this strategic plan | Update stakeholders | |
| Set up the process for champion nomination | | Keep track of incoming information | Create continuous process for nominations | |
| Distribution of awards | Uploading awardee profiles on to the website to highlight their work | Acknowledge Climate Champions | Inspiring additional nominations | |

**Assumptions:** Stakeholders will be open to collaboration by sending their nominations of individuals and organizations that are taking steps toward sustainability.

# BUILDING COMMUNITY AWARENESS THROUGH A STRATEGIC AND TARGETED COMMUNICATION PLAN

## First Year Accomplishments

**Short Term:**

- Identify communication experts
- Identify a list of key stakeholders
- Develop and deploy a pre-satisfaction survey of practitioners in field
- Evaluate existing list serves and other communication tools
- Hold regular meetings

**Long Term:**

- Complete a communication guidance document (messaging)
- Create internal and external communication evaluation plan
- Sustainability and public health data resources assessment
- Shared social media activities
- Media training
- Regular meetings

## Three Year Success Indicators

**Short Term:**

- Media is at the table (news, print, radio)
- Identify the influential champions for this work within different organizations (leaders who prioritize the campaign)
- Increased number and diversity of agencies using communication guidance (messaging document)
- Coordinating with other seasonal campaigns (flu season/summer season) and compile the communication updates in advance and in a timeless manner

**Long Term:**

- Unified communications plan completed
- Increased number of opportunities for media, public health, and sustainability professionals to collaborate and continue the dialogue
- Post Satisfaction Survey of practitioners in field
- Ongoing implementation of the communication evaluation plan

### Logic Model

The logic model illustrates some of the activities, outputs, and outcomes to fulfill this strategic direction. *(See next page)*

# BUILDING COMMUNITY AWARENESS THROUGH A STRATEGIC AND TARGETED COMMUNICATION PLAN

## SITUATION

The Greater Phoenix community is dealing with climate changes and public health issues. There is a lack of or inconsistent info to the general public on these issues. There are siloed efforts with inconsistent coordination of messaging. An effort to make the community aware of these situations is needed.

## PRIORITIES

Public Health Mission: We make healthy lives possible

Public Health Vision: A healthy and safe community

Funding: Centers for Disease Control (CDC) - Building Resilience Against Climate Effects (BRACE)

Personnel:

PIOs, communication and marketing staff from public, private, nonprofit organizations, media and interns, input by specialized experts in the field: (economists, fire, emergency response, elected officials, ASU sustainable cities network).

Approach:

Building community awareness through a strategic & targeted communication plan.

| ACTIVITIES | OUTPUTS | OUTCOMES | | |
|---|---|---|---|---|
| | | Short Term (1 yr.) | Intermediate Term (2-3 yrs.) | Long Term (3-5 yrs.) |
| Identification of current and potential outgoing climate information<br><br>Identify communication experts to build it<br><br>Identify target audience groups<br><br>Convening a group to develop the template and include community input<br><br>Inventory of platforms to monitor<br><br>Identify baseline assessment (audience) and post implementation strategy<br><br>Convene the same group to develop evaluation plan with external support if necessary | Messaging guidance document template<br><br>Create a plan for disseminating the message & identify media training strategy<br><br>Create evaluation plan | Developed guidance document template and plan for message dissemination<br><br>Developed evaluation plan and pre-survey | Tested and refined by stakeholders<br><br>Ongoing evaluation | All stakeholders are well equipped with the resources to bring awareness to climate and public health issues in a consistent manner<br><br>Measuring change over time to show an increase in awareness of a diversity of targeted audience using the guidance document |

**Assumptions:** Awareness is low; People will listen and take action; integrate information from other groups.

## FOSTERING ENVIRONMENTAL ACTION FOR A HEALTHIER COMMUNITY

**First Year Accomplishments**

- Create a climate adaptation toolkit for municipalities – Star Cities Program
- Identifying political will and funding across municipalities and private companies
- Evaluating current cooling center data and identify locations
- Identify partners interested in high density
- Identify current solar and water programs
- Identifying partners and success stories of market strategies (partner with Arizona State University [ASU] and Citizen's Climate Lobby [CCL]) with Maricopa Association of Government (MAG) and Valley Metro

**Three Year Success Indicators**

- Increase ridership Valley wide
- 3% increase in tree canopy county-wide
- Collaboration between cities on planning documents that address long term projects for climate impacts
- Expanded coverage of cooling centers into nights/weekend and other locations
- Broad public understanding of how market strategies address climate pollution
- At least one city to adapt a temperature reduction goal and funding to support it

**Logic Model**

The logic model illustrates some of the activities, outputs, and outcomes to fulfill this strategic direction. *(See next page)*

# FOSTERING ENVIRONMENTAL ACTION FOR A HEALTHIER COMMUNITY

## SITUATION

Phoenix (Maricopa County) is one of the hottest cities (counties) and experiences significant climate related deaths and health effects. There are limited resources and lack of awareness of how businesses, municipalities / governments, associations and individuals can contribute to adapt and mitigate environmental hazards.

## PRIORITIES

Public Health Mission: We make healthy lives possible.

Public Health Vision: A healthy and safe community

Funding: Centers for Disease Control & Student volunteers

Personnel:

Bridging Climate Change and Public Health (BCCPH) Workgroup:

- Maricopa County Department of Public Health staff
- Arizona State University staff
- Green Chamber of Commerce

Approach:

Fostering action via conducting environmental scan & development of tool kits

| ACTIVITIES | OUTPUTS | OUTCOMES | | |
|---|---|---|---|---|
| | | Short Term | Intermediate Term | Long Term |
| Develop scope of activities / items to be included in the toolkit | Toolkit | Validated tool-kit | Entities are aware of toolkit as a resource | Communities adopt or adapt to the strategies in the tool kit |
| Collect best practices of intervention climate vs. health across MC | | | | |
| Promote tool kit | | Share tool kit with commun-ication team | | |
| Track tool kit use and adoption activities | | | | |
| Develop a process document for how to identify funding partners for climate & health actions (including economic incentives) | Process document is created | Process document is available | | |
| Convene early climate adopter businesses | Business outreach plan | Identify business early adopters | Increase buy in for commercial benefits of climate action | Increase adoption of climate actions in businesses |
| Identify business cases for climate actions | | | | |
| Create business outreach plan | | | | |
| Develop priority list of climate/health hazard & interventions relevant at individual level | Priority list | Turn list over to communi-cation team for action | | |

**Assumptions:** Assume there is buy-in by the groups/general public & the action will impact the problem

## COORDINATING RESEARCH AND COLLABORATIVE EFFORTS TO CATALYZE CHANGE

**First Year Accomplishments**

- Environmental scan of complete list of stakeholders, frameworks, and toolkits
- Convene a meeting with current platform people for opportunities for expansion
- Identify nontraditional funding sources and collaborators
- Identify and engage in current community collaboration efforts

**Three Year Success Indicators**

- Create a comprehensive list of stakeholders
- Produce a platform to share knowledge and expertise
- Earn funding from nontraditional sources to mitigate climate health hazards
- Increase participation in community collaboration efforts
- Develop a formal process or framework or toolkit for engaging with population and stakeholders

**Logic Model**

The logic model illustrates some of the activities, outputs, and outcomes to fulfill this strategic direction. *(See next page)*

# COORDINATING RESEARCH AND COLLABORATIVE TO CATALYZE CHANGE

## SITUATION

- People sick/dying from climate-sensitive hazards
- Organizations working in silos
- Resources are limited and need more coordination

## PRIORITIES

Public Health Mission: We make healthy lives possible.

Public Health Vision: A healthy and safe community

Funding: Centers for Disease Control (CDC) - Building Resilience Against Climate Effects (BRACE)

Personnel:

Bridging Climate Change and Public Health (BCCPH) Workgroup:

- Maricopa County Department of Public Health (MCDPH)
- Arizona State University (ASU)
- University of Arizona (U of A)
- Arizona Department of Health Services (ADHS)

Approach:

Coordinating research and collaborative efforts to catalyze change

| ACTIVITIES | OUTPUTS | OUTCOMES | | |
|---|---|---|---|---|
| | | Short Term | Intermediate Term | Long Term |
| Determine audience for scan<br>Identify sectors for engagement<br>Identify partners that have contact list in each sector<br>Decide on variables to ask about<br>Gather and compile existing list of info from each partner<br>Disseminate info | Database/repository of stakeholders | Environmental scan of stakeholders completed<br>Identify non-traditional funding sources | Increased participation in community collaboration efforts (Increased connectivity of network)<br>Formal process for engaging new populations (including vulnerable populations and private sector) | A diverse network of multi-sector partnerships<br>Evidence-based climate & health strategies implemented by partners<br>Increased funding<br>Climate-sensitive health outcomes improved |
| Identify gaps<br>Environmental scan of currently used framework and toolkits | Increased BCCPH workgroup awareness of stakeholder gaps<br>Database of frameworks and toolkits | Completed environmental scan of frameworks and toolkits | Platform for coordination selected | |
| Identify facilitator<br>Determine how technology is used (platform)<br>Introduce platform concept<br>Determine "go/no-go" decision making process | Facilitator selected<br>Identify options for coordination platform (e.g., website, listserv database) | Convened meeting with current platform stakeholders to expand use of platform (central?) | Platform utilized for improved coordination | |

**Assumptions:** 1) Stakeholders are open to collaboration and sharing (data, stakeholders, framework); 2) More coordination and collaboration will lead to achieving long-term outcomes; 3) More collaboration will increase appeal to funders

## PROMOTING PUBLIC EDUCATION ABOUT CLIMATE AND HEALTH

**First Year Accomplishments**

- Assess and document how climate change and health is included for 50% of K – 12 districts in MC
- Identify organization who is willing to develop and host a CME/CEU course
- Connect with program curriculum developers (faculty, prof. Orgs, schools) to begin discussing teacher's academy future directions of health affected by climate
- Scope out technology requirements for hosting online library/repository
- Develop qualified speaker Distribution List and mechanism for receiving requests.

**Three Year Success Indicators**

- Knowledge of inclusion of climate change and health curriculum in each K-12 district
- Online CME/CEU programs available for health professionals
- Climate linked health effects are integrated into health professional programs/courses
- Library or repository of quality educational materials/curriculum/activities is centrally available (target teachers and students but broadly available
- Knowledgeable and qualified speakers available for lectures/training, professional conferences, community events and accompanying materials (handouts, PowerPoint presentation, etc.)

**Logic Model**

The logic model illustrates some of the activities, outputs, and outcomes to fulfill this strategic direction. *(See next page)*

# PROMOTING PUBLIC EDUCATION ABOUT CLIMATE AND HEALTH

## SITUATION

- Conflicting messages and information
- Lack of formal education program
- Lack of awareness of climate sensitive hazards

## PRIORITIES

Public Health Mission: We make healthy lives possible.

Public Health Vision: A healthy and safe community.

Funding: Centers for Disease Control (CDC) - Building Resilience Against Climate Effects (BRACE), CDC – Environmental Public Health Tracking (EPHT)

Personnel:

- Arizona Department of Health Services (ADHS)
- Arizona Department of Education (ADE)
- Arizona State University (ASU)
- Maricopa County Education Service Agency (MCESA)
- Maricopa County Department of Public Health (MCDPH)
- American Academy of Environmental Engineers (AAEE)
- Maricopa County Air Quality (MCAQ)

Approach:

Landscape Assessment

| ACTIVITIES | OUTPUTS | OUTCOMES | | |
|---|---|---|---|---|
| | | Short Term | Intermediate Term | Long Term |
| Speakers Bureau<br><br>Continuing Education Units (CEUs) / Continuing Medical Education (CME)<br><br>Catalogue of educational resources<br>– Active<br>➢ Informal education<br>➢ Formal, active<br>– Passive<br>➢ Websites<br>➢ Repositories<br><br>Assessing policy barriers<br><br>Meet with STEM partners | List (website) climate & health training<br>– Clinical & Public Health Workforce<br>– Professional Associations<br><br>Identify CEU partner – sponsor for credits<br><br>Completed repository<br><br>Identified policy barriers<br><br>K-12 standards associated with climate and other related topics (environment, health, air quality) | Increase website use<br><br>Increase workshop presentations<br><br>Increase community presentations<br><br>Increase school presentations<br><br>Increase understanding of gaps<br><br>Increase professional association presentations<br><br>Improved framing | Maintain speakers' bureau list<br><br>Increase curriculum modules and support materials<br><br>Increase receiving CEU/CME in workforce<br><br>Increase understanding of tangible actions<br><br>Improved education pipeline | Improved coordination across scales and levels<br><br>Increased number of schools implementing climate & health curriculum<br><br>More interest<br><br>Increase application of tangible actions<br><br>Increase climate & health educated workforce |

**Assumptions:** Hazards disproportionately affect vulnerable populations. Mutual interest across diverse stakeholder group. Meet stakeholders where they are at.

Maricopa County Public Health
WeArePublicHealth.org

# Bridging Climate Change and Public Health Strategic Plan

## Mission

***Adaptation and mitigation of climate-sensitive hazards to improve community health.***

## Practical Vision

- *Healthy Community Infrastructure Design*
- *Reframing Message for Multiple Stakeholder Needs*
- *Coordinated Multi-Scale Education Effort*
- *Improved Health Strategies and Outcomes*
- *Building a Diverse Network of Partnerships for Climate Change Adaptation and Mitigation*
- *Enhance and Build New Financing, and Policy and Research Strategies*
- *Private Sector Engagements*

## Strategic Directions

***As a diverse and informed stakeholder group, what are the key strategies and innovative solutions we can implement to address climate and health hazards in Maricopa County over the next 5 years?***

**Celebrating Success and Champions**

*An opportunity to raise awareness of current climate and health-related activities and successes across our community.*

**Building Community Awareness through a Strategic and Targeted Communication Plan**

*Supporting reasonable and unified climate change and health messages*

**Fostering Environmental Action for a Healthier Community**

*Promotes individual and organizational movement towards implementing mitigation and adaptation efforts.*

**Coordinating Research and Collaborative Efforts to Catalyze Change**

*Providing the opportunity to link research and practice to ensure that results are applicable and meaningful.*

**Promoting Community Awareness and Public Education about Climate and Health**

*Providing resources for education in the private and public sector which are supported by current science*

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