

# ARIZONA HEAT SAFETY RESOURCE GUIDE



MAY 2014

RESOURCES FOR LOCAL HEALTH OFFICIALS  
AND PUBLIC INFORMATION OFFICERS  
DURING EXTREME HEAT EVENTS

The goal of this Heat Safety Resource Guide is to provide local health officials and public information officers with information on health impacts of Extreme Heat Events (EHE), decision-support tools, and useful resources and expertise for prevention of heat related illnesses. This document also supports the Arizona Department of Health Services [Heat Emergency Response Plan](#).

# Arizona Heat Safety Resource Guide

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## SUMMARY

Heat kills by pushing the human body beyond its limits. Between 2000 and 2012, 1,535 deaths from exposure to excessive natural heat occurred in Arizona. In 2012, there were a total of 1,572 emergency department visits and a total of 212 inpatient admissions from exposure to excessive natural heat.

Most heat illnesses occur because the victim has been overexposed to heat or has overexerted his or her body for his or her age and physical condition. Anyone in Arizona can experience a heat illness or even death from heat exposure, especially from the months of May to October. Older adults, outdoor workers, young children, homeless people, and those who are sick are more likely to succumb to extreme heat but all residents of Arizona are at risk without appropriate precautions.

Conditions that can induce heat-related illnesses often coincide with stagnant atmospheric conditions and poor air quality. Consequently, people living in urban areas may be at greater risk from the effects of a prolonged heat wave than those living in rural areas. Also, urban building materials, such as asphalt and concrete, store heat longer and release heat at night more gradually than vegetated land covers in suburban and rural areas. Heat retention produces higher nighttime temperatures in cities known as the “urban heat island effect.” Prolonged hours of high temperature means greater exposure to health risks.

In 2013, a group of federal, state, and local agencies; non-profits; and university partners convened at the Arizona Department of Health Services to discuss heat safety issues in Arizona. These stakeholders worked together to develop a Heat Safety Resource Guide to link each other to resources.

The goal of this Heat Safety Resource Guide is to provide local health officials and public information officers with information on health impacts of Extreme Heat Events (EHE), decision-support tools, and useful resources and expertise for prevention of heat related illnesses. This document also supports the comprehensive Arizona Department of Health Services [Heat Emergency Response Plan](#).

## ACKNOWLEDGEMENT

The primary agencies that partnered to prepare this Heat safety guide’s development are:

Arizona Department of Economic Security  
Arizona Department of Health Services – Bureau of Emergency Medical Services and Trauma System  
Arizona Department of Health Services – Office of Environmental Health  
Arizona Department of Health Services – Office of Infectious Diseases  
Arizona Department of Health Services – Public Health Emergency Preparedness  
Arizona Division of Emergency Management  
Arizona Division of Occupational Safety and Health  
Arizona State Parks  
Arizona State University

City of Phoenix – Human Services Department  
City of Phoenix – Public Transit  
City of Tucson  
Maricopa Association of Governments  
Maricopa County Department of Public Health  
Mohave County Department of Public Health  
National Park Service – Southern Arizona  
National Weather Service – Flagstaff Region  
National Weather Service – Las Vegas Region  
National Weather Service – Phoenix Region  
National Weather Service – Tucson Region  
Pima County Health Department  
Red Cross – Grand Canyon Chapter  
Salvation Army  
Yuma County Public Health Services District

## **1.0 Extreme Heat Event: Preparedness and Response**

EHE health risks are not equally distributed among the population. Enhanced program responses include direct assessments of the health and environment of those at greatest risk during the EHE when dangerous conditions occur. Develop plans, resources, and distribution strategies to prepare the community. Encourage people to check on their neighbors and to ask their neighbors to do the same. Use 211 Arizona ([www.211arizona.org](http://www.211arizona.org)) to locate community information and resources. Identify the local agencies that have a role in preventing harm from EHEs – identify your local emergency management for their preparedness and response plans.

Defining the structure, relationships, and responsibilities for those supporting an EHE notification and response program (e.g., health departments, utilities, homeless advocates) is an essential long-term coordination activity. This action requires establishing a means for planning and communication among the program supporters so that available resources are used most efficiently and potentially conflicting messages from program participants are clarified.

EHEs are a threat to public health. Public health agencies play a part in developing and managing an EHE response plan. In addition, local emergency management agencies, street and sanitation departments, and health code enforcement staff typically have significant contact with the public. As a result, their information distribution networks and staff could, depending on local conditions, be a valuable resource to consider in EHE response planning.

### **1.1 Available Resources: Preparedness and Response**

Agencies and organizations involved with heat safety preparedness, heat emergency response planning, training for first responders and hospitals are listed in Section 4.0 Resources.

## **2.0 Ensuring Access to Timely Meteorological Forecast**

An effective EHE notification and response program requires access to reliable meteorological forecasts to provide lead time for implementing program elements.

To enhance EHE forecasting, agencies are encouraged to use systems that electronically retrieve and evaluate real-time National Weather Service (NWS) forecast data.

### **2.1 Available Resources: Meteorological Forecast**

To determine the level of communication and response measures each agency will implement when an EHE is forecast, local officials should use and evaluate the meteorological data from the National Weather Services. The NWS Phoenix Office, Tucson Office, Flagstaff Office, and Las Vegas Office issue warnings for extreme heat situations up to two days in advance and heat watches up to 4 days in advance. Contact information for each NWS office is listed in Section 4.0 Resources. To locate the Office in your region, see Appendix 2. To help you understand the geographic regions that NWS may issue warnings for, we have included a table to identify areas that are affected in Appendix 3.

## **3.0 Extreme Heat Event: Notifications and Public Education**

One of the public health challenges for EHEs is to develop and implement meaningful EHE notification strategies that increase public awareness and lessen future adverse health impacts.

A significant source of public health impacts of EHEs is that individuals often do not recognize the danger associated with EHE conditions, are unable to take preventative actions or find relief, or do not have the knowledge or resources to protect themselves. There is a significant need for continued and enhanced public education about the EHE risks and health impacts so that individuals are able to prepare for the onset of dangerous weather, understand what actions and behaviors might be most effective at reducing their risk, and know what resources are available to help them cope with extreme heat.

Effective public notification of forecast EHE conditions helps to reduce risk. Local agencies should coordinate public broadcasts of information about the anticipated timing, severity, and duration of EHE conditions; and the availability and hours of public cooling centers. Notifying the public of anticipated EHE conditions will enable many residents to prepare and will enable public assessment and intervention actions to concentrate on known high-risk individuals and locations. Likewise, advance public notification about the availability of cooling centers and refuge/hydration stations will increase the likelihood that at-risk individuals can take advantage of these services.

### **3.1 Available Resources: Notification and Public Education**

Agencies and organizations providing heat safety toolkits, newsletters, brochures, promotional items in English and Spanish (such as quick cards, pocket guides, posters, event presentations, videos), local radio and media sources (English and Spanish), heat stress checklists, heat safety tips for transit users in hot weather, educational and preparedness messages, and data are listed in Section 4.0 Resources.

Interested researchers and decision-makers who would like to find supporting data and tools can also find data on vulnerable populations in the Universities/Data/Vulnerabilities/Research Information section.

### **3.2 Available Resources: Cooling Centers and Refuge/Hydration Stations**

Agencies and organizations that provide cooling centers, refuge/hydration stations, and water distribution to the community are listed in Section 4.0 Resources.

#### 4.0 Available Resources: Heat Safety Resource Guide

Arizona Department of Health Services (ADHS)				
Program	Contact	Phone number	Expertise & Resources	Links
Climate and Health	Matthew Roach <a href="mailto:Matthew.roach@azdhs.gov">Matthew.roach@azdhs.gov</a>	(602) 364-3673	<ul style="list-style-type: none"> <li>Heat Safety Toolkits (schools, older adults, outdoor workers)</li> <li>Heat-related illness Awareness Campaign</li> <li>Morbidity and mortality surveillance and data collection</li> <li>Quarterly Statewide Heat Preparedness Meeting</li> </ul>	Resources <a href="http://www.azdhs.gov/phs/oe/heat/index.htm">http://www.azdhs.gov/phs/oe/heat/index.htm</a>
Public Health Emergency Preparedness	Krista Anheluk <a href="mailto:krista.aneluk@azdhs.gov">krista.aneluk@azdhs.gov</a>	(602) 448-3850	<ul style="list-style-type: none"> <li>Heat Emergency Response Plan</li> </ul>	Emergency Response Plans <a href="http://azdhs.gov/phs/emergency-preparedness/response-plans.htm">http://azdhs.gov/phs/emergency-preparedness/response-plans.htm</a>
Bureau of Emergency Medical Services and Trauma System (BEMSTS)	David Harden <a href="mailto:hardend@azdhs.gov">hardend@azdhs.gov</a>	(602) 364-3188	<ul style="list-style-type: none"> <li>Quarterly Newsletter with timely messages, sometimes including information on heat related illness</li> <li>Literature, training and events for first responders and hospitals</li> </ul>	Newsletters <a href="http://www.azdhs.gov/bems/documents/news/pulse/pulse-summer-2013.pdf">http://www.azdhs.gov/bems/documents/news/pulse/pulse-summer-2013.pdf</a>  News, Publications, Conferences <a href="http://www.azdhs.gov/bems/news/">http://www.azdhs.gov/bems/news/</a>
Office of Infectious Diseases	Sara Imholte <a href="mailto:Sara.Imholte@azdhs.gov">Sara.Imholte@azdhs.gov</a>	(602) 364-3889	<ul style="list-style-type: none"> <li>Exploring BioSense 2.0 for tracking heat-related conditions</li> </ul>	Syndromic Surveillance <a href="http://www.azdhs.gov/meaningful-use/syndromic-surveillance/index.htm">http://www.azdhs.gov/meaningful-use/syndromic-surveillance/index.htm</a>

Arizona Department of Economic Security				
Program	Contact	Phone number	Expertise & Resources	Links
Low Income Home Energy Assistance Program (LIHEAP)	Community Action Program (CAP)	(602) 542-4446	<ul style="list-style-type: none"> <li>Help to pay current and past due energy bills</li> <li>Help with Utility Deposits</li> <li>Help with energy efficiency measures to reduce future energy costs</li> </ul>	Energy Assistance <a href="https://www.azdes.gov/Landing.aspx?id=7312">https://www.azdes.gov/Landing.aspx?id=7312</a>

Arizona Division of Occupational Safety and Health (ADOSH)				
Program	Contact	Phone number	Expertise & Resources	Links
	Jessie Atencio <a href="mailto:Jessie.attencio@azdosh.gov">Jessie.attencio@azdosh.gov</a>	(602) 542-1694	<ul style="list-style-type: none"> <li>• Training on heat safety in the workplace</li> <li>• Personal protective equipment</li> <li>• Administrative controls for employers (shift work duties to cooler part of the day, vary work environment from hot to cool, change out people, leave later in the day)</li> <li>• Heat Campaign (Apr-Sep)</li> <li>• Hand-outs</li> <li>• Promotional items in English and Spanish (quick cards, pocket guides, posters, event presentations, videos)</li> <li>• Resource page</li> <li>• Heat Stress Checklists</li> <li>• Local radio and media sources (English &amp; Spanish)</li> </ul>	<p>Training Request Form <a href="http://www.ica.state.az.us/ADOSH/Forms/ADOSH_Form_TrainingRequest.pdf">http://www.ica.state.az.us/ADOSH/Forms/ADOSH_Form_TrainingRequest.pdf</a></p> <p>File a Safety Complaint <a href="http://www.ica.state.az.us/ADOSH/ADOSH_FormsComplaintsOnly.aspx">http://www.ica.state.az.us/ADOSH/ADOSH_FormsComplaintsOnly.aspx</a></p> <p>Video: Staying Safe while Working in Extreme Heat <a href="http://youtu.be/5w-PsE-jtZ0">http://youtu.be/5w-PsE-jtZ0</a> (English) <a href="http://youtu.be/i88sSMOeZRU">http://youtu.be/i88sSMOeZRU</a> (Spanish)</p>

Arizona Division of Emergency Management (ADEM)				
Program	Contact	Phone number	Expertise & Resources	Links
Human Services Branch	Daniel Porth <a href="mailto:Daniel.porth@azdema.gov">Daniel.porth@azdema.gov</a>	(602) 464-6500	<ul style="list-style-type: none"> <li>• Support and coordinate assistance to local, county, and tribal agencies*</li> <li>• Reception &amp; Care Centers (shelters)*</li> <li>• Support community-based efforts and volunteer organizations</li> </ul>	Emergency Management <a href="http://www.dem.azdema.gov/">http://www.dem.azdema.gov/</a>

<b>Arizona State Parks</b>				
Program	Contact	Phone number	Expertise & Resources	Links
Public Information Office	Ellen Billbrey <a href="mailto:ebillbrey@azstateparks.gov">ebillbrey@azstateparks.gov</a>	(602) 542-1996	<ul style="list-style-type: none"> <li>• Up-to-date information on park openings</li> <li>• Fire restrictions</li> <li>• Parks newsletter</li> <li>• Find information on individual parks</li> <li>• Each park has a first responder and EMT, the park ranger will inform guests of heat safety precautions at park entrance gate or ranger-led hikes</li> </ul>	<a href="http://azstateparks.com/index.html">http://azstateparks.com/index.html</a>

<b>National Park Service</b>				
Program	Contact	Phone number	Expertise & Resources	Links
Southern Arizona	Bob Gomez <a href="mailto:bob_gomez@nps.gov">bob_gomez@nps.gov</a>	(502) 733-5102	<ul style="list-style-type: none"> <li>• Heat safety promotion through posters and written material for visitors</li> <li>• Pre-activity checklist with pointers about heat for field workers</li> </ul>	Precautions Against the Heat <a href="http://www.nps.gov/foju/safety.htm">http://www.nps.gov/foju/safety.htm</a>



<b>National Weather Service (NWS)</b>				
Program	Contact	Phone number	Expertise & Resources	Links
Interactive NWS (iNWS)	<a href="mailto:wr.mobile.alerts@noaa.gov">wr.mobile.alerts@noaa.gov</a>	1-888-285-0650 / (801) 524-5131	<ul style="list-style-type: none"> <li>Real-time, weather warning messaging service to cell phones and mobile devices</li> </ul>	Sign up for alerts <a href="https://inws.wrh.noaa.gov/alerts">https://inws.wrh.noaa.gov/alerts</a>
NWS - Phoenix	Ken Waters <a href="mailto:ken.waters@noaa.gov">ken.waters@noaa.gov</a>	(602) 275-7002 x223	<ul style="list-style-type: none"> <li>Excessive heat watches and warnings</li> <li>Data on temperature, data on heat watches and warnings</li> <li>Educational and preparedness messages</li> <li>Monsoon Awareness Week</li> </ul>	Heat Watches/Warnings, Safety Info, Statistics, Climatology <a href="http://www.wrh.noaa.gov/psr/general/safety/heat/">http://www.wrh.noaa.gov/psr/general/safety/heat/</a>
NWS - Tucson	Ken Drozd <a href="mailto:Kenneth.drozd@noaa.gov">Kenneth.drozd@noaa.gov</a>	(520) 670-5156 x223	<ul style="list-style-type: none"> <li>Heat safety promotion</li> <li>Monsoon Awareness Week</li> <li>Excessive heat watches and warnings</li> <li>Outreach events</li> <li>Weather safety talks</li> </ul>	Keep Up-To-Date <a href="http://www.facebook.com/US.NationalWeatherService.Tucson.gov">http://www.facebook.com/US.NationalWeatherService.Tucson.gov</a> <a href="https://www.twitter.com/NWSTucson">https://www.twitter.com/NWSTucson</a> <a href="http://www.youtube.com/NWSTucson">http://www.youtube.com/NWSTucson</a>  Beat the Heat pamphlet <a href="http://www.wrh.noaa.gov/twc/Heat_Pamphlet.pdf">http://www.wrh.noaa.gov/twc/Heat_Pamphlet.pdf</a>
NWS - Flagstaff	<a href="mailto:w-fgz.webmaster@noaa.gov">w-fgz.webmaster@noaa.gov</a>	(928) 556-9161	<ul style="list-style-type: none"> <li>Watches and warnings</li> <li>Forecasts</li> <li>Weather safety resources</li> </ul>	<a href="http://www.wrh.noaa.gov/fgz/">http://www.wrh.noaa.gov/fgz/</a>
NWS - Las Vegas	<a href="mailto:w-vef.webmaster@noaa.gov">w-vef.webmaster@noaa.gov</a>	(702) 263-9744	<ul style="list-style-type: none"> <li>Watches and warnings</li> <li>Forecasts</li> <li>Weather safety resources</li> </ul>	<a href="http://www.wrh.noaa.gov/vef/">http://www.wrh.noaa.gov/vef/</a>

County Health Departments				
Program	Contact	Phone number	Expertise & Resources	Links
Maricopa County Department of Public Health – Office of Epidemiology & Data Services	Vjollca Berisha <a href="mailto:vjollcaberisha@mail.maricopa.gov">vjollcaberisha@mail.maricopa.gov</a>	(602) 372-2611	<ul style="list-style-type: none"> <li>Heat morbidity and mortality surveillance</li> <li>Hospital discharge data</li> <li>Exploring BioSense 2.0 for tracking heat-related conditions</li> </ul>	Weekly and annual heat-associated death reports <a href="http://www.maricopa.gov/publichealth/Services/EPI/Reports/heat.aspx">http://www.maricopa.gov/publichealth/Services/EPI/Reports/heat.aspx</a>
Maricopa County Department of Public Health	Jeanene Fowler <a href="mailto:jeanenefowler@mail.maricopa.gov">jeanenefowler@mail.maricopa.gov</a>	(602) 506-4926	<ul style="list-style-type: none"> <li>Provide water to the homeless population through Healthcare for the Homeless</li> <li>Heat brochures</li> <li>Data on heat-caused and heat-related deaths</li> </ul>	Resources on heat-related illness, heat tips, statistics, water and shelter, water donation and collection map <a href="http://www.heataz.org">www.heataz.org</a>
Mohave County Department of Public Health	Bruce Leeming <a href="mailto:bruce.leeming@mohavecounty.us">bruce.leeming@mohavecounty.us</a>	(928) 718-4949	<ul style="list-style-type: none"> <li>Heat safety tips, FAQ's</li> </ul>	<a href="http://www.healthelinks.com/">www.healthelinks.com/</a>
Pima County Health Department	Aaron Pacheco <a href="mailto:aaron.pacheco@pima.gov">aaron.pacheco@pima.gov</a>	(520) 243-7745	<ul style="list-style-type: none"> <li>Heat Safety Tips &amp; FAQs</li> </ul>	Beat the Heat tips, FAQs, stages of heat illness, weather service alerts <a href="https://webcms.pima.gov/cms/one.aspx?portalId=169&amp;pageId=20216">https://webcms.pima.gov/cms/one.aspx?portalId=169&amp;pageId=20216</a>
Yuma County Public Health Services District	Michael LeBrun <a href="mailto:Mike.lebrun@yumacountyaz.gov">Mike.lebrun@yumacountyaz.gov</a>	(928) 317-4624	<ul style="list-style-type: none"> <li>Emergency management support</li> <li>Cooling stations when power outage*</li> </ul>	Health effects and heat tips <a href="http://www.yumacountyaz.gov/departments-and-services/health/surviving-yuma-s-heat/heat-and-your-health">http://www.yumacountyaz.gov/departments-and-services/health/surviving-yuma-s-heat/heat-and-your-health</a>

Maricopa Association of Governments (MAG)				
Program	Contact	Phone number	Expertise & Resources	Links
Human Services	Brande Mead <a href="mailto:bmead@azmag.gov">bmead@azmag.gov</a>	(602) 452-5060	<ul style="list-style-type: none"> <li>Heat Relief Network maps (locations for cooling centers and refuge stations during excessive heat)</li> </ul>	<p>Heat Relief Network FAQs <a href="http://www.azmag.gov/Documents/CoC_2013-05-22_Tips-to-Avoid-Heat-Related-Illnesses.pdf">http://www.azmag.gov/Documents/CoC_2013-05-22_Tips-to-Avoid-Heat-Related-Illnesses.pdf</a></p> <p>Water Collection/Donation Sites <a href="http://www.azmag.gov/Documents/HS_2013-05-22_2013-Collection-and-Donations-Sites_v1.pdf">http://www.azmag.gov/Documents/HS_2013-05-22_2013-Collection-and-Donations-Sites_v1.pdf</a></p> <p>Water Hydration Stations and Refuge Locations <a href="http://www.azmag.gov/Documents/HS_2013-05-22_2013-Hydration-Stations-and-Refuge-Locations_v1.pdf">http://www.azmag.gov/Documents/HS_2013-05-22_2013-Hydration-Stations-and-Refuge-Locations_v1.pdf</a></p> <p>Tips to Avoid Heat-Related Illnesses <a href="http://www.azmag.gov/Documents/CoC_2011-06-06_Tips-to-Avoid-Heat-Related-Illnesses.pdf">http://www.azmag.gov/Documents/CoC_2011-06-06_Tips-to-Avoid-Heat-Related-Illnesses.pdf</a></p>

City of Phoenix (COP)				
Program	Contact	Phone number	Expertise & Resources	Links
Human Services Department	Kristina Blea <a href="mailto:kristina.blea@phoenix.gov">kristina.blea@phoenix.gov</a>	(602) 495-7519	<ul style="list-style-type: none"> <li>• Coordinates Mayor's "Call for Water" and Phoenix Heat Relief Network</li> <li>• Summer Respite Program for homeless</li> <li>• Administer, monitor, coordinate water and critical item distribution to the community</li> <li>• Training and technical assistance in starting a Heat Relief Network (HRN) in your community</li> <li>• Heat Fact Sheet</li> </ul>	<p>Heat Relief Network <a href="http://phoenix.gov/humanservices/programs/volunteer/heatrelief/index.html">http://phoenix.gov/humanservices/programs/volunteer/heatrelief/index.html</a></p> <p>Summer Respite <a href="http://phoenix.gov/humanservices/programs/volunteer/sumrespites/index.html">http://phoenix.gov/humanservices/programs/volunteer/sumrespites/index.html</a></p>
Public Transit	Matt Heil <a href="mailto:Matthew.heil@phoenix.gov">Matthew.heil@phoenix.gov</a>	(602) 261-8254	<ul style="list-style-type: none"> <li>• Personal Cool/Mantengase Fresco Campaign</li> <li>• Tips for transit users in hot weather</li> <li>• Heat safety flyers (English and Spanish)</li> </ul>	<a href="http://phoenix.gov/publictransit/rider/cool/index.html">http://phoenix.gov/publictransit/rider/cool/index.html</a>

Universities/Data/Vulnerabilities/Research Information				
Program	Contact	Phone number	Expertise & Resources	Links
Arizona State University (ASU)	Sharon Harlan <a href="mailto:sharon.harlan@asu.edu">sharon.harlan@asu.edu</a>	(480) 727-6780	<ul style="list-style-type: none"> <li>• Statistical analysis of health data to identify vulnerable populations and places and compare impacts across different health outcomes</li> <li>• Support development of health outcome-based warning and implementation programs</li> <li>• Scientific articles on neighborhood microclimates and human health</li> <li>• Science magazine for schools and general public</li> </ul>	<p>Neighborhood Effects on Heat Deaths: Social and Environmental Predictors of Vulnerability in Maricopa County, Arizona <a href="http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3569676/">http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3569676/</a></p> <p>Heat-Related Deaths in Hot Cities: Estimates of Human Tolerance to High Temperature Thresholds <a href="http://www.mdpi.com/1660-4601/11/3/3304">http://www.mdpi.com/1660-4601/11/3/3304</a></p> <p>Occupation and Environmental Heat-Associated Deaths in Maricopa County, Arizona: A Case-Control Study <a href="http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0062596">http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0062596</a></p> <p>Interactive Map of Maricopa County Cooling Centers <a href="http://www.coolme.today">http://www.coolme.today</a></p> <p>Chain Reaction Magazine <a href="http://dcdc.asu.edu/chair-reaction-7-people-and-environment-our-heat-habitat/">http://dcdc.asu.edu/chair-reaction-7-people-and-environment-our-heat-habitat/</a></p> <p>ASU Global Institute of Sustainability <a href="http://sustainability.asu.edu">http://sustainability.asu.edu</a></p>
Urban Vulnerability to Climate Change (UVCC) Project				
Office of the State Climatologist	Nancy Selover <a href="mailto:nancy.selover@asu.edu">nancy.selover@asu.edu</a> (Arizona State Climatologist)			
Global Institute of Sustainability				

<b>Salvation Army</b>				
Program	Contact	Phone number	Expertise & Resources	Links
Project Hope	Brent Babb <a href="mailto:Brent.Babb@usw.salvationarmy.org">Brent.Babb@usw.salvationarmy.org</a>	(602) 302-8861	<ul style="list-style-type: none"> <li>• Informational brochures with resources for homeless</li> <li>• Mobile hydration stations*</li> </ul>	Project Hope <a href="http://www.salvationarmyphoenix.org/#homeless-services/c168q">http://www.salvationarmyphoenix.org/#homeless-services/c168q</a>  Emergency Disaster Services <a href="http://www.salvationarmyphoenix.org/#emergency-disaster-services/c19ar">http://www.salvationarmyphoenix.org/#emergency-disaster-services/c19ar</a>

<b>Red Cross</b>				
Program	Contact	Phone number	Expertise & Resources	Links
Grand Canyon Chapter	Scott Keyes <a href="mailto:Scott.keyes@redcross.org">Scott.keyes@redcross.org</a>	(602) 336-6672	<ul style="list-style-type: none"> <li>• Training and Preparedness Education</li> <li>• Shelters during disaster*</li> </ul>	Heat Wave Safety <a href="http://www.redcross.org/prepare/disaster/heat-wave">http://www.redcross.org/prepare/disaster/heat-wave</a>

\*Available in times of emergency

## GLOSSARY

<b>Heat Index</b>	A measure used by the National Weather Service to communicate the combined effects of temperature and humidity on human thermal comfort. The Heat Index is reported in degrees Fahrenheit in the United States and is appropriate for shaded conditions. Exposure to full sunshine can increase the heat index by 15 degrees.
<b>Heat Cramps</b>	Painful muscle cramps and spasms, usually in muscles of legs and abdomen. Heavy sweating. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with the heat.
<b>Heat Exhaustion</b>	Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs. This results in a form of mild shock. If not treated, the victim's condition will worsen. Body temperatures will keep rising and the victim may suffer heat stroke.
<b>Heat Stroke</b>	A life-threatening condition. The victim's temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly.
<b>Sun Stroke</b>	Another term for heat stroke.
<b>Extreme Heat Event</b>	Conditions defined by summertime weather that is substantially hotter and/or more humid than average for a location at that time of year. Conditions can increase the incidence of mortality and morbidity in affected populations.
<b>Excessive Heat Watch</b>	Conditions are favorable for an excessive heat event to meet or exceed local Excessive Heat Warning criteria in the next 24 to 72 hours defined by NWS.
<b>Excessive Heat Warning</b>	Heat Index values are forecast to meet locally defined advisory criteria for 1 to 2 days (daytime highs = 105-110 F) defined by NWS.
<b>Heat Advisory</b>	Heat index are forecast to meet locally defined advisory criteria for 1 to 2 days (daytime highs = 100-105 Fahrenheit).

## APPENDIX 1: Heat Index Chart with Health Effects and Safety Recommendations

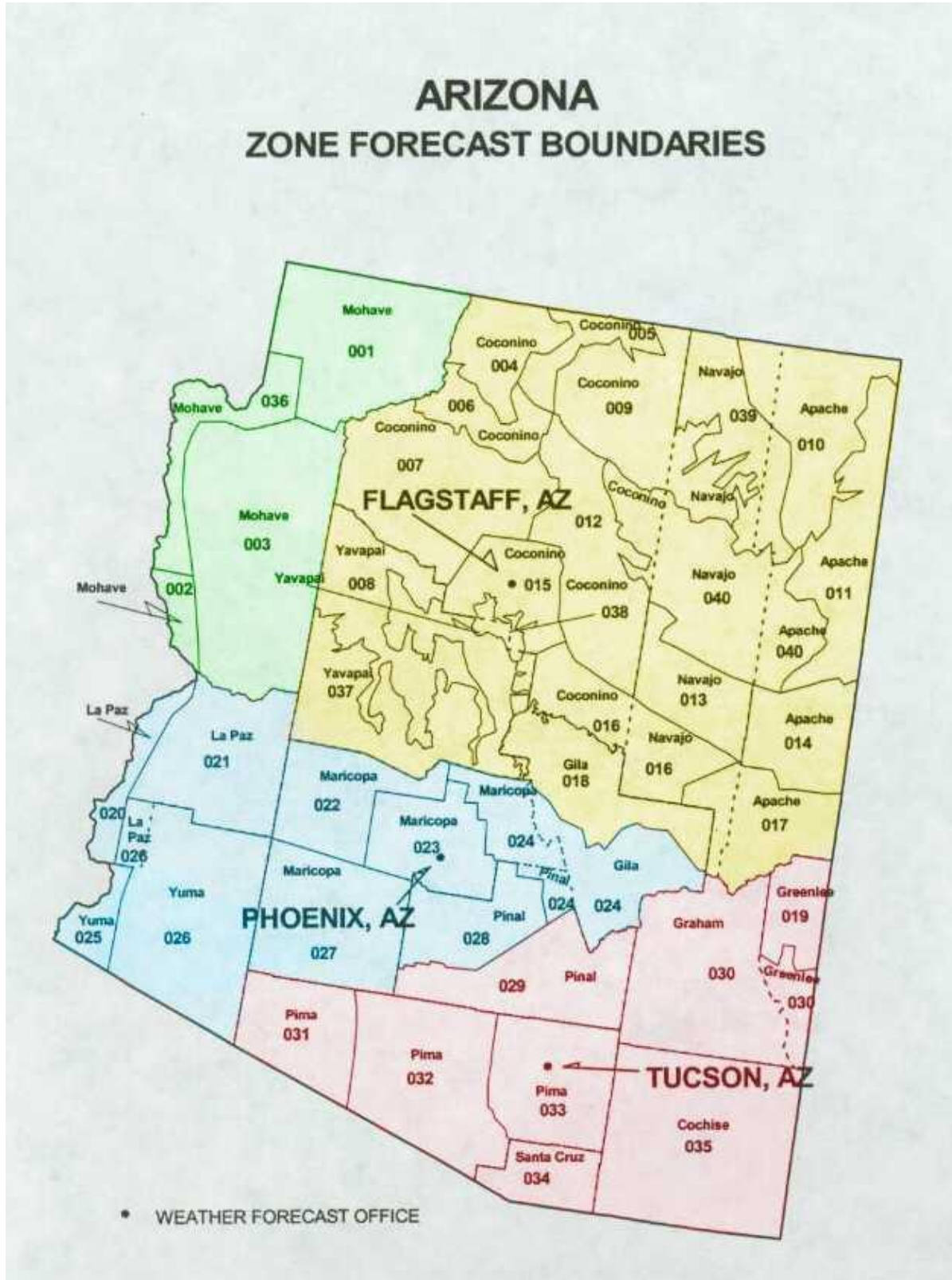
<div style="display: flex; justify-content: space-around; align-items: center;"> <span><span style="display: inline-block; width: 15px; height: 15px; background-color: red; margin-right: 5px;"></span> Extreme Danger</span> <span><span style="display: inline-block; width: 15px; height: 15px; background-color: orange; margin-right: 5px;"></span> Danger</span> <span><span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; margin-right: 5px;"></span> Extreme Caution</span> <span><span style="display: inline-block; width: 15px; height: 15px; background-color: #c0c0c0; margin-right: 5px;"></span> Caution</span> <span><span style="display: inline-block; width: 15px; height: 15px; background-color: #e0e0e0; margin-right: 5px;"></span> Most common in AZ</span> </div>																					
°F	RELATIVE HUMIDITY (%)																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
140	125																				
135	120	128																			
130	117	122	131																		
125	111	116	123	131	141																
120	107	111	116	123	130	139	148														
115	103	107	111	115	120	127	135	143	151												
110	99	102	105	108	112	117	123	130	137	143	150										
105	95	97	100	102	105	109	113	118	123	129	135	142	149								
100	91	93	95	97	99	101	104	107	110	115	120	125	132	138	144						
95	87	88	90	91	93	94	96	98	101	104	107	110	114	119	124	130	136				
90	83	84	85	86	87	88	90	91	93	95	96	98	100	102	106	109	113	117	122		
85	78	79	80	81	82	83	84	85	86	87	88	89	90	91	93	95	97	99	102	105	108
80	73	74	75	76	77	77	78	79	79	80	81	81	82	83	85	86	86	87	88	89	91
75	69	69	70	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80
70	64	64	65	65	66	66	67	67	68	68	69	69	70	70	70	71	71	71	71	71	72

<p><b>Heat Index: 130+ degrees F</b></p> <p><b>Health Effect:</b> Heatstroke/sunstroke is highly likely with continued exposure.</p> <p><b>Recommendations:</b> Avoid strenuous outdoor activity. Stay indoors in an air- conditioned facility. Stay well-hydrated. Drink 10 gulps every 20 minutes. Check on your family, friends, and neighbors.</p>
<p><b>Heat Index: 105-129 degrees F</b></p> <p><b>Health Effect:</b> Sunstroke, heat cramps and heat exhaustion are likely. Heat stroke is possible with prolonged exposure and/or physical activity.</p> <p><b>Recommendations:</b> Avoid strenuous outdoor activity. Stay indoors in an air- conditioned facility. Stay well-hydrated. Drink 10 gulps every 20 minutes.</p>
<p><b>Heat Index: 90-104 degrees F</b></p> <p><b>Health Effect:</b> Sunstroke, heat cramps, and heat exhaustion are possible with prolonged exposure and/or physical activity.</p> <p><b>Recommendations:</b> Limit strenuous outdoor activity. Limit your time outdoors. Stay well-hydrated. Drink 10 gulps every 20 minutes.</p>
<p><b>Heat Index: 80-89 degrees F</b></p> <p><b>Health Effect:</b> Fatigue is possible with prolonged exposure and/or physical activity.</p> <p><b>Recommendations:</b> Limit your time outdoors. Stay well-hydrated. Drink 10 gulps every 20 minutes.</p>



APPENDIX 2: Arizona Zone Forecast Boundaries



<http://www.wrh.noaa.gov/psr/redirect.php?wfo=psr&image=azzones.jpg>

### APPENDIX 3: National Weather Service Arizona Warning Forecast Zones

AZ Zone Number	Warning Zone Name	County Warning Area	Arizona County Name
1	Northwest Plateau	Las Vegas CWA	Mohave
2	Lake Havasu and Fort Mojave	Las Vegas CWA	Mohave
3	Northwest Deserts	Las Vegas CWA	Mohave
4	Kaibab Plateau	Flagstaff CWA	Coconino
5	Marble and Glen Canyons, including Page	Flagstaff CWA	Coconino
6	Grand Canyon Country	Flagstaff CWA	Coconino
7	Coconino Plateau	Flagstaff CWA	Coconino
8	Yavapai County Mountains	Flagstaff CWA	Yavapai
9	Northeast Plateaus and Mesas (N of Highway 264)	Flagstaff CWA	Coconino; Navajo
10	Chinle Valley	Flagstaff CWA	Apache; Navajo
11	Chuska Mountains and Defiance Plateau	Flagstaff CWA	Apache
12	Little Colorado River Valley, Coconino County	Flagstaff CWA	Coconino
13	Little Colorado River Valley, Navajo County	Flagstaff CWA	Navajo
14	Little Colorado River Valley, Apache County	Flagstaff CWA	Apache
15	West Mogollon Rim, including Flagstaff	Flagstaff CWA	Coconino
16	East Mogollon Rim	Flagstaff CWA	Coconino; Navajo
17	White Mountains	Flagstaff CWA	Apache; Navajo
18	Northern Gila County	Flagstaff CWA	Gila
19	Northern Greenlee County	Tucson CWA	Greenlee
20	Lower Colorado River Valley AZ	Phoenix CWA	La Paz
21	West Central Deserts	Phoenix CWA	La Paz
22	Northwest Maricopa County	Phoenix CWA	Maricopa
23	Greater Phoenix Area	Phoenix CWA	Maricopa
24	Southern Gila/Tonto National Forest Foothills	Phoenix CWA	Maricopa; Pinal; Gila
25	Yuma/Martinez Lake and vicinity	Phoenix CWA	Yuma
26	Southwest Deserts	Phoenix CWA	Yuma
27	Southwest Maricopa County	Phoenix CWA	Maricopa
28	Northwest and North-Central Pinal County	Phoenix CWA	Pinal
29	Southeast Pinal County	Tucson CWA	Pinal
30	Upper Gila River County	Tucson CWA	Graham; Greenlee
31	Western Pima County	Tucson CWA	Pima
32	Tohono Oodham Nation	Tucson CWA	Pima
33	Tucson Metro/Marana/Green Valley	Tucson CWA	Pima
34	Santa Cruz County	Tucson CWA	Santa Cruz
35	Cochise County	Tucson CWA	Cochise
36	Lake Mead National Recreational Area	Las Vegas CWA	Mohave
37	Yavapai County Valleys and Basins	Flagstaff CWA	Yavapai
38	Oak Creek and Sycamore Canyons, including Sedona	Flagstaff CWA	Coconino
39	Black Mesa Area	Flagstaff CWA	Navajo; Apache
40	Northeast Plateaus and Mesas (S of Highway 264)	Flagstaff CWA	Navajo; Apache

Adapted from National Weather Service Forecast Office (2012). Retrieved from

<http://www.wrh.noaa.gov/psr/redirect.php?wfo=psr&image=azzones.jpg>

**For comments, questions, and feedback**

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