

The Minnesota Climate and Health Strategic Plan

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Introduction

The Minnesota Climate and Health Strategic Plan “Plan” outlines goals, objectives, and activities for the Minnesota Department of Health (MDH) to adapt and respond to climate change and its impacts on public health. The Plan consists of seven overarching goals and 23 objectives with corresponding activities. The development and maintenance of this plan has been supported by grants from the Centers for Disease Control and Prevention (CDC).

Plan Vision: People and communities in Minnesota are resilient and are engaged in mitigating climate change and adapting to changing climatic conditions in ways that promote health equity and protect public health, safety, and wellbeing for current and future generations.

Plan Mission: Protecting, maintaining, and improving the health of all Minnesotans through mitigating, preparing for, and adapting to climate change.

The Plan is an important step in addressing the public health impacts of climate change in Minnesota. This is not, however, a comprehensive state plan to address climate change. The Plan focuses specifically on activities of MDH or activities that MDH can lead, but does not describe activities that other state agencies or local public health agencies should perform to adapt to the public health impacts of climate change.

The Plan describes activities that MDH will perform in the next five years to prepare for and adapt to the public health impacts of climate change. Input from almost all the divisions at MDH is reflected in the plan. The Plan can be used as a tool to seek additional funding for climate change activities as they relate to public health, track climate-related activities at MDH, and help direct limited funds to prioritized areas for implementation. The Plan is a living document and will be modified and updated regularly.

Background

Rationale

Minnesota’s climate is changing with serious consequences for human health and well-being. Minnesota has become measurably warmer, particularly in the last few decades. Earlier ice out dates and a lengthening pollen season reflect a warming climate. Precipitation patterns have become more erratic, including heavier rainfall events and extended periods of drought. These climate changes correspond to significant potential negative health impacts associated with air pollution, extreme heat, flooding, drought, and ecosystem threats, such as harmful algal blooms. For more information on the impacts of climate change on public health, refer to the [Minnesota Climate and Health Profile Report 2015](#). Climate projections indicate that these trends are likely to continue well into the current century and may worsen, according to most scenarios.

While there are known public health responses to many of the potential negative health impacts, the scope, timeline, and complexity of climate change challenges are unprecedented. Climate change has been called “the great amplifier,” increasing current public health risks, but also creating new risks. Critical gaps remain in the resources, programs, and expertise in

Minnesota's public health system to address the consequences of climate change on public health.

Plan Ownership

MDH's Minnesota Climate & Health Program coordinates the Plan and the MDH Climate and Health Workgroup. The Workgroup initiates and implements the activities in the strategic plan.

Minnesota Climate & Health Program

The Minnesota Climate & Health Program "Program" focuses on improving our ability to protect public health and prevent further harms from climate change by:

- Education (Engage). Resonate with the hearts and minds of the public, influencers and decision-makers to build a culture of health and climate action.
- Research (Inform). Conduct credible, rigorous and innovative research to facilitate health and climate in all policies.
- Capacity Building (Guide). Provide technical assistance, tools and products to expand and accelerate health and climate solutions.

The Program began in 2009 and is housed within the Environmental Health Division.

MDH Climate & Health Workgroup

The MDH Climate and Health Workgroup formed in December 2016 to:

- Make progress on the goals and objectives in the MDH Minnesota Climate and Health Strategic Plan.
- Ensure MDH programs are prepared for and responsive to climate changes in Minnesota.
- Build climate and health literacy by exchanging knowledge and information.

The Workgroup has had on average 20-30 MDH staff actively participating at a given time, representing programs across almost all divisions and offices. The Workgroup includes staff from the Program.

History

MDH developed the first strategic plan on climate and health in 2010. Then in 2015, the Program established an advisory committee to oversee the revision of the 2010 plan. The advisory committee included staff, supervisors, managers, and division directors from the following divisions: Environmental Health; Health Partnerships; Public Health Laboratory; Community and Family Health; the Health Promotion and Chronic Disease; the Infectious Disease Epidemiology, Prevention and Control; the Health Policy; the Health Regulation; the Office of Statewide Health Improvement Initiatives; and the Center for Health Equity. The advisory committee met five times during 2015 and 2016 to craft a revised Plan.

As part of the update process, a climate and health survey was released in August of 2015 to MDH staff to gauge their knowledge of and priorities related to climate change. The advisory

committee reviewed the results and some of the feedback was incorporated into the updated Plan. Feedback indicated climate mitigation is valued as much as climate adaptation for protecting the public’s health. However, the Program’s funding at this time prioritizes adaptation, so the Plan focuses primarily on this area of action. The advisory committee acknowledged this tension. They agreed that this is an important need and hope to more fully address mitigation in future updates.

The currently active MDH Climate and Health Workgroup includes some members from the 2010 and 2015/16 planning groups and new members from divisions with activities in the Plan.



Goals, Objectives, and Activities

The goals, objectives, and activities provide a blueprint to direct MDH’s activities to address the impacts of climate change on public health. The Plan identifies important areas of focus and can be used to guide priorities and funding for climate change-related activities. The Plan can also be used to measure progress and successes and hold different areas of MDH accountable for achievement of the activities.

The goals and objectives are intended to be implemented over a 5-year period. Achieving all the objectives is contingent upon continued collaboration and additional resources. The number and the extent of activities reflect the willingness of staff and leadership throughout MDH to address the public health impacts of climate change.

Workgroup members provide status updates annually regarding the activities in the plan. The most recent status update occurred in December 2018. The status of each activity is included in the section below, and falls within one of the following categories:

Ongoing: Activities that occur on a regular basis, such as surveillance and response.

Complete: Activities that have been finished.

In Progress: Activities that have been started.

Planned: Activities that are in the strategic plan but have not yet been started.

Canceled: Activities that have been canceled for any reason, for example a lack of resources or applicability, or changing priorities.

Goal 1. Understand, research, monitor, track, and report on the public health impacts of climate change.

Objective 1a: Support development, use and dissemination of local/regional climate models and data to better understand Minnesota-specific climate change effects on public health.

- 1a1. *In Progress.* The Minnesota Climate & Health Program in collaboration with the Minnesota State Climatology Office will develop and provide a training for state and local agencies (mainly, but not limited to, public health) on using climate data specific to Minnesota for planning and implementing adaptation strategies in the state. This will include convening a cross-agency technical workgroup for staff interested in obtaining and utilizing climate data. Depending on interest, Program staff may continue to convene and facilitate the technical workgroup to provide a forum for organization and agency end-users to share challenges, brainstorm solutions, and foster innovative applications of climate data specific for Minnesota to protect the public's health.
- 1a2. *Ongoing.* The MDH Environmental Public Health Tracking Program (EPHTP) will evaluate climate-related data for inclusion into the Minnesota Public Health Data Access Portal.

Objective 1b. Research, continue to evaluate, and report on the relationship between air temperature, extreme precipitation and other weather-related variables and associated climate-related hazards (e.g., air pollution, water contamination) and health outcomes (e.g., respiratory and cardiovascular illnesses/diseases).

- 1b1. *Canceled.* The Minnesota Climate & Health Program, in collaboration with the Asthma Program, will explore the association between changes in pollen counts and asthma-related hospital and emergency department (ED) visits.
- 1b2. *Complete.* The Minnesota Climate & Health Program, in collaboration with the University of Minnesota, will explore the association between changes in temperature and hospital and emergency department (ED) visits.
- 1b3. *Canceled.* The Minnesota Climate & Health Program, in collaboration with the Injury Program, will explore the association between extreme weather and crashes.
- 1b4. *In Progress.* The MDH Community and Family Health Division, in collaboration with the Minnesota Climate & Health Program, will meet to discuss data collected regarding health outcomes for pregnant women and infants, and for children and youth with special health needs, and explore possible intersections with data collected regarding extreme weather.
- 1b5. *In Progress.* The MDH Center for Health Promotion, in collaboration with the Minnesota Climate & Health Program, will explore the relationship between climate change and chronic diseases.
- 1b6. *Canceled.* The Minnesota Climate & Health Program, in collaboration with the MDH Health Policy Division, will explore the use of the Minnesota's All Payer Claims Database (APCD), if legislatively authorized, to better describe the financial impact of climate change on health.
- 1b7. *In Progress.* The Minnesota Climate & Health Program will explore the relationship between climate change trends in Minnesota and solastalgia, with particular emphasis on warming winters and impacts on winter recreation. MDH will review existing literature on solastalgia and seek to identify potential datasets that could be used to characterize the links between warming trends in MN, solastalgia, and other factors related to mental health and quality of life for the state's population.

Objective 1c. Assess data gaps and limitations related to tracking health outcomes associated with exposures to climate-related hazards (e.g., air pollution, water contamination) and report findings.

- 1c1. *Complete.* The Minnesota Climate & Health Program will update the MN Climate & Health Profile and will identify and report on data gaps and limitations. This will include updating the Profile report with new data, posting the updated Profile on the MDH website, and delivering webinars or in-person presentations to key audiences on the updated Profile.
- 1c2. *Complete.* The Minnesota Climate & Health Program, in collaboration with the Asthma Program, will explore developing a pollen monitoring system for Minnesota.
- 1c3. *In Progress.* The MDH Indoor Air Program will identify data gaps and limitations related to tracking health outcomes from exposure to indoor air contaminants predicted to increase as the climate changes – such mold and radon.

Objective 1d. Maintain and enhance surveillance of vectors, pathogens, vector-borne diseases, foodborne diseases and waterborne diseases for possible climate change impacts.

- 1d1. *Ongoing.* The MDH Vectorborne Diseases (VBD) Unit will continue to maintain and enhance surveillance of vectors, pathogens and VBD and report results annually.
- 1d2. *Ongoing.* The MDH Public Health Laboratory will maintain and enhance testing capability and capacity necessary for assessing the presence of emerging vector-borne, foodborne, and waterborne pathogens whose emergence may be impacted by climate change.
- 1d3. *Ongoing.* The Waterborne Diseases Unit will continue to conduct surveillance for waterborne diseases and investigate outbreaks of waterborne disease.
- 1d4. *Planned.* The Well Management Section will implement a data management plan for flood response sampling data.

Objective 1e. Coordinate with other agencies (e.g., DNR, MPCA) to incorporate water quality and quantity monitoring related to drinking water into existing surface and groundwater monitoring efforts to create a comprehensive surface and groundwater database.

- 1e1. *Ongoing.* The MDH Drinking Water Protection (DWP) and Well Management (WM) Sections will evaluate and identify opportunities to coordinate existing water quality and quantity data and monitoring related to vulnerable public and private water supplies prone to the impact of climate change with other agencies.
- 1e2. *Planned.* The MDH Environmental Public Health Tracking Program (EPHTP) will evaluate developing a public drinking water source vulnerability indicator for inclusion into the Minnesota Public Health Data Access Portal.
- 1e3. *Ongoing.* The MDH Public Health Laboratory will coordinate with the Environmental Health Division and with other agencies to ensure that testing for chemical contaminants is available in order to develop and assess water quality indicators.

Goal 2. Identify and develop potential mitigation and adaptation strategies and tools to address climate change and public health.

Objective 2a. Develop and disperse control/prevention strategies to prevent or respond to vectorborne disease and waterborne disease risks and/or outbreaks.

- 2a1. *Ongoing.* The MDH Vectorborne Diseases (VBD) Unit will continue to update and disperse control/prevention strategies via its website annually.

- 2a2. *In Progress.* The MDH Community and Family Health Division will monitor the health of women, infants and children as threats such as the Zika virus emerge in Minnesota.
- 2a3. *Ongoing.* The Waterborne Diseases Unit will continue to inform citizens about the risks of and prevention strategies for waterborne diseases via its website and targeted outreach activities.

Objective 2b. Strengthen MDH Drinking Water Protection Programs to include climate change impact considerations and to develop strategies, procedures, and policies for capacity to manage uncertainties relating to climate change.

- 2b1. *Ongoing.* The MDH Drinking Water Protection and Well Management Sections will promote Water and Climate Change Adaptation Training for Water Program Staff.
- 2b2. *In Progress.* The MDH Drinking Water Protection Section will provide outreach/education on climate change readiness and Source Water Protection to systems vulnerable to the impacts of climate change.
- 2b3. *Ongoing.* The MDH Drinking Water Protection Source Water Protection Unit will continue working with State agency partners to increase Clean Water Act and Safe Drinking Water Act collaboration for source water protection.
- 2b4. *Complete.* The Minnesota Climate & Health Program, in collaboration with the MDH Drinking Water Protection and Well Management Sections and the Minnesota State Climatology Office, will:
 - Develop a vulnerability assessment of future flood impacts for populations on private wells
 - Deliver presentations to key stakeholders on the vulnerability assessment
 - Explore opportunities for incorporating the results into intervention strategies aimed at private well owners, local planners and watershed managers.

Objective 2c. Develop a drinking water adaptation plan to increase Minnesota public water systems' capacity and resilience to respond to prolonged droughts, severe floods, storms, and tornados and to increase systems' capacity to treat waters with uncertain quality that meet required drinking water standards in order to provide safe drinking water.

- 2c1. *Ongoing.* The MDH Drinking Water Protection Section will Promote Use of Climate Resilience Evaluation and Awareness Tool by Local Water Utilities: Support wastewater treatment plants and drinking water systems in use of the Climate Resilience Evaluation and Awareness Tool (CREAT) to assess the vulnerability of plants to a changing climate and identify response actions.
- 2c2. *Planned.* The MDH Drinking Water Protection Section will evaluate and work towards addressing Climate Change in Community Water System Sanitary Surveys: Identify elements of the sanitary surveys for community water systems that address the risks to drinking water systems posed by climate change and address these risks as part of sanitary surveys on a 3 to 5 year basis.
- 2c3. *Planned.* The MDH Drinking Water Protection Section will evaluate and identify opportunities to update and improve Source Water Plan Contingency strategy included in Wellhead Protection Plans to include identifying impacts and response to impacts of climate change to the water source and infrastructure.
- 2c4. *Ongoing.* The MDH Public Health Laboratory will continue to provide testing services to assess public and private drinking water sources impacted by climactic conditions, such as severe floods, prolonged drought, etc.

Objective 2d. Develop strategies for adaptation to and mitigation of increasing levels of allergens (i.e., pollen and mold) and other air pollutants.

- 2d1. *Ongoing.* The MDH Asthma Program will help publicize the availability of emailed pollen alerts to people with allergies/asthma and health care providers.

- 2d2. *In Progress*. The MDH Indoor Air Program will develop and distribute guidance and educational materials for building owners, architects and contractors addressing indoor air quality concerns related to building weatherization activities.
- 2d3. *Ongoing*. Through family home visiting programs, the MDH Community and Family Health Division will assist families to implement strategies in the home setting that mitigate increasing levels of allergens.
- 2d4. *Complete*. The MDH C&H Program will collaborate with MPCA on re-assessing their air quality index alert communications strategy and messaging. Integrate public health considerations and develop joint messaging to encourage adaptation activities related to air quality and Minnesota climate and health hazards, such as extreme heat.
 - Finalize health messaging for AQI Alert templates
 - Formalize cross-agency social media strategy and content
 - Develop new AQI alert messaging specific to climate change hazards and health (extreme heat, wildfires)

Objective 2e. Compile and distribute a master list of known and promising mitigation and adaptation strategies to prevent the negative health impacts of climate change.

- 2e1. *Complete*. The Minnesota Climate & Health Program, in collaboration with the MDH Climate Change Workgroup and the MN Climate & Health Steering Team, will develop and distribute a compilation of evidence-based climate change adaptation strategies. The current list of strategies includes the BRACE Midwest X Southeast Collaborative strategies, emergency management strategies (Activity 4c1), comprehensive planning (Activity 6a2), GreenStep Cities strategies, and Interagency Climate Adaptation Team (ICAT) strategies (Activity 2e2). Additional strategies will be added as capacity and resources allow.
- 2e2. *Ongoing*. Collaborate on the Interagency Climate Adaptation Team (ICAT) and support ICAT efforts. This will include working with other state agencies to develop and prioritize state level actions related to climate adaptation strategies, considering whether changes to state policy are needed to implement climate adaptation strategies, and presenting to relevant stakeholder groups and the public about state climate adaptation efforts.
- 2e3. *Ongoing*. Collaborate with the MN Climate Adaptation Partners (CAP) and support CAP efforts. Includes activities to:
 - Host the annual MN CAP conference
 - Facilitate and present annual MN CAP awards

Objective 2f. Reduce the risk of waterborne disease from contaminated drinking water in case of a flood event.

- 2f1. *Ongoing*. The Well Management Section will develop a video for private well users on strategies to prevent and respond to water contamination from a flood event.

Goal 3. Identify populations that are at risk of poor health outcomes and sources of vulnerability due to climate change.

Objective 3a. Identify populations vulnerable to air pollution, outdoor allergens, vector-borne diseases, extreme heat events, drought and flooding, and food and water contaminants as a result of climate change.

- 3a1. *In Progress*. The Minnesota Climate & Health Program, in collaboration with stakeholders, will develop an open access, online vulnerability assessment tool that can be utilized by professionals from several disciplines to connect to health when planning for climate change. The pilot tool will

cater to public health professionals, emergency preparedness professionals and emergency managers, city/county planners, built environment professionals, as well as other stakeholders and will provide a central, accessible resource for determining spatially relevant vulnerabilities and assets needed to identify climate and health priorities. This project will start by using available state data. The first phase of development began in May 2017 with a University of Minnesota contract to develop a pilot tool to be completed in late 2017. The second phase will include a search for funding to build and support the public online version.

- 3a2. *Ongoing*. The MDH Environmental Public Health Tracking Program (EPHTP) will provide data to identify vulnerable populations to climate change.
- 3a3. *Planned*. The MDH Health Regulations Division will provide information to the Minnesota Climate & Health Program on nursing homes, hospitals, hospices, and supervised living facilities due to extreme weather events.

Goal 4. Enhance planning and preparedness for emergency and disaster response and recovery to effectively protect the public's health against negative impacts associated with climate change-related disasters.

Objective 4a. Coordinate with partners to identify those issues relating to climate change adaptation that are not addressed in the MDH All Hazards Plan.

- 4a1. *In Progress*. The MDH Center for Emergency Preparedness and Response will review projected climate change data to identify any updates for the MDH Risk and Threat Assessment.
- 4a2. *In Progress*. The MDH Center for Emergency Preparedness and Response will revise the MDH All-Hazards Response and Recovery Plan as needed to address any planning gaps based on identified risks and threats from projected climate change data.

Objective 4b. Evaluate and improve public health and health care infrastructure (plans, capabilities and capacity, response resources and systems) needed for emergency response, continuity of services and recovery for weather-induced disasters at state and local levels.

- 4b1. *Planned*. As part of the annual surveys of nursing homes and home care providers, the MDH Health Regulation staff will continue to check that each facility has an emergency plan in place.
- 4b2. *Planned*. The MDH Health Regulation Division will continue to participate in planning and preparedness for emergency and disaster response, including situational awareness during and following an incident, and serve as liaison to the Centers for Medicare and Medicaid Services (CMS) if waivers are needed.
- 4b3. *Ongoing*. The MDH Indoor Air Program will continue to support community preparedness and flood recovery response activities by providing information and technical assistance.
- 4b4. *Canceled*. The MDH Environmental Public Health Tracking Program (EPHTP), in collaboration with the Minnesota Climate & Health Program, will explore adapting the Rapid Response Roster, part of the Long-Term Surveillance Annex of the All-Hazards Plan, for climate-related emergencies.
- 4b5. *Ongoing*. The Well Management Section will work with local public health and Soil and Water Conservation Districts to improve the process for distributing and collecting samples following a flood event.

Objective 4c. Develop mechanisms to broaden engagement of, and increase coordination among, all stakeholders to promote shared problem solving and joint management of health and safety needs both prior to and during incidents.

- 4c1. *In Progress.* The Minnesota Climate & Health Program will collaborate with the MN Department of Public Safety/Homeland Security and Emergency Management, Minnesota Emergency Managers Association, and the MDH Emergency Preparedness and Response Section to develop and distribute a summary of Minnesota regional climate scenarios and best practice strategies for incorporating climate change into emergency management plans and processes.

Objective 4d. Explore and expand methods of providing timely notification or warning to response entities and general public.

- 4d1. *Complete.* The Minnesota Climate & Health Program, in collaboration with the National Weather Service (NWS), will review heat thresholds to ensure they are protective of public health and develop appropriate messaging.

Goal 5. Work with local public health agencies to increase their capacity to respond to and adapt to the public health impacts of climate change.

Objective 5a. Assess local public health departments' needs and capacity to adapt to climate change.

- 5a1. *Ongoing.* The Minnesota Climate & Health Program, in collaboration with the Local Public Health Association (LPHA), will assess local public health departments' needs and capacity to adapt to climate change.

Objective 5b. Aid in the development of a strategic plan for local public health to adapt to climate change that dovetails with the MDH strategic plan.

- 5b1. *Complete.* The MN Climate & Health Program, in collaboration with the Public Health Practice Section, will support a SCHSAC workgroup to help develop a strategic plan for local public health departments.

Objective 5c. Provide resources for local entities to better respond to private well contamination from flood events.

- 5c1. *Planned.* The Well Management Section will develop outreach tools for local public health and Soil and Water Conservation Districts to use in flood response.

Goal 6. Improve knowledge and understanding of climate change effects on human health.

Objective 6a. Provide education and outreach to key stakeholders such as public health professionals, healthcare providers, state agency personnel, business owners, farmers, planners, architects, landscape architects, designers, water industry professionals, policy makers and elected officials on the climate change effects to human health. Key stakeholders may include the general public.

- 6a1. *Complete.* The Minnesota Climate & Health Program, with support from content area experts, will develop and disseminate targeted information about climate and health in Minnesota to key stakeholders via training modules and supplemental communications. Topics include climate and health 101; water quality and quantity; air quality; extreme heat; wellbeing; and agriculture and food security.

- 6a2. *In Progress.* The Minnesota Climate & Health Program will work with the Metropolitan Council (Met Council), city/county planning entities, and other partners to provide information for planners on how to integrate climate adaptation and public health strategies into comprehensive plans.
- 6a3. *Canceled.* MDH OSHII staff will link Statewide Health Improvement Partnership (SHIP) grantees to climate and health trainings and incorporate information as appropriate from the training modules into the SHIP Implementation Guides (e.g., Active Living Guide).
- 6a4. *In Progress.* The MDH Source Water Protection Unit will develop a training for public water suppliers on climate change and the potential impacts associated with it on their water supply system based on their source of drinking water and infrastructure.
- 6a5. *Canceled.* Provide outreach to community-led sustainability projects and organizations to make connections with the MN Climate & Health Strategic Plan activities and resources.
- 6a6. *In Progress.* Communicate MN Climate & Health Strategic Plan activities and resources to boards, work groups, partners, and other stakeholders.
- 6a7. *Ongoing.* The Minnesota Climate & Health Team, in collaboration with the MDH Climate Change Workgroup and the MN Climate & Health Steering Team, will conduct outreach to the general public through speaking engagements, exhibits and events, and print and electronic media. Information framing, message testing, and season-appropriate topics will be incorporated. Multi-media content will be disseminated via the MDH webpages, social media channels, e-newsletters, etc. to educate stakeholders about the human health impacts of climate change, raise awareness about the work and products of the Program, and engage with local partners to build capacity for taking climate action and protecting health. (Steering Team recommendations, March 2017: Use lessons learned about framing and meeting people where they are at in understanding the issues. Consider a seasonal roll-out plan to time messages for greater impact, like heat message in summer months. Share MN extreme weather examples to emphasize personal relevance.)
- 6a8. *Ongoing.* MDH OSHII staff will provide information to Statewide Health Improvement Partnership (SHIP) grantees about climate and health.
- 6a9. *Ongoing.* MDH OSHII staff will provide consultation on policies, regulations, and initiatives that impact health related to Connected and Autonomous Vehicles (CAV) in Minnesota.

Objective 6b. Provide education and outreach to priority populations on the climate change effects to human health.

- 6b1. *Canceled.* The Minnesota Climate & Health Program, in collaboration with the MDH Climate Change Workgroup and the MN Climate & Health Steering Team, will identify and engage priority populations, and develop plans to provide outreach and education.
- 6b2. *Complete.* The Minnesota Climate & Health Program, in collaboration with the MDH Center for Health Equity, will provide training to Eliminating Health Disparities Initiative (EHDI) grantees on the health impacts of climate change.
- 6b3. *Complete.* The Minnesota Climate & Health Program will coordinate with the Minnesota Community Health Workers (CHW) Peer Network to provide training to practicing CHWs and CHW candidates on the impacts of climate change.
- 6b4. *Ongoing.* The MDH Refugee and International Health Program, along with its community stakeholder partners, will collaborate on the development and dissemination of fact sheets and presentations for refugee, immigrant and limited English proficient communities.
- 6b5. *Ongoing.* The Minnesota Climate & Health Program will work with MDH's Director of American Indian Health to share information with and develop relationships with environmental health tribal staff and Tribal Health Directors.
- 6b6. *Ongoing.* MDH OSHII staff will continue to promote active living initiatives throughout communities in Minnesota.

Goal 7. Identify ways to incorporate climate change considerations into agency and organization activities and track progress.

Objective 7a. Discuss how climate change impacts each MDH Division and their areas of responsibility and work.

- 7a1. *Ongoing.* The Minnesota Climate & Health Program will visit each MDH division as invited by Division Directors to discuss the health impacts of climate change.
- 7a2. *Ongoing.* The Minnesota Climate & Health Program will promote workplace climate adaptation and mitigation activities to increase MDH employee awareness of workplace measures to proactively adapt to and mitigate climate change.

Objective 7b. Monitor progress to measure success of all objectives.

- 7b1. *Ongoing.* The Minnesota Climate & Health Team, in collaboration with the MDH Climate Change Workgroup and the MN Climate and Health Steering Team, will monitor and evaluate the implementation of the MN Climate & Health Strategic Plan and the IMS. The strategic plan goals, objectives, and activities will be updated as needed throughout implementation to reflect evolving capacity, resources, needs, and findings from the evaluations. Monitoring will cover tracking of implementation for all activities. Evaluation will be conducted on select strategies (IMS) as resources and capacity are available. Reporting on monitoring and evaluation will be provided on a regular basis and at least annually. Findings from the evaluations will be shared and incorporated into new/revised strategies for continuous improvement.

Plan Evaluation

The Minnesota Climate and Health Strategic Plan and MDH Climate and Health Workgroup are ongoing until climate change adaptation is fully integrated at MDH. The Program will survey MDH staff every five years to measure climate and health knowledge and opinions (past surveys: 2010; 2015). MDH goals include:

- 90% of surveyed staff agree that Minnesota is currently experiencing climate change. (75% in 2010; 82% in 2015)
- 75% of surveyed staff agree that their division is working to prepare for and/or respond to climate changes in Minnesota. (New question to be added in 2020.)

The Program will track outputs and outcomes related to the Plan. Outputs include the number of completed activities and percent of MDH divisions represented on the Workgroup. For outcomes, the Program and Workgroup will conduct in-depth evaluation on select activities as resources and capacity are available.

The Workgroup will track progress on activities in SharePoint. The Program will share progress updates and evaluation results at least every five years.

Glossary

Adaptation: Refers to actions being taken to lessen the impact on health and the environment due to changes that cannot be prevented through mitigation.¹

Climate: The long-term statistical average of weather. Climate typically refers to the mean and variability of relevant weather variables, such as temperature, precipitation, and wind, over long time scales (30 years or more).²

Climate Change: Changes in average weather conditions that persist over multiple decades or longer. Climate change encompasses both increases and decreases in temperature, as well as shifts in precipitation, changing risk of certain types of severe weather events, and changes to other features of the climate system.²

Mitigation: Measures to reduce the amount and speed of future climate change by reducing emissions of heat-trapping gases or removing carbon dioxide from the atmosphere.²

Weather: The day-to-day variations in temperature, precipitation, and other aspects of the atmosphere around us.²

¹ Portier CJ, Thigpen Tart K, Carter SR, Dilworth CH, Grambsch AE, Gohlke J, Hess J, Howard SN, Luber G, Lutz JT, Maslak T, Prudent N, Radtke M, Rosenthal JP, Rowles T, Sandifer PA, Scheraga J, Schramm PJ, Strickman D, Trtanj JM, Whung P-Y. 2010. A Human Health Perspective on Climate Change: A Report Outlining the Research Needs on the Human Health Effects of Climate Change. Research Triangle Park, NC: Environmental Health Perspectives/National Institute of Environmental Health Sciences. doi:10.1289/ehp.1002272 Available: www.niehs.nih.gov/climatereport

² USGCRP, 2016: Appendix 5: Glossary and Acronyms. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. U.S. Global Change Research Program, Washington, DC, 307–312. <http://dx.doi.org/10.7930/J02F7KCR>