

# La Crosse Area Climate Adaptation Study



**Bureau of Science Services  
Wisconsin Department of Natural Resources  
P.O. Box 7921  
Madison, WI 53707-7921**

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**Summary:** The Association of State and Territorial Health Officials (ASTHO), in conjunction with the Centers for Disease Control and Prevention’s National Center for Environmental Health, awarded a small grant to the Wisconsin Department of Natural Resources to demonstrate for communities, in and outside of Wisconsin, methods for increasing the level of coordination and communication between the disparate programs involved in addressing the public health consequences of climate change. Our efforts focused on engaging several Wisconsin state agencies, city and county partners (including elected, appointed, and paid officials and local agency staff), as well as local civic groups. We explored and documented various communication and technical assistance options, taking efforts beyond a traditional educational and interactive workshop process. Success has been demonstrated by strengthening partnerships and moving climate adaptation from discussion to implementation of local government priorities. This report describes the work we undertook in the La Crosse, Wisconsin area and documents the deliverables produced. It also fulfills the final reporting requirements for our grant agreement.

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This project was supported by the Association of State and Territorial Health Officials (ASTHO). Points of view expressed in this report do not necessarily reflect the views or policies of ASTHO. Mention of trade names and commercial products does not constitute endorsement of their use.



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**Cover Photo:** The City of La Crosse, Wisconsin, and environs. Photograph by Stephen L. Arnold, Wisconsin DNR.

**Editor:** Dreux J. Watermolen

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# **La Crosse Area Climate Adaptation Study**

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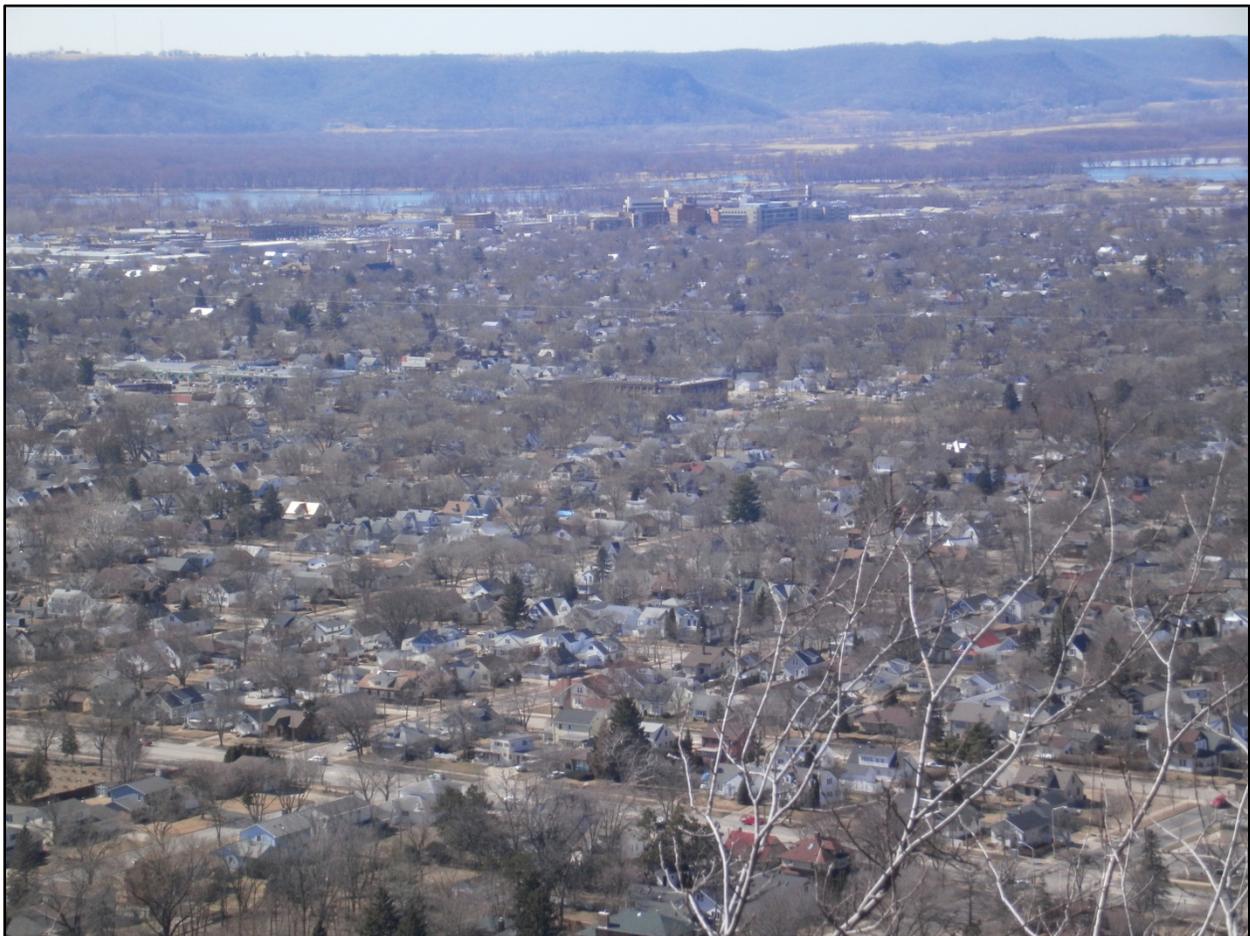
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# 1 Introduction

The Association of State and Territorial Health Officials (ASTHO), in conjunction with the Centers for Disease Control and Prevention’s National Center for Environmental Health, awarded a grant to the Wisconsin Department of Natural Resources (Wisconsin DNR) to demonstrate for communities, in and outside of Wisconsin, methods for increasing the level of coordination and communication between the disparate programs involved in addressing the public health consequences of climate change. Our efforts focused on the City and County of La Crosse, Wisconsin (Fig. 1). We brought public health to the climate change discussion by engaging several Wisconsin state agencies and city and county partners (including elected, appointed, and paid officials and local agency staff members), as well as local civic groups. This study explored and documented various communication and technical assistance options for the city and county, taking the effort beyond the educational and interactive workshop process. Success has been demonstrated through not only strengthening partnerships but in moving from discussion of climate adaptation to implementation of local government adaptation priorities.



**Figure 1.** *The City of La Crosse in west-central Wisconsin along the Mississippi River.* Photograph by Stephen L. Arnold.

## 1.1 Environmental Issues and Need for the Study

The Wisconsin Initiative on Climate Change Impacts (WICCI)<sup>1</sup> seeks to educate communities, businesses, and individuals about the science of climate change as well as the projected trends in climate for Wisconsin. Working Groups formed by the WICCI Science Council conduct science-based assessments of potential climate change impacts on specific regions, ecosystems, human health, communities, and industries throughout Wisconsin and make recommendations on adaptation strategies.

The WICCI Community Climate Adaptation (CCA) Working Group was charged with assisting communities with climate adaptation. In 2009 and 2010, working group members and WICCI collaborators conducted several workshops to inform communities about Wisconsin's changing climate and to conduct exercises in which local leaders could identify health and environmental issues and impacts from evolving climate-related events. Community leaders were also asked to identify adaptation actions and strategies that will help them reduce the negative effects of climate-related events. These leaders also explored the barriers that they likely will face in implementing climate adaptation over time. These were half-day sessions with no follow-up from WICCI or working group members. Local decision-makers were left to determine how to move forward with adaptation measures and funding. As a result, very little was being accomplished to advance community climate adaptation.

There remained a need for working group members and state agency staff to continue working with community decision-makers to facilitate discussion so they could determine where specific adaptation actions and strategies fit into community plans, budgets, and daily decisions. The ASTHO funding allowed us to look at the broad picture of community, environment, and human health relative to La Crosse's climate adaptation priorities and to work on implementation of several measures.

## 1.2 Project Accomplishments

The project set out to complete the following:

- a) Establish a dynamic partnership that evolves over time as new information becomes available.
- b) Educate the community about the science of climate change and adaptation.
- c) Help the community identify key issues and impacts.
- d) Have the community identify adaptation actions and strategies
- e) Have the community identify barriers to moving forward with adaptation.
- f) Remove one or more barriers in order to initiate a high priority adaptation strategy.
- g) Document the work so Wisconsin DNR and its partners (and ASHTO) have a replicable process for community climate adaptation assistance that can be scaled up for state-wide or broader community use.

The project demonstrated assistance and follow-through with the City and County of La Crosse so that they would (1) include climate adaptation in several community planning efforts and develop a commitment to consider climate change in relevant future plans and community decisions, and (2) implement one or more climate adaptation projects to address the community's top priorities through at least the planning and funding stages.

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<sup>1</sup> WICCI is a collaboration, jointly led by the University of Wisconsin-Madison's Nelson Institute for Environmental Studies and the Wisconsin DNR, that includes more than 70 federal, state, academic, and private sector entities from throughout Wisconsin. For more information, see <http://www.wicci.wisc.edu/>.

The experience and relationships between participants developed during the project will benefit future efforts to provide in-depth assistance from Wisconsin DNR and Wisconsin Department of Health Services (Wisconsin DHS) staff and WICCI scientists to other Wisconsin communities. The project resulted in a process that can be adapted to assist local governments state-wide.

### **1.3 Project Partners**

The project, “Building Partnerships for Climate and Health in Wisconsin Communities,” was executed by a broad coalition including project staff, government partners, and private non-profit organizations. The study area, called “the community,” focused on the City of La Crosse with consideration given to county and regional environmental and health management priorities.

Project partners included Wisconsin DNR, Wisconsin DHS, WICCI staff, CCA Working Group members, and leaders of several La Crosse area organizations:

- Sally Kefer - Study Project Manager, Wisconsin DNR and WICCI CCA Working Group Co-chair
- Steve Arnold - Program and Policy Analyst, Wisconsin DNR
- Shelly Shaw – Wisconsin DHS (left project March 22, 2012)
- Megan Christenson - Epidemiologist, Wisconsin DHS
- David Liebl - Statewide Outreach and Stormwater Specialist, University of Wisconsin-Extension and WICCI scientist
- Carolyn Betz - Program Manager, UW-Madison Nelson Institute and WICCI
- Amy Peterson - Planning and Economic Development Administrator, City of La Crosse
- Nick Nichols - Sustainability Coordinator, La Crosse County
- Marilyn Pedretti - Chair, Sustainable La Crosse Commission
- Jackie Eastwood - Transportation Planner, La Crosse Area Planning Committee
- Greg Flogstad - Director, Mississippi River Regional Planning Commission
- Coulee Partners for Sustainability

## 2 Process for Community Engagement

### 2.1 Approaching La Crosse Area Local Government

In 2011, a Wisconsin DNR representative informed a City of La Crosse staff person about the climate adaptation workshops at a flood management conference. Following a January 2012 introductory discussion, City of La Crosse planning department officials extended an invitation to work in partnership on an educational and planning effort through the Sustainable La Crosse Commission, with the city's Planning and Economic Development administrator serving as the official contact for the work. The Wisconsin DNR project manager (also the WICCI CCA chair) informed the mayor by phone and email and asked Wisconsin DNR management to also make an introductory call to the mayor to help build interest and instill confidence and to ensure the mayor that this was a voluntary, not a regulatory process.

### 2.2 La Crosse City and County Initial Meeting

On February 21, 2012, Wisconsin DNR, Wisconsin DHS, and La Crosse project staff explored La Crosse neighborhoods to observe the unique features and issues facing each area, including the riverfront which comprises a mile of city shoreline, the western border of the city across from French Island in the Mississippi River on which the airport and Exel Energy, the local power company, are located, the LEED certified Gundersen Lutheran Medical Center, the University of Wisconsin-La Crosse and three technical college campuses, new development on the south side, residential development on the south side bluffs in the Town of Shelby, the \$30 million flood protection walls along Pammel Creek, the east side coulee (bluff) region, the high density area around Losey Boulevard, the highway business area along Interstate 90 (including the City of Onalaska), and the historic downtown district.

**Figure 2.** *Project staff met with city, county, and MPO leaders at City Hall. Project maps with acetate overlays allowed local staff to note the locations of impacts from extreme weather events.* Photograph by Stephen L. Arnold.



Project staff then met with city, county and metropolitan planning organization (MPO) leaders at City Hall (Fig. 2). The meeting was documented. It was valuable to meet key leaders at this point, but getting input from them was difficult because they had not yet established a base of knowledge, nor were they familiar with the language of climate change. The project team discussed this “chicken and egg” question several times as to whether we should have conducted the climate adaptation workshop first and then met with local leaders. Logically, it seems to make sense to meet with community leaders to introduce a project and lay out the issue of climate change “terminology” to increase their familiarity and comfort level with the topic. Wisconsin DNR and Wisconsin DHS staff presented large-format (34” x 44”) project maps with acetate overlays (Fig. 2). These maps turned out to be excellent props, as community staff made notes on the overlays indicating the locations of the first stories they told about the impacts of extreme weather events. City staff displayed the FEMA flood maps of the area, which attendees also found very helpful for the discussion. A single map of the city and surrounding towns and physical features would have been sufficient for this purpose and the discussion. We found that the acetate overlays were easier to use at a meeting table than vellum that we had purchased for the planned workshop. The initial meeting did prove to be helpful in preparing for a workshop held a week later.

### 2.3 Community Climate Change Workshop

A workshop on climate adaptation for community leaders was held on February 28, 2012 (Fig. 3). It proved to be a major milestone for the project, serving as the kick-off event for about 50 civic leaders from the area. A non-profit group, Clean Wisconsin, sponsored the event and provided lunch, coffee, and dessert from a local restaurant.



**Figure 3.** *La Crosse Area Climate Adaptation Workshop, February 28, 2012.* Photograph by Stephen L. Arnold.

### 2.3.1. Workshop Goals

The workshop had the following goals for participants:

- a) Gain an understanding of climate science principles.
- b) Learn about projected climate change for Wisconsin.
- c) Discuss actual local experiences and perceptions of our changing climate.
- d) Understand the term “adaptation” to climate change.
- e) Identify adaptation actions and strategies to reduce or prevent negative climate-related impacts.
- f) Describe the barriers to adaptation actions and strategies.
- g) Identify the tools and resources to overcome barriers.

In keeping with the ASTHO study objectives, to go beyond awareness and education and to develop a scalable process for communities incorporating health into the climate adaptation discussion, workshop leaders described and helped the La Crosse community to begin to work toward an action plan that they could later execute.

### 2.3.2. Workshop Agenda

The meeting format was expanded from community climate adaptation workshops previously presented in Wisconsin. The agenda included the following elements:

#### 1. Welcome:

The Wisconsin DNR study project manager welcomed participants, introduced Wisconsin DNR, WICCI, and Wisconsin DHS staff and reviewed the goals for the workshop. The project manager also led the day’s activities. The co-chairs of the city-county Sustainable La Crosse Commission welcomed attendees and outlined their hopes for the outcomes.

#### 2. The science of climate change and adaptation:

The State Stormwater Coordinator from the University of Wisconsin-Extension presented, on behalf of WICCI, a PowerPoint presentation titled “The Science of Climate Change” that included climate projections for Wisconsin over the next 50+ years. The audience asked questions to ensure they were clear on definitions of climate change and adaptation. The presentation is archived on the project’s SharePoint site.

#### 3. Interactive session, small group discussion, and feedback:

Project staff took turns facilitating a series of six questions with attendees, which included: community observations of changes in climate over time, issues and impacts from these extreme events, review of adaptation accomplishments to date, identification of possible adaptation measures, and the technical and financial barriers to adaptation actions and strategies and possible solutions. The community also painted a picture of their vision for a future La Crosse area that is adapted to climate change. Small groups of four or five attendees discussed, recorded, and reported their answers back to the entire assembly. Appendix A includes a workshop summary.

#### 4. Summary, suggestions for next steps, and thanks to participants:

The recurring themes of participant feedback on the workshop questions were reviewed with the group. Participants were invited to subscribe to a GovDelivery mailing list for future announcements. Ideas for future climate adaptation forums were suggested and there was consensus on interest in holding them. Ideas for follow up included: community officials coordinating on climate adaptation during project planning and development on all large scale

community initiatives; identifying applicable public and private grants or other funds to support adaptation planning and implementation; and identifying sources of technical support for city infrastructure decisions related to climate adaptation.

The participants made recommendations to include climate adaptation objectives and certain strategies into the La Crosse Plan for Sustainability; town, village, city, and county comprehensive plans; City Parks and Recreation Outdoor Strategic Plan (which includes community forestry); La Crosse County Health Improvement Plan; La Crosse County All Hazards Mitigation Plan; Ports and Harbor Plan; and County Conservation Plan. Many ideas were listed for the City's Neighborhood Revitalization Plan and for City Engineering and Public Works project decision-making.

### **3 Materials Developed to Enhance Community Discussions**

A number of tools were used to enhance outreach to community leaders, staff, and the public. Some of these will work with every community; others must be tailored for each participating community. They are listed here for easy reference.

#### **3.1 Information Technology Tools**

Software for this project includes Microsoft Office 2010 (preferred) or 2003 and Adobe Acrobat X Pro for general document creation, Adobe Creative Suite 5.5 (CS5.5) or later for report writing, the Google Earth Plug-In for Internet Explorer (license required for government agencies) to participate in WeAdapt.org, and ESRI ArcGIS Explorer for geographical information, all running on Windows 7 (preferred) or XP.

Wisconsin DNR staff requested geographical information systems (GIS) staff support. Using ArcGIS Explorer and ArcGIS Explorer Online, several large-format maps displaying different information related to the La Crosse area were developed. Shape files for La Crosse County, minor civil districts, and City of La Crosse neighborhood planning areas were imported into ArcGIS Explorer and ArcGIS Explorer Online. It may be useful for a project staff member to have some ArcGIS training and a ArcGIS license, but with the excellent support from the Wisconsin DNR GIS manager, that was not needed.

To organize the project at Wisconsin DNR, a folder "Climate Change Adaptation" was established on a Wisconsin DNR Bureau of Science Services shared storage. The folder is only accessible to Wisconsin DNR staff and is used for secure back-up and storage of working documents shared among Wisconsin DNR project staff. The folder has been established for documents specific to the La Crosse study. New folders will be established for new community climate adaptation projects.

A Microsoft SharePoint server for the project was activated on March 30, 2012, to enable sharing of documents between Wisconsin DNR, Wisconsin DHS, University of Wisconsin-Madison Nelson Institute, City of La Crosse, and La Crosse County personnel. Participants need SharePoint Client Access Licenses (CALs) and Wisconsin Web Access Management System (WAMS) or Wisconsin Division of Enterprise Technology Microsoft credentials to access the server. Project staff contact information, meeting minutes and agendas, presentations, draft and final reports, and similar documents are shared among project participants using SharePoint.

Two electronic mailing lists were established for the project using GovDelivery, the bulk mail vendor used by Wisconsin DNR. A Wisconsin DNR project staff member administers the lists, referred to as “topics” by GovDelivery.

“Wisconsin Climate Change Adaptation”, with over 150 subscribers, is the larger and more inclusive mailing list. Topic administrators can send “bulletins”, in GovDelivery parlance, to subscribers on such subjects as scientific results, climate model predictions, funding and educational opportunities, and adaptation project reports.

A more focused mailing list is “La Crosse Area Climate Change Adaptation Study”. With only six subscribers, this low-volume list is specific to the present study, and will be used (along with the Wisconsin Climate Change Adaptation list) to distribute project deliverables, such as the workshop summary and final report. It will be deleted at the end of the project. A version of the narrower list could be created for each community or region that gets educated and then develops a plan and strategies for climate adaptation.

### **3.2 Inventory of La Crosse Area Community Plans**

With the help of many contributors, Wisconsin DNR and Wisconsin DHS staff compiled a list of La Crosse area community plans and current planning efforts, maintained on the shared file drive under the La Crosse folder. The list is organized by subject, includes the year the plan was adopted or published, indicates whether the plan has actually been downloaded to the folder La Crosse\Plans, and provides a hyperlink to plans that are available on the Internet.

The list also includes Web sites containing La Crosse community plans and a list of links to related information such as GIS data. The plans in the list were reviewed by project staff who narrowed the list down to plans that are suitable for incorporating climate adaptation objectives and strategies. This was beneficial to staff in gaining greater familiarity with the community. Recommendations were made by project staff to the community about fitting adaptation actions and strategies into plans. Furthermore, project staff identified and helped to draft grant applications to support the community’s highest priority adaptation strategies.

### **3.3 La Crosse Area Photography**

Wisconsin DNR staff photographed key locations in the La Crosse area in order to reflect the physical characteristics and culture of the community as we reported on the project. Photos available include the Black River Beach Neighborhood Center, new development at the south end of La Crosse, the railroad, a bike path, Pammel Creek flood walls and its outfall from Ebner Coulee, the bluffs, vistas from Grand Dad Bluff, washout repairs on Bliss Road, and a La Crosse-branded urban bike rack. Wisconsin DNR staff subsequently toured La Crosse with the Planning and Economic Development Administrator and Assistant City Engineer, and photographed examples of gray infrastructure in the Johnson Street storm water basin. The group discussed possibilities for green infrastructure in this 1.5 mile sub-basin which is experiencing new flooding. The photos are stored in the shared drive La Crosse folder and are available for use to illustrate presentations and reports produced for the project.

## 4 Community Climate Adaptation Plan Matrix

To organize the gaps found in community plans relative to climate adaptation, and from recommendations made at the workshop, we developed a matrix (Table 1) that lists plans where community identified vulnerabilities are best addressed, along with the adaptation actions and strategies that could be incorporated into each plan. The matrix also notes the agencies responsible for the plans. The matrix will be useful to community decision makers, for community plans and updates, and for budgetary decisions. Over time, the matrix may be updated to indicate whether a measure has been addressed and whether additional work is needed to fully address the vulnerability. The matrix can be expanded to include the status of plans, future action items, additional reference documents, and Web links.

**Table 1.** *Local plans where community identified vulnerabilities are best addressed along with possible adaptation actions and strategies.*

<b>Plan</b>	<b>Responsible Body</b>	<b>Potential adaptation measures</b>
City of La Crosse & La Crosse County Strategic Plan for Sustainability	Common Council, County Board, City/County Joint Sustainability Commission	Project staff made recommendations about how climate adaptation could fit into sustainability goals. Added several adaptation action items to tables thereby expanding its scope.
La Crosse County Health Improvement Plan	County Health department	Incorporate strategies that ensure citizens are aware of cooling center locations and how to access them, flood hazards and safety both during and after floods, high wind events, and managing waste from property damage to minimize injury and exposure to mold and mildew.
Confluence: The City of La Crosse Comprehensive Plan	Common Council, City staff	The plan is due to be updated soon. All climate adaptation actions and strategies from individual neighborhood plans may be integrated into the city's plan. Likewise, all town, village, and city plans may be integrated into the county and regional comprehensive plans to reflect the community's approach to climate adaptation in each of the required nine planning elements. Examples include: limitations on development and further expansion of impervious surface area in the Land Use element; more compact development; detailed adaptation measures for wildlife, wetland restoration, and natural resources in the Natural Resources element; innovative flood and floodplain management including green infrastructure in the Public Utilities element; more pervious surface to enhance infiltration and provide areas for detention of large storm event runoff; reforestation following emerald ash borer losses and expansion of urban trees in the Community and Public Facilities element.
All Hazards Mitigation Plan	Mississippi Regional Planning Commission; County Emergency Manager	The partnership has discussed climate adaptation needs as identified from the February workshop. RPC and county emergency staff will incorporate strategies into the AHMP update.
County Conservation Plan	County Conservation Department	County-city coordination on high priority agricultural and other sources of non-point pollution from coulee region east of city that contributes to sedimentation of the back waters of the Mississippi River along the city water front. <u>This could be identified as a conservation planning priority.</u>
City Area Flooding Risks	City Planning Department	Incorporate green infrastructure, where feasible, to mitigate flooding in urban areas. Flood prevention measures are being considered to manage the last few homes in the floodplain. Possible diversion systems of large event runoff on the east side of the city.

## 5 Ongoing and Future Work

Wisconsin DNR and Wisconsin DHS will continue the partnership with the city and county to identify the means for incorporating adaptation priorities into community plans and budgets and daily decisions and operations. Several examples serve to illustrate this process.

### 5.1. Implementation in the Johnson Creek Sub-basin

The 1.5-square-mile Johnson Creek storm water sub-basin on the south side of La Crosse is in an older, high-density, residential area of the city that is starting to experience flooding from more frequent and intense storms (Fig. 4). Project staff identified a U.S. Environmental Protection Agency (EPA) grant program with the potential to fund the modeling, design, and implementation of a green infrastructure project in the basin, where a multi-million dollar expansion of conventional storm water infrastructure has been proposed. Project staff worked with city engineering staff to develop a successful Letter of Interest to fund the creation of a hydrologic model of the basin that would enable modeling of green infrastructure alternatives. As a result of this grant, city engineering staff worked with the EPA's consultant to build their capacity to use public domain hydrologic models to assess future green infrastructure applications in other areas of the community.

Green infrastructure can provide multiple benefits, including reduced peak storm water flow, improved storm water quality, shading and cooling of urban neighborhoods in summer, improved property values, promotion of neighborhood reinvestment, and promotion of health through increased transit, walking, and biking. The Johnson Street sub-basin neighborhoods have unusually wide streets, ideal for retrofitting green infrastructure practices. The City's new storm water utility will eventually provide an additional source of funding for green infrastructure implementation.



**Figure 4.** The 1.5-square-mile Johnson Creek storm water sub-basin on the south side of La Crosse.

## 5.2. Enhance the Sustainable La Crosse Strategic Plan

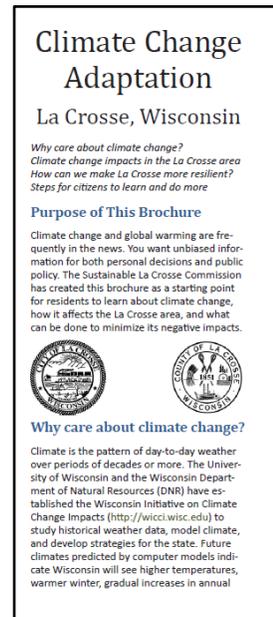
Wisconsin DNR staff made a presentation to the Sustainable La Crosse Commission to demonstrate how the highest priorities for climate adaptation identified at the February workshop could be incorporated into the Plan's "Action Items" table. The commission has taken these recommendations under consideration and is furthermore proposing that a "Climate Forum" be held in the future. Project staff worked with the commission to develop a brochure about La Crosse and adaptation to climate change (Fig. 5).

## 5.3. Incorporate Adaptation into the All Hazards Mitigation Plan

Project staff members provided specific recommendations to the Mississippi Regional Planning Commission and the county Emergency Management office for the update of the county's All Hazard Mitigation Plan.

## 5.4. Explore Adaptation to Mitigate Agricultural and Other Sources of Sediment

The La Crosse County conservation staff was notified of the community's concern about agricultural erosion from the coulee area filling backwaters along the Mississippi River. The build up of sediment is known to affect access for recreational boating on the river. A Letter of Interest was developed by project staff and county conservation staff for a federal NOAA grant but was declined by grant reviewers. The scope, however, is applicable for other types of conservation grants.



**Figure 5.** Project staff worked with the Sustainable La Crosse Commission to prepare a brochure discussing the community and climate change adaptation.

## 6 Meeting Grant Requirements

Wisconsin DNR and Wisconsin DHS project managers and staff participated in the quarterly ASTHO grant conference calls throughout the duration of the grant. The status of this and all other funded projects were reviewed with ASTHO staff and other grantees so that all grantees learned about each other's approaches.

The Wisconsin DNR Program and Policy Analyst attended the mandatory ASTHO Climate Change Consortium meeting on April 24, 2012, in Arlington, Virginia, where he presented an overview of the La Crosse Community Climate Adaptation Study. Hours have been tracked by both the Wisconsin DNR project manager and the Wisconsin DNR Program and Policy Analyst. The grant was extended to allow additional time to finish the report and continue the work of the analyst. Wisconsin DNR agreed to one final pay out at the end of the grant period on July 31, 2012. This report, which summarizes the work under the grant, is the final required product.

Because of this grant, the Wisconsin DNR, Wisconsin DHS and WICCI partnership will continue working with the county and city of La Crosse to plan for and implement the highest climate adaptation priorities. Furthermore, using the process we have developed, we plan to work with individual communities and other regions in Wisconsin to accomplish similar results.

## 7 Next Steps

Climate adaptation is a new topic for almost all the organizations in the La Crosse area, especially with respect to planning and day-to-day operations. The barriers to implementing adaptation may be summarized into two main categories: knowledge gaps and resources (time, money, expertise, etc.). Some knowledge gaps are in the underlying science and require research to make the best decisions on adaptation; most are in communication of additional information from those who have it to those who need it including local decision-makers who may believe required resources are better spent elsewhere. Thus, the next steps revolve around obtaining financial and staffing resources at the state and local levels to build awareness, transfer knowledge and technology, and implement solutions across the entire spectrum of community services.

Resources are also needed to integrate climate adaptation more fully into La Crosse area government planning and human services. In the coming months, additional resources in the form of government and foundation grants will be identified and applications made in order to advance climate adaptation, integrating climate adaptation planning and implementation into the fabric of local government operations. The goal is that climate adaptation becomes a core responsibility of all appropriate government units, just as equity, public safety, customer service, transparent governance, prudent financial management, and sustainability are expected throughout government. State agency staff will continue communication with the community after several adaptation strategies succeed but will turn their focus to other Wisconsin communities.

For long-term success in incorporating climate adaptation into La Crosse area community plans, adaptation needs a permanent home in local government programs, including human health. The joint city and county Sustainable La Crosse Commission can make climate adaptation part of their program for sustainability with consideration given to amending the ordinance and developing guidance for other City and County program policies.

## **Appendix A: La Crosse Climate Change Adaptation Workshop Synopsis**

A workshop for city, county, and citizen leaders was held in the city of La Crosse, Wisconsin on February 28, 2012. The goal was to educate about and start a community discussion regarding Wisconsin's changing climate and associated health and environmental impacts. David S. Liebl from the Wisconsin Initiative on Climate Change Impacts (WICCI) and University of Wisconsin-Extension presented the science of climate change. Key historic climate trends and projections for the La Crosse area over the next 50+ years include a gradual increase in average temperature of 4°-6° F. Warmer temperatures have important implications for human health and natural resources. Warmer winters mean less precipitation falling as snow and more as rainfall. There has been and will continue to be a gradual increase in the annual average amount of rainfall across Wisconsin. More frequent intense storms have been observed and are anticipated to continue in the future. This puts communities in the position of managing larger amounts of storm water runoff. Freezing and thawing cycles will also become more frequent due to warmer winters. This presents a unique set of issues for infrastructure and cars on roadways. More detail is provided in the WICCI Adaptive Assessment Report found at: <http://www.wicci.wisc.edu/>

The need for “community adaptation” to climate change is important in that we might reduce or prevent negative impacts from occurring as Wisconsin's climate changes. Addressing human health and natural resources will require discussion, planning, and budgeting by community decision-makers for adaptation actions and strategies. More detail is provided in the WICCI Adaptive Assessment Report found at <http://www.wicci.wisc.edu/>.

Workshop questions and a sampling of participant responses included:

### **What is your experience with extreme weather events? What do you perceive as gradual weather changes in the La Crosse area?**

- Flooding and tornado effects on human health and property. Low Mississippi River levels back up river traffic and decrease access for tourism. River flooding was not identified as an issue.

### **What are the impacts to the community and its residents from extreme weather events? Specify to whom and to what impacts are occurring and rank comments as H-M-L priority if applicable.**

- The most significant issue raised by participants was flooding.
- The number of floods that have occurred in the La Crosse area and the inability of the current storm water infrastructure to safely remove the amount of storm water produced as runoff from storms.
- Back up of sanitary sewer lines into basements.
- Private wells exceeding drinking water standards as a result of floods.
- Bluffs and hillside roads are subject to erosion and slope failure. Homes located on bluffs are at risk. Transport of sediments to the Mississippi River fills in habitat and impacts all river users.
- Dike and levee saturation and potential evacuation of residents
- Community budgets are stressed when damage occurs to public facilities and infrastructure. Repair and upgrades for adaptation can be expensive.
- Human health impacts from extreme weather events include injuries and visits to the emergency room; vector born disease from flood debris; extreme heat and cold events and higher asthma rates. Mold has been a concern for homes that experience repeated flooding.
- Ice storms have caused more damage than snowstorms along with their impact to human health.
- Straight line winds, tornadoes and hail cause significant property damage.

**What do you consider an accomplishment for the community and its citizens adapting to extreme weather events or gradual changes to climate?**

- Natural Step process through the joint Sustainable La Crosse Plan
- All Hazard Mitigation Plan and cooperate on training local governments.
- La Crosse County Emergency Management
- Several accomplishments were related to storm water planning and changes in infrastructure.
- The city Green Complete Streets ordinance and possibilities for green infrastructure benefitting health and storm water management.

**What are the near term actions and long-term strategies that the community should take to address the impacts identified? Think about cost effective, feasible and immediate (low-hanging fruit) actions or strategies, as well as those that need to be incorporated into planning and budget processes.**

- A new “model for addressing storm water” is needed since all storm water can’t be dealt with in the marsh land or on private or public land.
- Addressing areas of the city that have not historically experienced flooding but have flooded in recent years.
- Addressing hillside mudslides and road flooding and collapse
- Developing strategies to incorporate green infrastructure into local infrastructure projects (benefits both community health and the environment)
- Working through the city’s storm water utility to complete runoff and flood management practices.
- Get city council and county board members involved and educated and thinking in terms of regional planning and plans, (not just municipal).
- The County Emergency Management Plan and the All Hazards Mitigation Plan are updated regularly. The suggestion was made to incorporate climate adaptation strategies into both plans.
- Create an inter-disciplinary county and city government adaptation task force that “keeps the discussion open” and ensures a systems level (regional) perspective to adaptation planning rather than fragmented, isolated efforts with consideration of climate in all plans
- Reprioritize capital budget spending to needs vs. wants.
- Developing a public information plan to educate 115,000 citizens in the county (from all jurisdictions and government levels) about climate change to ensure as many people as possible develop an understanding that will lead to better decision-making.
- Mobilize health care facilities to educate their customer base and identify vulnerable populations.
- Update standards for lawns to allow longer grasses and plants (prairie planting). Note the value of native plants in landscaping.
- Regional plan for farmland preservation and for critical open space that supports climate adaptation needs.
- Consider requesting technical and financial assistance from federal government grants to address emerging infrastructure and other health based adaptation needs.

**What are the barriers to implementing the adaptation strategies you’ve identified including both the near-term actions and long-term strategies? Barriers might be financial, technical, lack of physical space, public will, etc.**

- Climate adaptation is “new” to the community. Concerns were expressed about the lack of community-wide understanding of climate change and its impacts and the knowledge to address impacts.
- In the absence of such understanding, the lack of political will may slow decision-making about what the top priorities are and allocation of funds in community budgets.
- Enhancing the multi-jurisdiction discussion on sustainability to include climate adaptation will help to remove public resistance to change.

**What is your vision of a community and its citizens that have adapted to our changing climate? Think outside the box of budget or existing policy constraints. (*Comments in future tense.*)**

- A variety of educational opportunities are offered through different forums put on by citizen and environmental groups, local government, institutions, businesses and public action groups. Views expressed by an educated citizenry are brought into the adaptive management process with respect to the future of the community.
- Climate adaptation will integrate seamlessly with the sustainability goals of the community. Like sustainability, climate adaptation requires a long-term perspective.

*NOTE: The workshop was coordinated by the city and county of La Crosse and Wisconsin Department of Natural Resources and Wisconsin Department of Health Services members of the WICCI Community Climate Adaptation Working Group. Lunch was sponsored by Clean Wisconsin, a 501(c)(3) non-profit organization.*

## Notes



## Science Services

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**Our Mission:** The Bureau of Science Services supports the Wisconsin Department of Natural Resources and its partners by:

- conducting applied research and acquiring original knowledge.
  - analyzing new information and emerging technologies.
  - synthesizing information for policy and management decisions.
  - applying the scientific method to the solution of environmental and natural resources problems.
  - providing science-based support services for management programs department-wide.
  - collaborating with local, state, regional, and federal agencies and academic institutions in Wisconsin and around the world.
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