Climate Adaptation in the Great Lakes Region

A Case Study of Traverse City, Michigan

Image Source: Vineyard Bay Estates

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Traverse City Department of Planning

Northwestern Michigan College

SEEDS

University of Michigan School of Natural Resources and Environment

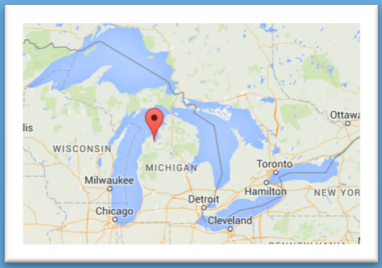
Fast Facts

Population: 15,018

The Traverse City Micropolitan Area consists of 4 counties with a total population of 143,372.

Primary industries:
Tourism and outdoor recreation attract many visitors and employ a large portion of residents. Casinos are popular; the largest area casino, Grand Traverse Resort and Casino, is the third largest employer in Grand Traverse County.

Agriculture (especially cherry and grape production) contributes as much as $97.9 million annually to the local economy. The Traverse City region is the largest producer of tart cherries in the U.S. and houses 80 percent of Michigan's sweet cherry orchards.



Resilience milestones

- *City of Traverse City Climate Action Plan*, 2011
- *A Master Plan for Grand Traverse County*, 2013
- *The Grand Vision*, 2009
- *New Designs for Growth Development Guidebook*
- Creation of Grand Traverse County Brownfield Redevelopment Authority
- The Boardman River Plan
- *E.coli* filtration systems in Grand Traverse Bay

Introduction

Traverse City, Michigan, is the largest city in the northern Michigan region and serves as the county seat of Grand Traverse County. While the city itself boasts a year-round population of 15,018 (as of the 2010 Census), its tourism and outdoor recreation industries attract more than 1.4 million visitors to the region annually—with the popular National Cherry Festival alone drawing approximately 500,000 travelers each year. In fact, Grand Traverse County is northern Michigan's most popular resort destination, and the population of Traverse City increases by 22 percent in July during the prime festival and vacationing season.

With highly engaged community residents, a geographically favorable location, richness of natural resources, and history of progressive innovation in land use planning, development, and public participation, Traverse City is primed to be a future leader in climate adaptation and municipal resilience efforts. Its strides in forming durable community partnerships and its emphasis on distributed, collaborative leadership make Traverse City a unique model for other Great Lakes communities.

Traverse City's most notable achievements in resilience planning include the creation of the City of Traverse City Climate Action Plan (in partnership with the nonprofit organization SEEDS), The Grand Vision (led by residents and born from a five-year collaborative engagement process), and the city's master plan.

Climate change and Traverse City

Per the Great Lakes Integrated Sciences and Assessments (GLISA) and National Climate Assessment Midwest and Regional Reports, temperature and precipitation variability in Traverse City could impact the tourism and agricultural sectors. Stronger storms, stormwater surges, and flooding are more likely to occur, and lake level variability may negatively affect Grand Traverse Bay and the Boardman River. See the following page for specific projections.

Major Partners

SEEDS and other local nonprofit organizations have been an instrumental force in enabling Traverse City to reach key resilience milestones. With their partnership, the climate action plan was completed in 2011. SEEDS also conducted a greenhouse gas inventory for the area in 2011.

Northwestern Michigan College and its Great Lakes Water Studies Institute offers academic and research expertise. It hosts a monthly Freshwater Roundtable where representatives of nongovernmental and other organizations assemble to discuss local issues including critical infrastructure redesign and replacement. Because local monitoring data on climate, invasives, and regional hydrology is still patchy, the college attempts to correct this with the creation of additional scientific stations and the involvement of partner organizations.

Grand Traverse County comprises 13 townships and two villages, seeking to maintain the high quality of life and tourism appeal of the area (including nature, recreation, and agriculture), while encouraging smart development.

The Grand Traverse Regional Land Conservancy is a 20-plus-year-old, local nonprofit whose mission is to "protect natural, scenic, and farm lands and advance stewardship, now and for future generations." The conservancy serves five counties and has preserved over 38,000 acres of land to date.

Adaptation in Traverse City: Key Lessons

1. Build Collaborative Partnerships

Traverse City has formed strong relationships with local nonprofits, academic institutions, and private sector businesses (refer to side boxes for a list of major partners). Additionally, as part of Grand Traverse County, Traverse City has maintained open dialogue with neighboring municipalities, working synergistically on regional initiatives. These strategies have enabled Traverse City to build an extensive and impressive network of partners, both within the city limits and beyond. These partners can and have provided everything from climate adaptation education, data collection and monitoring assistance and capacity-building to project management support and funding.

Takeaways for other cities

Reach out to area colleges, local nonprofit organizations, business leaders, and officials in adjacent municipalities. Projects undertaken collaboratively are often able to accomplish broader goals, secure more funding, receive more attention, and may garner local resident support more readily.

Traverse City Climate Projections

GLISA (the Great Lakes Integrated Sciences and Assessments) projects that the following climatic changes will occur in the Traverse City area by 2070 if present CO_2 emission levels continue:

- Five degrees Farenheit warmer on average
- Two inches more precipitation per year on average, with one more heavy precipitation event annually
- 35 fewer nights below freezing
- 20 more days above 90 degrees Farenheit, with five more days above 95 degrees Farenheit
- By 2099, 50 more frost-free days

More information on the GLISA and National Climate Assessment midwest and regional reports is available at *www.glisa.umich.edu/resources/nca*.

Additional Partners

- Conservation Resource Alliance
- The Watershed Center
- Traverse City Light & Power
- The Traverse City Chamber of Commerce
- Michigan Sea Grant
- Northwest Michigan Council of Governments
- Traverse Area Association of Realtors
- Citizens Climate Lobby

Past and Present Funding Strategies

The master plan was funded by the U.S. Department of Housing and Urban Development's Community Challenge Planning Grant program (through the Partnership for Sustainable Communities). Additional project funding has been provided in the past by Rotary Charities of Traverse City and Traverse City Light and Power.

Michigan Sea Grant has also funded hydrology research in Traverse City.

Future Funding Resources

- U.S. Environmental Protection Agency (EPA) stormwater grants
- NOAA's Office for Coastal Management offers grants
- The Michigan Department of Natural Resources offers grants for coastal managers to assist with invasive species control, dam removal and runoff management
- The EPA's Great Lakes Restoration Initiative also offers funding
- The Association of Marina Industries offers boating access grants for construction projects and Clean Vessel Act grants for marina sewage pumpout stations.

2. Analyze and Assess

Traverse City already has quite a comprehensive compilation of planning, development, and resilience materials (see climate action plan and master plan especially, as well as *New Designs for Smart Growth Development Guidebook*). In tandem with key partners, Traverse City has extensively inventoried their natural and human resources and has conducted several town hall-style collaborative meetings, which involved multiple stakeholders and broad-scale input. Next steps and best practices have, on the whole, largely been identified already. Similarly, Traverse City has also already created detailed maps of redevelopment, growth and investment areas. Thus, it would be fairly straightforward to build on these existing maps by overlaying climate vulnerability maps, thereby helping prioritize the most critical objectives. Redevelopment projects that increase climate resilience, while simultaneously reinforcing, repairing, or replacing existing infrastructure, have been the city officials' primary target.

Takeaways for other cities

Take every opportunity to gather key stakeholders and prioritize highest goals for the future. Evaluate infrastructure vulnerability frequently (for example, wastewater and stormwater management, energy efficiency upgrades, and other aspects). When upgrades need to occur, ensure that these will accommodate the projected variabilities in precipitation and temperature.

3. Identify Core Community Values to Bridge Differences

In the master plan, emphasis was placed on factors that unified Grand Traverse County. All communities prioritized high quality of life, proximity to unspoiled nature, preservation of local character and unique identity, and maintaining diversity among communities. Placemaking and walkability were also priorities. This sense of shared fate and recognition of common goals is a positive force for change and provides an ideal starting point for collaborative work. "People want to live in denser communities with better transit and more green space," explained Sarna Salzman, executive director of SEEDS, during an interview. "They want viewsheds." Traverse City has

Future Directions

Stormwater Utility

Traverse City has received a $2 million SAW Grant (Stormwater, Asset Management and Wastewater Grant) through the Michigan Department of Environmental Quality to help develop asset management plans and assist with the formation of a stormwater utility.

Stormwater utilities are fees separate from property taxes that residents pay based on the amount of runoff they generate. According to a SAW spokesperson, "This grant will allow the city to explore new funding sources for its stormwater infrastructure . . . providing a mechanism for the city to address its backlog of projects intended to reduce flooding risk, improve stormwater quality, and enhance public safety." The city will conduct GIS mapping of waste and stormwater drainage and collection systems, as well as examining maintenance and capital needs

Additional future directions

- Energy savings account (as identified in the climate action plan)
- Traverse City BumpOut Project (with matching grant of up to five thousand dollars)

employed considerable innovation in zoning, and ascribes to the notion that zoning ordinances are one of the best ways to incorporate resilience or sustainability initiatives into the city agenda, especially when these topics might otherwise be overlooked.

Takeaways for other cities

When people in cities focus on what unifies a regional vision, and they identify key interim goals toward achieving that vision, it may become easier to align priorities in a way that supports neighboring communities. Rather than having siloed efforts all aimed at achieving the same ends, residents can pool resources and implement a "divide and conquer" approach. Along the way, their successes can be recognized and celebrated.

4. Innovate, Take Risks, and Trailblaze

Traverse City has already been a pioneer in several environmental projects, including the removal of one dam from the Boardman River, with two more to follow soon. This is the largest dam removal project in Michigan history. In a similar vein, Traverse City was one of the first communities to engage in brownfield redevelopment. They have transformed the old Traverse City Ironworks and have created the Grand Traverse County Brownfield Redevelopment Authority. The planning commission has discussed incentivizing the Leadership in Energy & Environmental Design (LEED) building projects and retrofits. All of these endeavors strongly indicate that Traverse City has taken a proactive rather than reactive approach to building community resilience.

Takeaways for other cities

Having the resilience discussions early, before there is an acute need, can help with the allocation of monies and labor toward these projects before they become critical. Small investments now may prevent excessive cleanup and triage costs in the future. Additionally, getting climate readiness onto the collective "radar" can help ease the discomfort of some of

Challenges

Personnel

Russell Soyring, the city's planning director, mentioned in our interview that the city only had 2.5 dedicated staff members in the planning department. They are charged with all planning, zoning, and project review matters before they are able to work on other issues relating broadly to sustainability—which would encompass adaptation and resilience planning.

Funding

Past adaptation efforts have only been possible with the influx of grants and other awards. Oftentimes, there are no dedicated state or local funding sources for these types of projects.

Siloed Efforts

Many separate resilience initiatives and interested organizations exist, and there is much energy on this front, but efforts are still largely disconnected rather than unified.

Useful Links

- White House U.S. Resilience Climate Toolkit, compiled by U.S. Climate Resilience Task Force, contains visualization tools, case studies, videos and more: *http://toolkit.climate.gov*
- GLISA resources for marinas: *http://glisa.msu.edu/media/files/projectreports/14-728%20Increase%20Resilience%20at%20Marinas%20and%20Harbors.pdf*

these discussions, gently diffusing resistance to the topic and smoothing the transition to stronger adaptation efforts.

5. Be Action-Oriented and Responsive

After two severe, 100-year storm events occurred in the same month and led to flooding and *E.coli* issues in the bay, Traverse City installed special filtration systems and also designed "bay-friendly streets" that generate less stormwater, reduce snow-plowing needs and are narrower. In the interview, the city officials mentioned that stormwater management is also an opportunity to help complete street development projects, revitalize the economy, and work synergistically with other groups and city departments.

Takeaways for other cities

Climate disasters, while quite challenging on all levels, provide an opportunity to build in enhanced resilience measures during reconstruction. Similarly, as infrastructure ages and needs replacement, it, too, can be upgraded. For example, aging culverts can be replaced with wider ones that can better accommodate higher projected stormwater flows. The initial investment in technology and infrastructure upgrades may be higher, but if systems are in need of updating anyway, it makes sense to replace them with more resilient models.

6. Engage the Public: Residents Are a Resource

Traverse City has very engaged residents. The community boasts an unusually high percentage of well-educated and politically progressive residents, and there is no shortage of activism among community members. The resident-led regional land use, transportation, economic development, and environmental stewardship endeavor, called The Grand Vision, drew more than 15,000 participants—12,000 of whom voted on future visioning and ways to best prioritize the city's resources. Recognizing that sustainable growth is possible, and that development can enhance rather than hinder quality of life, The Grand Vision uses prospection (a type of environmental forecasting) to anticipate what community

visioning and ways to best prioritize the city's resources. Recognizing that sustainable growth is possible, and that development can enhance rather than hinder quality of life, The Grand Vision uses prospection (a type of environmental forecasting) to anticipate what community residents and officials together envision for 2060. Then, participatory backcasting is employed to determine which present projects and priorities will help realize those prospected goals.

Takeaways for other cities

Residents are a valuable asset and barometer for what is working and what is not. They can host a series of community meetings and scenario planning workshops and can seek community leaders; this is one way to provide additional manpower to city departments that may otherwise be understaffed or lack key resources. Residents can also survey the public to identify top local concerns, help envision the future, and inform the highest priority development or adaptation work. With more involvement in the planning process, participants are likely to be more invested in the outcome.

Concluding Thoughts from the Team

Our project team was quite impressed with Traverse City's distributed leadership and its valuation of ongoing dialog with the public. Traverse City is a true pioneer in the realm of collaboration and partnership. We were heartened by the decentralized, interconnected network of nonprofits, private sector and academic support spheres that Traverse City has carefully cultivated. We hope other Great Lakes municipalities might benefit from Traverse City's trailblazing efforts in this regard.

Suggested Focal Points

We identified several possible focus areas for Traverse City going forward. Since staffing constraints have proven to be a barrier for the city in the past, we recommend investigating the possibility of reconvening the city or county green teams. These teams could report to the planning commission and could be tasked with carrying out some of the more minor climate adaptation planning and coordination responsibilities (infrastructure and habitat monitoring, public education, researching adaptation grants, conducting grant writing, and other duties). Alternatively, Traverse City could capitalize on the already-invigorated residents and existing neighborhood associations and create a task force for adaptation. Another possible strategy would be to divide climate adaptation and funding outreach efforts among the next election of city council members. Similarly, newcomers to positions with the city could be entrusted with small but meaningful responsibilities that pertain to climate resilience; alternatively, a part-time or volunteer grants coordinator could be funded through a nonprofit or business sector city partner.

Because much of the city's needed research about highest priority development and infrastructure upgrades is already in place, and there is a strong vision for moving forward, Traverse City is well-equipped to take the next step toward adaptation and resilience work in earnest. It seems to merely be a matter of having enough sustained funding and an allocated labor pool to bring the city's clearly delineated goals to fruition.

Team's project description

We are a team of seven University of Michigan graduate students from the School of Natural Resources and Environment. Our master's project focuses on climate adaptation and resilience planning for Great Lakes municipalities. We work for NOAA's Great Lakes Regional Collaboration Team, in partnership with the Great Lakes and St. Lawrence Cities Initiative (GLSLCI). Our goal is to develop a useful online toolbox of climate adaptation resources, including online webinars, case studies, and infographics that can be used by communities in this region.

Our city case studies stem from municipal interviews conducted during the summer and fall of 2014. They aim to capture Great Lakes regional best practices in climate resilience and to assess common barriers that Great Lakes communities face in enhancing their climate change adaptation efforts. On June 23, 2014, we spoke with Traverse City Planning Director Russell Soyring, Mayor Michael Estes, former City Manager Jered Ottenwess, Executive Director of SEEDS Sarna Salzman, and Director of the Great Lakes Water Study Institute at Northwestern Michigan College, Hans van Sumeren. We are very grateful to them for sharing their time and insights with us.

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