



***Field Notes:***  
**Extreme Weather and Community Resilience**

## **ADAPTATION TO EXTREME WEATHER REQUIRES THE CAPACITY TO ACT**

Steven Steinhour    April 5, 2013

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### **Are Rural Towns and Counties Being Left Behind?**

During an August visit to my Ohio hometown, in a region that has experienced population ups and downs, I was struck by how many rural towns are in mid-stride. In passing small towns, flaking paint on houses and empty or demolished buildings in downtowns and an abandoned church spoke of years of economic downturn. Yet here and there were modern libraries, new high schools and well-tended parks that spoke of community efforts to revitalize their towns for the future.

I found myself wondering where economically-stressed rural small towns would find the resources to take on the unwelcome challenges from increasing extreme weather. How will they deal with more-severe heat waves, or with more-frequent and prolonged drought and wildfires? What steps can they take to protect against the increasing flooding from erratic, intense downpours and blizzards that used to be 100- or 500-year events? How badly will damage to agriculture from climate-energized heat, drought, or too much rain play out in the economies of these small towns?

### **A New Model for Proactive Local Actions to Minimize Weather Damage**

In the 1980s and '90s, the approach of governmental agencies handling natural emergencies, such as extreme weather, began to evolve from a nearly-exclusive focus on post-disaster recovery. The search for effective responses continues to this day. The [current emphasis](#) has expanded to helping local communities understand the risks and actions needed to minimize damage from worsening extreme weather. Public dollars do not only help communities to respond and recover. Today, communities can receive help for advance planning and certain costs of actions to avoid or minimize future damage from extreme weather.

This shift in policy centered on a formal planning process to analyze local natural hazards and develop strategies to counter risks they posed. The Federal Emergency Management Agency (FEMA) encourages states and communities to prepare "[Multi-Hazard Mitigation Plans](#)" that are to be updated every 3 years for states and 5 years for local jurisdictions. Periodic review of the plans keeps them current. The planning also requires communities to examine whether new hazards spawned by extreme weather—perhaps from climate disruption—require further actions to reduce or avoid damage and to save lives and economies.

**Building local resilience—the capacity to function, minimize and recover from adversity**—was encouraged for two reasons. First, truly major disasters may be regional and delay outside help to communities. Second, the risks of loss and damage from natural hazards are best evaluated and managed at the local level. Residents in communities understand their local vulnerabilities and needs, know what resources they can marshal, and must decide what actions they are prepared to take.

For example, flood plain designations with related zoning and building rules require specific local community or county implementing actions. Similarly, designation of wildfire management zones, decisions to reduce risks to public infrastructure (e.g., such as water and sewage, energy, or hospital facilities), or new hazard-resilient building standards are all issues that require local discussion, planning and actions.

This emphasis on local first response with available resources makes sense when considering the community-level scale of most natural hazards. But as the intensity and frequency of climate-influenced extreme weather increases, is “one size fits all” adequate? Do all local governments have equal capacity to adapt to the more-extreme weather that climate disruption energizes?

### **Metropolitan Centers and Adjacent Counties Ramping Up**

Metropolitan cities and adjacent counties across the country are proactively addressing the risks of climate-energized extreme weather. They have a number of advantages in anticipating and blunting the effects of prolonged or severe weather events. With a larger tax base, metro areas are more likely to have revenues to pay for adaptation. Less obviously, but perhaps more critically, they have depth in human resources. They have skilled staff and special-purpose agencies to deal with the core needs of emergency services, land-use and environmental planning, construction standards, and public infrastructure.

Many of these metro-related governments—such as [King County \(WA\)](#) and the [City of Chicago](#)—already have specific climate adaptation plans. They routinely upgrade these plans, just as they do their FEMA Multi-Hazard plans. Their trained staffs and agencies are available to conduct climate-related planning, public outreach, the writing of grant applications, and to regularly coordinate with state and federal weather and climate-related agencies. Significantly, their urban populations demand action on extreme weather adaptation and climate disruption. The capacity of metropolitan centers to adapt to emerging risks from extreme weather is generally the strongest and most resilient among U.S. communities

### **Farming and Resource-Based Small Towns and Counties Generally Have Least Capacity**

Using 2010 U.S. Census Bureau data, the [U.S. Department of Agriculture](#) estimated that in 2011 some 16 % of the U.S. population lived in non-metro small towns and counties distributed over 75 % of the land area. In 1990 those figures had been 21% of the population and 80% of the land area.

The numbers reflect a slow, decades-long decline in agriculture, mining and manufacturing in many rural communities. Of the 3,141 U.S. counties (and county equivalents), 2,053 are classified as rural counties – home to just over 51 million people. In the last 20 years, over half of these rural counties lost population. But not all did. Rural communities are surprisingly diverse in their economies, cultural lives, scenery and recreational offerings. The full package strongly influences where people, particularly retirees, choose to live.

In a small subset of over 350 amenity-rich rural counties population growth was actually higher than the national average. The contrast between declining population counties (e.g., agricultural, mining and manufacturing) and these few amenity-rich counties (e.g., scenic, mountainous and coastal) tells a story of great disparity. The punch line is that thousands of communities in over 1,000 rural counties are at risk from erosion of their capacity to protect against damage due to increasing extreme weather.

As a group, the at-risk rural counties that are losing population tend to have a limited revenue base and necessarily offer fewer services. Further, they tend to have older populations, dispersed residences creating transportation issues, fewer resident college graduates, lower per-capita incomes and greater health care challenges. Their governments typically struggle with strong, conflicting demands for public safety, transportation, medical infrastructure and health care services. These rural governments frequently have small generalist staffs that lack access to the training of their urban counterparts. According to [William L. Waugh, Jr.](#), an expert on disaster response, the overwhelming majority of fire departments in the U.S. are staffed by volunteers, only sometimes led by a few professional staff.

Increasing extreme weather and climate disruption pose newly-significant threats to life, property and local economies that small rural governments are ill-equipped to handle. Learning how to adapt protectively to extreme weather requires access to outside technical expertise and resources in such areas as economic development, building standards and land-use planning. Small communities need grant writers for applications to secure outside funds, people with skills in community education and outreach, and experienced people to maintain working contacts with state and federal agencies. Too many rural small-town governments simply lack access to those people, skills, and resources. Two examples: First, only [29% of rural counties](#) have at least 1 planner, versus 73% in metro-related counties. Second, only [28% of small rural towns](#) have a grant writer on staff, as opposed to 51% for metro governments. This lack of administrative capacity translates, over time, into increased community vulnerability to the complex and compound hazards of extreme weather.

### **State and Federal Governments are Reinforcing Selected Small-Community Capabilities**

In localizing disaster planning, federal and state programs have expanded to improve the management capacity of rural communities to do the planning for extreme weather. For example, FEMA and state governments now help fund costs of preparing the FEMA Multi-Hazard plans. It is increasingly common for rural towns and counties to adopt FEMA plans prepared under county supervision, frequently using consultants. The development of mutual assistance agreements between small towns and counties is also strengthening response capabilities.

FEMA, the U.S. Department of Agriculture (USDA), the U.S. National Drought Mitigation Center, and other state and federal agencies provide abundant “best practices” materials to educate residents and local governments about extreme weather risks and actions to reduce damage. Access to critical information—such as FEMA’s HAZUS weather-risk analysis program—is available to counties that have the planning capability to use it. Most of these programs deal with risk assessment, outcomes and protective actions. Significantly less attention goes to ensuring that local governments have the human resources needed to actually make use of the “best practices” information.

According to the trade journal “Agri-Pulse”, the USDA took a perceptive look at rural needs when it included funding for a new “[Regional Innovation Initiative](#)” in its FY 2011 budget. The Initiative recognized that, while economic improvements are crucial, small towns have social and cultural values that go beyond their economic roles. In describing the Initiative, Agriculture Secretary Vilsack proposed linking regional resources so that rural communities might prosper better than in their current isolation. Under the Initiative they could draw on the strengths and experience of other communities and agencies in their region. USDA’s strategies included business development, improving capital access and housing, expanding access to high-speed broadband, and information sharing among communities and various

levels of government. Of these strategies, the emphasis on active and cooperative information sharing may be especially useful to rural communities in their efforts to adapt to extreme weather.

### **Off-The-Shelf “Implementation” Information Targeting Rural Community Needs Can Be Very Effective**

A critical deficit in many small rural communities is skilled staff time to gather and analyze information and then adapt that for local circumstances. There is a practical step between the availability of information about how to prepare for extreme weather and being able to act. That often-overlooked step requires adoption of such tools as construction standards, zoning, land-use plans, the review of critical infrastructure locations, and formal ordinances that authorize a community to act. For political and practical reasons, many states treat land use as a local community issue. Yet many communities have had neither the local support, nor the need, to create local legal rules and plans for controlling land use. If responding to increasing extreme weather requires those tools, small communities may voluntarily choose to adopt them. Most likely to be adopted are “model text” or examples of concepts and language that other small, similarly situated communities have found appropriate and useful. Targeted information that is usable off-the-shelf and at the right scale could, in fact, be provided by another level of government or community in the region.

Sometimes the best information can be examples of well-drafted ordinances and plans from similar communities. Successful examples of practical steps to reduce flood damage, create wildfire interface zones, or deal with other local extreme weather hazards may be especially relevant if from within the region that shares the weather.

An added benefit could be illustrations of how other communities have successfully used weather risk reduction to make small rural towns more attractive for investment and new businesses. Staff time, skills and knowledge shared within the region can be a valuable supplement to governments in small rural communities.

It is possible that how the information is delivered may also be important. Regardless of the source, successful examples may be best received if presented by a voice likely to be respected and trusted locally. Inter-agency workshops, county staff, agricultural extension or even a regional college, may prove to be effective.

### **Conclusion**

On balance, the answer to my question as to whether small rural towns and counties are being left behind is “Yes”. It is clear that over 1,000 rural counties and many thousands of local communities lack the capabilities and tools they need to prepare for a future of increasing extreme weather threats to people, property and local economies. The good news is that, at minor cost, governments in the regions can share critical, off-the-shelf information about implementation that is tailored to the scale and structure of small rural governments.

Access to legal and administrative strategies needed to implement reductions in extreme weather risks could make a practical difference in the survival and recovery of small rural towns over time. This is not simply an issue facing the region around my Ohio hometown. The survival of small rural communities across the nation is critically linked to that uncertainty which all Americans face in our future of climate-influenced extreme weather.

Editorial thanks to Nancy Graalman



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Resource Renewal Institute  
187 East Blithedale Avenue  
Mill Valley, CA 94941  
415.928.3774  
[info@RRI.org](mailto:info@RRI.org)

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