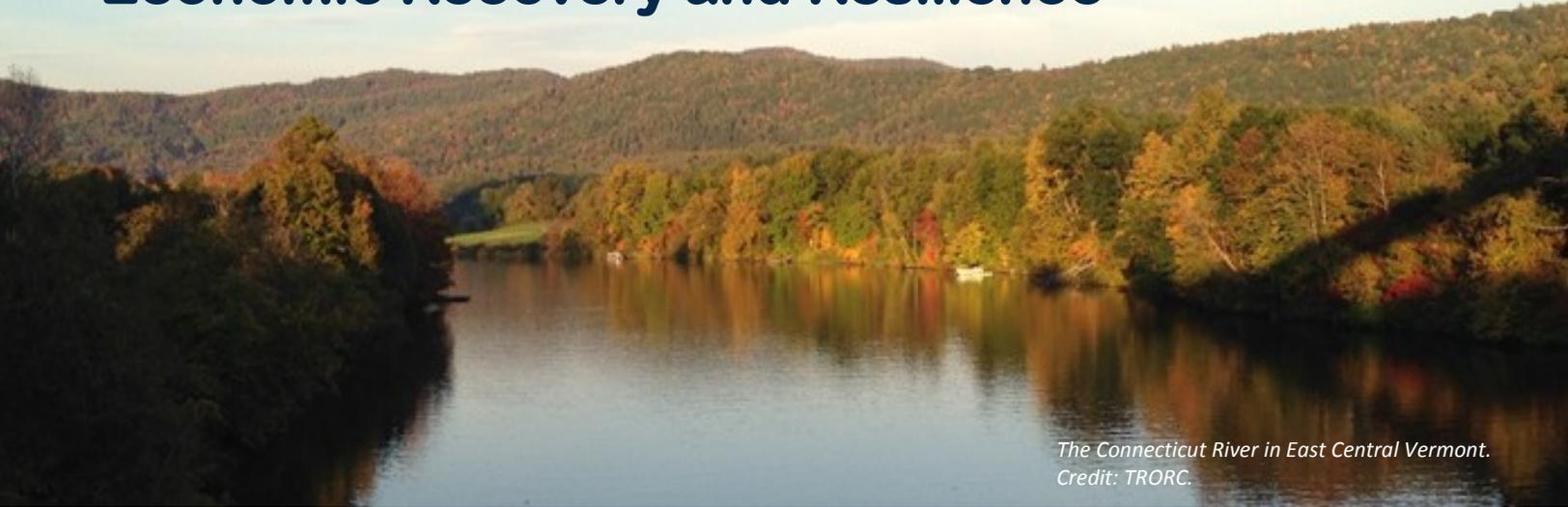


# Lessons from the Storm: Case Studies on Economic Recovery and Resilience



*The Connecticut River in East Central Vermont.  
Credit: TRORC.*

## East Central Vermont's Recovery after Tropical Storm Irene Paves the Way for Future Resilience

Hurricane Irene was downgraded to a tropical storm when it reached Vermont in August of 2011, but it is still remembered as one of the state's largest natural disasters in decades.<sup>2</sup> The storm deluged the region with up to ten inches of rainfall and the rising floodwaters ripped through local communities, tearing homes from their foundations, collapsing bridges and culverts, and burying roadways. After the storm cleared, more than 3,500 homes, 2,000 road segments, and 20,000 acres of farmland were damaged or destroyed statewide.<sup>3</sup> Adding to the problem, 13 communities throughout the state were left completely isolated after flooding blocked or washed away their access roads.<sup>4</sup>

East central Vermont's White River Valley, at the foot of the Green Mountains, is particularly vulnerable to swelling rivers and mountain runoff. Towns like Stockbridge, Rochester, and Pittsfield were inundated with flood waters during Irene, with some homes and roads completely wiped off the map.

Irene arrived just before Vermont's fall foliage and winter ski seasons, major economic drivers for the region and the state. The fall foliage season attracts an estimated 3.5 million visitors and \$460 million in revenues across Vermont.<sup>5</sup> The ski season

attracts an estimated 4.5 million visitors to the state and over \$700 million in direct spending, supporting 34,000 jobs in the leisure and hospitality industry.<sup>6</sup> The state's heavy reliance on the tourism and hospitality industries – which are dependent on a functioning transportation system, places to stay, and welcoming businesses along its trademark main streets – made it critical to recover quickly. However, in the aftermath of Irene, the top priority was not preparing for visitors but simply returning basic services and everyday necessities to residents and business owners. Kevin Geiger, senior planner with the Two Rivers-Ottawaquechee Regional Commission (TRORC) recalls, "No one could get from one side of the state to the other – business customers, the fuel trucks, commuters – nothing was moving. A half hour commute became a two hour commute."<sup>7</sup> For days after the storm, most of the region's economy came to a standstill. State and local leaders were in a race against time to repair critical infrastructure before temperatures dropped below freezing.

Given the magnitude of the disaster, state and local government capacities were quickly overwhelmed. Fortunately, many regional entities stepped in to fill the void, including TRORC. TRORC – one of 11 regional planning commissions (RPCs) in Vermont – is a political subdivision of the state formed through a compact of 30 municipalities located in the east central region. As such, its primary purposes are to provide technical services to town officials and conduct regional planning and development activities. However, as Irene showcased, TRORC also plays a critical role in emergency preparedness, planning, and recovery efforts.

This case study is part of a series produced by the NADO Research Foundation exploring how regional development organizations<sup>1</sup> have addressed the impacts of natural disasters, built resilience to future events, and increased long-term economic competitiveness and quality of life in their regions. This project is supported by the U.S. Economic Development Administration (EDA) under Agreement No. 01-79-14223. Any opinions, findings, or recommendations expressed here are those of the author and do not necessarily reflect the views of EDA or the NADO Research Foundation.



## The Immediate Response

Amidst the chaos brought by Irene, TRORC became a central figure in the coordination of recovery efforts in their region. The organization provided coordination among state, federal, and local leaders; assistance navigating the federal grants process; and on-the-ground support to local communities. Staff became fully dedicated to recovery. “We ceased all operations except for emergency response for six weeks after Irene,” says Geiger.<sup>8</sup> They became the go-to organization for help, and succeeded in supporting their partner communities by being physically present and eager to assist.

TRORC worked closely with the State of Vermont throughout the recovery process. In addition to providing support staff to the State Emergency Operations Center, they played a large role in the State’s effort to inventory impacted infrastructure. The Vermont Agency of Transportation (VTTrans) was under pressure to identify and repair damaged roads as quickly as possible in order to restore miles of impassable roads and reconnect the 13 communities that had been cut off from the state road system. Using a standardized, VTTrans-created assessment form, TRORC and other RPCs quickly deployed their staff to evaluate the condition of local transportation infrastructure and prioritize repairs. Using their GPS capabilities, TRORC was able to identify and map damaged roads, bridges, and culverts for both VTTrans and their own staff to use. As a result of this project, TRORC now maintains infrastructure maps that include observed conditions so that culverts needing repairs or reinforcements can be incorporated into mitigation plans and capital budgets, allowing them to be addressed before the next disaster strikes.

At the local level, TRORC assisted town administrators with permitting and helped them understand Federal Emergency Management Agency (FEMA) processes, such as the requirement that a property be ‘substantially damaged’ in order to receive buyout funding. When federal funds began flowing into the region, TRORC helped towns with the FEMA Public Assistance Grant Program, which funds activities like debris removal, and



Vermont’s major East-West highway, US 4, was damaged in multiple places between Rutland and Quechee during Tropical Storm Irene, cutting off cross-state traffic. Credit: TRORC.

## Key Facts

**Primary Funding:** The Economic Development Administration; HUD’s Community Development Block Grant - Disaster Recovery program; HUD’s Sustainable Communities Initiative Regional Planning Grant program; and additional funding from FEMA’s Emergency Management Performance Grant program and Hazard Mitigation Grant Program

**Project Description:** The Two Rivers-Ottawaquechee Regional Commission (TRORC) provides technical assistance to municipal state, and federal governments and local businesses including hazard mitigation planning and programs, business continuity planning, and grant management. TRORC is also working with partners on a new, statewide economic resilience program and a new sustainable development plan for the region.

**Key Outcomes:** Stronger relationships with state and local partners; better preparedness planning for future disasters and economic disruptions; a greater understanding of federal funding structures; a more resilient physical and social infrastructure system

**Partners:** State of Vermont, other Vermont Regional Planning Commissions, Local governments

**Website:** [www.TRORC.org](http://www.TRORC.org)

emergency repair of publicly-owned facilities. Some towns in the region had never adequately enforced their flood ordinance before Irene, so TRORC was also instrumental in helping them through that complex process.

## Flood Buyout Program

Following Irene, TRORC also implemented a buyout program that offered residents in flood-prone properties the option to relocate to higher ground that was out of harm’s way. FEMA, through Vermont’s Division of Emergency Management and Homeland Security, offered towns up to 75 percent of the costs of acquiring flood-damaged property through its Hazard Mitigation Grant Program (HMGP). According to Bob Ennis, grant administrator at TRORC, the buyout program is designed to remove structures from harm’s way and protect the floodplain by requiring that the acquired parcels remain as open space in perpetuity.

Additional funding for the buyout program was provided through the U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant Disaster Relief (CDBG-DR) program. After Irene, the Vermont Agency of Commerce and Community Development designated TRORC the administrator of the state’s CDBG-DR funds. A portion of these funds supplemented FEMA HMGP dollars to cover the remaining 25 percent of eligible properties’ buyout costs. The CDBG-DR funds were also used to purchase properties that did not meet FEMA’s damage requirements but were still at great risk for future flooding. The initial round of CDBG-DR funding for the buyout program included \$6 million for purchasing properties throughout the state and \$750,000 for site improvements and administration.<sup>9</sup>



*Blackies Deli in Bridgewater, Vermont was one of many local businesses that had significant damage after Hurricane Irene. The deli was demolished in 2014 and the site will remain open space. Credit: TRORC.*

In addition to administering the CDBG grant funds, TRORC assisted eligible towns with their HMGP applications, provided program support after grants were obtained, and worked with some towns to make improvements to the newly created open spaces within their communities, including adding park benches, fishing piers, and gardens with the help of CDBG funds. To date, more than 100 properties have been purchased statewide and another 40 are in the process of being acquired through the program.<sup>10</sup>

### **Helping Businesses Reduce Vulnerability**

TRORC has long recognized that small businesses are particularly vulnerable to natural disasters. An estimated 25 percent of businesses do not reopen following a major disaster, which leads to unemployment, reduced tax revenues, and other ripple effects throughout the regional economy.<sup>11</sup> In 2009, TRORC received a grant of \$235,000 from the U.S. Economic Development Administration (EDA) to establish a training program to work one-on-one with local businesses on continuity of operations planning.<sup>12</sup> Peter Gregory, executive director of TRORC, describes the goal of the program as “helping businesses understand where the basic pieces of their business infrastructure are and how they can lessen their vulnerability to disasters.”<sup>13</sup> The training program kicked off shortly before Irene, but after the storm, the need and interest was much greater.

Using a model adapted from Ready.gov and the Institute for Business and Home Safety, TRORC staff visited participating local businesses and walked them through disaster scenarios, potential responses, and steps they can take today to reduce the impact of a disaster on their business. Among the many topics covered are record keeping, stocking necessary supplies, purchasing a generator, designating a chain of command, having the appropriate insurance coverage, and off-site record storage. Between 2011 and 2012, TRORC and their partners trained 40

businesses. When Irene exposed a need for similar training for local governments, they were also able to adapt the program to help town officials think about how their offices can be better prepared to continue operating after a disaster.

### **Laying the Groundwork for Successful Recovery Before Disaster Strikes**

TRORC’s ability to play such a critical role in the recovery from Irene was the result of groundwork staff had laid long before Irene struck. “We had good relationships with our communities before Irene, and that was evident from the number of calls we received,” says Gregory. “We knew we were being looked at as someone who could help them because we had a strong track record of doing just that.”<sup>14</sup>

Having dealt with a number of smaller flood events, TRORC was already providing technical assistance and training services on disaster preparedness and recovery. In addition to their business continuity planning, TRORC was also working with the towns in its region to develop local hazard mitigation plans. FEMA-approved hazard mitigation plans are required for certain funding opportunities such as FEMA’s HMGP, but many small towns do not have the capacity to prepare these plans on their own. By contributing their technical expertise and data tools, TRORC staff can help local towns understand their risks and plan appropriately. For instance, they use GIS to identify flood risk by overlaying FEMA flood maps with their own maps of buildings and critical infrastructure. This analysis is used to initiate conversations with local officials about mitigating flood risk and developing stricter flood regulations. TRORC has also assessed wildfire risk, mapping variables such as fuel type, slope, distance to roads, distance to hydrants, and dryness to determine the number and location of homes at risk. The resulting maps are incorporated into mitigation plans and used to inform subdivision standards and new hydrant locations.

Another valuable service that TRORC provides to local officials is an Incident Command System training course. This program uses scenarios and reenactments to walk participants through various types of disasters - including floods, wildfires, hazardous material spills, and train derailments - and the appropriate responses. While these exercises are usually done around a conference room table, acting out disaster situations helps people understand their roles and how they can work together in more chaotic circumstances. The Incident Command System course is typically funded through grants such as FEMA’s Emergency Management Performance Grant (EMPG).

### **Building Resilience for the Future**

In addition to stressing the importance of preparedness, Irene also strengthened TRORC’s relationships with partners in local, state, and federal government, as well as with local residents. “The Irene recovery process tremendously broadened and deepened our relationships with the people living in our communities,” says Gregory.<sup>15</sup> It also built TRORC’s internal capacity on

disaster recovery and resilience issues and increased their understanding of state and federal disaster policies and programs.

Because of their widely-recognized expertise, TRORC now works closely with the state and federal governments to develop and manage innovative preparedness programs such as the Vermont Economic Resiliency Initiative (VERI). Funded by a \$500,000 grant from EDA, VERI is a partnership between the Vermont Department of Housing and Community Development, the Vermont Agencies of Natural Resources and Transportation, TRORC, and other regional commissions to evaluate and mitigate the impacts of natural disasters on the state's economy.<sup>16</sup>

Across the state, five communities were selected as pilot sites based on their level of disaster risk and their predominant economic sectors. In TRORC's region, Woodstock was selected for its high flood risk and its reliance on the tourism sector. Rigorous analysis was then conducted to measure economic activity - defined as incomes, expenditures, and the overall output of goods and services produced.

TRORC and other RPCs are working closely with the target communities to develop tailored action plans that will minimize future infrastructure damage, reduce the number of disaster-impacted businesses, decrease business recovery time, maintain supply chains, and enable residents to return to work quickly. To ensure a standardized approach to the analysis and local outreach, TRORC is overseeing the work of its fellow RPCs on the project. Once the plans are complete, the RPCs are expected to work with the target communities to allocate resources and identify grants to fund actions in the plan.

The relationships TRORC has built with stakeholders throughout its region have also contributed to a new, collaborative plan for sustainable development in the region entitled *East Central Vermont: What We Want*. This plan is unique because it is spearheaded by TRORC, but guided and fully supported by the East Central Vermont Sustainability Consortium, a group of over 30 organizations and towns from throughout the region.

In 2011, this consortium was awarded a \$540,000 HUD Sustainable Communities Regional Planning Grant to collaboratively develop *What We Want*, which addresses a number of issues including climate change, disaster mitigation, and economic resilience.<sup>16</sup> The final plan includes a number of actions that will mitigate future flood risk, such as upgrading infrastructure, elevating and relocating flood-prone properties, updating flood maps, and controlling development in floodplains. Since towns throughout the region have been closely involved in the planning process, many of these recommendations are already being incorporated into local comprehensive plans and implemented.

VERI and the new regional plan are just the latest examples of TRORC acting on the belief that recovery begins before the disaster strikes. It is important to be one step ahead and do everything possible to prepare residents and businesses through planning, training, regulations, and outreach. Armed with the lessons learned from Irene, TRORC is proactively working to prepare local communities and the regional economy for the next disaster and to make east central Vermont a more resilient, sustainable, and vibrant region.

**This report was researched and written by freelance writer Kimberly Colopinto with guidance from NADO staff.**

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<sup>1</sup>The term "regional development organization" refers to the multi-jurisdictional regional planning and development organizations that exist throughout the country and are known by various names in different states, including councils of government, regional councils, economic development districts, local development districts, and planning and development councils. These public-based entities play an invaluable role in fostering intergovernmental collaboration among federal, state, and local officials; deliver and manage federal and state programs; and work to solve area-wide issues and to address the fundamental building blocks required for competitive and sustainable communities and economies.

<sup>2</sup>Ring, Wilson, "Hurricane Irene 2 Years Later: Vermont Makes Second Anniversary of Flooding and Damage." *Huffington Post*. August 28, 2013. [http://www.huffingtonpost.com/2013/08/28/hurricane-irene-2-years-later\\_n\\_3827088.html](http://www.huffingtonpost.com/2013/08/28/hurricane-irene-2-years-later_n_3827088.html)

<sup>3</sup>Lessons Learned from Irene: Vermont RPCs Address Transportation System Recovery. NADO. July 2012. <http://www.nado.org/wp-content/uploads/2012/06/IreneVT.pdf>.

<sup>4</sup>Holcomb, Sam, Personal Interview, September 30, 2014.

<sup>5</sup>State of Vermont Website, "Gov. Shumlin, Tourism Officials and Industry Highlight Strong Summer/Fall Seasons." October 14, 2014. <http://governor.vermont.gov/newsroom-foilage-tourism-press-conference>.

<sup>6</sup>State of Vermont Website, "Gov. Shumlin, Tourism Officials and Industry Highlight Strong Summer/Fall Seasons." October 14, 2014. <http://governor.vermont.gov/newsroom-foilage-tourism-press-conference>.

<sup>7</sup>Geiger, Kevin, Personal interview, September 15, 2014.

<sup>8</sup>Geiger, Kevin, Personal Interview, September 5, 2014.

<sup>9</sup>Ennis, Bob, Personal Interview, September 18, 2014.

<sup>10</sup>Ennis, Bob, Personal Interview, September 18, 2014

<sup>11</sup>U.S. Small Business Administration Website. <http://www.sba.gov/content/disaster-planning>

<sup>12</sup>Two Rivers-Ottawaquechee Newsletter. February 2010. <http://www.trorc.org/wp/wp-content/uploads/2013/08/feb10nl.pdf>.

<sup>13</sup>Geiger, Kevin, Personal Interview, September 15, 2014.

<sup>14</sup>Gregory, Peter, Personal Interview, September 16, 2014.

<sup>15</sup>Gregory, Peter, Personal Interview, September 16, 2014.

<sup>16</sup>"Leahy, Sanders, Welch Announce \$2.5 Million in Grants to VEDA, State". *VTDigger*. April 26, 2013. <http://vtdigger.org/2013/04/26/leahy-sanders-welch-announce-2-5-million-in-grants-to-veda-state/>.

<sup>17</sup>HUD FY2011 Sustainable Communities Grantees. 2011. [http://portal.hud.gov/hudportal/documents/huddoc?id=FY2011RegGrantees\\_noDist.pdf](http://portal.hud.gov/hudportal/documents/huddoc?id=FY2011RegGrantees_noDist.pdf)