

ADAPTATION: Highways, bridges and sewers take an expensive hit from wild weather -- study *(Friday, May 4, 2012)*

Julia Pyper, E&E reporter

Roads and bridges are crumbling across the nation, and while Congress negotiates a new federal transportation and infrastructure bill, climate change is further damaging the systems that keep America moving.

Making climate adaptation a priority in city planning is a challenge, especially at a time of tight budgets, according to a [report](#) released this week by the Center for Clean Air Policy (CCAP) and the Environmental and Energy Study Institute (EESI).

First of all, damage to drab infrastructure is not the most high-profile climate-related issue.



Civilian contractors and the National Guard struggled to repair Hurricane Irene's massive damage to U.S. Highway 4 in Vermont last September. Photo courtesy of [Flickr](#).

"I call it 'an inconvenient sewer overflow,'" said Steve Winkelman, lead author and director of the CCAP transportation and adaptation program. "This is not about polar bears; it's about backed-up sewers in your streets or basements."

Though sometimes underemphasized, transportation infrastructure often takes the biggest hit in severe weather conditions. A record-breaking number of extreme

weather events last year alone caused more than \$50 billion in damage.

City planners don't always have access to the tools they need to integrate climate and weather research into their decisionmaking on the ground. The report recommends that the federal government provide updated flood maps, technical assistance and enhanced research on the cost and benefits of climate change preparedness to address these issues.

How do you define 'prepared'?

But city planners do have much of the relevant experience they need to prepare local transportation

infrastructure for an uncertain future, said Winkelman.

"You can start by asking cities, 'How well prepared are you for the current weather?'" he said. "Then you realize you already have city management organizations that can deal with these things. It's encouraging to me."

The new report is the product of a workshop held by the National Oceanic and Atmospheric Administration in November where 30 transportation planners and climate scientists met to discuss how surface transportation professionals need to respond to changing climate and extreme weather conditions, and how climate professionals can help meet those needs.

Another hurdle the working group highlighted is getting climate modeling to provide accurate predictions for individual cities, since transportation planning is often conducted at the local level.

According to Winkelman, coming up with localized climate models and precise data can be useful in city planning -- knowing exact precipitation levels in determining the appropriate height of a bridge, for instance. But it is not always necessary to know the figures down to a few decimal points to make the right adaptation decisions.

"The biggest challenge or uncertainty isn't necessarily evolving climate science," he said.

"Sometimes an engineer really needs to know what the best estimate is, but so often knowing the way things are trending and using common sense gets you a long way towards a solution."

Expensive 'wake-up call'

Existing regional climate models show that conditions in many parts of the United States are going to get hotter and wetter. By improving the communication between climate and weather scientists and city planners, making sustainability-oriented decisions will become much easier, according to the report.

The working group also identified that nonclimate factors -- such as infrastructure elevation, state of repair, soil saturation and tide levels -- are just as important for adapting transportation infrastructure as climate science information.

"What does adaption look like? To reduce emissions, it's a curly light bulb and a windmill," said Winkelman. "But for adaptation, it's a new culvert. ... Not very sexy. But it's effective."

In building better transportation infrastructure, engineers and policymakers can also learn from the weather patterns and extreme weather events, such as Tropical Storm Irene, that have already taken place in the last 15 years.

"For the most part, people running the road systems and the power ways are realizing that regardless of what people are saying about 2050, the trends of the last decade are a wake-up call, and we need to be paying more attention to [the changing climate]," Winkelman said.

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