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A new twist on an established quality concept

# Lead The Way

Use the U.S. Climate Resilience Toolkit to lead climate resilience projects by David M. Saunders

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s organizations face climate change hazards, quality professionals are uniquely qualified to lead climate resilience projects. Resilience is the capacity of a system to retain essential functions before, during and after a hazard.

The National Oceanic and Atmospheric Administration (NOAA) maintains a world-class website called the U.S. Climate Resilience Toolkit, which contains clever videos showing how functional capacity is lowered after a hazard strike.<sup>1</sup> If the hazard is severe, the organization may reach a tipping point and never recover. A supplier in a 500-year flood plain, for example, may be underwater after an extreme rain event, which is more common because the warmer atmosphere holds more water vapor (see Online Photo 1, which can be found on this column's webpage at [qualityprogress.com](http://qualityprogress.com)).

A visualization tool called the climate explorer provides historic temperature and precipitation observations as well as an interactive map of climate projections for any U.S. county. Quality professionals can identify key facilities and plug them into this database, which calculates the future probability of intense rainstorms, coastal flooding and extreme temperatures.<sup>2</sup> (See Online Photo 2.)

NOAA provides seamless links to other federal resources:

- The U.S. Army Corps of Engineers' sea level change curve calculator, which estimates rates of sea level change for any location along U.S. ocean coasts.<sup>3</sup> (See Online Photo 3.)
- Hazus, a nationally applicable standardized method developed by the Federal Emergency Management Agency (FEMA). This downloadable software package gives users access to FEMA's model for estimating potential losses from earthquakes, floods and hurricanes<sup>4</sup> (Online Photo 4).
- The U.S. Department of Transportation's vulnerability assessment scoring tool, which helps organizations implement an indicator-based vulnerability assessment of their transportation assets. Asset types covered in this tool include rails, ports, waterways, airports, heliports, oil and gas pipelines, bridges, roads and highways. The result is a set of vulnerability scores that can be used to rank assets by vulnerability<sup>5</sup> (Online Figure 1).



NOAA also has case studies that describe insights and actions:

■ After experiencing a tornado in 2010, Tropical Storm Irene in 2011 and the Halloween Nor'easter of 2011, residents of Bridgeport, CT, realized that they had better prepare for extreme events. City leaders inventoried their infrastructure, including vulnerabilities, so they were better prepared when Hurricane

Sandy arrived in 2012<sup>6</sup> (Online Photo 5).

- Using satellite data to document rates of land subsidence and sea level rise, as well as consulting model data to project future trends, highway engineers in Louisiana designed 17 miles of new roadway to replace the old LA-1. Louisiana's Department of Transportation and Development built the elevated roadway on 17-foot-tall pillars to make it more resilient to flooding, tropical storms and storm surge. Engineers expect the new structure to last for at least 75 years, serving (ironically) as one of the nation's main arteries for oil and gas<sup>7</sup> (Online Photo 6). Central to the toolkit is a five-step model readily recognizable to quality professionals (see Online Figure 2):

1. Explore hazards.
2. Assess vulnerability and risks.
3. Investigate options.
4. Prioritize and plan.
5. Take action.

As organizations tackle climate change, quality professionals can jump into the breach or stand on the sidelines. For those jumping in, bring the Climate Resilience Toolkit. **QP**

#### EDITOR'S NOTE

References listed in this column can be found on the column's webpage at [qualityprogress.com](http://qualityprogress.com).



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