Grumbles on water

By Benjamin H. Grumbles

Weather Water

Factoring climate change into long-term water planning

Climate change is water change.

That is a line I first heard many years ago, and it is proving true from coast to coast and ridge to reef. While politicians mud wrestle over whether and why, water managers must find practical ways to cope with changing conditions and increasing energy costs. Challenges here and now (and tomorrow) range from drought-ravaged crops, early snow melt, storm water runoff and sea level rise to saltwater intrusion, ocean acidification, temperature-induced fish kills and forest fires. These changes are happening; science researchers and policy makers need to pay attention and respond.

Below are some of the most obvious principles to keep in mind as carbon politics and global warming skirmishes churn the waters.

Weather and climate are not the same. According to NASA, the difference is a measure of time. Weather tells us about conditions over a short period of time, and climate explains how the atmosphere "behaves" over relatively long periods of time, typically 30 years. The smartest managers seize on weather patterns and trends beyond daily and seasonal conditions to position their communities and organizations the best they can with the resources they have.

Not all change is bad; climate adjustments can have winners as well as losers. In this case, though, many of the losses add up to significant societal costs. Vegetation, whether native or invasive, will travel and bloom in different places on different schedules. Saltwater intrusion threatens coastal cities and the aquifers on which they depend. Warmer waters and drier forests can mean greater risks to fish, wildlife and people, and higher costs to downstream water utilities. On the other hand (as economists are known to say), some chilly but warming climates might see reduced heating costs and longer beach seasons for revenue-generating tourists.

What you don't know can hurt you. Water managers, agricultural and energy producers, manufacturers—they are all watching water and virtual water more closely, which can make or break a business—whether the business is crops, widgets or copper mines. Research on impacts and trends to local watersheds, including the downscaling of information, is needed badly. The science of "ecosystem services" and the practice of water footprinting, which are gaining steam, may look like fads to some but are exactly what is needed.

Energy efficiency and water efficiency go hand in hand, as do their economic and environmental benefits. Climate skeptics should not have a problem with utilities, corporations and cities saving money and deferring, or even avoiding, more expensive infrastructure investments through water and energy conservation and efficiency. The U.S. Environmental Protection Agency's (EPA) Energy-Water Nexus Principles underscore the value of integrating drops and watts work.

An ounce of climate adaptation is worth a pound of disaster response. This is the core argument for smart growth and sustainable, resilient infrastructure. Building out of harm's way and siting beyond the fray translates into more affordable investments and insurable risks. Wetlands conservation and barrier island protection add important, life-saving layers of protection. The U.S. Federal Emergency Management Agency and Departments of Interior, Commerce and Agriculture, as well as the Army Corps of Engineers and EPA, all should look for ways to provide federal science and support for local- and state-based decisions that advance climate readiness.

Infrastructure resiliency needs focus and funding. Utilities and local land use managers must plan for changing conditions and manage new and emerging risks. Forecasting demand and aligning the right rates and bills to recover costs is an art. The Association of the Metropolitan Water Agencies and National Association of Clean Water Agencies (NACWA) teamed up on a 2009 report worth reading—with a price tag worth a double take: "Confronting Climate Change: An Early Assessment of Water and Wastewater Adaptation Costs" lays out the range of investments needed and concludes that between $448 billion and $944 billion are needed for infrastructure adjustments, not including emergency response and recovery and new regulatory controls.

Green infrastructure and resource recovery will help communities adapt. There are many shades of green and definitions of recovery. Each area needs to consider what works best and how innovative infrastructure and resource management strategies, from bioswales to biogas recovery, can make the most sense. The U.S. Water Alliance has described the barriers and gateways to green infrastructure; and other organizations, from the White House Council on Environmental Quality to American Rivers to the Water Environment Federation to NACWA, are doing great work to advance the greening process and the paradigm shift from waste discharger to energy generator.

EPA summarizes its overall approach in its 2012 "National Water Program Strategy: Response to Climate Change" (http://water.epa.gov/scitech/climatechange), which is worth a good look. It provides a good update of the agency's original Climate and Water strategy released in 2008.

The bottom line is that every community and utility should consider weather and climate in its water planning and management and adapt as appropriate. Perth, Australia, is one of my favorite examples. It has launched a program to cope with serious drought and water supply challenges: "Water forever, whatever the weather." I am not sure I like the catchy slogan, but I appreciate its focus on reusing wastewater, recharging aquifers, reclaiming ocean water through desalination and reducing water waste with efficiency—all in an effort to adapt, survive and become "drought proof" by 2022. WWD

Benjamin H. Grumbles is president of the U.S. Water Alliance. Views expressed in this column may not necessarily reflect those of the Alliance or its members. Grumbles can be reached at bhgrumbles@gmail.com.

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