

American Planning Association

Planning and Drought

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NIDIS Drought Webinar

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Background: APA's National Centers for Planning

- <http://www.planning.org/nationalcenters/>
- Green Communities
- Planning and Public Health
- Hazards Planning
- All are part of APA Research but involve collaboration with Outreach, Policy, and Education functions of APA—
And with each other!



Background: APA's Hazards Planning Research Center

Our mission is to support the development of safe, resilient communities that can both minimize their losses from disasters and quickly and efficiently marshal their resources afterwards to recover in ways that leave them stronger and better prepared than ever before.

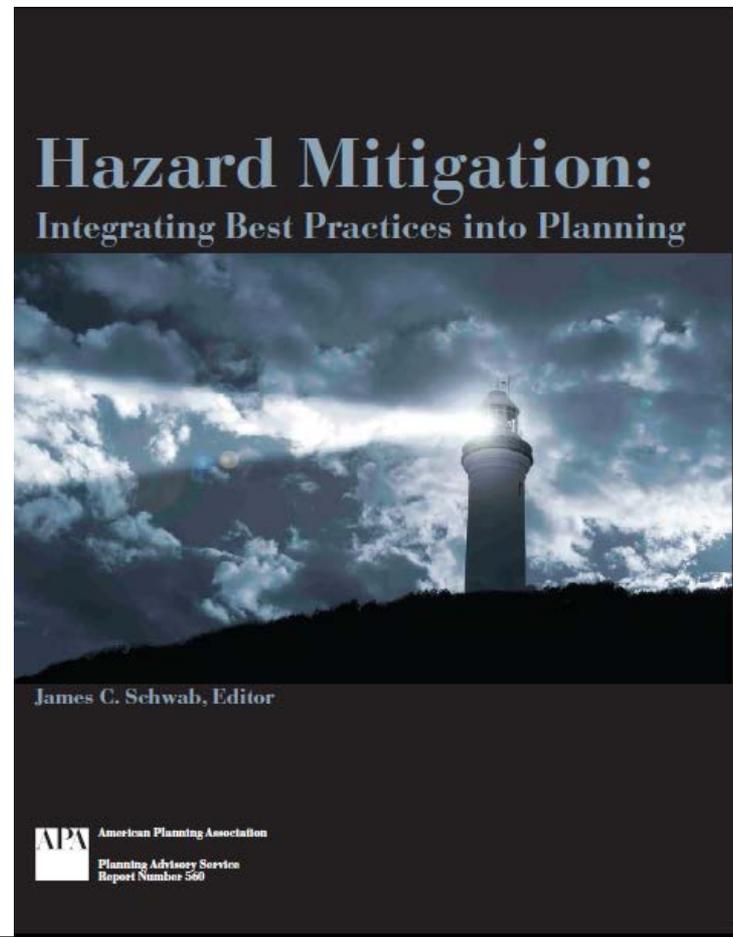


APA Hazards: Prior Projects

- *Planning for Post-Disaster Recovery and Reconstruction* (PAS 483/484), 1998
- *Firewise Communities Training Assessment*, 2003
- *Planning for a Disaster-Resistant Community*, 2003
- *Planning for Wildfires* (PAS 529/530), 2005
- *Landslide Hazards and Planning* (PAS 533/534), 2005
- Various post-Katrina projects (2005-2007)
- *Hazard Mitigation: Integrating Best Practices into Planning* (PAS 560), 2010
- Sandy recovery workshops, 2013
- *Planning and Drought* (PAS 574), 2013
- *Planning for Post-Disaster Recovery: Next Generation* (PAS 576), 2014
- *Coastal Zone Management* (forthcoming), 2014

Integrated Hazards Planning

- Focuses on all-hazards approach
- Integrating hazard mitigation into all aspects of planning process:
 - Visioning and goal setting
 - Plan making (incl. comp plan)
 - Implementation tools
 - Development work (site plans, redevelopment, etc.)
 - Capital improvements



Why Include Drought?

- Significant economic and environmental impacts
- Water is a huge planning issue--*especially* when it's lacking
- Integrated hazards approach is not complete without it
- Too long neglected in overall hazards profile
- Expertise increasingly available to do proper risk assessments
- Increased impacts from climate change
- Opportunity to forge new partnerships
- Planning can affect outcomes

APA Connections on Drought

- *Drought-Ready Communities* set stage for effective planning involvement on wider scale
- Evolving partnership between
 APA and National Drought
 Mitigation Center
- Engagement with NIDIS

Drought-Ready Communities

A Guide to Community Drought Preparedness



NIDIS Conference in Chicago

- *Engaging Preparedness Communities* mini-conference hosted in APA's building in Chicago, June 2011
- Presentation on applying APA's integrated hazards planning approach to drought provided template for moving forward
- APA & NDMC agreed on PAS Report
 - Symposium held July 2012 (see <http://www.planning.org/research/drought/symposium/>)

Planning and Drought



James C. Schwab, ACP, Editor

Drought: What's Different?

- Slow onset
 - By the time you know drought exists, it may be too late to react
 - When do you declare an emergency?
- Lack of clear temporal boundaries (onset and conclusion)
- Length of duration (months or years, not days)
- Defined by significant departure from norm, not simple aridity

Impacts of drought

First chapter of PAS Report focused on defining the problem:

- Water impacts
- Public health impacts
- Environmental impacts
- Built environment impacts
- Secondary hazards related to drought
- Economic impacts



Water Impacts

- Decreased surface and groundwater supplies
- Increased concentration of pollutants
- Reduced navigation potential
- Increased wildfire risk with reduced water supplies for firefighting
- Reduced drinking water quality
- Increased saltwater intrusion in tidal areas
- Land subsidence due to groundwater collapse

Public Health Impacts

- Increased stress and mental health problems, e.g., depression
- Reduced sanitation and hygiene due to declining water supplies
- Reduced water and air quality affect respiratory and gastronomic health
- Potential impacts on nutrition due to impact on food production
- Reduced water-related recreation opportunities

Environmental Impacts

- Loss or destruction of fish & wildlife habitat
- Lack of food & water for wild animals
- Increased disease in wild animals
- Increased competition & vulnerability to predation
- Conflict with humans from wildlife migration & concentration
- Increased stress on endangered species
- Loss of wetlands & estuaries
- More intense wildfires
- Wind & water erosion of soils/desertification
- Greater susceptibility to invasive species & pests
- Decreased air quality due to dust & particulates
- Saltwater intrusion in tidal areas
- Loss of biodiversity
- Decreased landscape quality in urban areas from vegetation loss

Built Environment Impacts

- Foundation cracking due to expansive soils
- Damage to municipal water supply & delivery
- Damage to wastewater treatment facilities from reduced flow
- Pavement cracks and expansion on transportation routes
- Reduced water flow for hydropower production
- Maintenance problems for public parks and landscaping/urban forest

Secondary Hazards Impacts

- Heightened wildfire risks
 - Texas in 2011 (near Austin)
 - Colorado in 2012 (Waldo Canyon near Colorado Springs)
- Subsidence and sinkholes from low groundwater levels
- Soil erosion from ground hardening followed by rain

Economic Impacts

- Impacts on electricity production
 - May vary considerably among regions depending on nature of power sources
- Reduced agricultural production
- Reduced activity for green industry (tree nurseries, landscapers, etc.)
- Lost revenue for tourism and recreation
- Secondary impacts in loss of retail or higher prices for food products
- Increased costs for water

Poll Question #1

Based on your job responsibilities, at what level(s) do you see the greatest need for drought planning assistance?

- A. Local
- B. State
- C. Federal
- D. Regional
- E. Water Basin
- F. Tribal
- G. Individual
- H. All Levels
- I. Other (please specify)

Challenges for Planners in Addressing Drought

- Lot size: Influencing water consumption (to match supply) by reducing water demand for lawn watering
- Building codes: Requiring installation of more and better water-conserving devices in new construction
- Reducing water consumption through landscaping codes (e.g., xeriscaping)



Knowledge Base on Drought

- Drought an irregular and recurring feature of climate
- Not restricted to arid climates; can occur anywhere, anytime as prolonged departure from norm
- Nature of vulnerability varies greatly by both region and season
- Climate change may alter drought patterns through temperature variations and their impact on precipitation
- Ocean current shifts also influence drought patterns
- Overall, drought results from complex, interconnected global systems

Tools & Resources

- National Integrated Drought Information System (NIDIS) established by Congress in 2006, maintains drought.gov portal
 - Building national Drought Early Warning System (DEWS)
 - Integrates drought efforts at all levels
- U.S. Drought Monitor (droughtmonitor.unl.edu)
- Drought Risk Atlas (droughtatlas.unl.edu)
- Drought Management Database (drought.unl.edu/droughtmanagement.aspx)
- Drought Impact Reporter (droughtreporter.unl.edu)

Land-use Planning for Drought

- Water planners and land-use planners must work collaboratively to succeed
- Water conservation is a critical element of success
- Research in Portland, OR, and Utah shows similar conclusions and critical ties to planning:
 - One acre of single-family development used almost as much water as the same acre of multifamily
 - Increased lot size results in increased consumption
- Build in water efficiency from beginning of planning process to the end

Cross-jurisdictional Partnerships

- Most water management is already regional
- Drought is *always* a regional phenomenon
- Merging land-use and water resource planning at regional level is the new “gold standard” for addressing drought and climate change effectively
- Share information on policies and planning processes
- Build drought and climate action planning teams
- Brief elected officials and decision makers
- Make community involvement a cornerstone

Communicating about Drought

- Strong culture of support depends on awareness and involvement
- Establish regional interagency communications: again the “gold standard”
- Electronic messaging is part of the new reality



Case Studies in PAS Report

- Civano (Tucson, AZ, master planned community)
- Hualapai Tribe (Arizona)
- Athens-Clarke County (Georgia)
- Albuquerque (New Mexico)
- Tampa Bay Water (Florida)
- Interstate Commission on the Potomac River Basin
- State of Colorado
- Murray-Darling Basin (Australia)

Athens-Clarke County

- 2002 drought a major factor in triggering restrictions and public reactions based on lack of input
- Need for long-term drought & water plan became clear
- New Water Conservation Committee unveils 3 conservation ordinances from 2004 to 2008—each increasingly strict but building momentum toward conservation rate structure
- Bottom line: Shift from reactive measures to long-term strategy



Tampa Bay Water

- 1972 Florida Water Resources Act created 5 water management districts including SW Florida WMD
- 1974 law enabled regional water planning, resulting in what became Tampa Bay Water in 1998
- New Water Source Initiative in 1993 resulted in:
 - Enhanced surface water supplies
 - New large treatment plant
 - 15.5 billion gallon storage reservoir
 - Nation's 3rd largest desalination plant (2007)

Tampa Bay Water

- 2001 drought leads to Water Supply Management Plan
- Lessons learned:
 - Diversifying water supply
 - Reducing groundwater withdrawals
 - Coordination among regional agencies
- Also—lesson in long-term evolution of approach

Figure 4.2. The Tampa Bay Seawater Desalination Plant provides up to 25 million gallons of drinking water per day—in important drought-proof, alternative water supply for the region.

Tampa Bay Water



Interstate Commission on Potomac River Basin

- ICPRB created by Congress in 1940 to address pollution; quantity issues added in 1970
- Droughts, population growth, more intakes began to tax system by 1960s
- Low Flow Allocation Agreement agreed in 1978
- 8 more agreements in 1982 including joint storage
- 1999 drought produced different responses, highlighting coordination problems; led to common triggers among jurisdictions
- ICPRB's annual drought preparedness exercise
- Bottom line: Evolution of coordinated responses in large metro area

State of Colorado

- Covered in presentation by Taryn Finnessey of Colorado Water Conservation Board December 4
- Archived at <http://drought.unl.edu/AboutUs/CurrentProjects/EngagingPreparednessCommunities.aspx>
- Current plan establishes Colorado as a leader in state drought planning

Conclusions

Identified best practices overall in report:

- Establish diverse committee or task force
- Community education on drought
- Establish regulations for water conservation
- Establish incentives for water conservation
- Develop a plan
- Conduct drought exercises and training
- Apply integrated approach to water management
- Share data and tools with stakeholders
- Diversify the water supply
- Continuous data collection, forecasting & monitoring

Looking Ahead

- Climate change will have real impacts on water supplies and weather patterns over time
- Not preparing will create a serious disadvantage
- *Both* increased drought and severe flooding are part of the paradox of increased extreme events



Contact Information

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 - www.planning.org/nationalcenters/hazards
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Poll Question #2

Given available resources, drought planning can either stand alone or be integrated into other existing or future planned efforts. Of the following choices and the situation you are most familiar with, will drought planning best be accomplished as:

- A. A stand-alone drought planning process?
- B. Part of a climate change action planning process?
- C. Part of a water planning process?
- D. Part of an overall natural hazard planning process?
- E. Other? (please specify)