New Developments in State Drought Planning




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State Drought Planning Progress

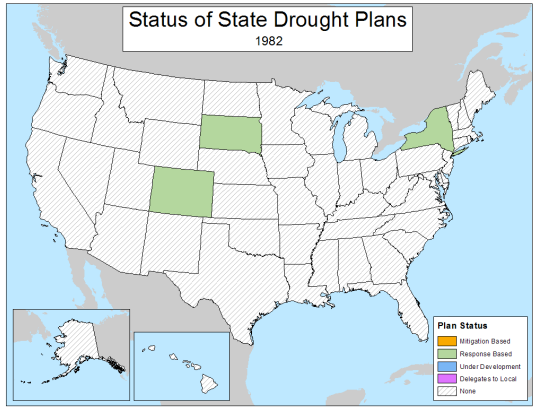
1982: ***3*** state plans…all response oriented

1990: ***24*** state ***plans…all are still response*** oriented

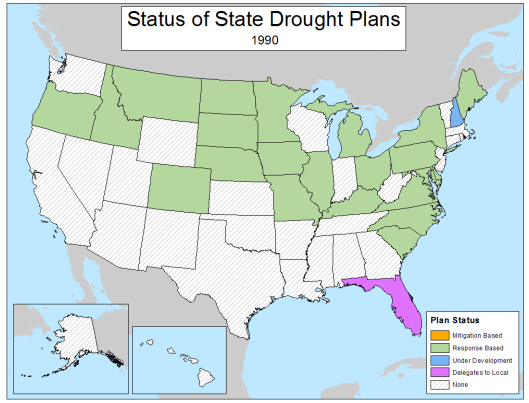
1995: NDMC formed; ***Montana first mitigation plan***

2006: NIDIS formed; ***10 states w/ mitigation plans***

2019: ***46*** state plans; ***16 states w/ mitigation plans***



1982



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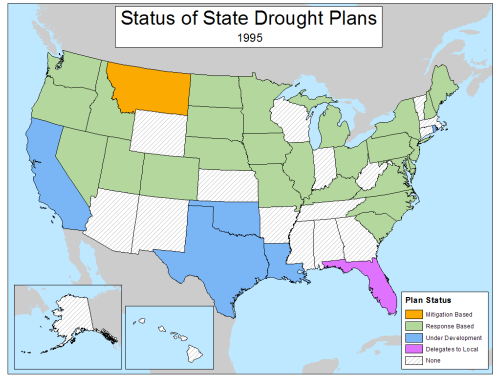
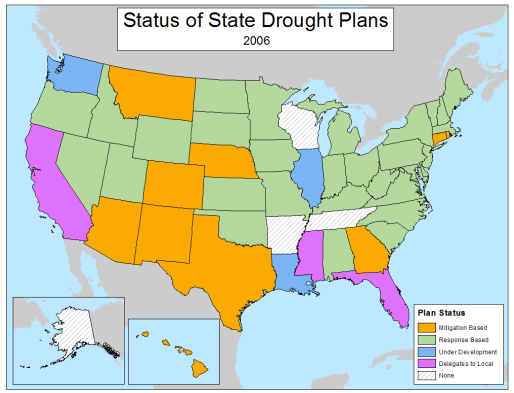
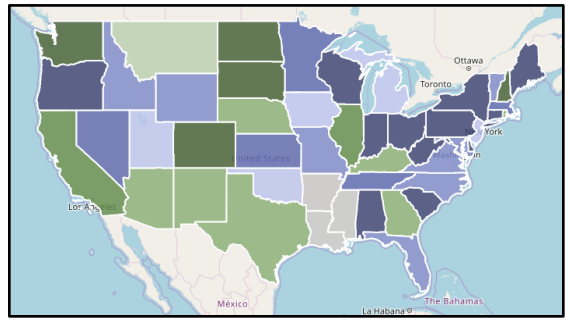


1995

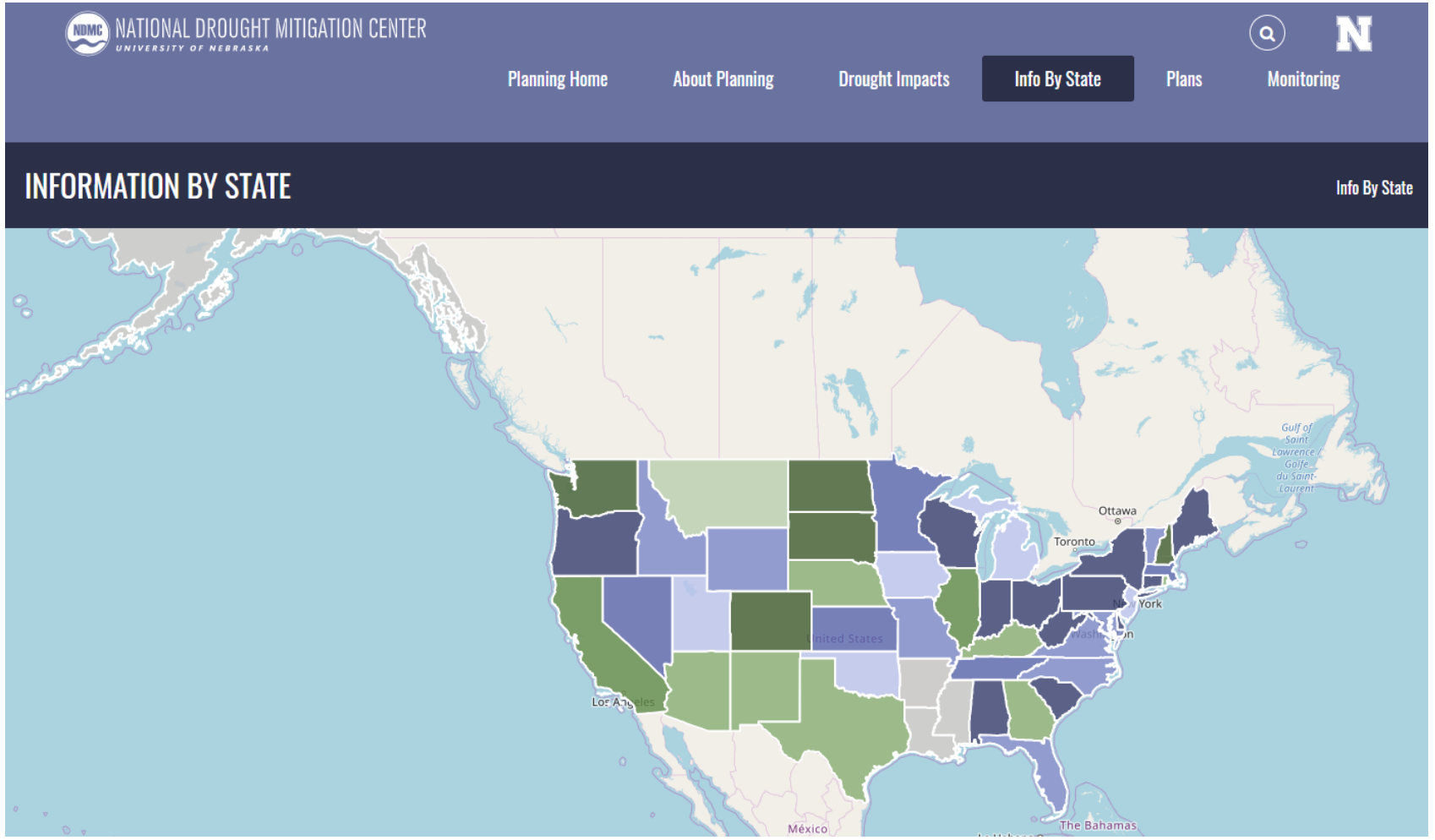


2006



2019

Developing a range of plans that could include drought



Display

Drought Plans

- Drought Plans
- Hazard Plans
- Water Plans
- Climate Plans

1-5 6-10 11-20 20+

Mitigation: plan identifies actions to reduce impacts of future droughts

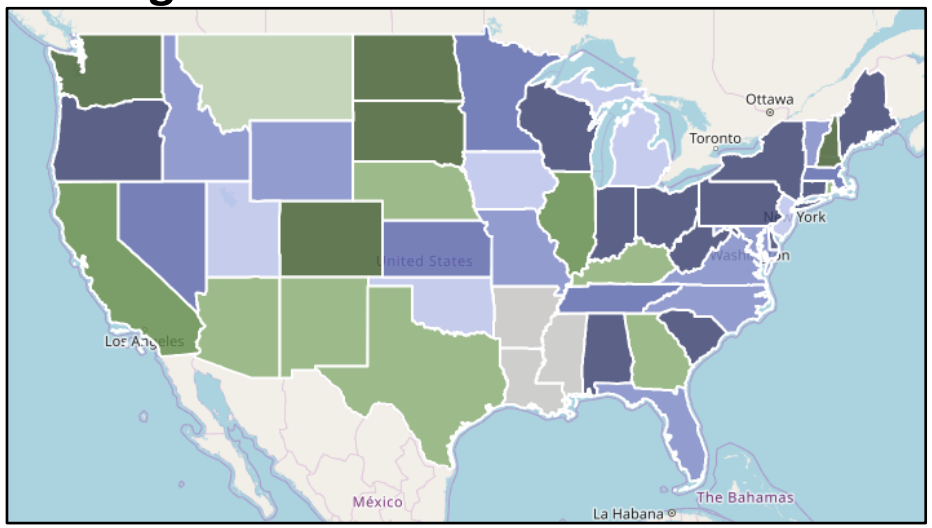
Response: plan identifies actions to take during a drought

No Plan on File

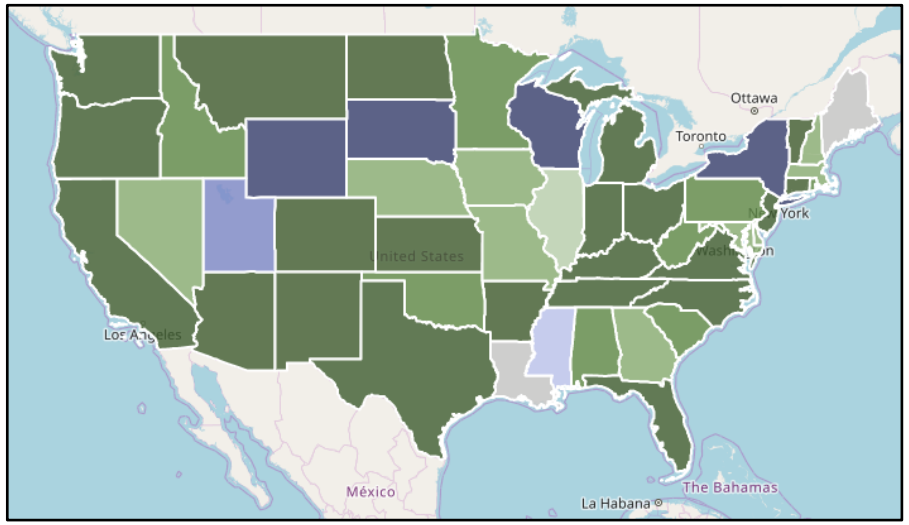
https://drought.unl.edu/droughtplanning/InfobyState.aspx

Variety of Ways to Address Drought

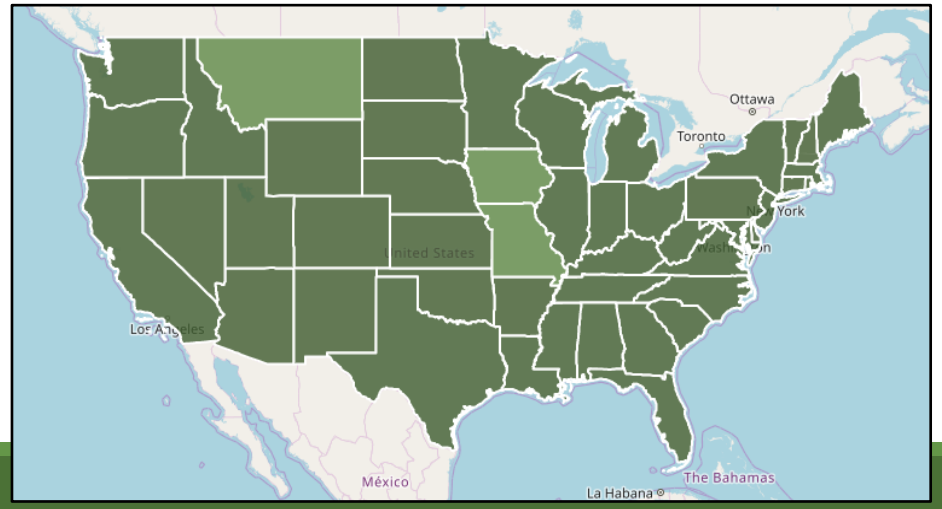
State Drought Plans



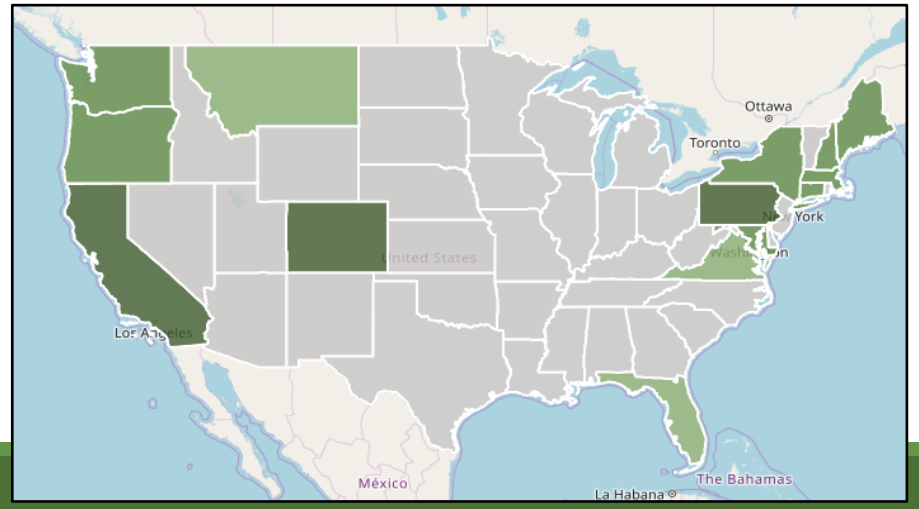
State Water Plans



State Hazard Mitigation Plans



State Climate Plans

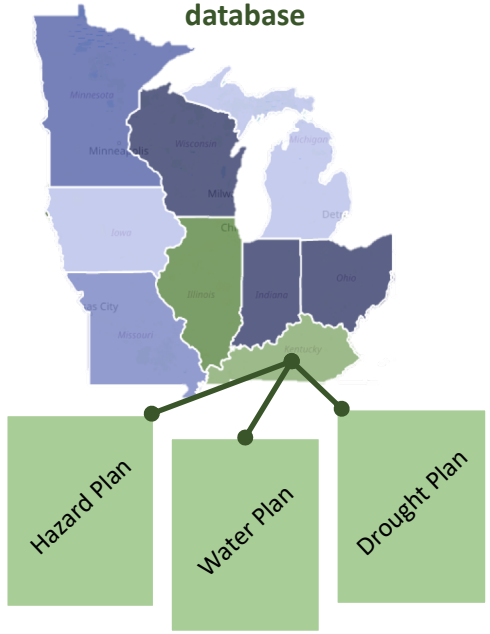


Drought Mitigation Research in the Midwest

Assessing drought mitigation actions included in state hazard mitigation, water, and drought plans

1

Gather state plans from NDMC database



2

Find, code, and, categorize actions

Sectors:

- Farming
- Livestock Production
- Water Supply & Quality
- Recreation/Tourism
- Fire
- Plants & Wildlife
- Society & Public Health

3

Analyze actions within the database

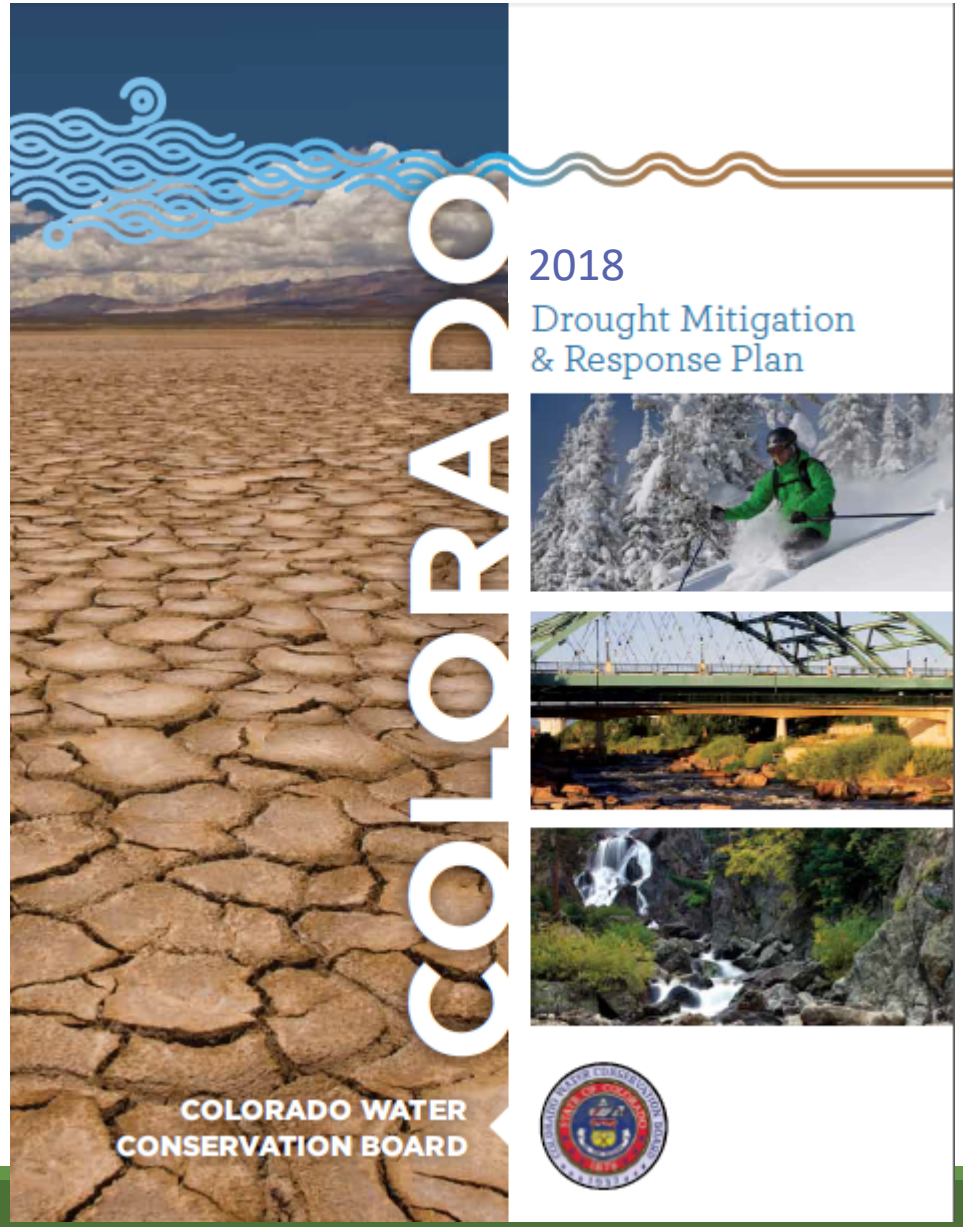
Research Questions:

What drought management actions are being implemented or proposed at the state level in the Midwest DEWS region?	What are similarities and differences between actions implemented via drought, water and hazard mitigation plans?

Example spreadsheet:

State	Plan Type	Year	Sector	Subsector	Drought Mitigation Action Text	Section/Page/Figure	Responsible Party	Time (past, current, future)
Kentucky	Drought	2008	Water Supply and Quality	Water Conservation	Take a leadership role by implementing water conservation efforts at state facilities.	Page 31	Kentucky Drought Mitigation Team	Current

Linking State Plans: Colorado



Timeline:

- First developed in 1981
- Revised: 1986, 1990, 2001, 2002, 2007, 2010, 2013, 2018 (more focus on mitigation)

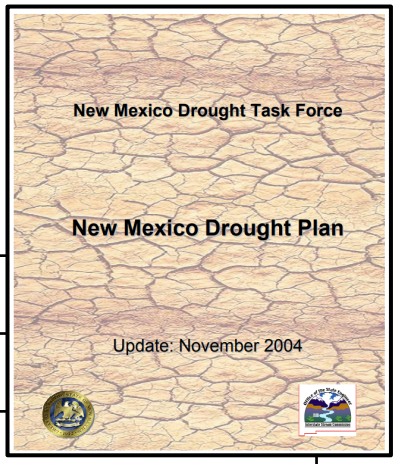
Prepared as Drought Annex to:

Natural Hazard Mitigation Plan and
State Emergency Operations Plan

Complies with:

Disaster Mitigation Act of 2000
Emergency Management Accreditation Program
National Response Framework
National Incident Management System

Using Lessons Learned in Planning: New Mexico



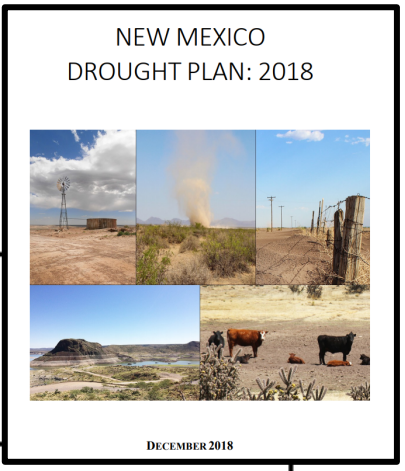
Several drought stages that would trigger meetings and actions in/out of drought

PDSI and SPI are the primary indicators to trigger action

Stages	Indicators	
Normal	Short-term	**PDSI** is greater than -0.9. Six month **SPI** is positive
	Long-term	Twelve to 60 month **SPI** shows no values less than -0.25.
Advisory	Short-term	**PDSI** is between -1.0 and -1.9 for 1 month or a four-week running average but period of less than -1.0 does not exceed 1 months. Six month **SPI** less than -0.25.
	Long-term	Twelve to 60-month **SPI** lowest value is between -0.25 and -0.50
Alert	Short-term	**PDSI** is between -1.0 and -1.9 for greater than 2 months or between -2.0 and -2.9 for 1 month. Six month **SPI** less than -0.50
	Long-term	Twelve to 60-month **SPI** shows lowest value between -0.50 and -0.80
Warning	Short-term	**PDSI** is between -1.0 and -1.9 for 9 months or more, -2.0 to -2.9 for at least 2 months, or -3.0 or less for at least 1 month. Six month **SPI** less than -1.25
	Long-term	Twelve to 60-month **SPI** shows lowest value between -0.80. and -1.25
Emergency	Short-term	**PDSI** is between -2.0 to -2.9 for 9 months or more, -3.0 to -3.9 for at least 2 months, or -4.0 or less for at least 1 month. Six month **SPI** less than -1.70
	Long-term	Twelve to 60-month **SPI** shows lowest value less than -1.25

Management found to be unrealistic during drought conditions

2018 New Mexico State Plan Revision



Reduced the number of drought stages (and meetings)

Decided to use the US Drought Monitor as primary trigger

More realistic based on their experiences

Drought Stage	Trigger	Drought Task Force Meeting Schedule	Responses
Watch		DTF convenes yearly	• DMWG meets monthly • Work groups meet as directed by the DTF to provide updates to SDC • SDC provides annual updates to the DTF, and as requested • DTF provides annual updates to the Governor, and as requested

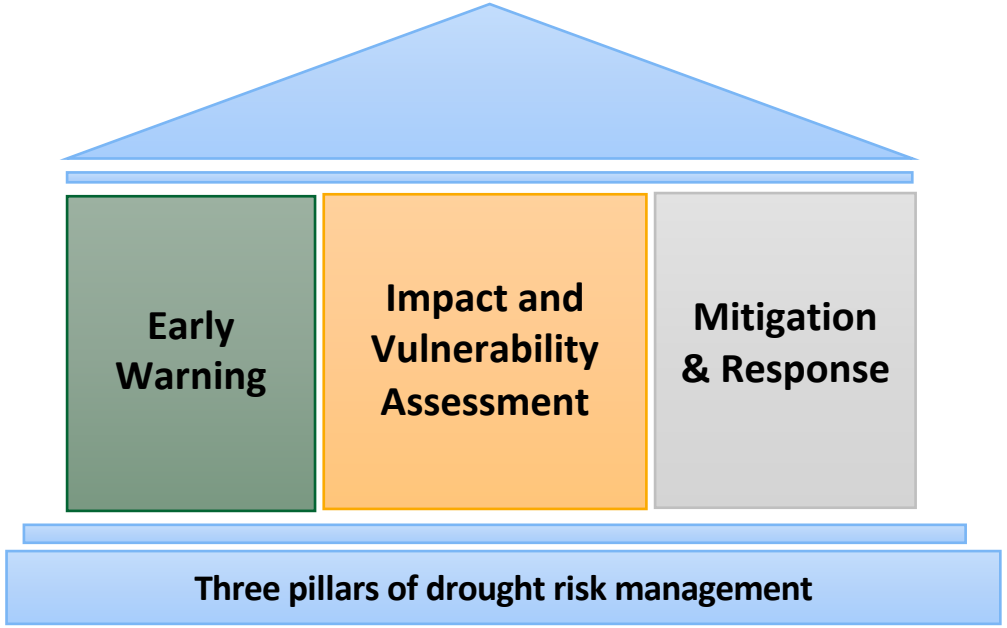
Emergency	**50% or more of the state is at D2 levels or higher as documented by the USDM**	DTF convenes twice a year and receives updates on previous water year	• DMWG continues to meet monthly
			• Work groups continue to meet as directed by the DTF to provide updates to SDC
			• SDC provides quarterly updates to the DTF, and as requested
			• DTF considers making recommendation to Governor to issue an Executive Order
			  ○ DMWG determines whether to make an Executive Order recommendation to DTF
			  ○ factors considered: percent of state in D3, D4; duration; impacts

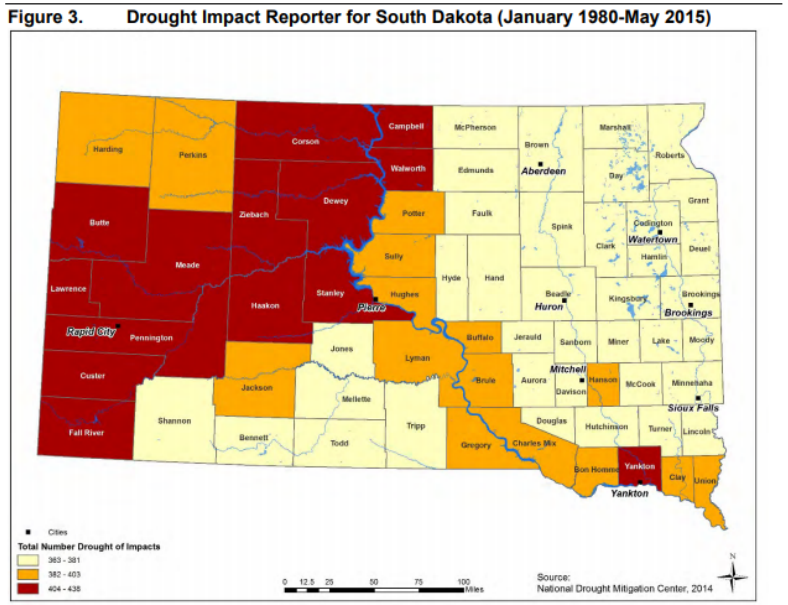
Exceptional	**20% or more of the state is at D4 levels as documented by the USDM**	DTF convenes at same interval as during Emergency Stage, with additional meetings as necessary	• DMWG continues to meet monthly
			• Work groups continue to meet as directed by the DTF to provide updates to SDC
			• SDC provides monthly updates to the DTF, and as requested
			• DTF strongly considers making recommendation to Governor to issue an Executive Order
			  ○ DMWG determines whether to make an Executive Order recommendation to DTF
			  ○ factors considered: percent of state in D3, D4; duration; impacts

Impact and Vulnerability Assessment

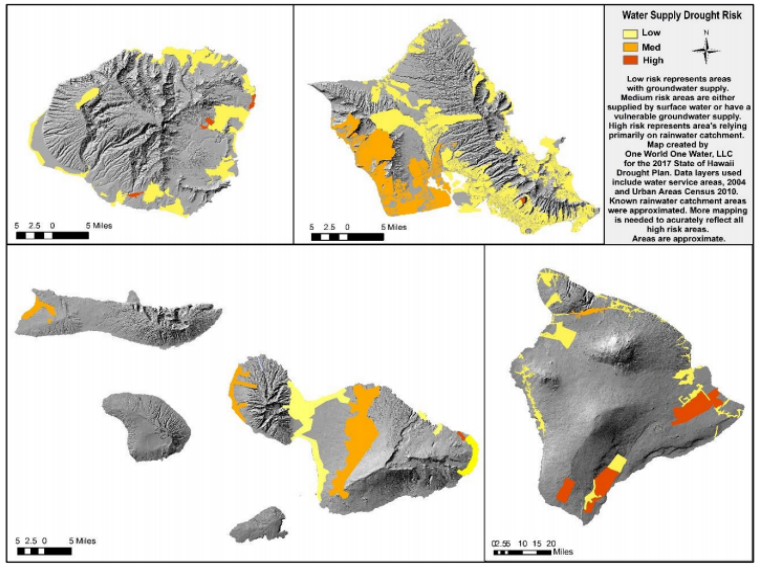
Work to better assess drought impacts and sectoral vulnerability - qualitative/quantitative

Results: better understanding and communication of vulnerable sectors and regions





South Dakota historical drought impacts (1980-2015)



Hawaii Water Supply Drought Risk (2017)

U.S. Drought Impact Reporter: https://droughtreporter.unl.edu

Drought Scenario-Based Exercises

Exercises that use scenarios to get people together to better plan and manage activities during a drought.

Gaming Exercises

"Drought Tournaments"

Table-top exercises

Operations simulations

Drought Scenario-Based Exercises: Washington

Washington State
Drought Contingency Plan

April, 2018

DEPARTMENT OF ECOLOGY
State of Washington

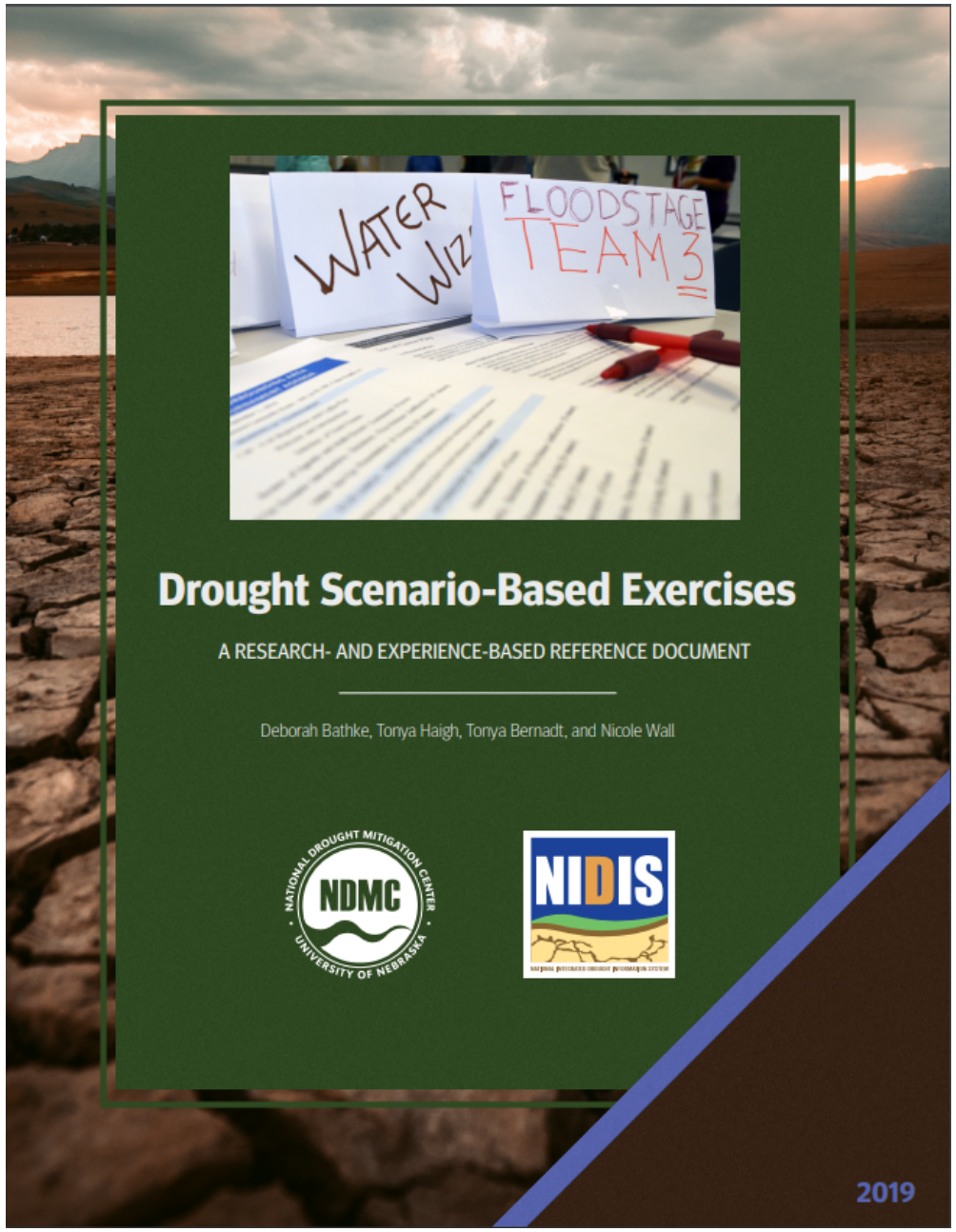
Drought Contingency Plan exercises will occur on a biennial basis, and may include seminars, workshops, and/or tabletop exercises.

Exercises will ensure the capabilities and actions outlined in the plan are able to be effectively accomplished.

Support for plan exercises will be provided by the Washington Emergency Management Division's (EMD) Exercise and Training Section.

Drought Scenario-Based Exercised Reference

1. Drought and benefits of preparation
2. Exercise types
3. Exercise selection considerations
4. Exercise development process
5. Past exercises



https://drought.unl.edu/droughtplanning/AboutPlanning/PlanningProcesses.aspx

Hazard Mitigation Assistance for Drought

In 2015, FEMA announced eligibility of several new activities addressing drought for hazard mitigation (flood and drought-resilient infrastructure)

- **Aquifer Storage and Recovery (ASR)**
- **Floodwater Diversion and Storage**
- **Floodplain and Stream Restoration**

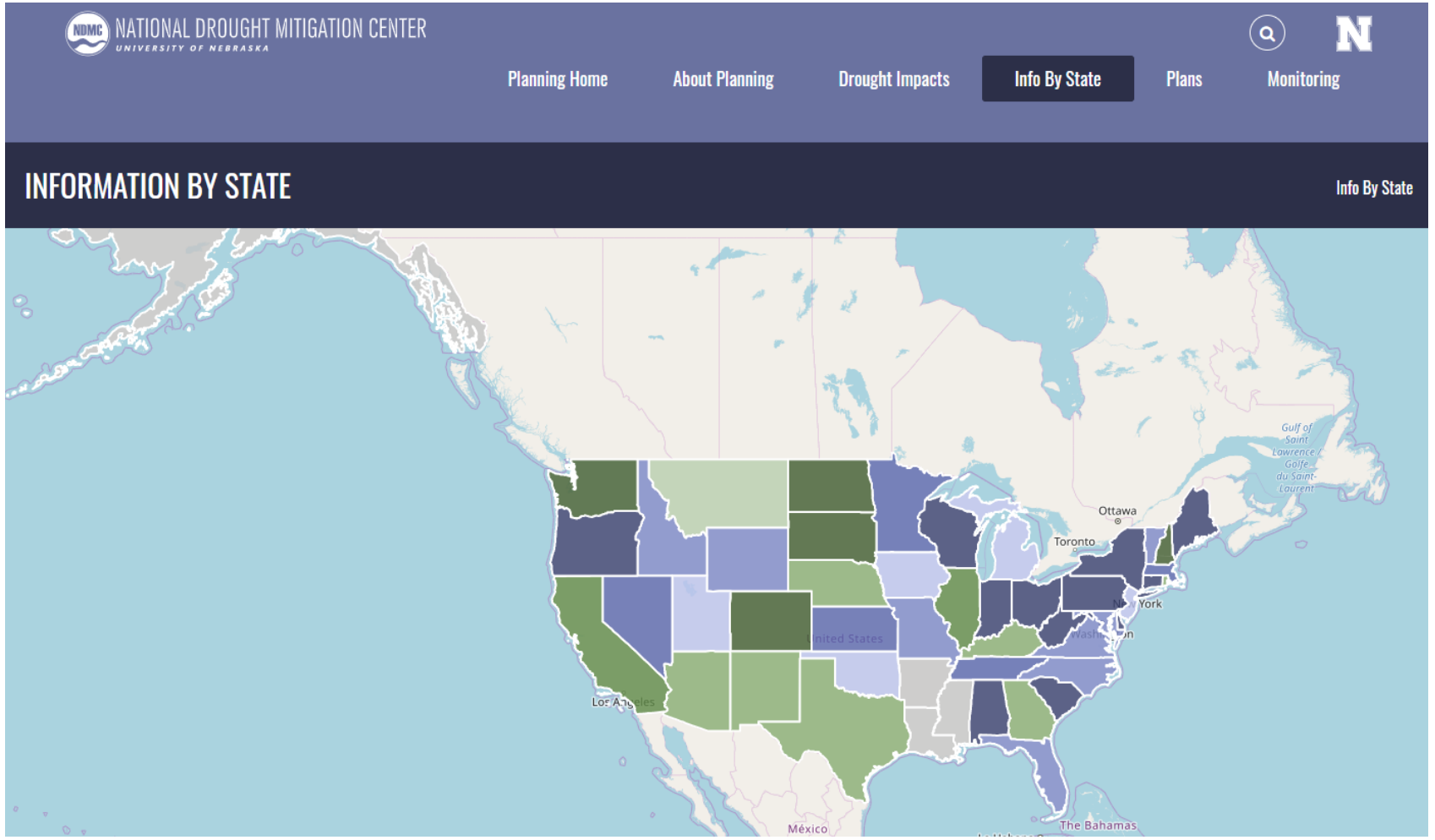
Due January 31, 2020
25% cost-share required

$4-10 million for mitigation projects per applicant ($10 million for resilient infrastructure)

Changing the program next year…
See FEMA Pre-Disaster Mitigation Program website for updates

https://www.fema.gov/pre-disaster-mitigation-grant-program

Increasing amount of data, tools, funding and example plans to support planning



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NATIONAL DROUGHT MITIGATION CENTER

NDMC

AT THE UNIVERSITY OF NEBRASKA-LINCOLN

DROUGHT.UNL.EDU

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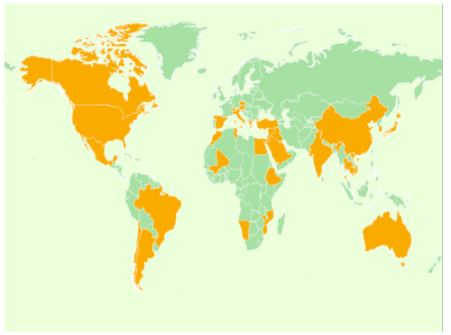
/NationalDroughtMitigationCenter @droughtcenter

Planning Scales and Tools

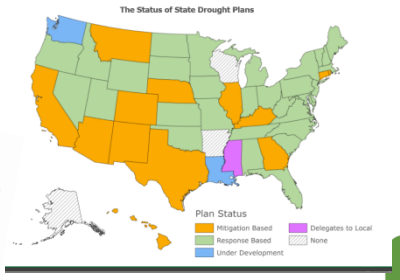
Work with planners at ***all scales***

Developed planning guides at all scales

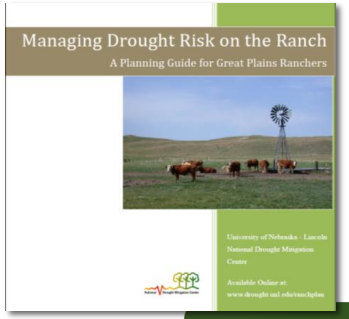


Nation

Basin



Tribal/ State

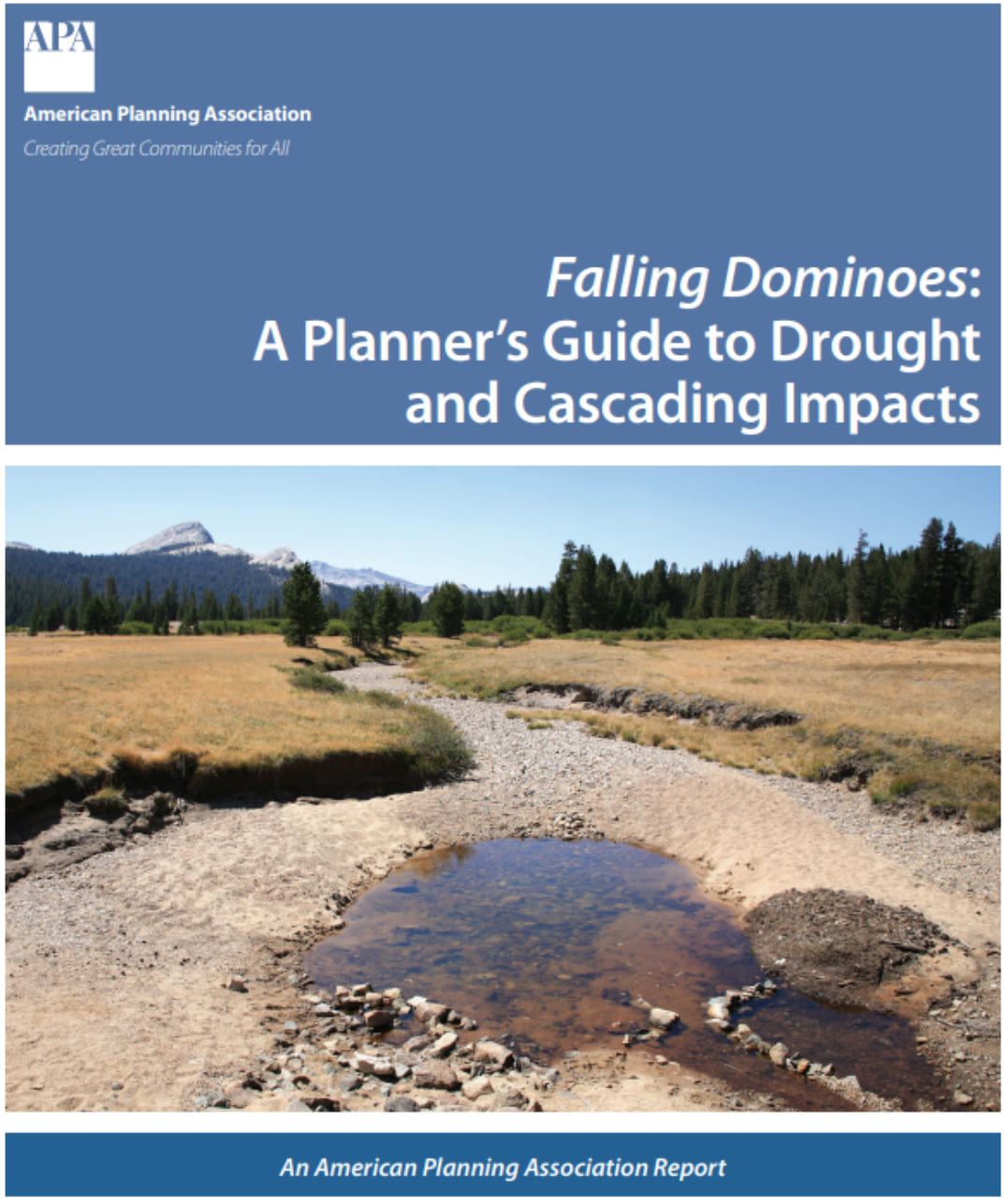


Community

Individual

Local Drought Planning Options

- Drought plan
- Hazard mitigation plan
- Climate adaptation plan
- Comprehensive plan
- Water management plan
- Emergency operations plan



https://www.planning.org/publications/document/9188906