

Calendar No. 424

115TH CONGRESS }
2d Session }

SENATE

{ REPORT
115-256 }

NATIONAL INTEGRATED DROUGHT INFOR-
MATION SYSTEM REAUTHORIZATION ACT
OF 2018

R E P O R T

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND
TRANSPORTATION

ON

S. 2200



MAY 22, 2018.—Ordered to be printed

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED FIFTEENTH CONGRESS

SECOND SESSION

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NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM REAUTHORIZATION ACT OF 2018

MAY 22, 2018.—Ordered to be printed

Mr. THUNE, from the Committee on Commerce, Science, and
Transportation, submitted the following

R E P O R T

[To accompany S. 2200]

[Including cost estimate of the Congressional Budget Office]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 2200) to reauthorize the National Integrated Drought Information System, and for other purposes, having considered the same, reports favorably thereon with an amendment (in the nature of a substitute) and recommends that the bill (as amended) do pass.

PURPOSE OF THE BILL

The purpose of S. 2200 is to reauthorize the National Integrated Drought Information System (NIDIS) through fiscal year (FY) 2023. It also would make improvements, including encouraging appropriate partnerships with the private sector, integrating seasonal and subseasonal drought and water forecasts, and supporting ongoing soil moisture observations to better aid farmers.

BACKGROUND AND NEEDS

Drought is a natural hazard with significant economic, social, and ecological consequences. Drought is most simply defined as a deficiency of precipitation over an extended period of time. Drought conditions are relative depending on the average amount of rainfall

in a given region, and its impacts vary greatly across the country.¹ Drought is usually the result of multiple, interacting weather phenomenon, such as global weather patterns like the El Niño/Southern Oscillation and high-pressure areas. Because the causes of drought are complex and are themselves difficult to predict, accurately predicting the temperature and precipitation conditions that can lead to a drought more than 1 month in the future is a scientific challenge.²

In 2006, NIDIS was established by Congress with an interagency mandate to coordinate and integrate drought research and created a national drought early warning system. The early warning system utilizes new and existing partner networks to optimize the expertise of a wide range of Federal, State, local, tribal, and academic partners in order to make climate and drought science readily available, easily understandable and usable for decision makers and to improve the capacity of stakeholders to better monitor, forecast, plan for, and cope with the impacts of drought.

Over the past 30 years, drought has been the second most common type of weather disaster to cause more than \$1 billion in damages. Most recently, the 2017 drought in South Dakota, North Dakota, and Montana caused an estimated \$2.5 billion in damages to field crops and livestock and in lost revenue. The western wildfires of 2017, enhanced by extreme drought, burned over 1 million acres, took countless lives, and cost over \$2 billion.³ And drought in the Apalachicola-Chattahoochee-Flint River Basin, in 2017, threatened agriculture in Alabama and a significant portion of the oyster harvest in Florida. Forecasts and warnings of drought made possible by NIDIS are essential for farmers, ranchers, fishermen, and emergency managers to make smart decisions and reduce these costs.⁴

Through NIDIS, the National Oceanic and Atmospheric Administration (NOAA) is one of the key entities that contribute to the U.S. Drought Monitor, which provides a weekly map of drought conditions. These county-level drought intensity maps can trigger Federal financial aid for agriculture and rural water supplies.

¹Folger, P., B. A. Cody, and N. T. Carter. "Drought in the United States: Causes and Issues for Congress." April 22, 2013. CRS Report RL34580.

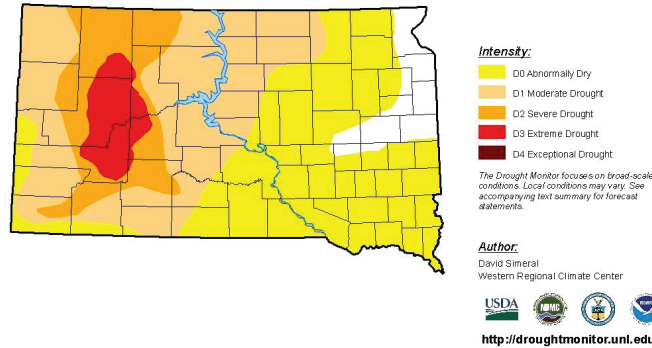
²National Drought Mitigation Center, "Predicting Drought" (<http://drought.unl.edu/DroughtBasics/PredictingDrought.aspx>) (accessed July 23, 2013).

³National Centers for Environmental Information, "Billion-Dollar Weather and Climate Disasters: Table of Events," National Oceanic and Atmospheric Administration, 2017 (<https://www.ncdc.noaa.gov/billions/events/US/1980-2017>) (accessed December, 6, 2017).

⁴Agricultural Act of 2004 (P.L. 113-79; 128 Stat. 649).

U.S. Drought Monitor
South Dakota

December 5, 2017
(Released Thursday, Dec. 7, 2017)
Valid 7 a.m. EST



NIDIS HISTORY

Because drought has such far-reaching and costly impacts, Congress enacted the National Drought Policy Act of 1998.⁵ In this law, Congress found an increasing need, particularly at the Federal level, to emphasize preparedness, mitigation, and risk management (rather than simply crisis management) when addressing drought. The Act created the National Drought Policy Commission (Commission), and required it, in collaboration with the National Drought Mitigation Center at Lincoln, Nebraska, and the Western Drought Coordination Council, to study existing policies and make recommendations with respect to drought. The Commission submitted its report in May 2000.⁶ The report included the following three “guiding principles” for U.S. drought policy: “favor preparedness over insurance, insurance over relief, and incentives over regulation”; “set research priorities based on the potential of the research results to reduce drought impacts”; and “coordinate the delivery of Federal services through cooperation and collaboration with non-federal entities.”⁷ The Commission report provided 29 specific recommendations, many targeted at the Executive branch. The Commission also recognized the patchwork nature of Federal drought programs and that no single Federal agency leads or coordinates drought programs.

Consistent with the third guiding principle of the Commission’s report, to “improve collaboration among scientists and managers to enhance the effectiveness of observation networks, monitoring, prediction, information delivery, and applied research and to foster public understanding of and preparedness for drought,” Congress passed the National Integrated Drought Information System Act of

⁵ P.L. 105–199; 112 Stat. 641.

⁶ National Drought Policy Commission Report (<http://govinfo.library.unt.edu/drought/finalreport/fullreport/ndpcfullreportcovers/ndpcreportcontents.htm>) (accessed July 24, 2013).

⁷ *Ibid.*

2006 (Act of 2006).⁸ The Act of 2006 was a bipartisan effort to address weaknesses in Federal drought monitoring and forecasting capabilities. The Act of 2006 directed the Administrator of NOAA (Administrator), through the National Weather Service and other weather and climate programs as appropriate, to establish NIDIS. The Act of 2006 specifies that NIDIS should do the following: provide an effective drought early warning system; coordinate research in support of a drought early warning system; and build upon existing forecasting and assessment programs and partnerships. NIDIS was developed in consultation with many stakeholders, including the Western Governors' Association, who testified on behalf of the bill during House of Representative hearings in 2006.⁹

The NIDIS Reauthorization Act of 2014¹⁰ specifies that the purposes of the program are to better inform and provide for more timely decision-making, to reduce drought related impacts and costs, and to designate cooperative institutes to assist with NIDIS functions. It also required a report from the Administrator on NIDIS implementation.¹¹ This report was issued in January 2016 and contains a summary of drought in the United States since 2006, an update on NIDIS partnerships with the private sector, and the drought early warning system, among other topics.¹²

Currently, the multi-agency NIDIS Executive Council oversees the NIDIS program office, which is housed in the Climate Program Office of NOAA's Office of Oceanic and Atmospheric Research. In turn, the NIDIS program office coordinates the multi-agency and multi-State NIDIS Program Implementation Team, which includes academic and private-sector representatives as well as Federal, State, and tribal agencies. Four primary activities drive the NIDIS program at NOAA: the U.S. Drought Portal, the online access point for a variety of products and information regarding drought;¹³ the Regional Drought Early Warning Information Systems (DEWS), which are deployed in several regions including Pacific Northwest, California-Nevada, Intermountain West, Missouri River Basin, Midwest, Southern Plains, Apalachicola-Chattahoochee-Flint River Basin, and the Coastal Carolinas¹⁴ (These DEWS provide assessments and outlooks for current and future drought conditions to support decision making¹⁵); "Coping with Drought" research grants to better understand the impacts of drought on agriculture, ecosystems, and water resources and to develop decision support tools for regional, tribal, State, and local use; and climate test-beds, which improve our understanding of climate forecasts and stream flow projections.

⁸ 15 U.S.C. 313d.

⁹ H. Rept. 109-503.

¹⁰ P.L. 113-86; 128 Stat. 1015.

¹¹ P.L. 113-86; 128 Stat. 1015.

¹² National Integrated Drought Information System, "Report to Congress," January 2016 (https://www.drought.gov/drought/sites/drought.gov.drought/files/media/whatisnidis/Documents/rpt_FINAL_NIDIS%20CongReport_Jan2016.pdf) (accessed December 8, 2017).

¹³ *Ibid.*

¹⁴ Drought.gov, Regions (<https://www.drought.gov/drought/regions>) (accessed December 8, 2017).

¹⁵ See U.S. Drought Portal, "Drought Early Warning System" (<http://www.drought.gov/drought/content/regional-programs/regional-drought-early-warning-system>) (accessed July 24, 2013).

SUMMARY OF PROVISIONS

If enacted, the National Integrated Drought Information System Reauthorization Act of 2018, S. 2200, would do the following:

- Update and reauthorize the law authorizing NIDIS and authorize funding through FY 2023.
- Require the Under Secretary of Commerce for Oceans and Atmosphere (Under Secretary) to develop a strategy for a national coordinated soil moisture monitoring network.
- Authorize funding for the weather and climate information in agriculture program through FY 2023.

LEGISLATIVE HISTORY

S. 2200 was introduced on December 6, 2017, by Mr. Thune (for himself and Senator Nelson) and was referred to the Committee on Commerce, Science, and Transportation of the Senate. Senator Fischer also cosponsored this bill. On December 13, 2017, the Committee met in open Executive Session and, by voice vote, ordered S. 2200 reported favorably with an amendment (in the nature of a substitute).

ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

S. 2200—National Integrated Drought Information System Reauthorization Act of 2018

Summary: S. 2200 would amend the National Integrated Drought Information System Act of 2006 to make changes to the National Integrated Drought Information System (NIDIS). The bill would authorize appropriations to the National Oceanic and Atmospheric Administration (NOAA) of \$57 million over the 2018–2022 period (and \$16 million in 2023) for the NIDIS and \$111 million over the 2018–2022 period (and \$30 million in 2023) for agricultural weather and climate forecasting.

Assuming appropriation of the authorized amounts, CBO estimates that implementing S. 2200 would cost \$147 million over the 2018–2022 period and \$67 million after 2022.

Enacting S. 2200 would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply.

CBO estimates that enacting S. 2200 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

S. 2200 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA).

Estimated cost to the Federal Government: The estimated budgetary effect of S. 2200 is shown in the following table. The costs of this legislation fall within budget function 300 (natural resources and environment).

	By fiscal year, in millions of dollars—					
	2018	2019	2020	2021	2022	2018–2022
INCREASES IN SPENDING SUBJECT TO APPROPRIATION						
National Integrated Drought Information System:						
Authorization Level	0	14	14	14	15	57
Estimated Outlays	0	9	12	14	15	50
Agricultural Weather and Climate Research:						
Authorization Level	0	27	28	28	29	111
Estimated Outlays	0	18	24	27	28	97
Total Increases:						
Authorization Level	0	41	42	42	44	168
Estimated Outlays	0	27	36	41	43	147

Components do not sum to totals because of rounding.
The bill also would authorize appropriations of \$16 million in 2023 for the National Integrated Drought Information System and \$30 million in 2023 for Agriculture Weather and Climate Research.

Basis of estimate: CBO assumes that S. 2200 will be enacted near the end of 2018 and that the authorized amounts will be appropriated for each year. Estimated outlays are based on historical spending patterns for the programs. The bill would authorize appropriations for 2018 but at the same level already authorized for 2018. Thus, CBO does not estimate any costs for the authorization of appropriations for 2018.

National Integrated Drought Information System

NIDI is focused on improving the nation's capacity to manage drought-related risks by providing information to assess the potential consequences of drought and to prepare for and mitigate against drought. S. 2200 would make several changes to NIDIS, including authorizing federal agencies to work with private-sector entities to improve drought monitoring and forecasting and requiring NOAA to develop a strategy for a national, coordinated soil-moisture-monitoring network. The bill would authorize annual appropriations totaling \$57 million over the 2019–2022 period and \$16 million in 2023 for NIDIS. Under current law, in 2018 about \$14 million is authorized to be appropriated for NIDIS. In 2017, \$13.5 million was allocated to NIDIS.

Agriculture weather and climate research

S. 2200 also would authorize the appropriation of \$111 million over the 2019–2022 period and \$30 million in 2023 for agricultural weather and climate research by NOAA. Under current law, in 2018 roughly \$27 million is authorized to be appropriated for agricultural weather and climate research. In 2017, about \$9 million was allocated to such research.

Pay-As-You-Go considerations: None.

Increase in long-term direct spending and deficits: CBO estimates that enacting S. 2200 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

Mandates: S. 2200 contains no intergovernmental or private-sector mandates as defined in UMRA.

Estimate prepared by: Federal Costs: Robert Reese; Mandates: Jon Sperl.

Estimate approved by: H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported:

NUMBER OF PERSONS COVERED

S. 2200, as reported, does not create any new programs or impose any new regulatory requirements, and therefore would not subject any individuals or businesses to new regulations.

ECONOMIC IMPACT

S. 2200, as reported, is not expected to have a negative impact on the Nation's economy.

PRIVACY

The reported bill would have no impact on the personal privacy of individuals.

PAPERWORK

S. 2200, as reported, would not increase paperwork requirements for either the private or public sector.

CONGRESSIONALLY DIRECTED SPENDING

In compliance with paragraph 4(b) of rule XLIV of the Standing Rules of the Senate, the Committee provides that no provisions contained in the bill, as reported, meet the definition of congressionally directed spending items under the rule.

SECTION-BY-SECTION ANALYSIS

Section 1. Short title.

This section would provide that the bill may be cited as the “National Integrated Drought Information System Reauthorization Act of 2018.”

Section 2. National Integrated Drought Information System Program.

This section would update the Act of 2006 to specify that NIDIS collect and integrate information about key indicators of drought, including precipitation, soil moisture, and evaporative demand. It also would explicitly tie NIDIS to the Weather Research and Forecasting Innovation Act of 2017,¹⁶ by requiring NIDIS to leverage and utilize improvements in seasonal and subseasonal forecasts and forecast communication coordinators. This section also would allow the system to develop partnerships with the private sector and academia, and to utilize citizen scientists to collect and integrate monitoring data. Additionally, it would require the Under Secretary to develop a strategy for a national coordinated soil moisture monitoring network.

Section 2 would strike outdated reporting language and would authorize appropriations for the system through FY 2023 starting

¹⁶P.L. 115–25; 131 Stat. 91.

at \$13.5 million in FY 2018 and increasing by \$250,000 each FY thereafter.¹⁷

Section 3. Reauthorization of weather and climate information in agriculture.

This section would authorize appropriations for section 1762(j) of the Food Security Act of 1985¹⁸ in order to carry out seasonal and subseasonal weather forecasting through FY 2023. Authorized appropriations would be \$26.5 million for FY 2018 and increase by \$500,000 each FY thereafter.¹⁹

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new material is printed in italic, existing law in which no change is proposed is shown in roman):

NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM
ACT OF 2006

[15 U.S.C. 313d]

SEC. 3. NIDIS PROGRAM.

[15 U.S.C. 313d]

(a) **IN GENERAL.**—The Under Secretary, through the National Weather Service and other appropriate weather and climate programs in the National Oceanic and Atmospheric Administration, shall establish a National Integrated Drought Information System to better inform and provide for more timely decisionmaking to reduce drought related impacts and costs.

(b) **SYSTEM FUNCTIONS.**—The National Integrated Drought Information System shall—

(1) provide an effective drought early warning system that—

(A) collects and integrates information on the key indicators of drought and drought impacts [in order to make usable, reliable, and timely forecasts of drought, including], *including precipitation, soil moisture, and evaporative demand, in order to make usable, reliable, and timely forecasts of drought* and assessments of the severity of drought conditions and impacts; and

(B) provides such information, forecasts, and assessments on both national and regional levels;

(2) communicate drought forecasts, drought conditions, and drought impacts on an ongoing basis to public and private entities engaged in drought planning and preparedness, including—

(A) decisionmakers at the Federal, regional, State, tribal, and local levels of government;

(B) the private sector; and

(C) the public;

¹⁷ NIDIS is currently authorized at \$13.5 million (P.L. 113–86; 128 Stat. 1015).

¹⁸ 15 U.S.C. 8521.

¹⁹ Currently authorized at \$26.5 million (P.L. 115–25; 131 Stat. 91).

(3) provide timely data, information, and products that reflect local, regional, *watershed*, and State differences in drought conditions;

(4) coordinate, and integrate, *through interagency agreements* as practicable, Federal research and monitoring in support of a drought early warning *information* system;

[(5) build upon existing forecasting and assessment programs and partnerships, including through the designation of one or more cooperative institutes to assist with National Integrated Drought Information System functions; and]

(5) *utilize existing forecasting and assessment programs and partnerships, including forecast communication coordinators and cooperative institutes, and improvements in seasonal, sub-seasonal, and low flow water prediction; and*

(6) continue ongoing research and monitoring activities related to *the prediction*, drought, including research activities relating to length, severity, and impacts of drought and the role of extreme weather events and climate variability in drought.

(c) *PARTNERSHIPS.—The National Integrated Drought Information System may—*

(1) *engage with the private sector to improve drought monitoring, forecast, and communication if the Under Secretary determines the partnership is appropriate, cost-effective, and beneficial to the public and decisionmakers described in subsection (b)(2)(A);*

(2) *facilitate the development of 1 or more academic cooperative partnerships to assist with National Integrated Drought Information System functions; and*

(3) *utilize and support, as appropriate, monitoring by citizen scientists, including by developing best practices to facilitate maximum data integration.*

[(c)](d) *CONSULTATION.—The Under Secretary shall consult with relevant Federal, regional, State, tribal, and local government agencies, research institutions, and the private sector in the development and sustainment of the National Integrated Drought Information System.*

[(d)](e) *COOPERATION FROM OTHER FEDERAL AGENCIES.—Each Federal agency shall cooperate as appropriate with the Under Secretary in carrying out this section.*

[(e)](f) *REPORT.—*

[(1) *IN GENERAL.—Not later than 18 months after the date of enactment of the National Integrated Drought Information System Reauthorization Act of 2014, the Under Secretary shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report that contains—*

[(A) *an analysis of the implementation of the National Integrated Drought Information System program, including how the information, forecasts, and assessments are utilized in drought policy planning and response activities;*

[(B) *specific plans for continued development of such program, including future milestones; and*

[(C) an identification of research, monitoring, and forecasting needs to enhance the predictive capability of drought early warnings that include—

- [(i) the length and severity of droughts;
- [(ii) the contribution of weather events to reducing the severity or ending drought conditions; and
- [(iii) regionally specific drought impacts.

[(2) CONSULTATION.—In developing the report under paragraph (1), the Under Secretary shall consult with relevant Federal, regional, State, tribal, and local government agencies, research institutions, and the private sector.]

(f) SOIL MOISTURE.—Not later than 1 year after the date of enactment of the National Integrated Drought Information System Reauthorization Act of 2018, the Under Secretary, acting through the National Integrated Drought Information System, shall develop a strategy for a national coordinated soil moisture monitoring network.

[SEC. 4. AUTHORIZATION OF APPROPRIATIONS.

[15 U.S.C. 313d note]

[There are authorized to be appropriated to carry out this Act \$13,500,000 for each of fiscal years 2014 through 2018.]

SEC. 4. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to carry out this Act—

- (1) \$13,500,000 for fiscal year 2018;*
- (2) \$13,750,000 for fiscal year 2019;*
- (3) \$14,000,000 for fiscal year 2020;*
- (4) \$14,250,000 for fiscal year 2021;*
- (5) \$14,500,000 for fiscal year 2022; and*
- (6) \$15,750,000 for fiscal year 2023.*

FOOD SECURITY ACT OF 1985

[Public Law 99–198; 99 Stat. 1354]

§ 8521. Weather and climate information in agriculture

(a)* * *

[(j) AUTHORIZATION OF APPROPRIATIONS.—For each of fiscal years 2017 and 2018, there are authorized out of funds appropriated to the National Weather Service, \$26,500,000 to carry out the activities of this section.]

(j) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out the activities under this section—

- (1) \$26,500,000 for fiscal year 2018;*
- (2) \$27,000,000 for fiscal year 2019;*
- (3) \$27,500,000 for fiscal year 2020;*
- (4) \$28,000,000 for fiscal year 2021;*
- (5) \$28,500,000 for fiscal year 2022; and*
- (6) \$30,000,000 for fiscal year 2023.*

(k) DERIVATION OF FUNDS.—Amounts made available to carry out this section shall be derived from amounts appropriated or otherwise made available to the National Weather Service.