

ADVANCED WEATHER MODEL COMPUTING  
DEVELOPMENT ACT

MAY 5, 2023.—Committed to the Committee of the Whole House on the State of the  
Union and ordered to be printed

Mr. LUCAS, from the Committee on Science, Space, and Technology,  
submitted the following

R E P O R T

[To accompany H.R. 1715]

The Committee on Science, Space, and Technology, to whom was  
referred the bill (H.R. 1715) to direct the Department of Energy  
and the National Oceanic and Atmospheric Administration to con-  
duct collaborative research in order to advance numerical weather  
and climate prediction in the United States, and for other pur-  
poses, having considered the same, reports favorably thereon with-  
out amendment and recommends that the bill do pass.

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PURPOSE AND SUMMARY

The purpose of this bill is to authorize the collaborative research  
partnership between the U.S. Department of Energy (DOE) and the

National Oceanic and Atmospheric Administration (NOAA). H.R. 1715 directs DOE and NOAA to conduct collaborative research to advance numerical weather and climate prediction in the United States. This legislation also establishes a joint DOE and NOAA initiative to support advanced modeling on high-performance computers, with a five-year sunset. It also directs the Secretary and Administrator to submit reports to Congress on these activities.

H.R. 1715 was introduced by Representative Max Miller (R-OH), with Representative Ross (D-NC) as the original cosponsor. Additional cosponsors include Mr. Jackson (D-NC) and Ms. Lee (D-PA).

#### BACKGROUND AND NEED FOR LEGISLATION

DOE and NOAA have an established history of partnering to address a range of weather and climate focused research activities. Through the National Climate-Computing Research Center (NCRC) established in 2009 NOAA has been able to accelerate the development and deployment of its four major modeling configurations: weather and subseasonal-to-seasonal forecasting (SHiELD), seasonal-to-multidecadal forecasting (SPEAR), high-resolution-ocean-based climate modeling (CM4), and Earth system modeling (ESM4).

In January of 2021, DOE and NOAA formally agreed to renew their strategic partnership for another five years and fund a series of new projects including updating the advanced computers capability. As they continue working together on future challenges, these agencies can help improve storm forecasting accuracy, climate modeling, weather modeling. In addition, leveraging DOE's high-performance computing capabilities can improve NOAA's forecasting and advance DOE's machine learning and related advanced scientific computing abilities. As international competition grows and new opportunities for government-wide coordination and collaboration emerge, there is a need to strengthen these types of interagency research partnerships and preserve them for the next generation. While several DOE and NOAA research collaboration initiatives have been formalized through various laws and agreements, this legislation would provide a more comprehensive authorization of this important research relationship.

#### LEGISLATIVE HISTORY

On March 8, 2023, Chairman Frank Lucas presiding, the House Committee on Science, Space, and Technology held a hearing titled, "Innovation through Collaboration: The Department of Energy's Role in the U.S. Research Ecosystem" to examine the role of the U.S. Department of Energy (DOE) in the federal research enterprise by exploring interagency research partnerships between DOE and the National Aeronautics and Space Administration (NASA), the National Oceanic and Atmospheric Administration (NOAA), the U.S. Department of Agriculture (USDA), and the National Science Foundation (NSF), among others.

Witnesses:

- Dr. Harriet Kung, Deputy Director for Science Programs in the Office of Science, the U.S. Department of Energy
- Mr. James L. Reuter, Associate Administrator for the Space Technology Mission Directorate, the National Aeronautics and Space Administration

- Dr. Michael C. Morgan, Assistant Secretary of Commerce for Environmental Observation and Prediction, the National Oceanic and Atmospheric Administration
- Dr. Sean L. Jones, Assistant Director for the Directorate of Mathematical and Physical Sciences, the National Science Foundation

On March 22, 2023, Representative Max Miller (R-OH) introduced H.R. 1715, with Representative Ross (D-NC) as the original cosponsor.

On March 29, 2023, the Committee on Science, Space, and Technology met to consider H.R. 1715. Chairman Lucas moved that Committee favorably report the bill, H.R. 1715, without amendment, to the House of Representatives with the recommendation that the bill be approved. The motion was agreed to by a vote of 36–0.

#### COMMITTEE VIEWS

The Committee recognizes the partnership between DOE and NOAA as critical to human health and safety. The Committee intends that the activities authorized in this legislation be cross-cutting in nature, involving all relevant program offices at DOE and the NOAA. The Committee also intends for the research and development activities authorized in this legislation to build from existing activities at both agencies and make use of the DOE’s unique computing capabilities and user facilities.

The intention and expected effect of this legislation is not to displace NOAA’s weather forecasting workforce. NOAA has carried out research activities that are consistent with the authorized activities in this bill for decades. Any further advancements in forecasting capabilities resulting from this research will not replace the necessary contributions made by National Weather Service forecasters when preparing forecasts informed by those model results, based on their scientific training, expertise, and experience oversight from the agency’s forecasting experts in reviewing forecasts for the accuracy before being issued to the public.

#### SECTION-BY-SECTION

##### *Section 1. Short title*

This section establishes that this legislation may be referred to as the “Advanced Weather Model Computing Development Act”.

##### *Section 2. Definitions*

In this section the terms “Department”, “National Laboratory”, “Secretary”, and “Administrator” are defined.

##### *Section 3. Department of Energy and National Oceanic and Atmospheric Administration research and development coordination*

Directs the Secretary of Energy and the NOAA Administrator to carry out collaborative research and development activities in artificial intelligence and high-performance computing focused on the advancement of climate models and operational numerical weather prediction relevant to agency missions, through a memorandum of understanding or other appropriate interagency agreement. Directs the Secretary and the Administrator to, in carrying out these ac-

tivities, conduct collaborative research in modeling and data analytics, explore options for performance portability of the optimized weather model codes, develop methods to accommodate large data sets of weather and climate information, and support the maintenance of and improvements to scientific computing infrastructure. Requires the Secretary and the Administrator to submit to the Committee on Science, Space, and Technology and the Committee on Commerce, Science, and Transportation and the Committee on Energy and Natural Resources of the Senate, a report detailing: coordination activities carried out under this section, collaborative research achievements, and potential opportunities to expand technical capabilities, among other areas.

*Section 4. Climate and weather prediction on high performance computers initiative*

Authorizes the Administrator to, in collaboration with the Secretary, carry out an initiative, which may leverage DOE high performance computers or expertise, to run advanced models to conduct proof of concept scenarios in comparison with current issued forecasts and models. Requires that the authority under this section terminate five years after the date of enactment of this section.

*Section 5. Research security*

Requires that the activities authorized under this Act shall be applied in a manner consistent with the research security provisions under subtitle D of title VI of the Research and Development, Competition, and Innovation Act (enacted as division B of the CHIPS Act of 2022 (Public Law 117–167; 42 U.S.C. 19231 et seq.)).

COMMITTEE CONSIDERATION

On March 29, 2023, the Committee met in open session and ordered reported favorably the bill, H.R. 1715, without amendment, by roll call vote, a quorum being present.

ROLL CALL VOTES

Clause 3(b) of rule XIII requires the Committee to list the record votes on the motion to report legislation and amendments thereto. The following reflects the record votes taken during the Committee consideration:

**Full Committee Markup Bill:**  
**HR 1715, motion to report**

**Sponsor:** Miller of Ohio, Ross

Majority	Aye	No	Present
Frank Lucas, Oklahoma	1		
Bill Posey, Florida	1		
Randy Weber, Texas	1		
Brian Babin, Texas	1		
Jim Baird, Indiana	1		
Daniel Webster, Florida	1		
Mike Garcia, California	1		
Stephanie Bice, Oklahoma	1		
Jay Obernolte, California	1		
Chuck Fleischmann, Tennessee			
Darrell Issa, California	1		
Rick Crawford, Arkansas	1		
Claudia Tenney, New York	1		
Ryan Zinke, Montana	1		
Scott Franklin, Florida	1		
Dale Strong, Alabama	1		
Max Miller, Ohio	1		
Rich McCormick, Georgia	1		
Mike Collins, Georgia	1		
Brandon Williams, New York	1		
Tom Kean, New Jersey	1		
Minority	Aye	No	Present
Zoe Lofgren, California	1		
Suzanne Bonamici, Oregon	1		
Haley Stevens, Michigan	1		
Jamaal Bowman, New York	1		
Deborah Ross, New Carolina	1		
Eric Sorensen, Illinois	1		
Andrea Salinas, Oregon	1		
Val Foushee, North Carolina	1		
Kevin Mullin, California	1		
Jeff Jackson, North Carolina	1		
Emilia Sykes, Ohio	1		
Maxwell Frost, Florida	1		
Yadira Caraveo, Colorado	1		
Summer Lee, Pennsylvania	1		
Jennifer McClellan, Virginia	1		
Ted Lieu, California			
Sean Casten, Illinois	1		
Paul Tonko			
<b>Total</b>	36	0	

Date: 3/29/23

Measure: \_\_\_\_\_

Offered By: \_\_\_\_\_

Amendment No.: \_\_\_\_\_

<b>Result?</b>	Agreed To: [ X ]		
	Not Agreed To: [ ]		
	Withdrawn: [ ]		
Voice Vote	Ayes	Nays	Present
	36	0	

## APPLICATION OF LAW TO THE LEGISLATIVE BRANCH

The Committee finds that H.R. 1715 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

## STATEMENT OF OVERSIGHT FINDINGS AND RECOMMENDATIONS OF THE COMMITTEE

In compliance with clause 3(c)(1) of rule XIII and clause (2)(b)(1) of rule X, the Committee’s oversight findings and recommendations are reflected in the descriptive portions of this report.

## STATEMENT OF GENERAL PERFORMANCE GOALS AND OBJECTIVES

In accordance with clause 3(c)(4) of rule XIII, the goal of H.R. 1715 is to provide for interagency cooperation between DOE and NOAA regarding collaborative research and development activities carried out through the use of artificial intelligence and high-performance computing mechanisms. These activities will focus on the advancement of climate models and operational numerical weather predictions relevant to agency missions. This legislation includes a reporting requirement to ensure that the goals of Congress and the Committee are met in continuing fashion.

## DUPLICATION OF FEDERAL PROGRAMS

Pursuant to clause 3(c)(5) of rule XIII, the Committee finds that no provision of H.R. 1715 establishes or reauthorizes a program of the Federal Government known to be duplicative of another Federal program, including any program that was included in a report to Congress pursuant to section 21 of Public Law 111–139 or identified in the most recent Catalog of Federal Domestic Assistance.

## FEDERAL ADVISORY COMMITTEE ACT

The Committee finds that the legislation does not establish or authorize the establishment of an advisory committee within the definition of section 5(b) of the Federal Advisory Committee Act.

## UNFUNDED MANDATE STATEMENT

The Committee adopts as its own the estimate of Federal mandates prepared by the Director of the Congressional Budget Office pursuant to section 423 of the Unfunded Mandates Reform Act.

## EARMARK IDENTIFICATION

Pursuant to clauses 9(e), 9(f), and 9(g) of rule XXI, the Committee finds that H.R. 1715 does not include any congressional earmarks, limited tax benefits, or limited tariff benefits.

## COMMITTEE COST ESTIMATE

Pursuant to clause 3(d)(1) of rule XIII, the Committee adopts as its own the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974. At the time this report was filed, the estimate was not available.

NEW BUDGET AUTHORITY, ENTITLEMENT AUTHORITY, AND TAX  
EXPENDITURES

Pursuant to clause 3(c)(2) of rule XIII, the Committee finds that H.R. 1715 would result in no new or increased budget authority, entitlement authority, or tax expenditures or revenues.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

Pursuant to clause 3(c)(3) of rule XIII, at the time this report was filed, the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974 was not available.

