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NATIONAL VOLCANO EARLY WARNING AND MONITORING SYSTEM ACT

JUNE 15, 2017.—Ordered to be printed

Ms. MURKOWSKI, from the Committee on Energy and Natural
Resources, submitted the following

R E P O R T

[To accompany S. 346]

[Including cost estimate of the Congressional Budget Office]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 346) to provide for the establishment of the National Volcano Early Warning and Monitoring System, having considered the same, reports favorably thereon with amendments and recommends that the bill, as amended, do pass.

The amendments are as follows:

1. Beginning on page 1, strike line 6 and all that follows through page 4, line 13.
2. On page 4, line 14, strike “3” and insert “2”.
3. On page 4, line 21, strike “4” and insert “3”.
4. On page 4, line 22, strike “4” and insert “3”.
5. On page 8, line 14, strike “5” and insert “4”.

PURPOSE

The purpose of S. 346 is to provide for the establishment of the National Volcano Early Warning and Monitoring System.

BACKGROUND AND NEED

The United States is the third most active country for volcanic eruptions, ranking only behind Indonesia and Japan in its number of historically active volcanoes. It is home to 169 active volcanoes, of which 55 are considered still to be threatening to life and property.

In Washington State, Mount St. Helens explosively erupted on May 18, 1980, causing 57 fatalities and destroying 27 bridges and 185 miles of highways at an estimated cost of \$1.1 billion. Although Mount St. Helens is well known, Mount Rainier near Seattle could cause far greater loss of life if it should erupt again suddenly. The same is true of the Yellowstone National Park caldera, should it erupt, as it has roughly every 600,000 years.

There are five active major volcanoes in the Cascade Range of Washington, Oregon, and Idaho—Mount Baker, Glacier Peak, Mount Rainier, Mount St. Helens, and Mount Adams. In the past 29 years, there have been more than 50 eruptions and at least 17 episodes of significant unrest at 34 different volcanoes in the United States, according to the U.S. Geological Survey (USGS).

Another example of the threat from volcanic eruptions was demonstrated on December 15, 1989, when a Boeing 747 flying 150 miles northeast of Anchorage, Alaska, encountered an ash cloud that rose from an earlier eruption of Mount Redoubt. The plane lost power in all four engines, falling some 10,000 feet before it could restart two of its engines. The restart saved the lives of the plane's 231 passengers, but caused \$80 million in damage to the craft. This incident illustrates the dangers to aircraft, especially on the West Coast and in Alaskan air space.

Since 1990, eight commercial aircraft have lost engine power mid-flight and dozens more have been damaged after flying into ash clouds caused by volcanic eruptions. Notably, lesser known volcanoes, such as Mount Redoubt in Alaska, erupted more than 100 times from 2009 to 2010, causing the cancellation of more than 230 commercial airline flights and putting almost 10,000 airline passengers at risk.

The Federal Aviation Administration reports that over 80,000 large aircraft a year, carrying more than 30,000 passengers a day, fly near many of Alaska's volcanoes, mostly on the heavily traveled great-circle routes between Europe, North America, and Asia. The Alaska Volcano Observatory, with its partial federal funding, today is responsible for monitoring 29 active volcanoes in the "Ring of Fire" area along the Aleutian Island flight path.

The advances in volcanic and earthquake forecasting could be aided by a national watch office and help to make more accurate and timely predictions of eruptions possible. For example, in 1989, the Alaska Volcano Observatory could provide only a few days' notice before Mount Redoubt erupted that year. In 2009, after the center's capabilities had been expanded and hours of operation increased, it provided two months of notice before the volcano erupted again. This was enough warning time to reduce oil stored in the Drift River tank farm complex, located down slope from the volcano, and mitigate the threat of environmental damage.

LEGISLATIVE HISTORY

S. 346 was introduced on February 8, 2017, by Senators Murkowski, Cantwell, and Hirono.

In the 114th Congress, Senators Murkowski and Cantwell introduced a similar measure, S. 2056, on September 17, 2015. The Energy and Natural Resources Committee held a hearing on the bill on September 22, 2016.

In the 112th Congress, Senator Murkowski introduced a similar measure, S. 566, on March 14, 2011. The Subcommittee on Public Lands, Forests, and Mining held a hearing on the bill on May 18, 2011 (S. Hrg. 112–39).

The Committee on Energy and Natural Resources met in open business session on March 30, 2017, and ordered S. 346 favorably reported as amended.

COMMITTEE RECOMMENDATION

The Senate Committee on Energy and Natural Resources, in open business session on March 30, 2017, by a majority voice vote of a quorum present, recommends that the Senate pass S. 346, if amended as described herein.

COMMITTEE AMENDMENTS

During its consideration of S. 346, the Committee adopted an amendment to strike the findings and make four conforming amendments.

SECTION-BY-SECTION ANALYSIS

Section 1 provides a short title.

Section 2 contains definitions.

Section 3(a) directs the Secretary of the Interior (Secretary) to establish the National Volcano Early Warning and Monitoring System (System) within the USGS in order to organize, modernize, standardize, and stabilize the monitoring systems of the volcano observatories in the United States and unify these systems into a single interoperative system. It also sets forth the new System's objective to monitor the nation's volcanoes at the level commensurate with the threat posed by upgrading existing monitoring networks, installing new networks on unmonitored volcanoes, and using geodetic and other methods when applicable.

Subsection (b) specifies the System's components as requiring a national volcano watch office that is operational 24 hours a day, seven days a week; a national volcano data center; and an external grants program to support research into volcano monitoring science and technology.

Subsection (c) directs the Secretary to submit to Congress a five-year management plan for establishing and operating the System within 180 days of the bill's enactment. This subsection further directs the Secretary to establish an advisory committee to help implement the System. It further authorizes the Secretary to enter into cooperative agreements with institutions of higher education and State agencies and directs the Secretary to coordinate with other federal agencies.

Subsection (d) directs the Secretary to submit an annual report to Congress on the activities carried out pursuant to the Act.

Section 4 authorizes such sums as are necessary for each of fiscal years 2017 through 2027 and specifies that the amounts made available are to supplement and not supplant Federal funds for other USGS work.

COST AND BUDGETARY CONSIDERATIONS

The following estimate of the costs of this measure has been provided by the Congressional Budget Office:

S. 346 would authorize the appropriation of such sums as are necessary for the U.S. Geological Survey (USGS) to establish a system to improve monitoring of active volcanoes. The bill also would authorize USGS to enter into cooperative partnerships with universities and state agencies to implement the system.

Based on an analysis of information provided by USGS and assuming appropriation of the necessary amounts, CBO estimates that implementing S. 346 would cost \$55 million over the 2018–2022 period.

Enacting S. 346 would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply. CBO estimates that enacting the legislation would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

S. 346 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments.

Estimate prepared by: Federal costs: Robert Reese; Impact on state, local, and tribal governments: Jon Sperl; Impact on the private sector: Amy Petz.

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

REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact which would be incurred in carrying out S. 346.

The bill is not a regulatory measure in the sense of imposing Government-established standards or significant economic responsibilities on private individuals and businesses.

No personal information would be collected in administering the provision. Therefore, there would be no impact on personal privacy.

Little, if any, additional paperwork would result from the enactment of S. 346, as ordered reported.

CONGRESSIONALLY DIRECTED SPENDING

S. 346, as ordered reported, does not contain any congressionally directed spending items, limited tax benefits, or limited tariff benefits as defined in rule XLIV of the Standing Rules of the Senate.

EXECUTIVE COMMUNICATIONS

Because S. 346 is similar to legislation considered by the Committee in the 114th Congress, the Committee did not request Executive Agency views. The testimony provided by the Department of the Interior at the hearing before the Energy and Natural Resources on September 22, 2016, follows:

STATEMENT FOR THE RECORD, U.S. DEPARTMENT OF THE
INTERIOR

Thank you for providing the Department of the Interior with the opportunity to present this Statement for the Record on S. 2056, the National Volcano Early Warning and Monitoring System Act. The Department strongly supports S. 2056 and shares its goal of improving public and aviation safety through comprehensive monitoring of the most threatening volcanoes in the United States and its Territories.

The National Volcano Early Warning System (NVEWS) is the U.S. Geological Survey's (USGS) approach to upgrading and modernizing its monitoring networks to ensure that all active volcanoes in the United States and its Territories are monitored at levels commensurate with their threat. NVEWS priorities are based on a 2005 national assessment of volcano threat levels, which the USGS is in the process of revising to incorporate new knowledge. While several network upgrades were made possible through the American Reinvestment and Recovery Act (ARRA) stimulus of 2009–2011, the USGS has since been making opportunistic NVEWS upgrades funded out of existing base resources. The USGS has achieved 30% completion of network upgrades to NVEWS standards with some Very-High-Threat and High-Threat volcanoes lacking basic monitoring networks. As with existing efforts, any work conducted to fulfill the objectives of the bill would need to compete for funding with other Administration priorities.

This legislation would enable the building out of the NVEWS network and will improve the USGS' capabilities to detect eruption precursors at the earliest possible stages (usually weeks to months before an eruption) and to deliver probabilistic eruption forecasts and warnings to the public, land managers, emergency responders and the aviation sector. The success of volcanic hazard mitigation efforts is highly dependent upon the quality and comprehensiveness of the in-ground monitoring networks deployed on and around the Nation's active volcanoes, the scientific expertise in our volcano observatories, and the preparedness of communities through well developed and regularly exercised volcano emergency response plans.

The USGS is fully prepared to deliver an updated implementation plan for completion of the National Volcano Early Warning and Monitoring System for the Nation's Very-High-Threat and High-Threat volcanoes in response to the legislation. The volcano research grants program that would be authorized under bill S. 2056 would allow the USGS to engage more of the Nation's major universities in this basic and applied research and lead to advancement of the field of volcanology. The USGS has a successful track record of effective leveraging of resources with other federal agencies, state geological surveys and universities. An authorized grants program under bill S.

2056 would enable continued collaboration and design and development of promising and cost-effective volcano monitoring technologies of the future.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the Committee notes that no changes in existing law are made by the bill as ordered reported.

