

USGS Update for ACEHR

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ACEHR 2015 Recommendations to USGS

- #1 - work to reduce uncertainty in ground motion scaling in the CEUS. May require assessing the merits of different strategies that include upgrading **stations obtained from NSF** with strong motion sensors, as well as placing more focus on rapidly instrumenting aftershock sequences and other targets of opportunity.
- #2 - make **earthquake early warning (EEW)** a funding priority.
- #3 - enhance efforts to understand, educate and communicate the risks posed by **induced seismicity**.
- #4 - expand **earthquake scenario** development in conjunction with stakeholder engagement, in order to examine consequences of earthquakes in high-risk urban areas.
- #5 - work with operators of critical infrastructure and lifeline systems to define and integrate near real-time earthquake data and other seismic information into system monitoring, so that operators can quickly assess system impacts from earthquake movements and take appropriate actions. [Link to EEW](#).

FY15 Budget Recap for USGS Hazards:

Changes relative to the budget request:

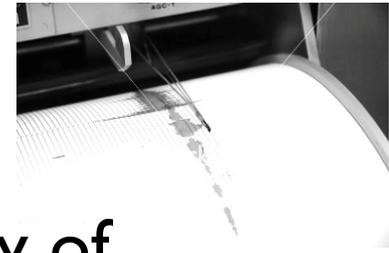
EHP: Provided an unrequested \$5M above FY14 levels toward the development of earthquake early warning prototype for the West Coast.

EHP: A requested \$700K increase for induced seismicity studies was provided but without a requested offsetting cut to the Earthquake Hazards Program

VHP: Provided an unrequested \$2M increase above FY14 for repairing and upgrading monitoring at highest threat (Alaskan) volcanoes.

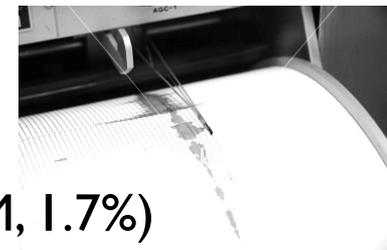
Note: The Administration did not request relief from sequestration cuts, as it did in FY14

Some 2016 Highlights



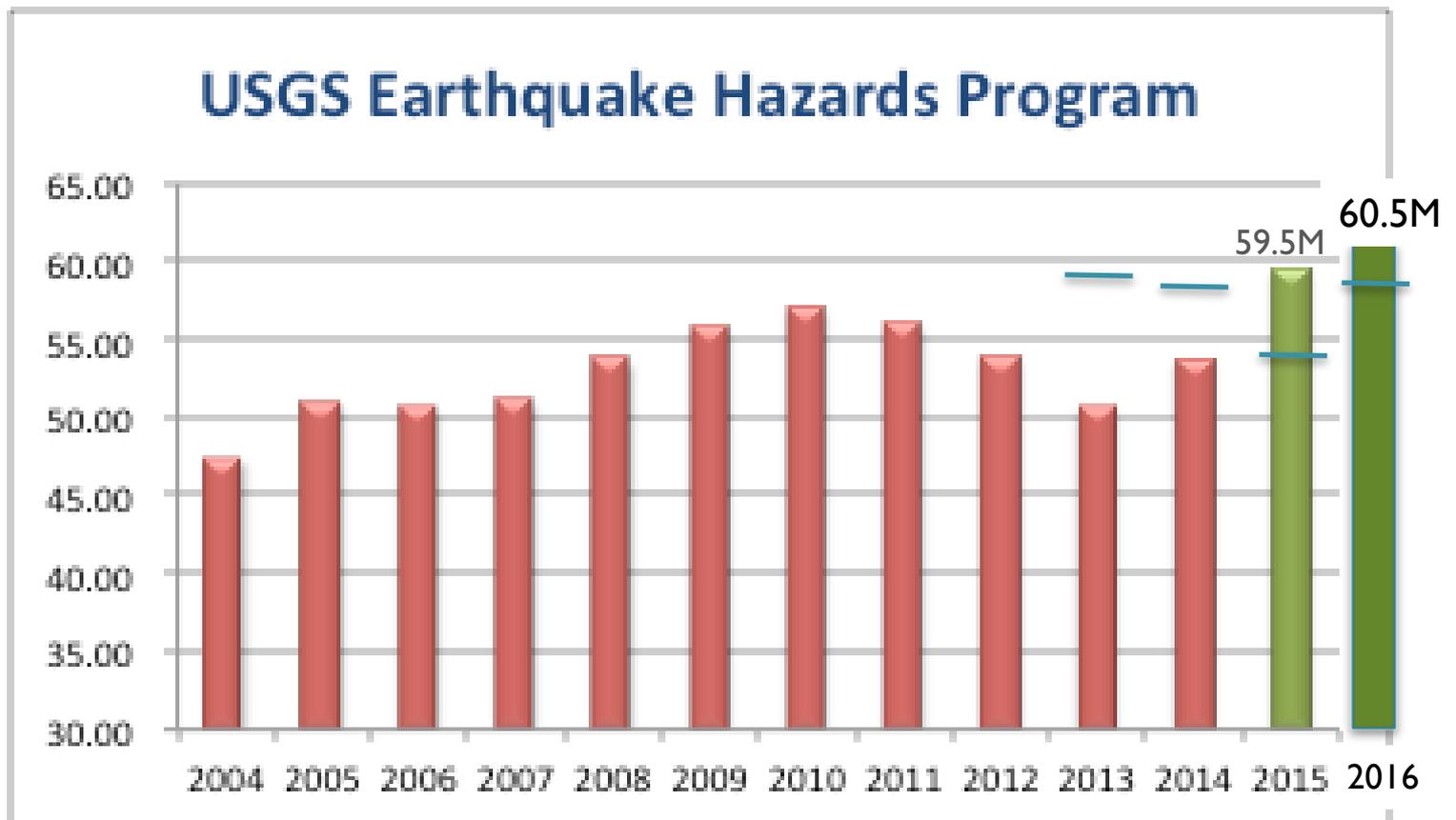
- New Executive Order for Seismic Safety of Federal Buildings
- Budget increases directed to Earthquake Early Warning and the Global Seismographic Network
- EHP External funding increased to \$17.35M (28.7%)
- USGS directed to “*conduct a cost-benefit analysis and spending plan for the adoption of any remaining seismic stations, including any stations in final deployment, if included as part of the ANSS*”
- Administration to match Congressional support for earthquake early warning?

FY 16 Appropriation - EHP



Increase for earthquake early warning (+\$1.0M, 1.7%)

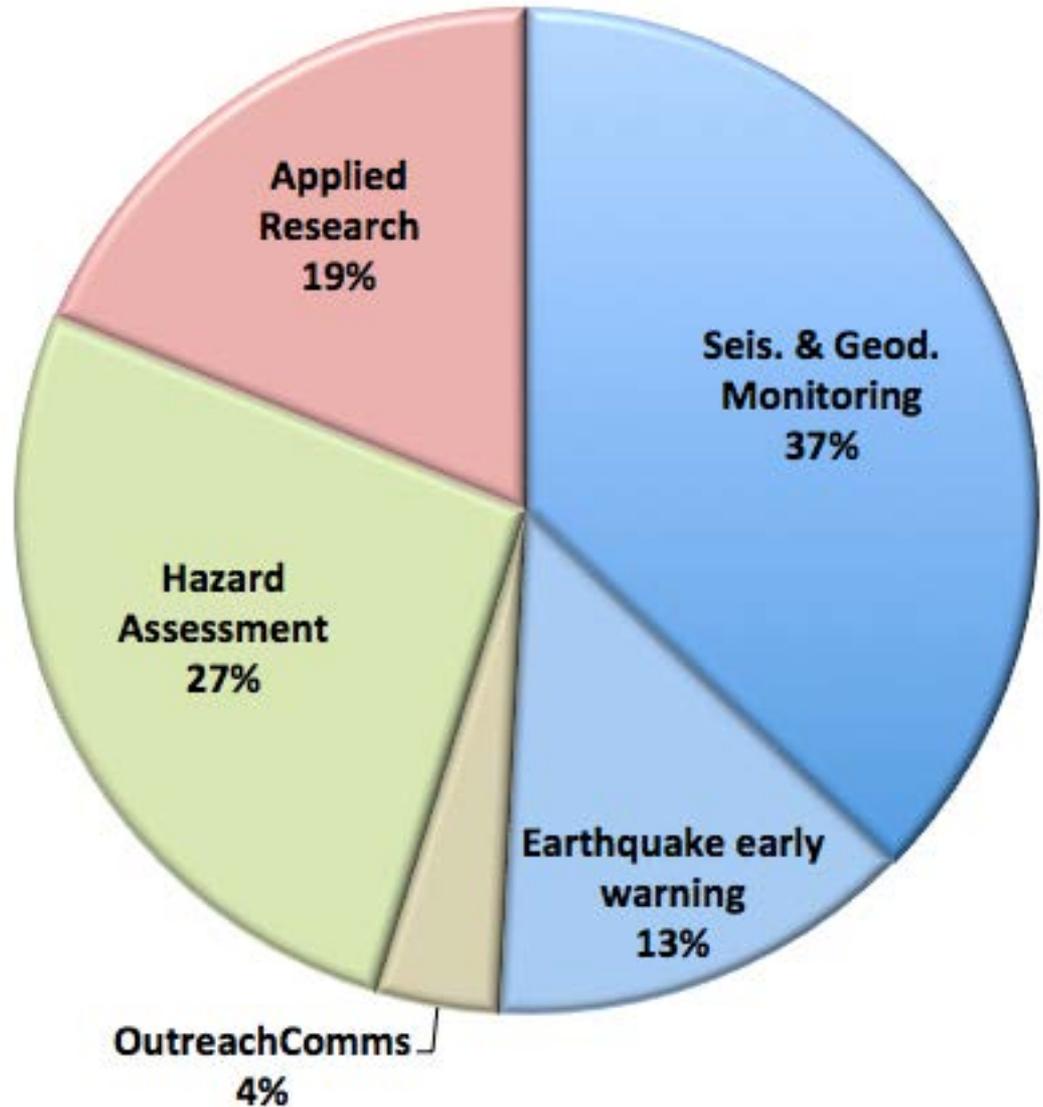
No other changes (COLA not funded but Federal Salaries increased approx. 1.7%)



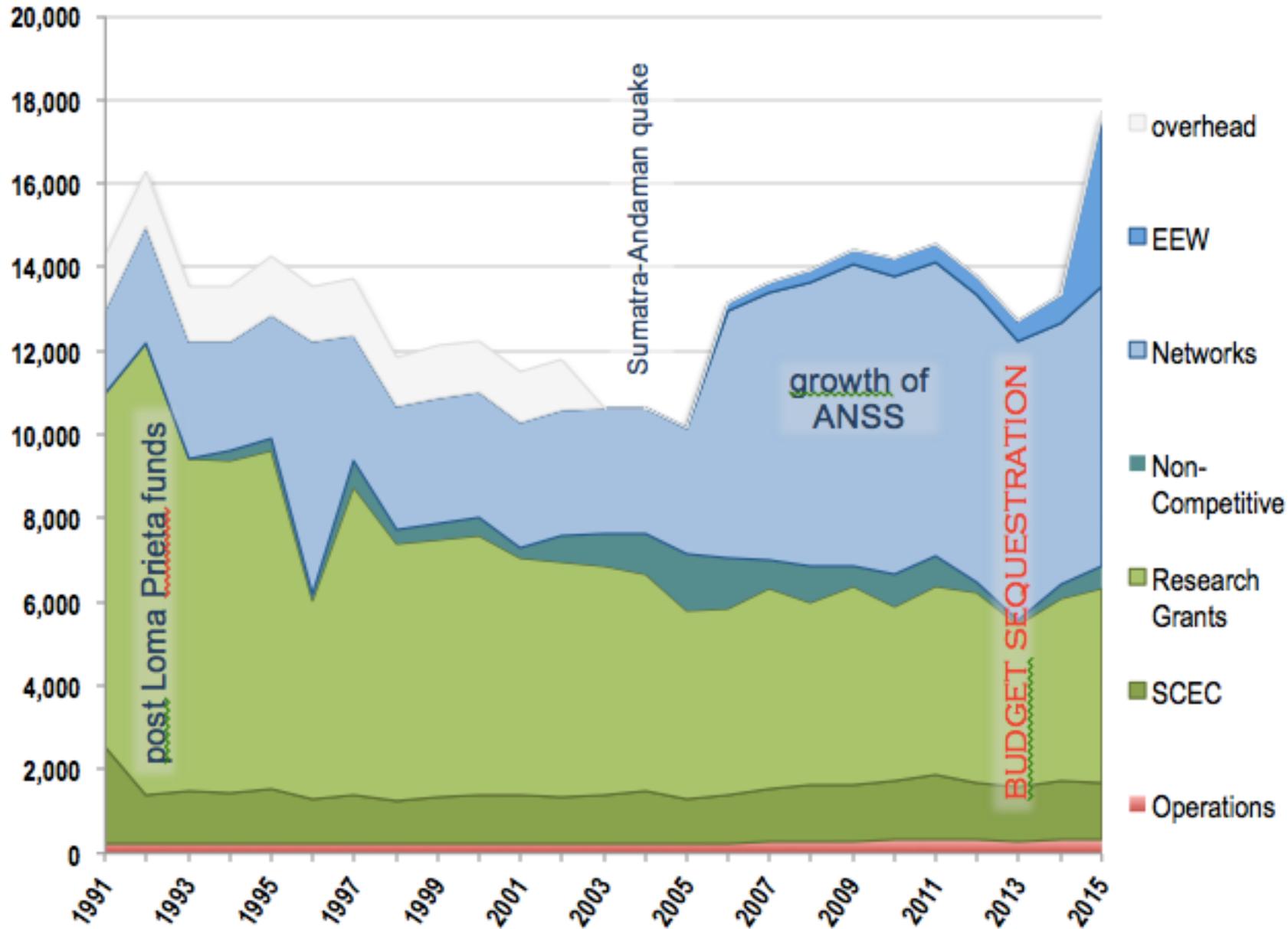
FY16 Budget by Program Element

EHP Total
\$60.5M

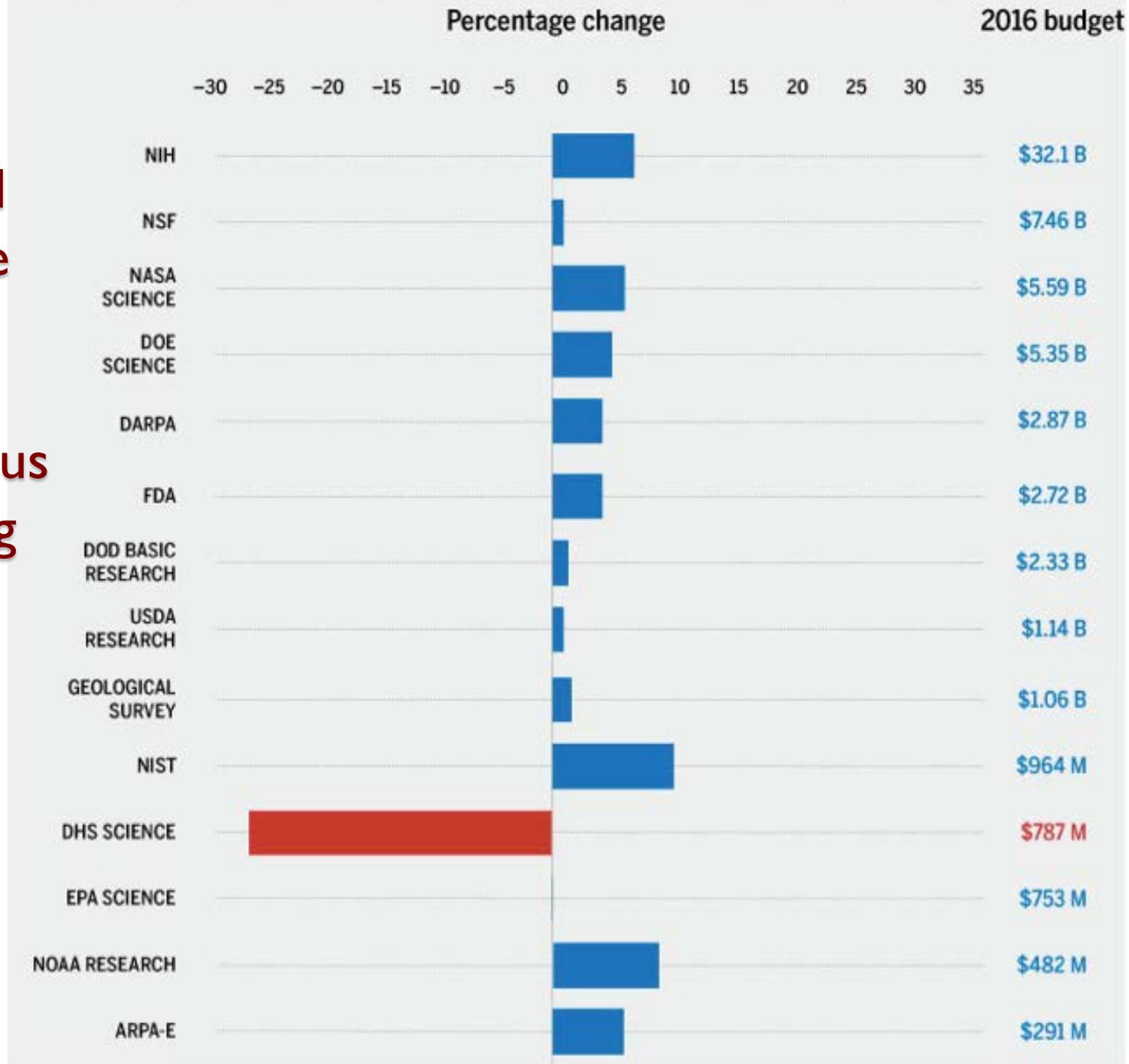
Global
Seismographic
Network:
\$6.45M
(+\$1.60M)



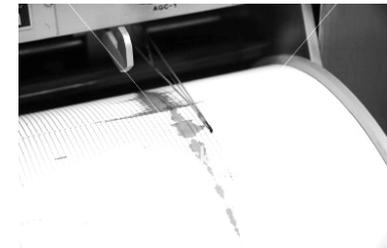
USGS/EHP External Funding History



Federal Science in the FY16 Omnibus Funding Bill



FY17 Funding Request

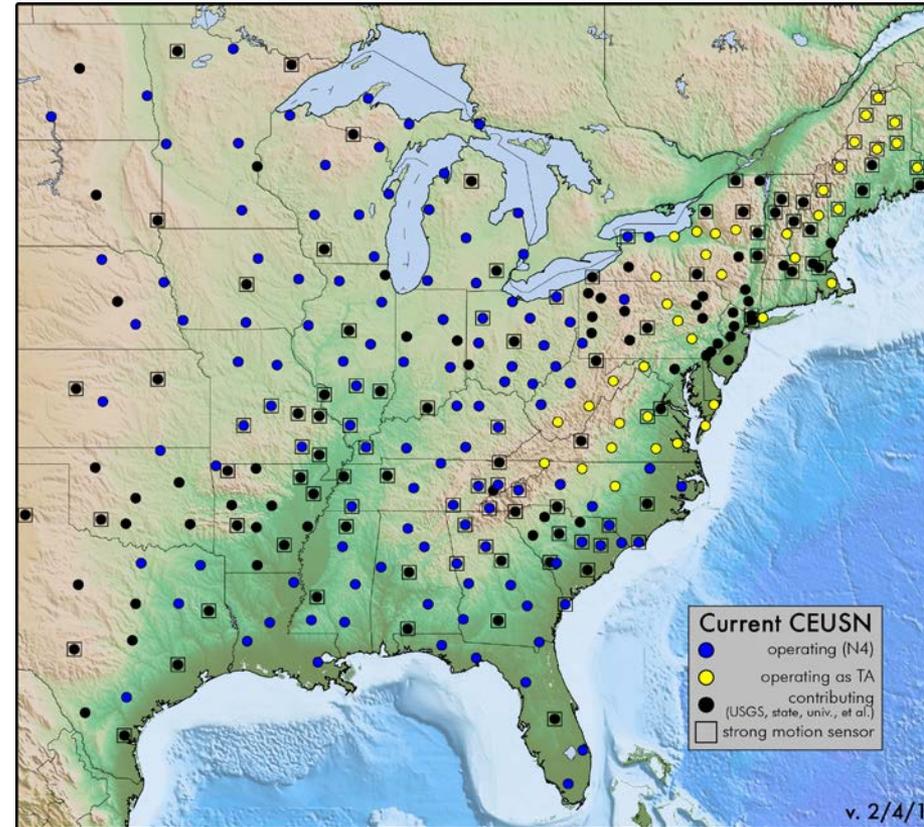


Earthquake Hazards Program

- FY16 Budget: \$60.5M
- FY17 request: \$62.2M
 - +\$0.7M for expanded work on induced seismicity
 - +\$0.8M for CEUSN

Global Seismographic Network Program

- FY16 Budget: \$6.45M
- FY17 request: \$7.32M



Near-term program challenges...

- “Brain-drain” at the USGS Science Centers
 - About one hire for every two retirements
- Significantly increasing Menlo Park facility costs
- Bipartisan support in the Congress
- Future of NSF’s *SAGE* and *GAGE* facilities
- NEHRP ICC has not met in more than four years
- NEHRP authorization expired more than six years ago



National Scenario-Based Earthquake Response Exercises



- 2009 – Hayward fault (PLE)
- 2011 – New Madrid (NLE)
- 2014 – Alaska Shield (NLE)
 - repeat of the 1964 M9.2 Great Alaska Eq.
- 2015 – Southern California San Andreas (NLE)
 - acting-out the 2008 ShakeOut scenario
 - also exercised a Puente Hills M7.1 (for NORTHCOM)
- 2016 – Cascadia Rising, May 2016 (NLE)

Cascadia — Unprepared?

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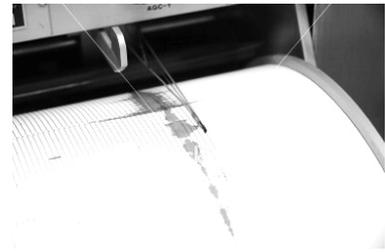
THE REALLY BIG ONE

An earthquake will destroy a sizable portion of the coastal Northwest.

BY KATHRYN SCHULZ

Since the article was published:

- Congressional inquiries to USGS
- Interest in offshore monitoring
- Legislation introduced requiring FEMA to develop an EEW system
- NSC briefing on EEW



Feb. 2nd Earthquake Resilience Summit



THE WHITE HOUSE
Office of the Press Secretary

FOR IMMEDIATE RELEASE

February 2, 2016

FACT SHEET: Obama Administration Announces Steps to Increase Nation's Resilience to Earthquakes

The Obama Administration remains committed to improving the resilience of our communities, States, and the Nation to important hazards, such as earthquakes. A [2015 scientific assessment from the U.S. Geological Survey](#) shows that more than 143 million Americans in the continental United States could experience potentially damaging earthquakes. This estimate is nearly double the previous 2006 estimate because populations have grown in earthquake-prone areas and there are now better methods for estimating earthquake risks. Improving warning systems, better building protections, and informed citizens can help mitigate losses, injuries, and deaths, and also can help communities recover faster.



Feb. 2nd Earthquake Summit and EEW

- USGS announces EEW “Production Prototype” is operational
- New Commitments from other agencies & external partners
 - USFS – expedited station permitting on FS lands
 - FCC – new rules to enable faster, geotargeted warnings
 - Oregon State – purchase of 15 Cascadia TA stations
 - City of Eugene, OR – to host public fora and 4 sensors
 - Washington State – \$4.6M for hazard assessment & maps
 - Moore Foundation – \$3.6M in new research grants
 - Puget Sound Energy – purchase/install eight SM sensors
 - PG&E – joining ShakeAlert as Beta user and assist UCB
 - Intel – Pledge to support ShakeAlert implementation

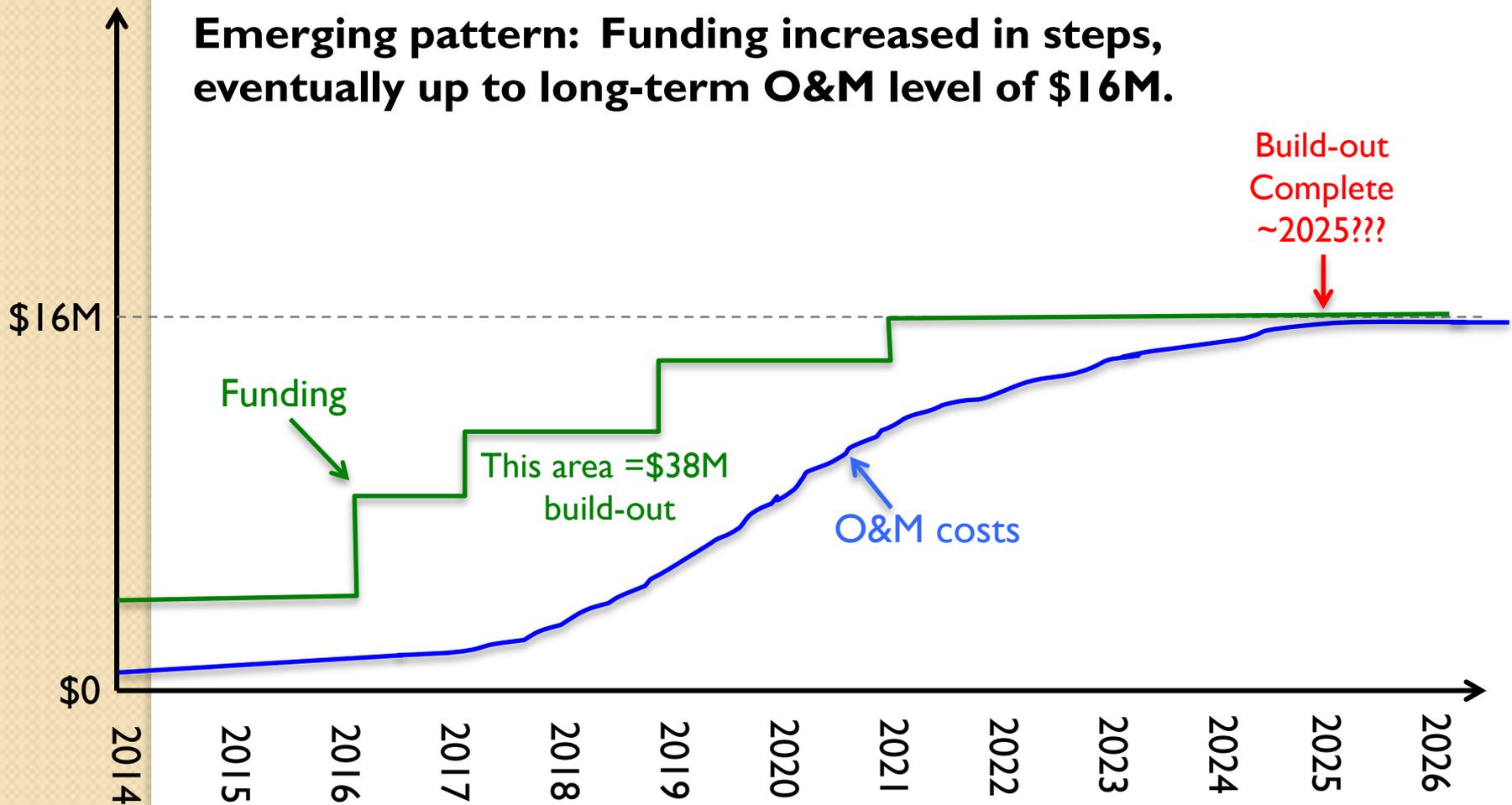
Organizations Receiving *ShakeAlerts*

(Beta Users plus BART)

Alaska Airlines^P
Amgen^S (medical products)
Arx Pax^N (magnetic base isolation)
AtHoc^N (mass communications)
Bank of America^S
Bay Area Rapid Transit (BART)^N
Bonneville Power Administration^P
Boyd Gaming^S, Las Vegas, NV
British Columbia Provincial Emergency Management^P
British Petroleum (Olympic Pipeline)^P
Cal OES, Warning Center^S
Caltech Safety/Security/Facilities^S
Caltrans^S (8 traffic mgmt. centers)
City of Hesperia^S
City of Long Beach^S EOC, FD, PD, Depts. of wastewater, transportation, gas, oil, water
City of Ontario EOC^S
Disneyland^S
FEMA Region X^P
Google.org (Crisis Response)^N
Early Warning Labs^S
Intel Corporation^P
Jet Propulsion Lab, EOC, Deep Space Net^S
Kinometrics (seismic sensor systems)^S
Long Beach Airport^S
Los Angeles City^S, EMD, Police, Fire
Los Angeles County OEM^S, Sheriff, Fire
Los Angeles Dept. of Water and Power^S
Los Angeles Metro^S
Los Angeles Unified School District^S
Metrolink^S (dispatch)
Metropolitan Water District^S
Microsoft^P
Natural Resources Canada^P
NOAA/Pacific Marine Environmental Lab^P
North County Transit District^S (San Diego)
Northwest Healthcare Response Network^P
Ocean Networks Canada^P
Orange Co. OEM^S
Orange Co. Sheriff^S
Oregon Department of Geology and Mineral Industries (DOGAMI)^P
Oregon Department of Transportation^P
Oregon Emergency Management^P
Paccar (truck manufacturer)^P
Port of Long Beach^S
Port of Seattle (SeaTac Airport and Seattle Marine Port)^P
Providence Health & Services (Washington & Oregon Hospitals)^P
Puget Sound Energy^P
Regroup^N (mass communications)
RESIG^N (insurance)
Riverside County OEM/Fire^S
San Bernardino OEC/Fire^S
San Diego County EOC^S
San Francisco DEM^N
Santa Barbara County OEM^S
Seattle City Light^P
Seattle Emergency Management^P
Seattle Public Utilities^P
Sound Transit^P
Southern California Edison^S
The Boeing Company^P
UC Berkeley OEP^N
Univ. of So California, EOC, Fire, facilities^S
Universal Studios^S
University of Oregon^P
University of So California Medical Center^S
University of Washington, Emergency Management^P
US Digital Designs, Inc.^S
Washington Department of Natural Resources^P
Washington State Dept. of Transportation^P

Funding the development of EEW

Emerging pattern: Funding increased in steps, eventually up to long-term O&M level of \$16M.



SESAC 2015 Recommendations

- Ensure that the new blueprint for monitoring earthquakes includes a vision for the future and addresses monitoring across the nation.
- Develop a funding strategy at the highest USGS level for monitoring and analyzing induced seismicity.
- Develop a funding strategy for Earthquake Early Warning that will allow for a natural and rapid expansion from a regional system to a nationwide system.
- Continue to build on the success of NEIC in providing products that are readily available following significant earthquakes.
- Strengthen the partnerships with NSF and other federal partners within NEHRP as well as universities and private industry.
- Undertake an assessment of the cost of a re-vitalized EHP that is comprehensive in its goal of ensuring a safer and more resilient nation.