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GEOSCIENTISTS INFORMING POLICY

Beth Bartel with slides from Linda Rowan
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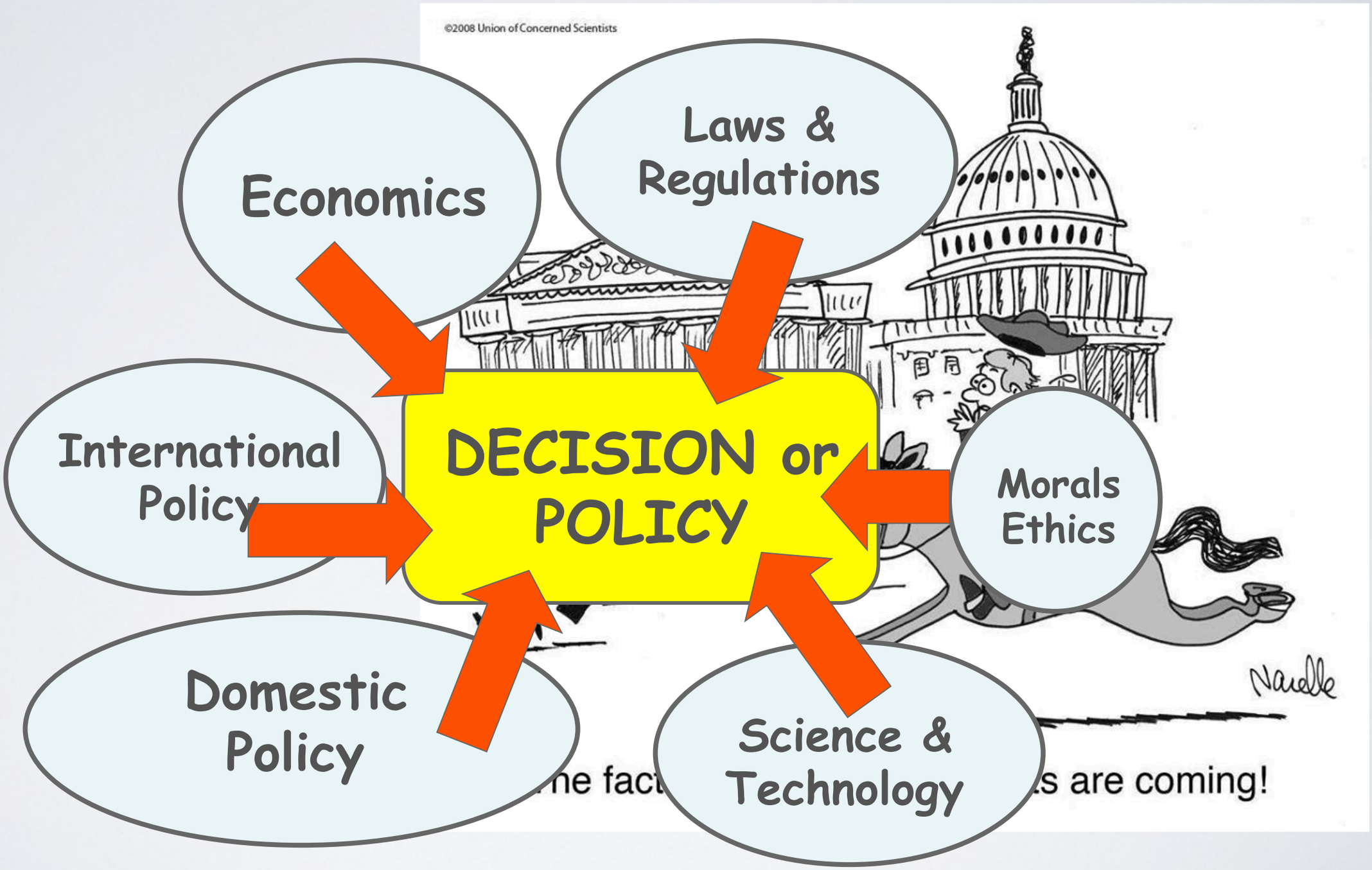
OUTLINE

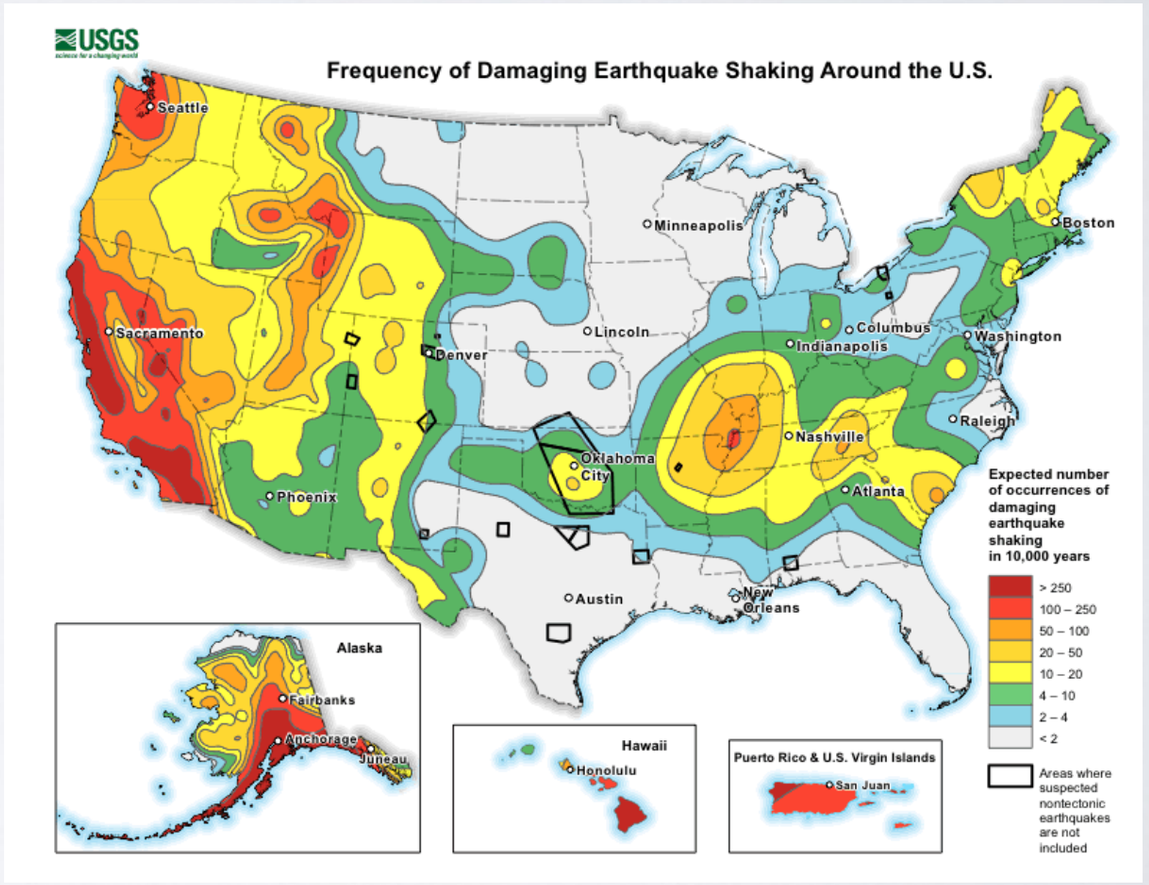
- The role of geoscience in public policy
- How geoscientists can get involved in informing policymaking
- Communicating with policymakers

POLICY INPUTS



ROLE OF GEOSCIENCE IN POLICY

- Hazards
- Natural Resources (Soil, Mining, Water)
- Environment
- Energy
- Infrastructure
- Waste
- Terrestrial Reference Frame
- Research



COMMUNICATION NEEDED

- Ensure that sound geoscience informs policymaking
- Ensure that sound geoscience benefits society
- Ensure that sound geoscience informs daily life decisions
- Advance geoscience research and education

WHAT YOU CAN DO

Steps you can take from small to large

1. Highlight geoscience to the public
2. Learn more about policy
3. Communicate about science policy to a broad audience
4. Participate in policy making
5. Engage policymakers

1. HIGHLIGHT GEOSCIENCE TO THE PUBLIC

- We're doing it!
  - Events
  - Media
  - Social Media
  - Everyday life

2. LEARN MORE ABOUT POLICY

Congressional websites

Also:

- Congressional Research Service: loc.gov/crsinfo
- Federal Register: federalregister.gov
- Independent source: GovTrack.us

2. LEARN MORE ABOUT POLICY

Agency websites

Nsf.gov/od/lpa/

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2. LEARN MORE ABOUT POLICY

The National Academies of SCIENCES ENGINEERING MEDICINE

DECADAL SURVEY FOR EARTH SCIENCE AND APPLICATIONS FROM SPACE

Division on Engineering and Physical Sciences

- ESAS 2017 HOME
- ABOUT THE SURVEY
- STEERING COMMITTEE
- PAST MEETINGS AND EVENTS
- PANELS
- COMMUNITY INPUT
- SSB HOME
- DEPS HOME

DECADAL SURVEY FOR EARTH SCIENCE AND APPLICATIONS FROM SPACE

The 2017-2027 Decadal Survey for Earth Science and Applications from Space (ESAS 2017) will help shape science priorities and guide agency investments into the next decade. The survey, sponsored by NASA, NOAA, and the USGS, is driven by input from the scientific community and policy experts.

Read a letter from our co-chairs

Learn more about the survey

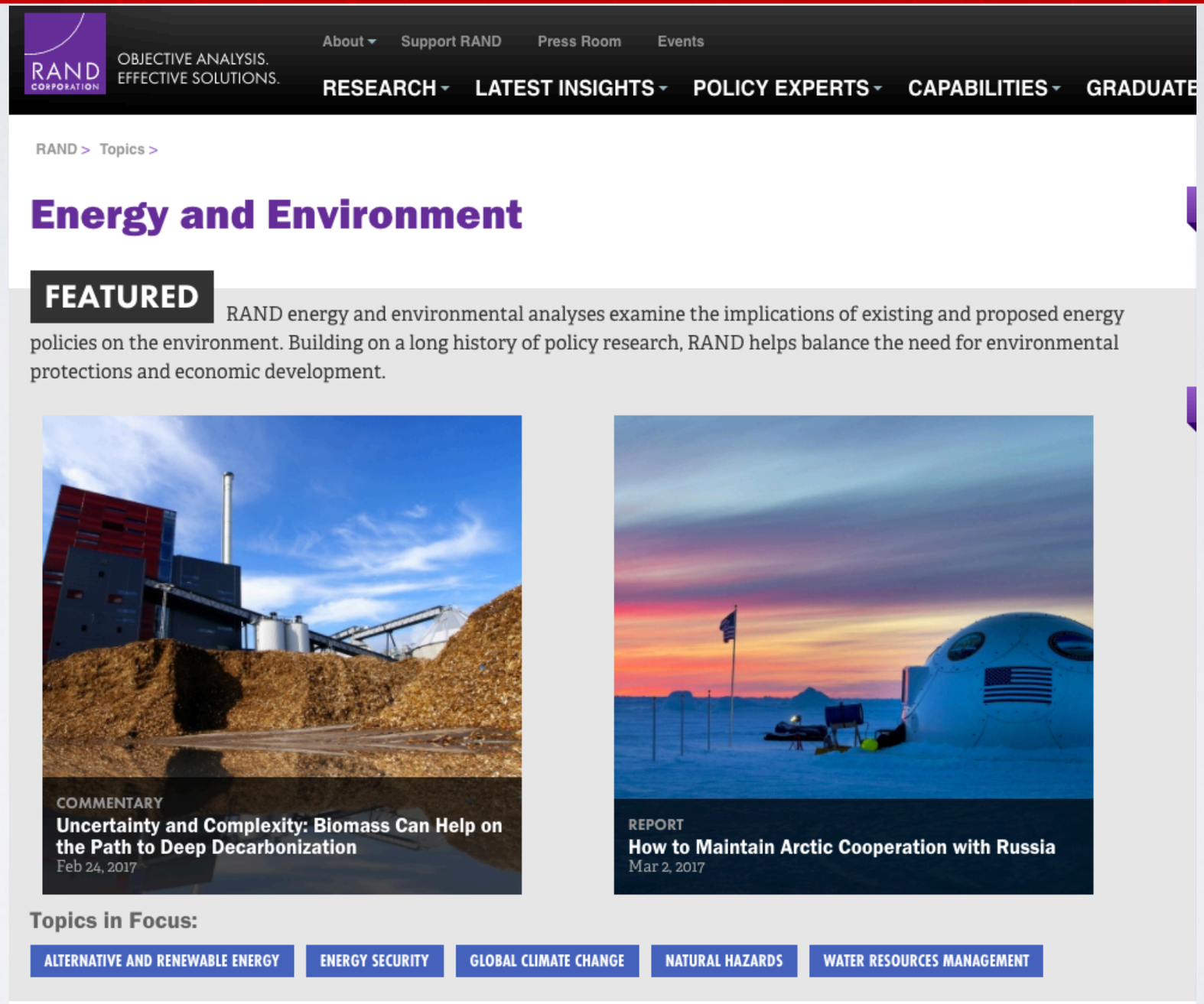
Read past newsletters

SIGN UP FOR OUR MAILING LIST

http://sites.nationalacademies.org/DEPS/esas2017/index.htm

2. LEARN MORE ABOUT POLICY

Think tanks



rand.org

Also:

- Brookings Institution

2. LEARN MORE ABOUT POLICY

Science societies

AGU POSITION STATEMENTS AND LETTERS

POSITION STATEMENTS

From time to time the AGU Council adopts position statements that relate the understanding and application of the geophysical sciences to relevant public policy. In making such statements, the Council limits itself to positions that are within the range of available geophysical data or norms of legitimate scientific debate. Each statement expires after four years unless reaffirmed. Learn more about **AGU's Advocacy Policy**.

CLIMATE ISSUES

- **Human-Induced Climate Change Requires Urgent Action**
- **Geoengineering Solutions to Climate Change Require Enhanced Research, Consideration of Societal Impacts, and Policy Development**

DATA MANAGEMENT AND RESEARCH POLICY

- **Earth and Space Science Data Should Be Credited, Preserved, Open, and Accessible as an Integral Responsibility of Scientists, Data Stewards, and Sponsoring Institutions**
- **The U.S. Government Has a Critical Role in Supporting Basic Research in the Earth and Space Sciences**
- **AGU Supports Free and Open Communication of Scientific Findings**
- **The Capability to Monitor the Comprehensive Nuclear-Test-Ban Treaty (CTBT) Should be Expanded, Completed, and Maintained**

http://sciencepolicy.agu.org/agu-position-statements-and-letters/

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2. LEARN MORE ABOUT POLICY

Geoscience Policy Recommendations for the New Administration and the 115th Congress

This set of policy recommendations outlines ways to achieve our shared national interests where the geosciences play a significant role. The policy proposals build on the consensus document *Geoscience for America's Critical Needs: Invitation to a National Policy Dialogue*, which was developed for the 2016 election.

Geoscientists gather and interpret data about the Earth and other planets, providing the data, tools, and expertise to help solve some of America's greatest challenges. The policy proposals laid out in this document are centered around five high-level thematic areas:

- **Enhancing national and homeland security**
- **Increasing economic prosperity**
- **Securing resources and strengthening national infrastructure**
- **Supporting strong and resilient communities, and**
- **Growing a dynamic workforce**

This report highlights the shared priorities of nine professional geoscientific societies that represent some 250,000 members and are members of the Geoscience Policy Working Group. We in the geoscience community offer to share our scientific expertise and perspectives as you craft national policies to build a strong and competitive nation.

The societies listed below do not necessarily endorse or have expertise on every recommendation in this report.

Signed: American Association of Petroleum Geologists, Association of American State Geologists, American Geophysical Union, American Geosciences Institute, American Institute of Professional Geologists, Consortium for Ocean Leadership, Geological Society of America, National Ground Water Association, Soil Science Society of America.

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POLICY PROPOSALS

ENHANCE NATIONAL SECURITY

1. Support and enhance the nation's strategic Earth observational infrastructure and invest in the interpretation and preservation of this data.
2. Prioritize natural hazards research and monitoring to minimize risk to people and infrastructure.
3. Invest in America's icebreakers to maintain our military and economic capabilities in the Polar regions.
4. Invest in research to promote the development of innovative technologies for water reuse, water recycling, and managed aquifer recharge.

INCREASE ECONOMIC PROSPERITY

1. Support robust energy research and develop solutions to reduce potential environmental impacts of energy extraction and generation.
2. Support and invest in regional ocean planning initiatives to protect and encourage responsible production of our ocean's natural resources.
3. Support agricultural and aquacultural data collection, analysis, and application for efficient and sustainable food production.
4. Gain a better understanding of soil properties and their relation to valuable ecosystem services.
5. Identify alternative uses, or storage options, for produced waters, carbon dioxide, and other energy waste streams.
6. Define the composition, structure, and geologic processes of the Earth's crust.

SUPPORT STRONG COMMUNITIES

1. Improve communication to mitigate the impact of natural hazards on people, buildings, and infrastructure.
2. Invest in soil microbiome research as a new frontier connecting biology, medicine, and agriculture.
3. Assess and improve the operation of deep injection wells to ensure community safety.

SECURE RESOURCES AND STRENGTHEN OUR NATIONAL INFRASTRUCTURE

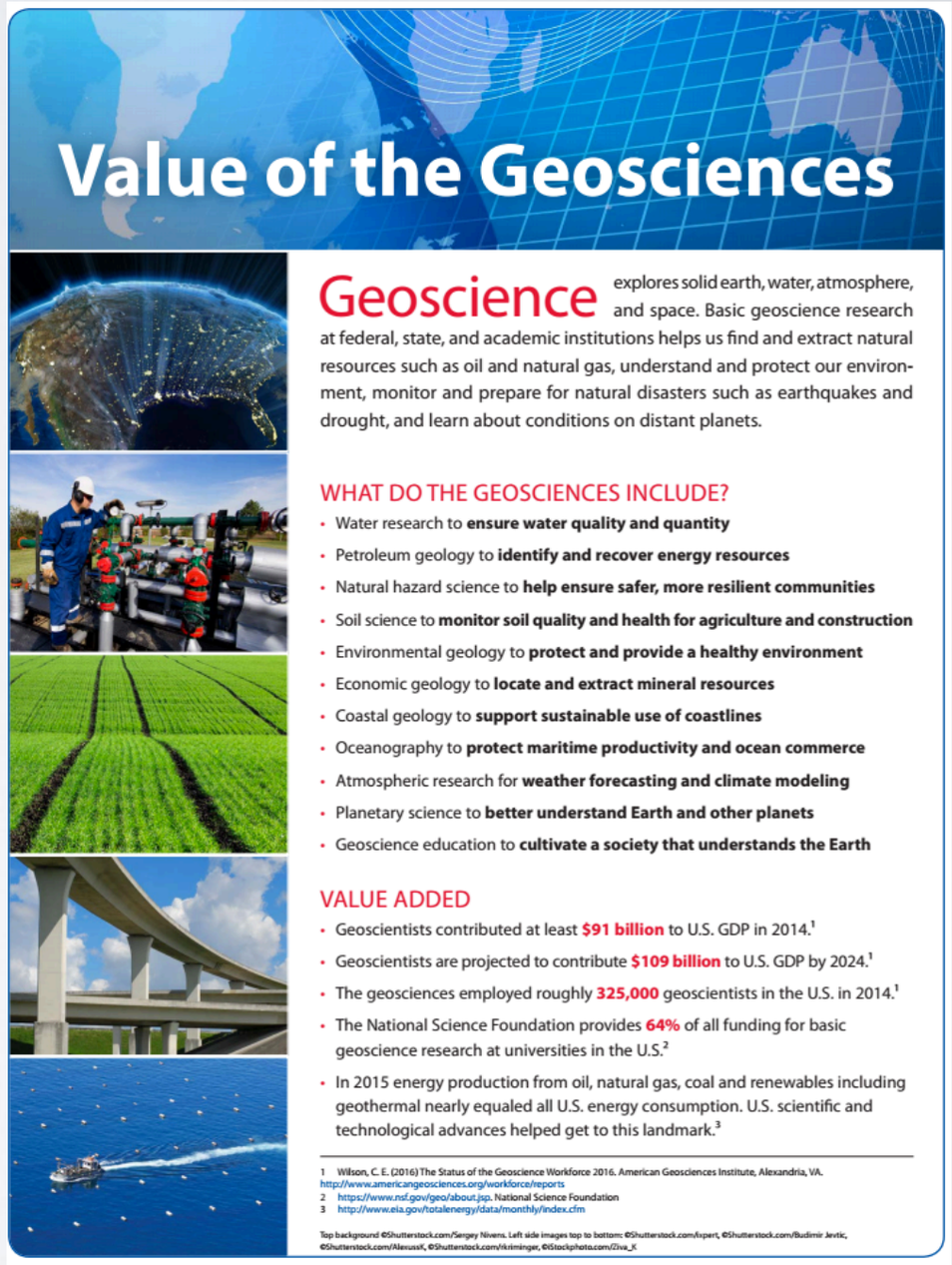
1. Examine mineral commodities from discovery to disposal to ensure stable supply chains for our infrastructure and economy.
2. Mitigate the high risk associated with nuclear waste.
3. Invest in water infrastructure to ensure access to safe and cost-effective drinking water for all.
4. Support collection and dissemination of water monitoring data.

GROW A DYNAMIC WORKFORCE

1. Support strong federal investments in basic geoscience research to train and develop future geoscientists.
2. Invest in a vibrant and dynamic STEM-focused workforce to increase our global competitiveness.
3. Establish infrastructure to support robust aquaculture systems to create new jobs and business opportunities.

3. SCIENCE POLICY COMMUNICATION

- Policy Forums in Science Journals
- Editorials/News
- Policy Reports
- Factsheets/One Pagers
- Social Media



Value of the Geosciences

Geoscience explores solid earth, water, atmosphere, and space. Basic geoscience research at federal, state, and academic institutions helps us find and extract natural resources such as oil and natural gas, understand and protect our environment, monitor and prepare for natural disasters such as earthquakes and drought, and learn about conditions on distant planets.

WHAT DO THE GEOSCIENCES INCLUDE?

- Water research to **ensure water quality and quantity**
- Petroleum geology to **identify and recover energy resources**
- Natural hazard science to **help ensure safer, more resilient communities**
- Soil science to **monitor soil quality and health for agriculture and construction**
- Environmental geology to **protect and provide a healthy environment**
- Economic geology to **locate and extract mineral resources**
- Coastal geology to **support sustainable use of coastlines**
- Oceanography to **protect maritime productivity and ocean commerce**
- Atmospheric research for **weather forecasting and climate modeling**
- Planetary science to **better understand Earth and other planets**
- Geoscience education to **cultivate a society that understands the Earth**

VALUE ADDED

- Geoscientists contributed at least **$91 billion** to U.S. GDP in 2014.[1]
- Geoscientists are projected to contribute **$109 billion** to U.S. GDP by 2024.[1]
- The geosciences employed roughly **325,000** geoscientists in the U.S. in 2014.[1]
- The National Science Foundation provides **64%** of all funding for basic geoscience research at universities in the U.S.[2]
- In 2015 energy production from oil, natural gas, coal and renewables including geothermal nearly equaled all U.S. energy consumption. U.S. scientific and technological advances helped get to this landmark.[3]

1 Wilson, C. E. (2016) The Status of the Geoscience Workforce 2016. American Geosciences Institute, Alexandria, VA. http://www.americangeosciences.org/workforce/reports
2 https://www.nsf.gov/geo/about.jsp. National Science Foundation
3 http://www.eia.gov/totalenergy/data/monthly/index.cfm

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4. PARTICIPATE IN POLICYMAKING

a. Volunteer

b. Fellowships

c. Internships

d. Professional Staff

- AAAS
- AGU
- GSA
- SSA
- AGI
- AMS

5. ENGAGE POLICYMAKERS

a. Comments, Phone Calls, and Letters

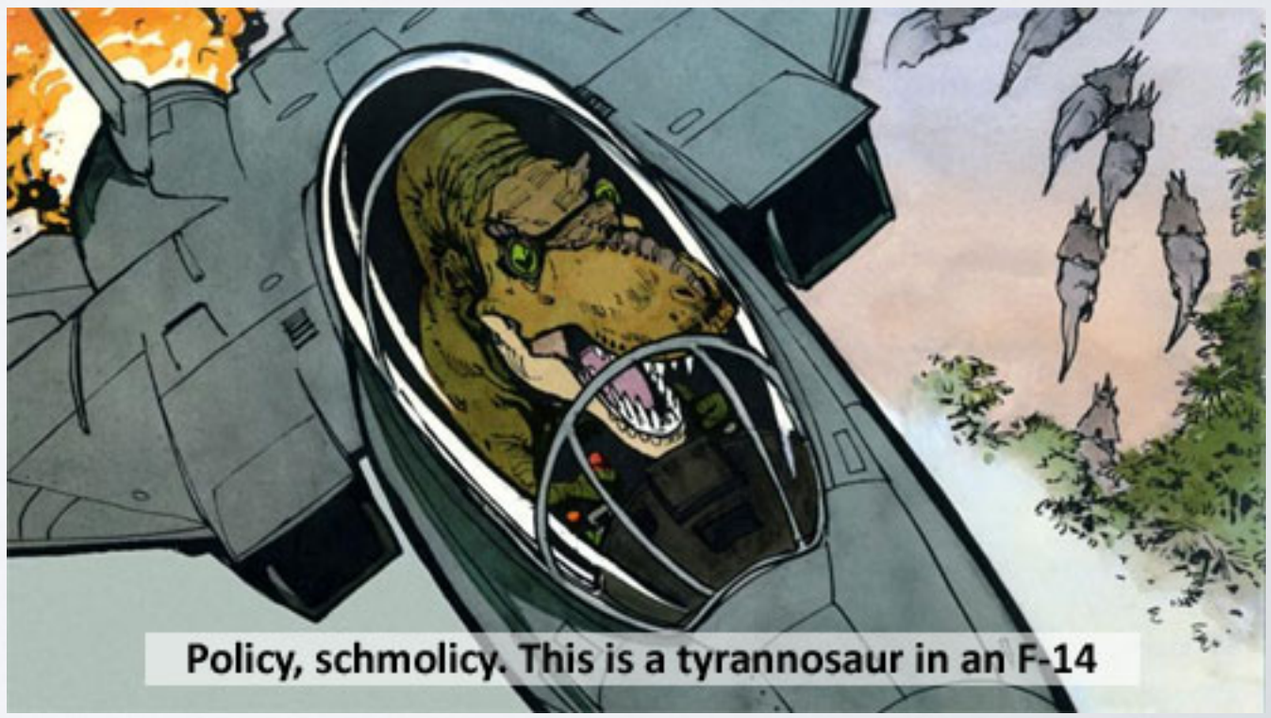
b. Congressional Visits

c. Townhalls and Institution Visits

d. Exhibitions and Briefings

e. Hearings and Testimony

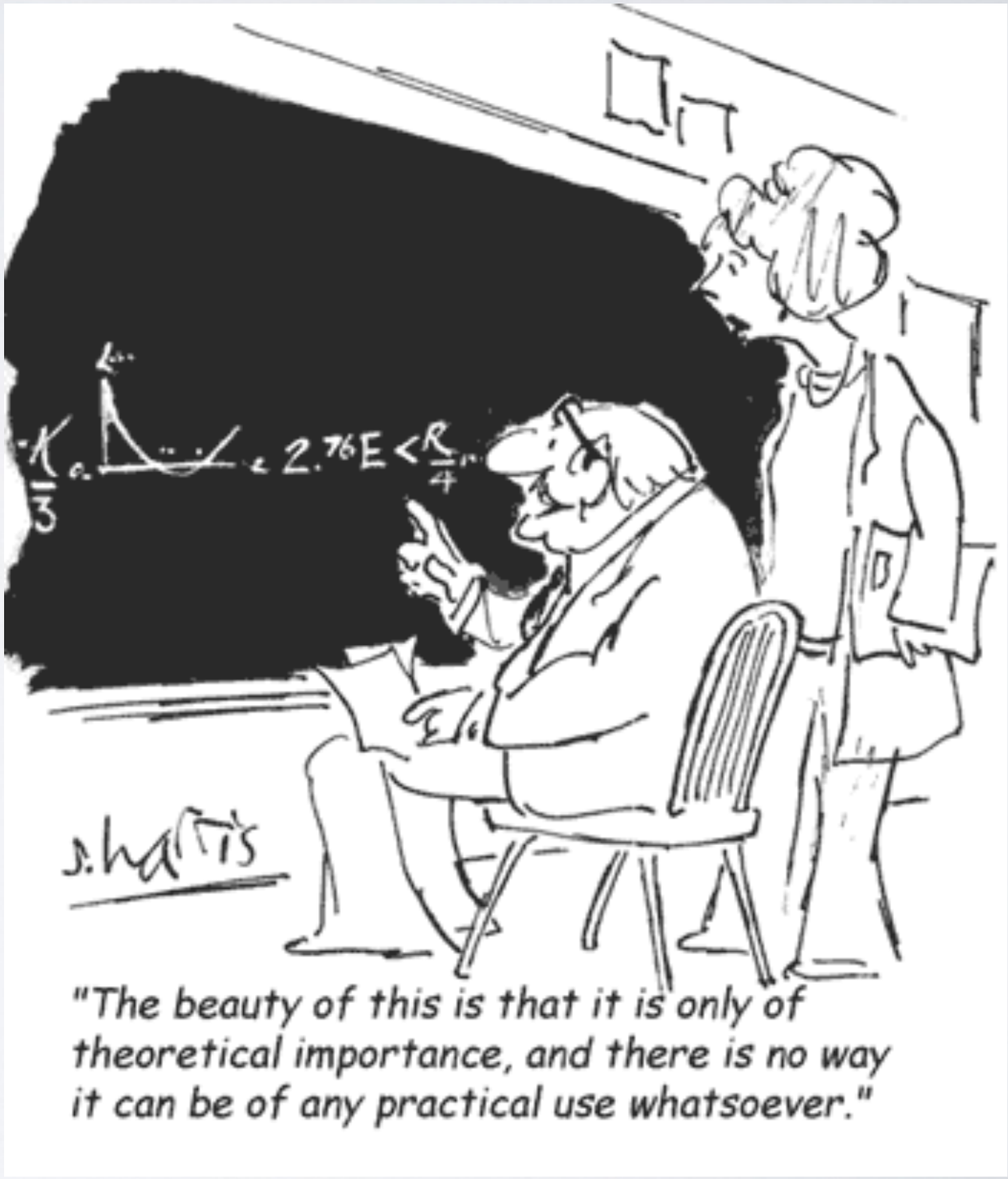
f. Legislation



A DAY IN THE LIFE OF A POLICYMAKER

BEST PRACTICES

- Have an “ask”
- Frame your ask
- Support your argument
  - Three main points
  - Personal story



POLICY MAKER EXERCISE – PART 1 - RESEARCH

- Identify your representative (http://www.house.gov/representatives/find/)
- Think of an "ask" related to your research; more funding? Alternatively, find a bill that you would like them to take a stand on (https://www.congress.gov/)
- Look at your representative's website to find points of connection between their interests and your work
- Develop messaging about your research in the framework of their interests: What are you asking for, and why? (Three main points)
- Think: are there any supporting visuals you would bring?

POLICY MAKER EXERCISE – PART 2 – PRACTICE

- Find a new partner
- Choose A and B
- A: You are a staffer with no scientific background
- B: Introduce yourself (name, position [e.g., PhD student], institution, city of residence)
- B: Deliver your ask; be succinct and get to your point quickly
  - What are you asking for?
  - Why are you asking for this?
  - A personal story or connection, if you have one
- Switch