

Science and Technology Policy in Congress:

An Assessment of How Congress Seeks, Processes,
and Legislates Complex
Science and Technology Issues

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*“...when you do not know a thing,
to allow that you do not know it—
this is knowledge.”*

~Confucius

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Chapter 1: Background and Methodology

Abstract

In 2007 and 2008, The Keystone Center and the Consensus Building Institute conducted a series of interviews of current and past Members of Congress and their senior staff, to better understand how Congress accesses information on complex scientific and technological issues that may require legislation or regulation. While studies have suggested what Congress should do, little has been done to ask Congress, what gaps it perceives, and what might be improved from the view on Capitol Hill. This report is an assessment of those Congressional interviews and recommendations.

In 2006 and 2007, The Keystone Center (Keystone) worked with the Woodrow Wilson International Center for Scholars (Wilson Center) to address public policy formation around complex science and technology issues. A number of issues were (and continue to be) in the headlines: water scarcity and water contamination; climate change; nanotechnology; and genetics and stem cell research. Congress and the White House reflected the array of opinions from the broader public, based not just on partisan leanings and differences in values systems, but also from a general lack of scientific and technological knowledge. The Wilson Center and Keystone convened a panel of scientists and policy experts in 2007 to highlight different approaches that might be considered to improve general knowledge around these and other pressing subjects. [A brief summary of the subjects considered by the group can be found in Appendix C.]

At the same time, a review was conducted of the Office of Technology Assessment (OTA), including a look at its origins, its successes and challenges, and its ultimate demise in the mid-1990s. Over the past decade, several studies were conducted suggesting how Congress and the Administration should access this information, including suggestions to revive the OTA. However, very little work had been done to ask Members of Congress what they perceived to be the gap in knowledge and the best ways to address it from their own view. To answer these questions from this critical point of view, Keystone teamed up with the Consensus Building Institute (CBI) to conduct a series of interviews of current and past Members of Congress and their senior staff. [A list of interview questions is available in Appendix A, and a list of interviewees is available in Appendix B.]

We made several assumptions about the science and technology policy issues that come before Congress and that informed our interviews:

- ♦ Congress is well-served by mediating, non-partisan institutions that focus on specific topics (two of note include the Congressional Budget Office on budget issues and the Government Accountability Office on issues of waste and fraud);
- ♦ Congress uses scientific and technical information to inform its decisions, at least in part. However, Congress currently lacks a science and technology-specific mediating institution that explicitly provides education, understanding, and analysis of the key issues it needs to consider.
- ♦ Congress, at least as a whole, cares about information that is credible (i.e., it might withstand the critique of professional peers) and legitimate (i.e., considered reasoned or acceptable in the eyes of diverse constituencies).

Through our interviews, we sought to answer the following questions:

- ♦ *What are the perceived gaps in how Members of Congress access state-of-the-art science, especially science that is uncertain and contested, to best inform the decisions and actions of government; and,*
- ♦ *How strong is the desire among Members of Congress to access information that is technically credible and legitimate in the eyes of diverse stakeholders?*

Chapter 2: Current Sources of Science and Technology Information for Members of Congress



Members of Congress currently obtain their information about complex technical and scientific issues related to current or future legislation from a variety of sources. At this point in time, Congress as a collective body does not obtain its information in any fully coordinated, uniform, or systematic fashion. Rather, there are a variety of mechanisms utilized by individual Members, committees, and occasionally, Congress as a whole. In some sense, sources of information are a relatively “free market of ideas” in which individual Members decide where, from whom, and how to seek information. For long-standing Members who have developed extensive technical “information networks,” the information they seek tends to be narrowly focused on local district issues and may be partisan. Indeed, some Members noted that they knew the partisan leanings of the place or person from whom they obtained certain types of information. However, from the perspective of tenured Members of Congress, there is a sense that they can get the information they know they need.

On the other hand, for new Members or Members who are suddenly faced with key technical or scientific information outside of their networks or knowledge, the challenge of obtaining relevant, credible, and legitimate information is difficult. It was acknowledged that, especially for new Members, there is little time for analysis of new scientific or technology topics, and when new Members are unable to answer questions among internal staff, they often rely on other, more senior Members or the position of their political party.

For both seasoned and new Members of Congress, the sources of science and technology information include the following, in no particular order:

The Internet

In the last five years, more and more Members and their staff use the Internet directly to research issues and priorities before them. There is a strong awareness of the power of search sites like Google, and of information sites like Wikipedia, but also of the limited amount of peer-reviewed analysis that is quickly and readily available.

Member and staff expertise

A few Members and/or their staff are experts in a particular technical or scientific field. They either come with expertise and/or build it over time in one technical area or another. This is particularly true in the Senate.

Committee staff

Committees, particularly the House Science Committee, have staff with expertise in particular areas and are able to inform either individual Members of Congress or the Committee as a whole on particular science and technology matters.

White House Office of Science and Technology Policy (OSTP)

A few Members noted that they have obtained assistance from the President's OSTP, though this may depend strongly on the Member's party affiliation in relation to the President's.

Executive branch agencies

Many interviewees noted that they can obtain a great deal of information from the various executive branch agencies and national laboratories. This is based on relationships between Congressional and executive agency staff. This is particularly true for accessing information from pre-existing studies on relevant subjects, and less so for original analysis on new topics.

Interest groups

Most Members have any number of interest groups and their advocates or lobbyists who provide advice to them. Interest groups and various trade associations may develop particular expertise on specific issues, develop their own reports and research, and seek to use that to influence and/or inform Members.

Think tanks

Though "think tanks" and "interest groups" may be hard to distinguish in many cases, Members also often seek out (or are sought out by) the work of such D.C.-based organizations. Each shares a dedication to generating detailed analysis of various issues (however partisan or not). These include the Brookings Institution, the Heritage Foundation, and others.

Universities

Many, but by no means all, of the Members interviewed utilize universities and colleges within their district or state for specific advice on science and technology matters. However, many noted that universities tend to respond to requests at their own pace, which is too slow for the legislative calendar. Further, requests from Congress are often used as opportunities for the university to ask for additional money above and beyond the needs of the immediate research.

American Association for the Advancement of Science (AAAS) Fellows

At least some Members employ and/or use AAAS Fellows to help them fill the gap on a particular science and technology issue of interest. However, physical office space constraints and budget constraints tend to limit their use in the House, and they often are tasked with multiple issues during their typical six-month tenure.

Congressional Research Service (CRS)

Individual Members frequently utilize CRS for facts and basic background on particular issues, and many interviewees praised CRS for its ability to provide basic information. CRS is less frequently used for analytical work.

National Academies of Science/National Research Council (NAS/NRC)

At least some Members, committees, and Congress as a whole (through legislation) access the NAS for various and specific science and technology issues.

Chapter 3: The Congressional Perspective

From our interviews, there was no emerging agreement that Congress necessarily needs to access “state-of-the-art” science nor that the analysis is technically credible and legitimate in the eyes of diverse stakeholders. The following views on “the problem” or “question” were offered, in no particular order.

Who cares?

Several interviewees lamented the fact that most Congressional Members seem to have little care about, interest in, or attention to technical and scientific matters in particular, and to legitimate and credible sources of information to guide Congress on such issues when it chooses to take them up. As one interviewee said: “No one in Congress senses the need for science in their daily lives.” In short, these interviewees felt that “few care” about these issues in today’s highly partisan, party-driven Congress.

Times have changed

Some noted that in the last decade, the proliferation of information sources and access to them, primarily through the web, has filled the gap generally that might have been provided in earlier years through committee expertise or such entities as the Office of Technology Assessment (OTA). One interviewee commented: “There is today so much good (and bad) information available, from think tanks, universities, associations, that OTA would just be one more source.” Interest groups have grown more sophisticated in developing their own research and analysis capabilities. Capable think tanks across Washington have proliferated and offer a range of in-depth analysis across the ideological spectrum. If anything, the problem is not a lack of sufficient information, but rather too much information on almost all topics.



More independent analysis

The Internet has provided a remarkable and efficient research tool for Members of Congress and their staff. One staff member said: “For intermediate analysis – more than instant Google search, less than full-fledged [National] Academy study – the best way is to do it myself.” Another staff person noted that while his boss gets most of his information from a rich set of sources he has developed over time, including NGOs, academic institutions, and others, the Congressman “makes an extra effort, at times, to even do his own research directly.”

Party above analysis

Some interviewees noted that Congress has become increasingly partisan over the last decade or two. They note that even if capable scientific and technical analysis were available, it would not likely inform the highly partisan decision-making of parties, their leaders, and Members. As one interviewee said: “Even if you created such a body, would anyone listen in the current state of affairs?” Some felt that Congress less and less makes decisions based on thorough analysis and deliberation, and more and more solely on ideology and political grounds. Thus, even if a credible, centrist analysis is conducted on a particular issue for Congress, it might not matter much in the current way decisions are made.

Poorly defined desire for analysis

Some certainly lamented the fact that OTA was terminated in the mid-1990s; but demonstrated even greater concern that few staffers or even Members of both parties could even remember the kind of Congress that wanted scientific and technical analysis, let alone had a dedicated institution to deliver that analysis directly. One interviewee stated: “Many if not most staffers don’t even remember the pre-1994 Congress and its then long-standing institutions, and so, how to get even a Democratic Congress to resurrect any kind of meaningful, funded institution is sadly difficult to imagine.” Some noted that Members are generally responsive to the general public, who appear to be overwhelmed, tuned out, or unconcerned about science and technology. One interviewee noted that: “The job of Congress ought to encompass learning stuff constituents don’t have time to learn.” Yet, until the American public decides science and technology actually matters for their future well-being and it again surfaces on the national consciousness like after World War II, Congress (or its constituents) is simply not going to make this a priority.

“I am not averse to bringing back OTA. Sure they’d be busy doing lots of reports. It’s a way for Congress to say, ‘See, we’re doing something on this tricky subject.’”

Analysis as paralysis

Some interviewees noted that Congress typically uses science and technology analysis, not as a means to inform decision-making, but more frequently, as a means to avoid it. One interviewee noted: “We use NAS to do studies to make unfriendly amendments or certain kinds of bills go away. We can appease a Member by ordering the study.” Thus, science and technology analysis can be more a means to postpone or divert attention, rather than to inform important decisions that should and must be made. Or, as another interviewee noted: “I am not averse to bringing back OTA. Sure they’d be busy doing lots of reports. It’s a way for Congress to say, ‘See, we’re doing something on this tricky subject.’”

Congress is the mediating institution

Some interviewees noted that Congress, by the Constitution, is the mediating body that must directly take up all policy issues, including science and technology. The proper role of Congress, in this view, should not create its own bureaucracies, administration, and sources of information. That is precisely backwards from what the Framers intended. Rather, individual Members should obtain their information from where they can and will, and using those sources, make informed arguments and decisions with one another.

Chapter 4: Challenges of Science and Technology Analysis Facing Congress

Many interviewees highlighted several challenges facing Congress with the current, diverse means by which Congress seeks and obtains science and technology analysis.



Too much information

Most Members noted that there is no lack of data, information, and analysis of complex science and technology issues via the Internet and from a variety of sources. However, it is difficult and time-consuming for many to individually weed through such quantities of information, and can be difficult even then to determine which information is more balanced and legitimate. Though many interviewees did note the increasing partisanship of their institution, they also expressed hope, or at least longing, that there might be some means to obtain credible and legitimate information that would help them to make better decisions about weighty policy choices.

Limited resources

Many noted, especially on the House side, that most individual Members lack the staff, office space, and dollars to reasonably equip themselves to understand and make decisions about complex science and technology issues. Many noted that for those few Members who build up technical expertise on an issue over time, additional intra-office resources are useful, like AAAS Fellows. But for the rank and file, especially Members during their first few terms, having some kind of additional, trusted extra-office resource might prove very useful and could help narrow the extreme partisan differences in recent sessions of Congress.

Balancing information as a power

A few interviewees noted that with the demise of the Office of Technology Assessment (OTA), Congress has lost its own source of trusted science and technology information and analysis. Thus, on the important issues of the day, Members must turn to outside entities for information. Generally, this means turning to industry and business, because they have the resources to fund data gathering and analysis. But this in turn means that information is more likely biased and favorable toward those who created and funded such research. Thus, unintentionally, the demise of OTA has contributed to the “over” influence of well-funded special interest groups.

Framing science and technology to be compelling to Congress

Some interviewees noted that in order for science and technology to be compelling as a policy topic, the general issue must be reframed and made more relevant for individual Members in their districts. Some noted the current Administration’s effort to frame science and technology issues as ones of “American Competitiveness” is a step in the right direction.

Others noted that those who care about science and technology have to find ways to make the issues (and their analysis) relevant to individual Members of Congress in their individual districts. If science and technology can be associated with jobs, children's future, quality of life, public safety, and/or national security in very concrete ways, Members might be able, and more willing, to pay more attention to these issues.

Insufficient knowledge and the inability to ask the right questions

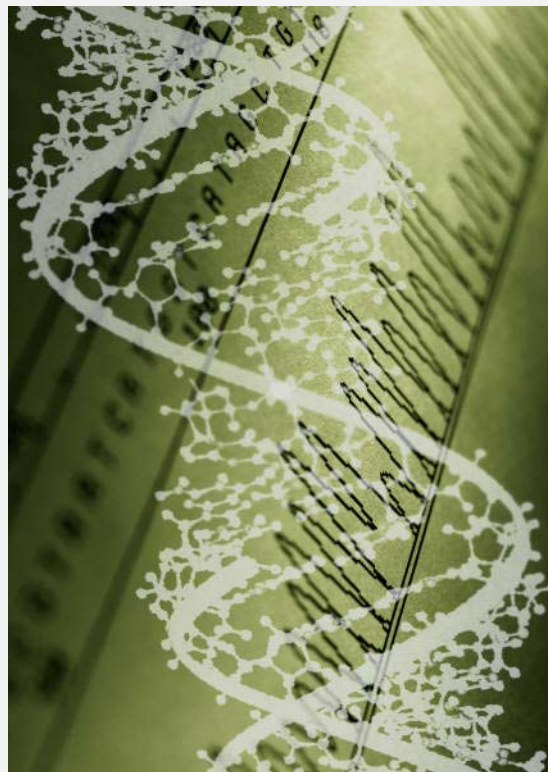
While vast quantities of information flood email inboxes from numerous sources, many Members of Congress lack the training and expertise to frame questions and issues in a way that might then lend them to further science and technology analysis. One Member stated: "The problem is that Members don't know to ask about science questions. And it's not just 'science' it's the scientific aspects of non-scientific subjects, e.g., voting issues and the technology aspects inherent in it." It would seem that science and technology issues are not framed or understood in a way that is compelling to many or most Members of Congress, and Congress has difficulty framing policy issues or questions in a way that make them compelling or open to science and technology analysis.

Institutional gaps in sourcing particular kinds of analysis

Many Members cited the points more thoroughly covered in *Science and Technology Advice for Congress (2003)* by noting that there are institutional gaps in providing Congress certain kinds of science and technology analysis. The Congressional Research Service (CRS) is highly responsive and can provide individual Members confidential information and comprehensive literature reviews on key issues. However, CRS is not equipped to do more thorough analysis and at least some option alternatives (if you did X, then the pros would be A and the cons would be B). The National Academies of Science (NAS) do provide a means to obtain more thorough analysis and recommendations on any number of key issues. However, interviewees noted that this often takes too long for their legislative purposes (typically 18 months) and requires a negotiation with the executive branch and agencies to find the necessary will and funding. Thus, there is a gap between the short-term, primarily factual information CRS provides and the longer-term, detailed recommendations that NAS studies typically produce.

Technical and scientific complexity

Many Members noted that over the last 20 years science and technology issues have become more varied, complex, and thoroughly opaque in some cases. From complex financial derivatives contributing to Wall Street woes to the Internet to advances in health care and medicine, individual Members cannot keep up with all the changes and advances, nor can Congress as a whole.



Given this complexity, Members have a difficult time knowing what research should take budgetary priority for the national interest. (For example, is it genetically-modified organisms, embryonic stem cell research, or some other nascent technology that is suddenly going to pose a large public interest problem?) Instead, Members may limit their efforts to more parochial interests, so that regardless of the issue, whatever research is done is conducted in their respective districts.

“There are so many issues, there is so much information, and it is so complex, that often if you don’t have a dog in that fight, you defer to Members who do, or tow the party line. Maybe it would be different if there was some source outside of my office that was vetted in some way.”

Lack of an “honest” broker serving Congress directly

Many Members cited desire for, if not skepticism about, some kind of entity that could be an “honest broker” that would provide some kinds of analysis on science and technology issues. Many cited a set of principles that might guide that “honest broker.”

These include:

- ◆ Directly beholden to and proximate to Congress;
- ◆ Produces reports that have legislatively-relevant language;
- ◆ Works on relevant issues; produces results in a timely fashion, i.e., in keeping with the legislative calendar;
- ◆ Is more than “hearings” and “reporting;”
- ◆ Provides analysis of alternatives rather than specific recommendations; and,
- ◆ Is non-partisan (free of the undue influence of the executive branch or the majority party in Congress).

As one Member noted: “There are so many issues, there is so much information, and it is so complex, that often if you don’t have a dog in that fight, you defer to Members who do, or tow the party line. Maybe it would be different if there was some source outside of my office that was vetted in some way.” At the same time, many expressed doubt that such an “honest broker” could be created and sustained. As noted above, the doubt includes the general lack of interest in science and technology issues, the difficult current budget circumstances, the political cost of recreating an OTA-like entity for the party whose “success” over a decade ago was to kill it, and the difficulty in structuring an entity that would remain non-partisan over time.

Chapter 5: Science and Technology Issues in Need of More Analysis

Interviewees cited some issues that might require more thorough science and technology analysis now, or in the coming years. These are listed below in no particular order.

Internet

Congress has done little regulation in this arena, which, for some, may be a very good thing. On the other hand, some expressed concern that they knew little about the technology and its advancement and what, if anything, ought to be addressed by Congress.

Climate change

Interviewees raised a number of specific questions of interest. Can you translate parts per million of CO₂ into degrees, and with agreement among scientists? What is the remaining state of uncertainty regarding the anthropogenic sources of climate change and what else can be learned to quickly reduce that uncertainty?



Nuclear waste and Yucca Mountain

Of the risks cited for Yucca Mountain, what is the range of probability of each given what we know today across various studies, researchers, and institutions that have researched the question?

Fuel efficiency

What is the range of estimated costs associated with requiring a fuel efficiency standard of 35 mpg? 40 mpg? Other? What technologies are more likely to aid that increase? Which are not?

Cellulosic ethanol

What are the estimated trajectories for industrial-scale cellulosic ethanol reaching the U.S. market? How might one try to draw some broader conclusions from such diverse, divergent estimates to date?

Chapter 6: Congressional Recommendations to Best Access Science and Technology Analysis that is Relevant, Timely, Credible, Affordable, and Legitimate

Interviewees expressed a range of views on how they might best improve their access to science and technology analysis that would be useful to them to help sift through extensive information, educate and inform, and provide some kind of detailed analysis that many (not just an individual Member) might trust, or at least rely on, to inform their decisions. A thorough analysis and review of various choices is provided in Chapters 6 through 12 in *Science and Technology Advice for Congress (2003)* and summarized well in the concluding Chapter 13. However, to augment this analysis, the interviews provided some additional options and views. These recommendations from the various interviewees are as follows:

Better briefings

One potential way to raise awareness is through a series of briefings by credible scientists at the Office of Science and Technology Policy, the National Science Foundation, the National Institutes of Health, etc. The goal ought to be to increase the understanding of Members and Congressional staff.

Better identification of sources of knowledge

Several interviewees discussed the notion of a list of sources of expertise on particular subjects. It was suggested that a list of institutions could be developed to help new Members and their staff know to whom to turn for answers on complex issues (e.g., for nuclear power research, contact the Idaho National Lab or the Massachusetts Institute of Technology). It was noted that if such a list were created at the individual level (i.e., for questions about X, contact Professor Y), it would quickly create its own lobbying effort to have certain experts included or excluded. Therefore, a list at the institutional level is preferable.

Enhance the Congressional Research Service (CRS)

CRS is currently focused typically on data- or fact-specific requests. Staffing may be uneven and they are not fully equipped to provide more thorough, in-depth analysis. However, with additional budget and staffing that extends technical expertise beyond their primary research associates, CRS could help improve upon the current situation.

Enhance the National Academies of Science (NAS)

NAS, while serving many functions well, is currently underfunded, slow to produce results, and requires Congress to deal with the executive branch in vetting/contracting for NAS analysis. NAS might be enhanced in order to produce reports with the quality of their 18-month reports, but in far shorter time on issues timely and relevant to a particular Congress and legislative calendar.

Link up universities

While individual Members do use their own university affiliations (within district, state, or as an alumni), Congress does not have any efficient and structured way to enlist universities in key analysis. Though universities and colleges individually may lack the full range of resources needed on any particular topic,

collectively they are a potential rich source of assistance. For example, key questions or issues might be posed to a variety of academic institutions with a clear set of instructions, a limited source of funds, and a deadline. Universities could compete to provide a range of useful, focused, but diverse analysis.

Convene bi-partisan, Congressional panels

Congress might find ways to create its own “blue ribbon” panel or experts from time to time to address key issues or policies. Those panels might provide joint deliberation to and before Congress, be convened in a bi-partisan way, and have a short, definite life. The goal would be to improve upon the often combative and partisan process of standard committee hearings.

Create a limited Office of Technology Assessment “OTA-light”

Some, but by no means all, Members and staff suggested some improved version of OTA should be created. It would need to be affordable, timely in its response to Congress, focused in its purpose, and managed and structured in a way to reduce partisanship and manipulation.

Enhance technical resources at the Government Accountability Office (GAO)

While GAO may never be able or equipped to do in-depth science and technology analysis, their technical competence might certainly be improved so that they can provide better economic analysis of science and technology-related issues, particularly to assess whether research or demonstration projects are inefficient or wasteful.

Enhance the House Science Committee

The House of Representatives already has the Science Committee, which is less partisan than most, has thirty or so capable staffers, is a creature of Congress, and is able to analyze issues for itself and other committees. Additional resources such as staff might be provided to improve on its ability to be responsive and cover a range of topics.

Build Congressional capacity

Some noted that the issue should not be framed as creating an additional institution or mechanism to assist Congress. Rather, the issue should be framed as enhancing and increasing Congress’s overall ability to deal with science and technology issues that permeate most policy issues under consideration. Such capacity building might include the following components:

- ◆ A larger American Association for the Advancement of Science (AAAS) Fellows program with greater opportunities for networking among Fellows and Members;
- ◆ More resources for individual Members to raise awareness of science and technology issues of which they are well-versed;
- ◆ A vetted list of institutions that can provide technical information on specific subjects; and,
- ◆ Basic briefing materials and resources for new Members to know how to access technical assistance on various kinds of science and technology issues.

Chapter 7: What Next?

From our interviews, there is, not surprisingly, no clear nor agreed upon view about how Congress might better both elevate science and technology issues and obtain advice in a more concerted, collective, bipartisan, and trusted fashion. However, we believe that our interviews uncovered, if not a strong desire, at least a general longing for a better way for Congress to take on difficult, complex, and uncertain scientific and technical issues in a more analytical, deliberate, and less partisan fashion. Very few interviewees have the motivation to simply recreate OTA, but many believe that at least some marginal improvements to the current approaches would help.

In reviewing our interview results and the 2003 book *Science and Technology Advice for Congress*, we conclude that the 111th Congress (2009/10) and a new administration would benefit from focused, specific advice on how to enhance the ability of Congress to understand, have access to, and act on science and technology analysis. The next Congress (and those that follow) will face a number of issues pressing down on the national interest. These include, but are not limited to:

- ◆ Technology and national security;
- ◆ Climate change and how best to enact policies and encourage behaviors that reduce or mitigate impacts while enhancing economic opportunity and social well-being;
- ◆ Science and math education in a global and highly competitive marketplace;
- ◆ Scientific and technological research and its association with national prosperity, economic competitiveness, and national security;
- ◆ The implications of a large cohort of aging citizens and implications for medical care, transportation, housing, and government costs;
- ◆ Rapid advances in biomedical, pharmaceutical, and other technologies that will have potential significant social impacts; and,
- ◆ Water quality and quantity, ranging from changing precipitation trends to pharmaceuticals in water supplies.

We recommend that a focused and limited meeting be convened to provide specific recommendations to the next Congress and Administration. We believe that the 2003 Resources for the Future work laid tremendous groundwork for the options and institutional arrangements that Congress might pursue. Where it fell short was to take that substantial work, vet the options among a diverse and esteemed group of individuals, including senior Congressional staff, and prioritize those options and develop a specific set of recommendations that can be forwarded to Congress. If there is interest in this, Keystone is prepared to bring working sessions together that would accomplish this.

Thus, we recommend the following process be convened.

- ◆ Engage staff from Resources for the Future in a dialogue about participating in a short, focused process (April).
- ◆ Convene a distinguished set of individuals across agencies and interests to develop recommendations (May – July).
- ◆ Conduct an initial meeting of the dialogue to approve objectives, agree on basic ground rules, and hear presentations on the various institutional and other options already developed by many experts (September).
- ◆ Conduct a second meeting to weigh and prioritize options and develop draft recommendations (October).
- ◆ Prepare a draft report to be forwarded to Congress along with a public engagement/media plan (November).
- ◆ Conduct a third and final meeting of the dialogue group to refine and finalize the report (December).
- ◆ Implement the media and outreach strategy (January 2009).

Appendix A: Interview Questions

1. On what issues do you seek scientific and technical advice?
2. Where do you seek and obtain that advice?
3. What measures do you believe are in place to ensure that advice is credible (technically competent), legitimate (you can trust it), and salient (it's relevant to the decisions you have to make)?
4. Are there ways that advice might be more helpful to you (who it comes from, in what form, etc.)?
5. Would Congress benefit from a clearly articulated policy regarding the responsible use of best available science to inform decision making? If so, what should be in it, and how might it be implemented?
6. What can the Congress do to engage scientists and citizens together in ways that rebuild the more trusted role scientists used to play while making scientists more sensitive to value and interest-based issues that may not have technical resolutions?
7. Do any institutions need to be changed or created to serve as more effective mediating devices for science-intensive policy debates?

Appendix B: List of Interviewees

- ◆ Senator Richard Burr (R-North Carolina)
- ◆ Senator Larry Craig (R-Idaho)
- ◆ Representative Tom Allen (D-Maine)
- ◆ Representative (former) Sherwood Boehlert (R-New York), former Chairman of the House Science Committee
- ◆ Representative Rick Boucher (D-Virginia)
- ◆ Representative Vern Ehlers (R-Michigan)
- ◆ Representative Rush Holt (D-New Jersey)
- ◆ Representative Mac Thornberry (R-Texas)
- ◆ Wendy Adams, Office of Representative Mark Udall (D-Colorado)
- ◆ Dan Ahouse, Chief of Staff, Representative Maurice Hinchey, (D- New York)
- ◆ Chuck Atkins, Director House Science Committee
- ◆ Jonathan Birdsong, Office of Mike Thompson (D-California)
- ◆ Kathryn Clay, Ph.D., Office of Senator Pete Domenici
- ◆ Mark Forest, Office of Representative William Delahunt (D-Massachusetts)
- ◆ Bruce Harris, House Committee on Energy and Commerce
- ◆ Alex Hoern-Saric, Senate Committee on Commerce, Science and Transportation
- ◆ Julia Jester, Ph.D., Office of Vern Ehlers (R-Michigan)
- ◆ Wyatt King, Office of Representative Gabrielle Giffords (D-Arizona)
- ◆ Rob Lehman, former Chief of Staff to Representative Larry Combest (R-Texas) and Representative Rob Portman (R-Ohio)
- ◆ Corey McDaniel, Ph.D., Office of Senator Larry Craig (R-Idaho)
- ◆ Dan Rosso, Office of Lamar Smith (R-Texas)
- ◆ Bob Simon, Director, Senate Energy and Natural Resources Committee
- ◆ Jenny Ware, Senate Committee on Health, Education, Labor and Pensions

Appendix C: Summary of Initial Meeting at Woodrow Wilson International Center for Scholars, May 11, 2007

A scoping meeting was convened at the Woodrow Wilson Center in Washington, D.C. on May 11, 2007. The more than twenty individuals who participated in the meeting identified 23 potential study topics. After the meeting, each participant was asked to vote for the four topics they believed were of the highest priority. The voting process resulted in five potential study areas:

1. Governance of Emerging Technologies
2. Consequences of Globalization for Science and Technology
3. Integrity of Science and Technology Advice
 - ◆ Science and Technology Advice for Congress and the President
 - ◆ Approaches to Setting science and technology Priorities
 - ◆ Organization and Advisory Structure of the Office of Science and Technology Policy
4. Societal and Economic Impacts on science and technology
 - ◆ Democratization of the Science and Technology Policy-Making Process
 - ◆ Influence of Immigration Policies on Science and Technology Enterprise
5. Global Water Crisis (including impacts of climate change)

Appendix D: Summary of Interviewee Comments

The need for science:

- ◆ It's important to fix science education – it would be great if 10% of Congress was composed of scientists.
- ◆ If you disaggregate “science” issues from other issues that Congress has to legislate on, you do it a disservice. Science is part of every day life.
- ◆ No one in Congress senses the need for science in their daily lives.
- ◆ You could think of raising awareness through a series of briefings by credible scientists at the Office of Science and Technology Policy, the NSF, NIH, etc.
- ◆ The problem is that you HAVE to make it relevant to the daily business of Members. It needs to be understandable, in sufficient depth, and relevant.
- ◆ Ideologues in Congress are more extreme than their founders -- on both ends of the political spectrum. At the extremes science is chosen based on ingoing opinions or assertions.
- ◆ Look at what CEQ is doing to edit EPA and NOAA documents. We can't have that.
- ◆ The problem is that Members don't know to ask about science questions. And it's not just “science” it's the scientific aspects of non-scientific subjects. (E.g., voting issues – and the technology aspects inherent in it)
- ◆ We need to look at scientific and technological problems the way the whole world looks at it.
- ◆ There are lots of issues that are important, though, like genetically modified organisms, ground water contamination, use of fertilizer and its downstream impacts. All this impacted agricultural interests, so we had to get smart about them.
- ◆ With credible means to gain technical and scientific info on key issues (offshore wind is a big one), Congressmen are left turning to advocacy and interest groups, and mostly, because of financing, industry groups. Thus, the only ones with the resources to fund adequate (not necessarily fair, non-partisan, or accurate) studies are industry. Thus, the demise of other institutions for advice leaves Congress, again, at the mercy of industry and business who are the only ones left with the resources to fund studies and provide analysis. This is systemic the much broader problem of Congress – the public interest is not being served.
- ◆ A Member won't muck around on a particular scientific issue if it's not relevant to his district or his committee, or his personal interests.
- ◆ Members must know how it's going to address issues in the district, or else won't have much interest.
- ◆ Most important is that issues are relevant to the district.

Reframing science in a way that makes it more accessible:

- ◆ We need to push the competitiveness angle. President Bush has a competitiveness agenda. The importance for more science in policy circles and in schools can be pushed through this concept.
- ◆ Washington is the only town in the country where you can get scientific evaluation on a subject with two completely different results.
- ◆ This is not a priority issue for many in Congress, Republican and Democrat.
- ◆ Every Member has to choose where they're going to spend their time and focus. There may be issues where they are very involved, and others where they don't have a dog in the fight. If not, why bother?
- ◆ If there's an issue of relevance to a Member, he will want to immerse himself in it, and will want to know what questions he needs to ask.

Politicization:

- ◆ Jim Hansen’s efforts shouldn’t have been edited by a political appointee. Hansen is a credible scientist, but has a strong point of view.
- ◆ Everyone has a potential source of bias. That’s why there is some skepticism on relying on individual scientists.
- ◆ Have to make a judgment about the quality of information. Reputation is important – if a report is on the internet, if the author’s reputation didn’t precede them, it would be discounted.
- ◆ Not sure you can avoid scientific editing. Even if it’s not overt, like with CEQ edits on climate papers, you do your own editing if you know the politics or perceived bias of the author. If there’s a professor that does good work, I’ll quote it, and occasionally converse with that professor, but try not to tie myself too tightly to that person, for fear that his research might start becoming tainted toward issues I like, or that there would even be the perception that was the case.

Comments on the Office of Technology Assessment:

- ◆ Many if not most staffers don’t even remember the pre-1994 Congress and its then long-standing institutions, and so, how to get even a Democratic Congress to resurrect any kind of meaningful, funded institution is sadly difficult to imagine.
- ◆ The advantages of OTA was that it was located on the Hill – it had proximity. It could produce reports with legislatively relevant language. And it understood its role as a service to Congress.
- ◆ OTA wrote reports that were highly relevant – as an example, the OTA report on Alzheimer’s disease written in the 80s is still frequently cited and quoted today. Same with the Genetic Non-Discrimination Act.
- ◆ A strong promoter of resuscitating OTA.
- ◆ It may have been a mistake to get rid of OTA – it’s hard to get objective information.
- ◆ There needs to be an honest broker close to, created by policy makers. Though I feel that if we were to revive OTA, it wouldn’t make a whit’s difference.
- ◆ There is today so much good (and bad) information available, from think tanks, universities, associations, that OTA would just be one more source.
- ◆ I can’t speak for OTA, it was before my time, but my sense is that it was another bureaucracy.
- ◆ Not averse to bringing back OTA, sure they’d be busy doing lots of reports. It’s a way for Congress to say – “See, we’re doing something on this tricky subject.” There’s a “Studies” section in the EPAct for much the same reason. Allows perception of doing work.
- ◆ Having an OTA entity back is a good idea. It’s a political issue. Having gotten rid of OTA was notch in belt for republicans. Reluctance by Dems to create new bureaucracy. Bingaman, Holt want to bring it back. Leadership cool on it.
- ◆ Laments the loss of OTA
- ◆ Believed that OTA served Congress well. Not clear that OTA should be resurrected as was, but did serve a useful role.
- ◆ Resuscitating OTA might not necessarily be the answer. It wasn’t timely.
- ◆ Since the demise of OTA there is a dearth of places to get reliable technical and scientific information.
- ◆ Smaller stripped down version of OTA might come back in future congress. Some unhappiness whether OTA serving needs of all Members, or was there an “in group” that was getting more attention than others.
- ◆ Good guy to talk about demise of OTA would be Jim Jensen – head of Cong. Relations for National Research Council. 202-334-1601

Existing organizations:**CRS**

- ◆ CRS is more capable of this than GAO. Inverse problem of the National Academy – too focused on short-term. Analyze this legislation or this background issue. Not as able to do independent research – just compiling efforts in response.
- ◆ CRS is good at finding other sources of material, but not at doing original work. CRS is good at helping identify experts in various fields. You could accomplish a lot by making CRS more user-friendly – the information on various experts is there, but you have to dig for it.
- ◆ More money for CRS might not necessarily be the answer. It's often not timely.
- ◆ CRS reports are credible.
- ◆ They use CRS – they have pinpointed expertise. Recently asked them for information on energy costs, and they were able to respond in just 2 weeks, but even that is too much time, sometimes.
- ◆ Rely on CRS, but timeliness is an issue.
- ◆ CRS fills the function of providing experts.
- ◆ CRS is a warehouse of unimpressive people. Some are very helpful, some are energetic. But it's like a lottery, with some great folks, but not true as a whole. Many are 9-5 workers who show up to punch their card and then go home.
- ◆ CRS reports are useful for background material. They do a good job of collating what information is out there, but with substantive questions they don't provide enough depth and they take too long. Their Rapid Response efforts only work if you have a very specific question. Also, their results are not always correct – it's hard to trust them.
- ◆ A beefed up, better funded CRS might make the most sense.

CBO

The CBO has its own institutional limitations (forced to score the budget a certain way), but no one accuses it of partisan bias. Maybe something CBO-like that could score scientific and technological issues.

GAO

- ◆ GAO is respected for its research and, unlike CRS, posts all of its research online for the general public.
- ◆ GAO takes a hell of a long time – 18 months turnaround. On some issues, there's time, because Congress takes a while to get bills passed. But other times it's just way too long.

NAS

- ◆ Is there anything the academy could do to respond more quickly or with more agility? Perennial question. In theory should be possible. Academy total soft money organization. Unlikely that Congress could appropriate reserve account for research.
- ◆ The NAS and NSF are chronically underfunded.
- ◆ NAS is useful, depending on the issue.
- ◆ We use NAS to do studies to make unfriendly amendments on energy bills go away. Can appease a Member by ordering the study. On the other hand, some studies are quite good. "Rising Above the Gathering Storm" looked at the top 10 activities to make the US more competitive. It was used to generate policy on competitiveness.
- ◆ National Research Council does good reports.
- ◆ Since 2000, the Academies have even become less useful because even Congressional requests must

be negotiated with the administration for budget allocation for the project. Thus, the project can be killed by neglect or rescope to diminish or reduce its value.

- ◆ For the last 25 years, timeliness has always been the issue. They have experimented with other formats, but it's always a problem.
- ◆ The Academy does an 18 month study as well or better than anyone.
- ◆ Use the National Academies primarily as a consumer of their information, not as a requestor.

Congressional Committees

- ◆ Science Committee looks at issues that are more in the R&D stage. By the time it gets to Energy and Commerce, the issue is mainly settled, and they are legislating on it. Lots of expertise on committee staff.
- ◆ The central question is more about capacity building. Members of Congress who have been in office for a while get more veteran staff, perhaps Fellows.
- ◆ Sometimes Members go through the Science Committee if it is on a subject they are working on or interested in.
- ◆ There are committees that serve Congress well in a bipartisan way, like the Joint Economic Committee. The Science Committee is less partisan than others.

DOE

- ◆ The National Labs are useful if they already have done a study that is relevant to current work, but aren't timely on new analysis.
- ◆ Best is Energy Information Administration. They can do factual research. They are very conservative in their assumptions, but if you know that, it works well.
- ◆ Members with National Labs in their state will ask them lots of questions. But they have a credibility problem. From time to time, DOE has sent them up to the Hill on some Administrative priority. For example, the Global Nuclear Energy Partnership (GNEP) the Bush Admin called the labs into town to make a half-hearted pitch of the party line. Sometimes multi-lab studies are good, but they can also be self-serving. Wish they were more independent and effective than they have been recently

Universities

- ◆ University systems just ask for money, and then are never timely. They operate on their own time scale, which is different than Congress'.
- ◆ Use universities sometimes. Senator Kay Bailey Hutchinson (R-TX) did a good thing when she noted that each university didn't need to devote resources to being the best in every scientific enterprise – it's spread around the state. Helps with federal hand outs.
- ◆ They use the university system – different universities have different expertise. For example, UC Davis is expert on hydrogen issues, but not on forestry or timber issues.
- ◆ Reach out to UTexas for straightforward feedback on various issues.
- ◆ MIT has done the best job of any university – they are known as the primary technology experts on energy. Look at their nuclear and coal studies.
- ◆ Forest policy -- AZ state. Usually it's the charismatic professor, who gets to know folks on the Hill. See that person over and over as witness. Parlay it into expertise.
- ◆ Members are also likely to call their local university in their district.

Staff

- ◆ Staff has to wade through the bullshit, but most staff, even on House side, have advanced degrees.
- ◆ For intermediate analysis – more than instant Google search, less than full fledged Academy study – best way is to do it myself. AAAS fellow and PhD in applied physics. Not every office can do that analysis, so it gives us an edge.
- ◆ Members also rely on staff from other committees, and depend on committee staff judgment.
- ◆ On the House side, AAAS fellows can be underutilized if they are brought on just to do a single subject. On the Senate side there are so many issues, there's lots of work.
- ◆ If you formalized the network of AAAS fellows, you'd ruin it. Similarly, if you tried to do a cheat sheet of who to call for what, it would become highly politicized, with lobbyists trying to get their scientist on the list, or others off the list. Keep it informal.
- ◆ Gets most of his information from a rich set of sources he has developed over time, including NGOs, academic institutions (he does use universities in his District), and others. He has been motivated to build this network and makes an extra effort, at times, to even do his own research directly, which is probably rare in Congress.

Other Sources:

- ◆ Members develop good relationships depending on where they have interest.
- ◆ The problem is that the world moves at a different pace than OTA, CBO, or CRS.
- ◆ Sometimes there are think tanks that do work collaboratively – Brookings/Heritage/American Enterprise Institute, and get a range of views.
- ◆ The Congressional Management Foundation (202) 546-0100 train staff and new Members. They put out a good book for Members on how to run a staff. Good stuff. Might be some synergy.
- ◆ Under Clinton, the White House Office Science and Technology was an accessible and helpful entity after the demise of OTA.
- ◆ DARPA is useful on cyber intelligence.

New organizations:

- ◆ No need for a “CBO” type organization to handle science issues.
- ◆ No new institutions need to be created.
- ◆ If you know an issue is coming up, it would be great to have a panel of experts that regularly meet on that subject that could give advise – a range of advise. The Farm Bill is every 5 years. The Highway Bill is periodic. You can plan around them.
- ◆ Congress needs an independent scientific body. Maybe we revive OTA. We have lots of issues that need analysis, including the climate, ocean acidification, and interactions between air, water and land. We need an antidote to the failure of ideas in Congress.
- ◆ CRS is good, but it's not truly academic – its findings are not made public.
- ◆ CRS can do quick and dirty analysis sometimes. NAS takes a year or more.
- ◆ Senator Pryor has done work to foster science parks among groups of universities to create new “Silicon Valley” type areas of expertise.
- ◆ Policy Committees can be charged to take on project analysis, but it's going to be partisan.
- ◆ There should be a National Intelligence Estimate, which allows minority views, on subjects like nanotech.
- ◆ Need something authoritative and quick.
- ◆ There's a real need to bring back something that would be CBO/GAO-like in terms of its objectivity.
- ◆ Skeptical of the idea of a new OTA-like organization. Any institution that Congress creates these days cannot really escape being captured by partisanship.
- ◆ Even if you created such a body, would anyone listen in the current state of affairs?

- ◆ Is the proper role of Congress to create its own institutions that try to speak to Congress.
- ◆ Does Congress want, need, or should even have mediating institutions?

Filling the gap:

- ◆ There are factual questions that can be answered instantly. For example, for a floor speech, a Senator wanted to know how much the US spent on oil per day, and was quickly able to query someone in the office via Blackberry, have them look it up (# barrels per day X \$/barrel), and give the answer. But that's not analysis.
- ◆ On the House side, Members have fewer resources than on the Senate. Members are more likely to toe the party line on issues they are not involved in. He did that when he was in the House. Knows Members that do that today. Not so much the case on the Senate side. Senators have more PhDs on staff.
- ◆ Members on the House don't have access to information because they don't have the money or the physical space – this is a real constraint. There's no point in having a smart scientist on the staff if you're only going to use them occasionally. Science is incidental to someone just seeking information on a subject.
- ◆ The internet is a good source for information. Tend to trust sources on the internet that existed prior to the internet, or that have a credible establishment beyond the internet.
- ◆ Turn often to academia. Peer review holds them in check. The need for research dollars keeps them neutral. Research Triangle Park provides such a wealth of good information. But rather than use just one institution, it's better to leverage Research Triangle Park against other universities. We need competition between academics and government agencies like RTP.
- ◆ Where Members go for information on science depends on their own political leanings and ideology. Mr. Rohrabacher [from Los Angeles] (R-CA) is going to approach issues differently than Ms. Woolsey [from San Francisco] (D-CA), for example.
- ◆ There's more information out there than a staff person could ever read, let alone digest. There needs to be an honest broker/filter of information. The Science Committee does that somewhat, but they only have about 30 bona fide "science types" who are researchers or PhDs.
- ◆ Worried that "technology experts" would not be pure in their thinking – bring own biases into it. Also, science guys often lack interpersonal skills.
- ◆ Every Member in his/her first 100 days is making all decisions based on gut reactions. You don't know who to call.
- ◆ Create a text "Science for Simple People" or something similar for incoming Members, and for others that are curious.
- ◆ Create a document or a place where if a Member has a question, it offers a choice or several choices of where to go to.
- ◆ We need something that is a creature of Congress, of the Institution of Congress, not under the thumb of the Majority party, not under the thumb of the Administration.
- ◆ There are so many issues, there is so much information, and it is so complex, that often if you don't have a dog in that fight, you defer to Members who do, or toe the party line. Maybe it would be different if there was some resource outside of the office that was vetted in some way.
- ◆ Freshmen Members' hands are held hard by leadership – there's not much leeway.
- ◆ Timing is important – if it's a hot topic, spin happens fast, and affects perception.
- ◆ There is an effort to get GAO some more money to improve technical competence. Even if all they are doing is counting beans, improving their technical competence is important. They can get involved in programs with technical components, but really can't fill the analysis gap.
- ◆ In most offices, there is no physical room or budge to bring in an extra body to handle specific science issues. If I brought in a fellow, I'd have to get rid of someone else.
- ◆ One Member, as a freshman, received a "cheat sheet" of people to contact at committees, agencies, in

various labs and at various universities when I had a question. This was given to him by the Republican Party, so it had biases built in, but it was incredibly useful for a Freshman, and for new staff, to be able to go to this reference before he established relationships on his own.

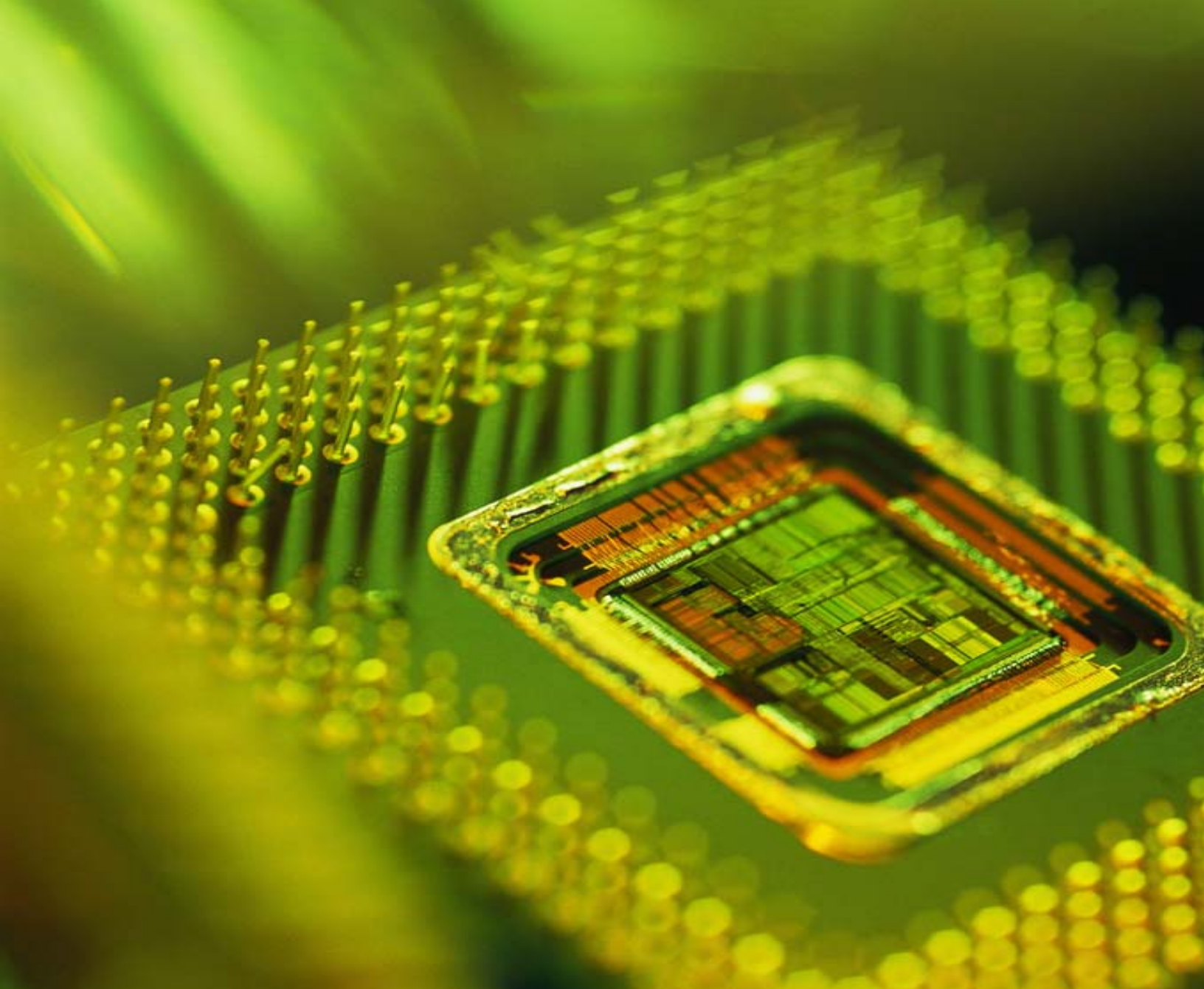
- ◆ What's needed on some of these issues is a 2-3 page summary of the history of the issue – how did we get to this point on this subject, what have been the flash points, and why is it important to legislate on it now? That information would be useful.
- ◆ One interviewee is a chemist, and a former fellow, and is used as a resource by colleagues in other offices on scientific questions.
- ◆ After a while, you get to know the experts at various agencies, and know who is rational and reasonable.
- ◆ Some Members have a pet scientific project, and try to raise awareness on that issue. For example, Roscoe Bartlett (R-MD) has a fellow on staff to study peak oil, and he is doing all he can to raise awareness among other Members on this issue.
- ◆ Individual scientists are harder to identify as more credible than organizations. You can say I spoke to Dr. so and so, who says that what I'm about to say is correct. But people could ask, who is Dr. so and so? On the other hand, if I say a group of MIT professors looked at this, MIT has good reputation above individual scientists.
- ◆ Fellows told to reach out to other fellows when they start, but could be encouraged to do more, because there is an informal network of fellows on the Hill. They work in a bipartisan fashion and network on different issues, depending on their respective strengths.
- ◆ Everyone has access to lots of random information – you can find any study on the internet that will back your ingoing assertion.
- ◆ You know who to deal with based on experience. The best lobbyists are those who tell you what they want, why they want it, what their opponents will say, and what their response is to that. Job of committee staff to survey lots of stakeholders to get the full picture.
- ◆ It's critical to increase the level of importance of an issue so that Members feel they need to get educated on a subject. There was recently \$2.5 million appropriated in the Legislative Branch Appropriations Committee to GAO to do technology studies (Zach Wamp and Rush Holt co-sponsored).
- ◆ If not OTA, it's clear that we need a body that serves Congress, and is:
 1. Relevant
 2. Part of the Hill process all the time (not just hearings)
 3. Produces products in legislative language
 4. Produces products with relevance to the legislative calendar
 5. Is recognized as a non-partisan source (not under the thumb of the Administration or Majority Party in Congress)

Specific Issues:

- ◆ Internet: The internet is one of the areas where Congress has done a poor job regulating. Bill Gates came to his office, and asked, innocently, why Congress hated him. Responded because you're powerful and we can't control you. (Within a year, he had a powerful lobbying presence in DC.) But the point is that there are elements that can and will elude Congress for lack of understanding. On the other hand, the internet is so unfettered because we have not regulated it.
- ◆ On Climate Change, there are remaining questions – for example, can you translate parts per million of CO₂ into degrees, and with agreement among scientists – maybe you can, but I haven't seen it yet. Recognize the IPCC as a balanced, authoritative voice on climate change. And there's a list of noted scientists who take a contrary view. On something like climate change, you might ask for "what is the uncertainty regarding the anthropogenic causes of climate change" but that finding would likely be challenged in this current Congress and subsequently, the institution who concluded it would be

found suspect.

- ◆ Stem cells. When we were talking about stem cells, we talked to bioethicists who said major breakthroughs were a long ways away – more than a year – so there was no need for urgency.
- ◆ Yucca Mountain. We need to use more peer review to keep scientists in check. For example, two guys at Los Alamos were saying Yucca Mountain could blow up, but they were modeling it as if it were a quartz crystal, not tuff. They ventured outside the realm of their own scientific expertise. It never would have made it through peer review into a journal.
- ◆ Fuel efficiency. We have just forced autos to go to 35 mpg. Is this something based on what they can do technologically, is it knowing that they can't do it today, but hoping to force them to get there, or does it just sound nice? I don't know, and don't think others do, but it would be nice to see the analysis.
- ◆ Research on cellulosic ethanol – wanted a number that would help them determine how much could enter the market by a date certain – couldn't find a single number – estimates were all over the map. Analysis would have helped.



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