



# The Science-Engineering-Technology Work Group

**SETWG** is an information network comprising professional, scientific, and engineering societies, higher education associations, institutions of higher learning, trade associations, and companies. The Work Group is concerned about the future vitality of the U.S. science, mathematics, education and engineering enterprise. The **Science-Engineering-Technology Work Group** contacts are Debbie Rudolph (Phone 202-530-8332, Fax 202-785-0835, E-Mail [d.rudolph@ieee.org](mailto:d.rudolph@ieee.org)) and Kevin Marvel (Phone 202-328-2010, Fax 202-235-2560, E-Mail [marvel@as.org](mailto:marvel@as.org)).

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SPIE - The International Society for Optical  
Engineering  
Stanford University  
Telecommunications Industry Association  
University of Pittsburgh



## Organizing your Visit

*Before going into a Congressional Office, choose a leader who will be the focal point of the group, usually someone from the Member's state or district.*

### Use the “3” Rule:

Structure your visit into 3 main parts

#### **Who**

- Thank the *congress/staff person* for taking the time to meet with your group
- Introduce all *the meeting participants* – Both name and organization
- Mention the broader scientific community, making note of the more than 250 scientists participating in the *SET Congressional Visits Day* effort, who represent more than 2 million US scientists.

#### **What**

- **Science, engineering, and technology** are crucial to the nation, as well as the Member's state/district.
- Give examples of *national SET importance* (e.g., use CVD leave-behind materials)
- Give examples of *state/district importance* (e.g., use information about your own work/organization).

#### **How**

- **Ask** your senator/representative/staffer to maintain a commitment to science, engineering, and technology funding in the FY 2004 budget
- **Offer** to serve as a resource on SET-related issues.
- Follow-up: **invite** the legislator/staff to visit your facility. Seeing is believing!

Be sure to acknowledge the legislator's past support for SET and be specific. If the legislator is already a champion – ask how you can help him or her advance SET among their congressional colleagues.



## Rules “of the Game” for your Meeting

- 1.** Be on time and be prepared to wait. Changes in the legislative calendar and office activity often mean Members and staff must deal with other things.
- 2.** You must be prepared and succinct. *If you do not know the answer, be honest! Always commit to finding out the answer and follow up*
- 3.** Explain how SET funding affects the Senator’s or Representative's state or district with a **short anecdote** or facts about the district. (e.g., how many people work for your company/university and their economic impact)
- 4.** Limit the presentation; let everyone speak to the issue if they want to contribute.
- 5.** Never be negative about politicians; do not whine or lecture to Members or staffers; do not imply that R&D funding is or should be an entitlement.

**After the meeting, follow up! Send a letter of thanks to the Member and staffer offering to be a source of information in the future.**



# How Congress Works

Members and staff are very busy and deal with many other issues in addition to your main issue of concern. They are "jacks of all trades, masters of few." Acknowledging the limitations on their time and resources and offering to be a source of information is vital and helps to build a strong working relationship.

1. The legislative process is designed to be complex and deliberative, ensuring that all parties have an opportunity to comment on legislation. Legislation is considered in subcommittees, committees, and on the floor of both the Senate and House, and must be signed by the President. Most proposed laws are never acted upon and few ever become law.
2. Staffers are often very influential in advising Members on votes.
3. Members look to their colleagues for guidance; influencing one, may in fact, influence many.
4. All government is political and, in the immortal words of former House Speaker Thomas P. "Tip" O'Neill, "all politics is local."
5. Legislative proposals are weighed subjectively. Members of Congress not only consider proposals on their merits but also on these basic political questions:
  - How will the bill affect the legislator's re-election prospects?
  - Is this issue consistent with the legislator's previous votes/positions on related matters, and with his/her political and economic philosophies?
  - What would be the impact on the Member's local economy and jobs?
  - What are the constituents saying, the news media and local interest groups recommending?
  - What are the legislative staff and advisors recommending?



# The Legislative Process

There are essentially two types of legislation, both of which follow the same route into law:

- 1) **Authorization bills** -- establish programs and policies, also set recommended budget levels.
- 2) **Appropriations bills** -- provide the actual funding for government programs and agencies on an annual basis

## Step 1 - Committees

Most legislative activity occurs in Committee, thus giving Committee members greater influence on specific legislation. Most legislation is given public hearings by subcommittees and full committees of both the House and Senate. Amendments to legislation can be made to the bill in subcommittee and/or full committee during special Committee meetings called "mark ups."

## Step 2 - The Floor

Once a bill passes through the committee process, it may be amended further on the floor of either the House or Senate.

## Step 3 - Conference Committee

When both the House and Senate have passed versions of the same legislation that are different, a "Conference Committee" of both Representatives and Senators meets to work out the differences -- often additional changes are made during Conference. Both chambers must approve the new version of the legislation.

## Step 4 - The President

The President can sign or veto any piece of legislation. The Congress can attempt to override a veto with a 2/3 vote. Congress can also try to amend the legislation in a manner to the President's liking or send it back through the entire committee process. Only if the President signs a bill or a veto is overridden does the legislation become law.

**Members of Congress and staff often note how little people know about the legislative process. Showing that you have some knowledge will impress them, leaving a positive impact.**



# Building Relationships with Legislators

Personal visits, letters, phone calls, and other forms of communication are very important when they come from constituents who are well-known, highly regarded, and have gone out of their way to be helpful in a variety of ways in the past. Strong personal relationships are the best means of influencing legislative decision-making. Building relationships takes time and careful effort, but it is the most effective way to shape the thinking of those who decide public policy.

How do you go about building such relationships? In much the same way as you cultivate friendships: by being friendly and personally helpful, by being a useful and trustworthy source of sound information and insight, and contributing your personal time to professional and political needs and interests. Your own party affiliation should not restrict you. Every elected officeholder represents an entire state, legislative district, or local government-- Republicans, Democrats, and Independents alike. You do not have to be a member of the legislator's political party to work together and even to become friends.

You will need to do some homework about the key issues, economic facts, employment, industry, etc. that are important to the interests and viewpoint you represent. At the same time, familiarize yourself about the legislators with whom you want to build relationships.

Become a fountain of facts. For example, know the number of employees you represent in the official's state or district, the annual payroll and taxes paid, expenditures for local supplies, materials and services, investments, and philanthropic contributions and corporate sponsorships. Also, be aware of the community improvement projects that your company/university or employees support, environmental investments, contributions and activities, and facts about local safety and health standards and performance.

Some relationship-building activities are:

1. Write and/or call legislators on current issues.
2. Make personal visits either in Washington, D.C. or in the home district offices to discuss current issues or broad problems.
3. Organize group visits on issues of mutual importance.
4. Invite legislators to tour local plants and facilities, research and teaching laboratories, and meet with management and employees for discussion of problems and issues.
5. Get personally involved in legislators' campaigns and the activities of your political party.

Here are some ways you can work with your organization's Government Relations staff to build relationships at the federal level:

1. Develop resource relationships with Members of Congress & staff who can call upon at will for reliable and authoritative economic/technical information.
2. Leverage legislative influence through effective coalitions and third-party activities.
3. Provide financial support for legislators' campaigns, through individual contributions or through your organization's political action committee.

These steps will progressively build your credibility with the Congressional official. Establishing a reputation as an objective data source, for example, builds credibility for subsequent communications expressing opinions on issues. Political activity establishes you as a friend whose views are likely to receive more weight than someone who writes from time to time.

### **Using Economic Data**

Economic data and technical information are often essential to support your case on key issues. Use the data you have about operating in your area or state to illustrate how much your organization contributes in terms of wages and benefits, local purchases, taxes, and other concerns. The data can be presented as a sentence or two in a letter to a legislator, as a brief paragraph in position papers, press releases and personal visits, or in a brochure for the public or government audiences.

If scientific data are necessary to address specific issues, they must be used with sophistication. Technical experts on the staffs of policymakers may comprehend and delight in complex charts and tables, but the decision makers themselves have very low tolerance for such detail. When using charts to convey information, avoid using scientific jargon. If such terms are required, you should explain them so that a non-technical audience can understand.

When using economic and technical data, use exactly the information you need to build credibility and make the case, and then stop. Stretching data to fit the need would strain your credibility. Test the presentation by showing it to a few friends or neighbors beforehand. If they find it tiresome or confusing, there is a good chance that your target audience would, too.

### **Personal Visits**

There is no better way to effectively make your case on issues with legislators and staff than personal visits. Such visits also are a good way to introduce yourself as a constituent. Personal meeting can be difficult to accomplish with the policymaker's busy schedule, but remember that you are offering an important business contact. You can arrange the meeting with the policymaker directly or through staff aides.

The following suggestions will help make the best use of your time and the legislator's:

1. **Always make an appointment.** Arranging the first meeting may require patience on your part, but be persistent. Later, as you become known as a resource, gaining appointments will be less difficult. This will occur especially if you also become known as a campaign contributor, political activist, or civic leader who can muster support on the issues from a wide variety of groups through your coalition activities.
2. **Be prepared to meet with key legislative personnel or committee staff members if the legislator is unavailable.** Briefing these people before your visit also may be useful so that they can prepare the legislator. Staff aides are often more knowledgeable about details of a specific issue than lawmakers themselves.
3. **If several individuals join you in the visit, decide in advance who will be the principal spokesperson.** That individual, of course, should encourage others to participate in the discussion to share particular expertise or experiences.
4. **If you want to discuss a specific issue, make sure you are thoroughly familiar with all aspects of it before going into the meeting.**
5. **When talking to legislators, try to be concise, well organized, and mindful of the other person's time.** State your view firmly, but be attentive to the policy-maker's position also.
6. **Open the discussion by reminding the legislators who you are, whom you represent, and why you are there.** Know the issue and the bill number. State your concern about the issue, how it will affect you and your organization, and the community.
7. **Always be truthful and never mislead.** Your personal credibility and that of the organization you represent is at stake. If you do not have the answer to a question, do not improvise. Promise to get back to the questioner with the necessary information, and be sure to do so promptly.
8. **Come prepared with a brief (one-page) position paper that summarizes your points with facts, and leave it behind with the legislators or staff aides.** If a lengthier document or answers to questions is relevant, send it later with a "thank-you" note.
9. **To gain a favorable vote, follow up with letter(s) and calls to legislators and their key staff advisors at appropriate points as the issue progresses.**
10. **Maintain the relationship.** Get your name on legislative mailing lists. Find occasions to see the legislators again in appropriate circumstances, and write to them on the issues from time to time. If you obtain reports or data that will be useful to legislators and their aides and that you can share with them, send those documents with a brief personal cover note. Eventually, you may even find policymakers coming to you for information, help, or your point of view on new issues.



## **R&D is an Investment**

### **Federally funded research secures the Nation's future.**

This message packs a big idea into a small number of words, but it sums up the common denominator between all of the organizations participating in Congressional Visits Day. *Research should be viewed as an investment, not an expense.*

Our groups recognize that federal support for basic research in a wide variety of scientific and technological disciplines has led to the economic success our Nation enjoys today. Federal expenditure in this area is not an expense, but an investment in the future. Research takes time and only the Federal government can maintain the levels and stability of funding necessary to perform the very basic R&D efforts that lead to long-term national benefits.

Although some legislators and their staff are aware of the long-term nature of federally funded R&D efforts, many are not. This is a most important message for all CVD participants to convey, that long term, steady investment is required for the Nation's research enterprise.

The federal government supports a unique research and education enterprise that fuels the American economy. This enterprise provides the underpinning of high-technology industries, expands the frontiers of knowledge, and trains future generations of scientists, engineers, and mathematicians.

Despite these facts, funding cuts loom on the horizon. It is up to the scientific and R&D community to carry the investment message to Congress. Be sure to highlight this important message in your visit with our Nation's legislators.

### **Federally funded research secures the Nation's future.**



## The Return on Federal R&D Investment

More than 50 percent of all industrial innovation and growth in the United States since World War II can be attributed to advances pioneered through scientific research.

The list of achievements is long and increases every day. Results happen -- sometimes through serendipity and sometimes by design, sometimes in a few years and sometimes not for decades. We do not know *when* they will occur, but we do know that they will.

Whether the applications are broad and enabling, or part of a new product or process, publicly funded science is at the core of our society's progress to date. Most federal agencies require research to achieve their goals for our government and taxpayers. The nation's scientists and engineers produce those research results, ensuring our national strength, security, health, economy and workforce development.

Achievements such as computer modeling of chemical structures to design drugs, the Internet, lasers, magnetic resonance imaging, and global environmental monitoring and management are well known.

A 1997 study prepared for the National Science Foundation by CHI Research found that 73% of scientific articles cited in patent applications are based on research funded by government or foundations, showing industry's dependence on public science in developing the next generation of products and processes.<sup>1</sup>

A five-year study released in 1997 showed that technology transfer from academic research added more than \$21 billion – supporting 180,000 jobs – to the American economy each year.<sup>2</sup>

*Although some in Congress are aware of these important facts, many are not. It is up to CVD participants to help carry this concept to policy makers. Remember our Message:*

**Federally funded research secures the Nation's future.**

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<sup>1</sup> The Increasing Linkage between US Technology and Public Science, by Francis Narin, et al., CHI Research (March 1997).

<sup>2</sup> Association of University Technology Managers Licensing Survey, FY 1991– FY 1995 (February 1997).



## The Cycle of Innovation

Basic research, applied research, and development constitute a cycle which gives rise to new products and processes, new ideas and understanding, and new researchers and teachers. Each part of this cycle depends on every other. Basic research produces fundamental discoveries which underpin applied research and the development process. The resulting innovations drive economic growth, leading to new jobs and a higher quality of life. These latter stages of the cycle, in turn, stimulate questions and provide advances in instrumentation which produce new avenues for basic research. In addition, research performed at universities and colleges serves to educate the scientific and technical workforce, on which every stage of the cycle depends. This cycle of innovation is a positive-feedback loop, constantly expanding the frontiers of knowledge. Examples of innovations that followed this pattern abound:

**Fiber Optics** • Electronic mail, the World Wide Web, and better international telephone communications all depend on the use of tightly focused laser beams channeled through tiny strands of glass – optical fibers thinner than a human hair yet stronger than steel. These world-shrinking developments came from fundamental discoveries into the nature of light nearly a century ago.

**GPS** • Basic research into atomic clocks combined with satellite navigation technology led to development of the global positioning system (GPS). The ability to locate an object with pinpoint accuracy gives GPS a wide range of civilian and military uses, including aircraft navigation and collision-avoidance systems, rescue of ships lost at sea, and monitoring forest fires. This new technology has also become an important tool for basic research into earthquakes and volcanoes.

**Human Genome** • The sequencing and analysis of the human genome, which promises major advances in human health, has involved huge amounts of data-processing made possible only by recent advances in information technology (IT). The dramatic release of a draft sequence of the human genome earlier this year thus could not have occurred without the revolution in IT that has at its roots discoveries in basic physics.

### Federal Investment in R&D

Federal funding of research and development comes in many forms. Most federal R&D funding is mission-oriented. That is, it serves to advance the goals and objectives of the agency that provides the funds. NASA, for example, funds basic research, applied research, and development as part of its broad goal of exploring space. The only federal agency that funds R&D that is not mission-oriented is the National Science Foundation, whose mission is to support basic and applied research, research facilities, and education across a wide range of science and engineering disciplines.

*The federal investment of public funds in the early stages of the innovation cycle stands out as a vitally important element of the nation's scientific enterprise. While federal funding accounts for only about a quarter of total R&D in the U.S., it pays for nearly half of basic research. Similarly, just nine percent of industry R&D funding goes to basic research, while nearly a quarter of federal R&D does.<sup>3</sup>*

<sup>3</sup> AAAS Report XXVI: *Research & Development FY 2002*, pp. 31, 58 (<http://www.aaas.org/spp/dspp/rd/xxvi/rd02main.htm>).

## Charts From AAAS' Preliminary Bush Budget Analysis

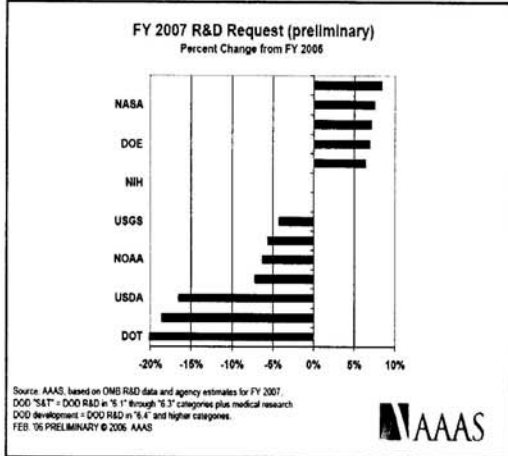


Figure 1

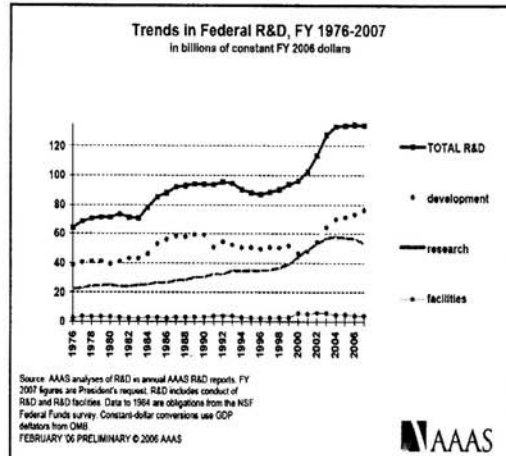


Figure 2

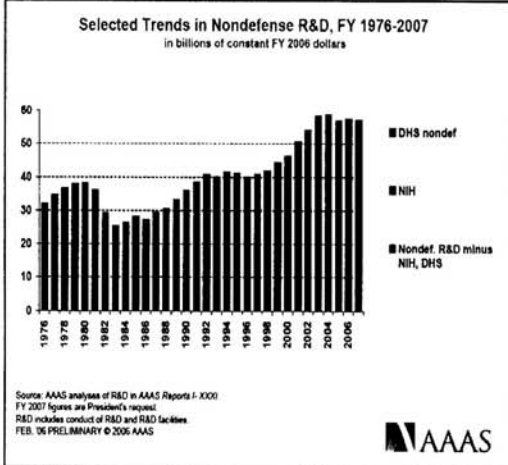


Figure 3

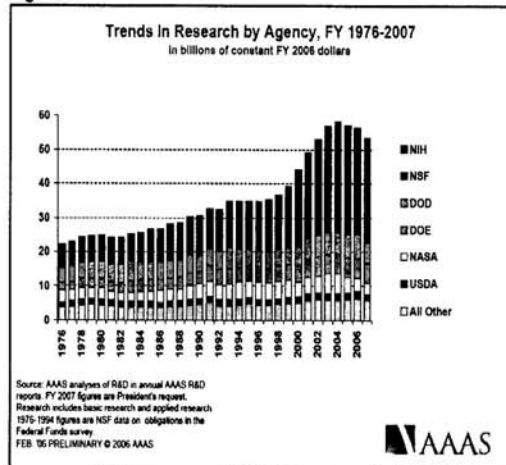


Figure 4

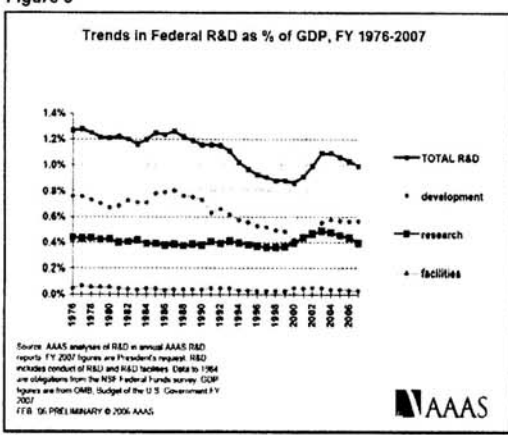


Figure 5

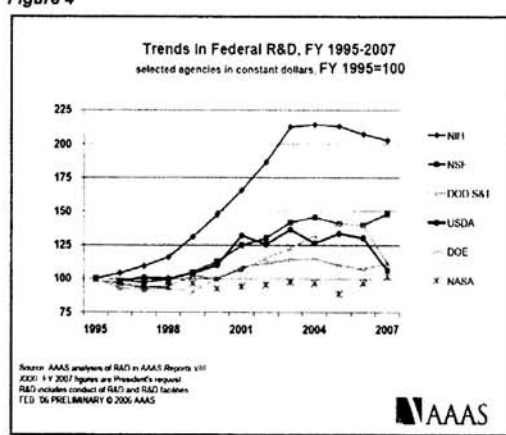


Figure 6

