

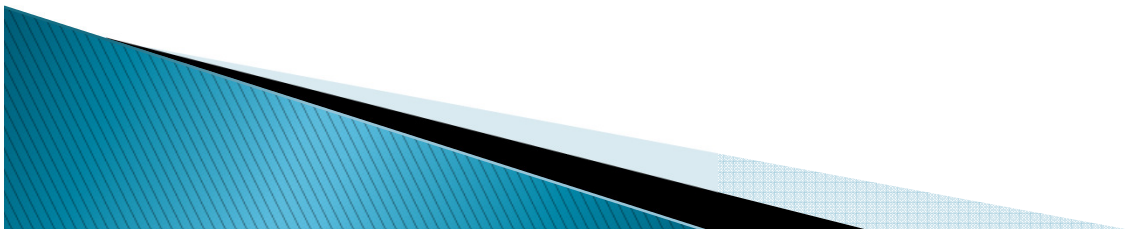
Emerging Between the Industrial and Federal Sectors: Reflections and Recommendations

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MS&T 2011



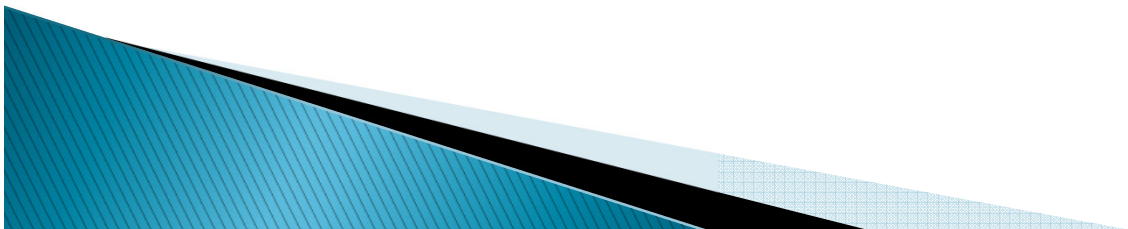
Outline

- ▶ Objectives
- ▶ Disclaimers
- ▶ Reflections
- ▶ Recommendations
- ▶ Conclusions



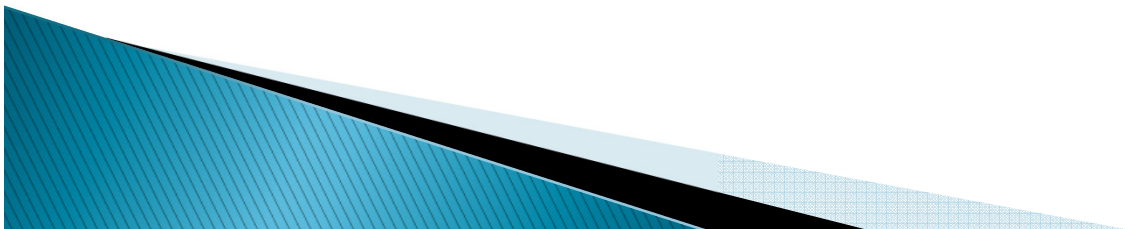
Objectives

- ▶ Reflect on emergence as a materials engineering professional in between the industrial and federal sectors
- ▶ Inspire emerging materials engineering professionals to participate these sectors
- ▶ Illustrate the need for materials engineers within industry, government and academia sectors
- ▶ Identify specific actions for emerging materials engineering professionals



Disclaimers

- ▶ The opinions expressed herein are based personal experiences, observations and reflections
- ▶ This not an endorsement of any political party, candidate or policy
- ▶ This is not a call for resumés or proposals



Careerquest?

Driving Directions from Basking Ridge, New Jersey to Charleston, South Carolina | MapQuest - Windows Internet Explorer

http://www.mapquest.com/?version=1.0&hk=10-ntUXV8AY

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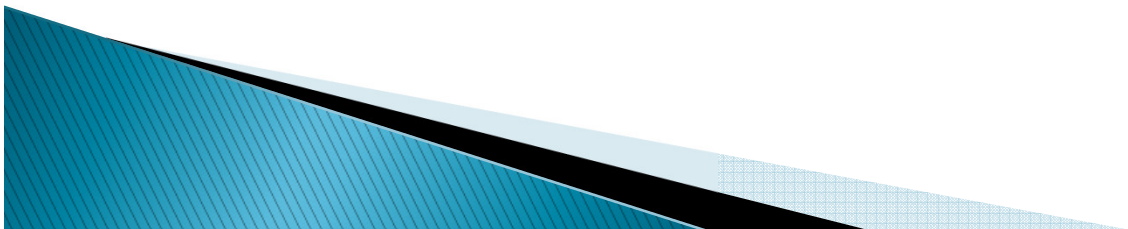
How does one emerge in between the industrial and federal sectors?

- ▶ Start at A – High School – Board of Education
- ▶ Go to B – College and Air Force ROTC
- ▶ Go to C – Air Force Materials Laboratory
- ▶ Go to D – Air Force Ballistic Missile Office
- ▶ Go to E – Southern Terminus of the Appalachian Trail
- ▶ Go to F – Northern Terminus of the Appalachian Trail*
- ▶ Go to G – DOD Contractor
- ▶ Go to H – Industrial Manufacturer
- ▶ Go to I – ATI – Collaboration Leader
- ▶ Stop at ?
- ▶ Common features of these stops
 - Constant interaction with the federal sector
 - Professional and personal interests
 - ASM International networking
 - ASM International Federal Affairs Committee

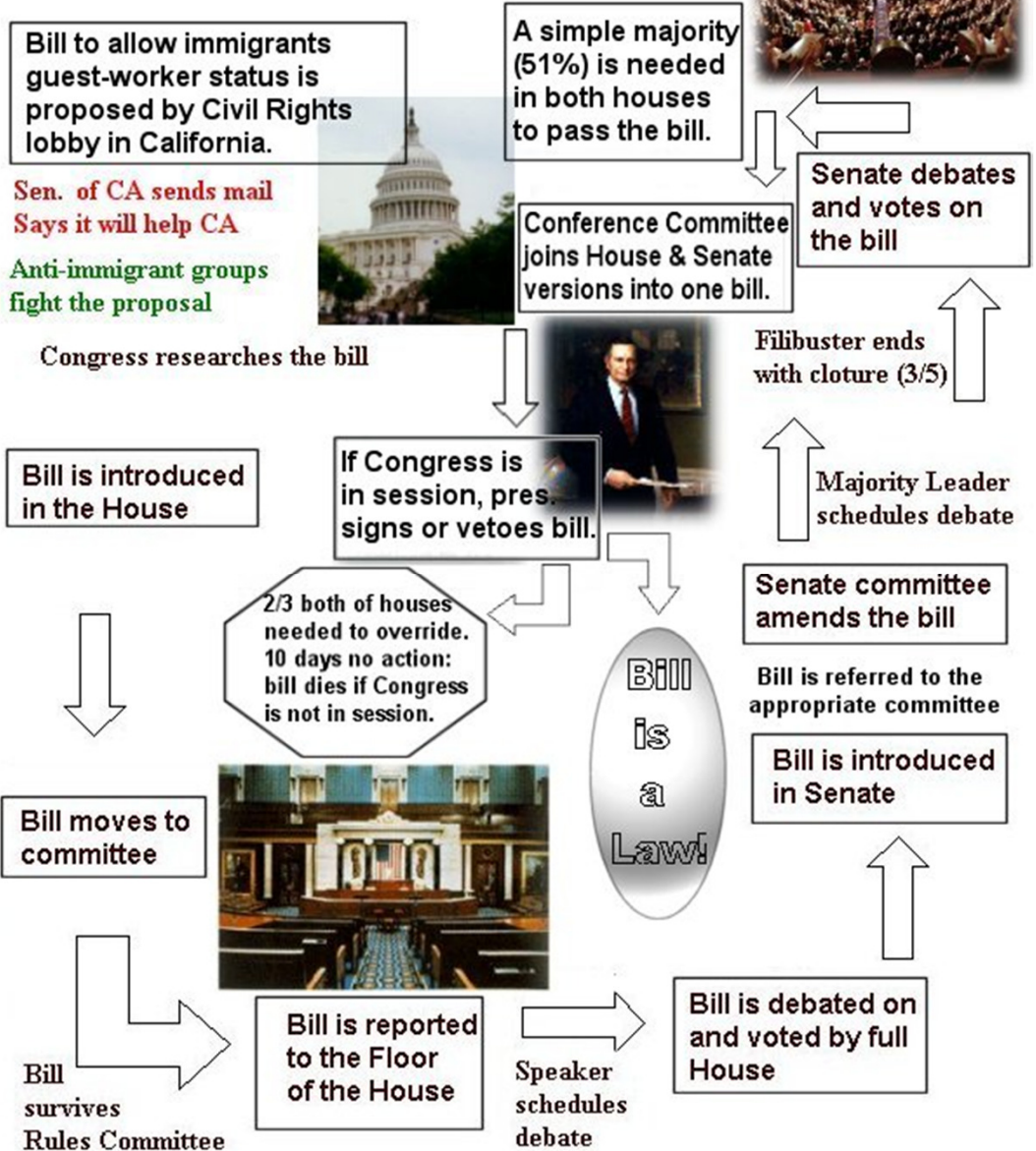


Materials Engineers and Policy

- ▶ Opportunities abound
- ▶ Legislative Branch
 - Making of policy
 - Creation of laws
- ▶ Executive Branch
 - Making of policy
 - Approving or vetoing laws
 - Program execution within the Agencies
 - DOD, DOE, DOC, etc
 - Regulation
 - EPA, NRC, etc
- ▶ Judicial Branch
 - Not touched upon during this presentation, but assume there is plenty of room for materials engineering



Representing the People and How a Bill Becomes a Law



Where do Materials Engineers participate in this process?
Replace “Immigrant” with favorite materials related bill!

“Because that’s where the money is.”
– Willy Sutton

DoD Congressional Budget Data - Windows Internet Explorer

http://www.dtic.mil/congressional_budget/

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DoD Congressional Budget Data

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Welcome to the Defense Technical Information Center (DTIC) sponsored DoD Congressional Budget Data website. From this site you can access DoD Congressional Budget data, in both PDF and Excel spreadsheet formats. DTIC's goal is to post the data from each report on this site after they are filed and made available on the [Thomas](#) (Library of Congress) website.

Disclaimer: The Congressional budget data contained on this site is based on the authoritative information found on Thomas, the Library of Congress' Web site. DTIC scans the Congressional budget data and converts the information into Excel spreadsheets, which are easier to manipulate. The converted data is reviewed by DTIC to ensure accuracy; however some conversion errors can be overlooked. The scanning process is approximately 95% accurate. You can view the authoritative Congressional budget data at: <http://www.thomas.gov>.

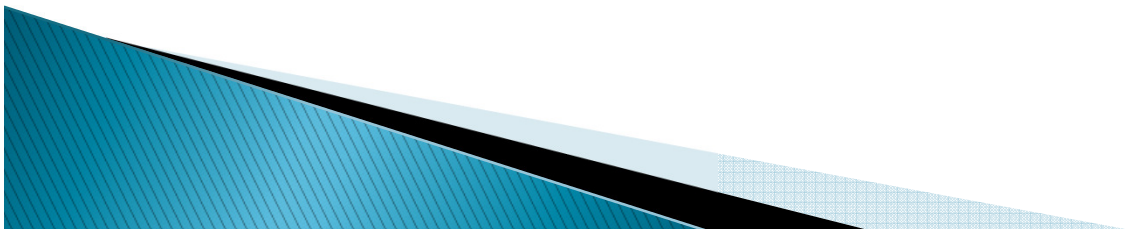
Download: Select links in the table below to download PDFs or Excel spreadsheets of the associated sections of each report. Selecting the report link will allow you to download a PDF of the entire report.

FY2012 Reports	RDT&E PDF	RDT&E Spreadsheet	Procurement PDF	Procurement Spreadsheet	O&M PDF	O&M Spreadsheet	Personnel PDF	Personnel Spreadsheet
FY2012 HASC (House Report 112-78) 2.4MB	269K	209K	252K	246K	161K	102K	188K	69K
FY2012 SASC (Senate Report 112-26) 1.9MB	94K	180K	91K	165K	53K	85K	45K	35K
Senate Report S.1253 1.3MB								
FY2012 HAC (House Report 112-110) 6.7MB	1257K	135K	1705K	197K	876K	79K	570K	64K
FY2012 SAC (Senate Report 112-77) 0.8MB	191K	96K	230K	92K	122K	70K	90K	48K
FY2012 AUTH CONF	Report not yet released							
FY2012 APPROP CONF	Report not yet released							

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Interception Matrix

Materials	Legislation & Regulations	Solutions	Roles
Rare Earths	Series of proposed bills	DOE Alternatives TBD – New Programs	Research Manufacturing Policy
Body & Vehicle Armor	Defense Appropriations Bill	Competitive Contracts	Legislation Research Manufacturing
Aluminum, Steel, Magnesium, Composites	CAFÉ Standards	Reduced weight, reduced cost, improved designs	Policy Research Manufacturing



Engineering Data 2008

Federal, State, and local governments employed about 12 percent of engineers in 2008. About 6 percent were in the Federal Government, mainly in the U.S. – DOD, DOT, DOE, DOI, and Energy, and in the NASA. Many engineers in State and local government agencies worked in highway and public works departments.

<http://www.bls.gov/oco/ocos027.htm>

Civil engineers	278,400
Mechanical engineers	238,700
Industrial engineers	214,800
Electrical engineers	157,800
Electronics engineers, except computer	143,700
Computer hardware engineers	74,700
Aerospace engineers	71,600
Environmental engineers	54,300
Chemical engineers	31,700
Health and safety engineers, except mining safety engineers and inspectors	25,700
Materials engineers	24,400
Petroleum engineers	21,900
Nuclear engineers	16,900
Biomedical engineers	16,000
Marine engineers and naval architects	8,500
Mining and geological engineers, including mining safety engineers	7,100
Agricultural engineers	2,700
Engineers, all other	183,200

Hang out on K Street

- ▶ Consider becoming a lobbyist!
- ▶ Special interest groups
- ▶ Lobbying firms
- ▶ All need expertise
- ▶ Do something old, thumb through the white pages of the DC phone book, if you can find one
- ▶ Do something “new”, browse the web for your favorite material

	Total Lobbying Spending	Number of Lobbyists*
1998	\$1.44B	10,405
2009	\$3.49B	13,705
2010	\$3.51B	12,964
2011	\$1.67B	11,674

<http://www.opensecrets.org/lobby/index.php>

* The number of unique, registered lobbyists who have actively lobbied.



National Mining Association >>

Starting from the ground up, materials – “minerals” – make a difference!

Join the fray

- ▶ Joint ASM/TMS Government Affairs Committee
- ▶ Congressional Visit Days to communicate with your leaders
 - Visit your Representatives and Senators on the Hill
 - Coordinate site visits by political leaders to your organization
- ▶ Visit Agencies to see what they do or be hired or be contracted
 - Department of Defense – Office of the Secretary of Defense down to the military services
 - Department of Energy – HQ and Laboratories
 - Department of Commerce – NIST
 - Department of Transportation – Laboratories
 - Others – Nuclear Regulatory Agency, Environmental Protection Agency, National Aeronautics and Space Agency, Central Intelligence Agency, Federal Bureau of Investigation, Secret Service?
- ▶ Apply for Fellowships to broaden your career
 - White House Fellowship
 - Congressional Fellowship
- ▶ Become a Lobbyist to represent a segment of the marketplace on various issues
- ▶ Run for Office

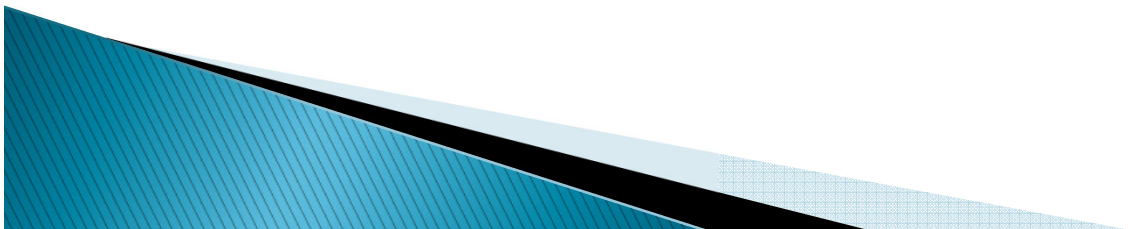


Recommendations

- ▶ Plan with the end in mind – Point N
 - Where do you want to be? Point N
 - Which stops can or could you make from Point 0 to Point N?
 - When do you want to be there?
 - Who will be going with you? – Solo or not solo?
- ▶ Draw your map from Point 0 to Point N
 - Write down a firm but flexible plan
 - Create SMART objectives and goals
 - Specific
 - Measurable
 - Attainable
 - Realistic
 - Timely
 - Integrate and Implement a Plan – Do – Check – Act Cycle
 - Implement Daily but on a Weekly Basis while checking regularly
 - Cut and paste pictures of you goals – mirror, office, notebook
 - Consider a support team

Did we attain the presentation objectives?

- ▶ Reflect on emergence as a materials engineering professional in between the industrial and federal sectors
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Phase Transformation of 2,132 Miles



Spring Mountain, GA



Mount Katahdin, ME