Presentation Agenda

I. Basics of Federal Budgeting & Appropriations

II. Long-Term Federal R&D Investment Trends

III. Federal R&D Focus Areas:
   - FY22/Annual Budget Process
   - NSF Reform Bills, Reconciliation Package, and Bipartisan Infrastructure Package

IV. How to Design Federal Requests/Capture Awards

V. Discussion/Questions & Answers
Basics of Federal Budgeting & Appropriations

“Love is where you fund it.”

[Image of people sharing a dollar bill]
The Annual Budget Process at a Glance

Executive Branch

- White House
- OMB
- OSTP

Legislative Branch

- Budget Committees
- Authorizing Committees

- Budget Resolution
- Authorizing Legislation

Appropriations Committees & Subcommittees

SPENDING BILLS \( \times 12 \)
Congressional Appropriations Process

- Federal Budget Request Submission in February, Testimony from Agency officials in March, and Member Days in April...
- February – April: Hill visits to submit request (virtual/in-person).
- “Dear Colleague” letters, Members submit their requests;
- Subcommittee Chairs are responsible for producing the initial bill (or “mark”) and report for each subcommittee.
  - Bills **AND** reports: both contain important information/directions/restrictions on use of funds/other instructional language for agencies.
- All 12 annual bills must complete this entire process:
  - Subcommittees → Full Committee → House and Senate Floors → Conference committee → President’s desk
What Factors Influence Appropriations?

• The “public interest” - aka national challenges, security, public health, economic competitiveness, functioning of government, etc...

• The “mission direction” of an agency – especially science.

• Legislator’s interests.

• Legislator’s professional background.

• Current fiscal environment.

• Ideology and party preferences/who is in the majority.

• “All politics is local” (their key constituencies).
At Every Moment, We Are in 3 Appropriations Cycles
# Federal Planning, Programming, Budgeting, & Execution (PPBE) Cycle Overview

## CY 2018
- **Execution**
  - FY 2018 & Prior FYs

## CY 2019
- **Budgeting**
  - FY2019
- **Execution**
  - FY 2019 & Prior FYs
- **FY20 Budget Sent To Congress**

## CY 2020
- **Execution**
  - FY 2020 & Prior FYs
- **FY20 Committee Mark-ups**

## CY 2021
- **Programming**
  - POM FYs 2020 - 2024
- **Planning**
  - DPG FYs 2021 2025
- **Programming**
  - POM FYs 2021 - 2025

## CY 2022
- **Planning**
  - DPG FYs 2021 2025
- **Programming**
  - POM FYs 2022 - 2026
- **Execution**
  - FY 2020

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- Continue dialog with government POCs.
- Send POM21 papers to ensure FY21 budget justification book(s) include(s) appropriate descriptions for your program.
Long-Term Federal R&D Investment Trends

History Tells Us Where We’ve Been
Federal R&D Budget Authority
Billions of Constant 2020 dollars, including 2009 Recovery Act

*Under OMB guidance, beginning in FY 2017 late-stage development, testing, and evaluation programs, mostly in Defense, are no longer counted as R&D. Does not yet include COVID-19 emergency R&D. Based on OMB, agency, CBO, and appropriations data. | AAAS
Federal Research Funding by Discipline as a Share of GDP, FY1970-FY2017

Source: National Science Foundation, Federal Funds for Research and Development series. GDP figures are from OMB. © 2019 AAAS
Share of Nondefense Discretionary Outlays for Select Research Agencies, FY1979-FY2019

Based on analysis of historical OMB outlays data, AAAS 2020
Trends in R&D by Agency
Select Science & Tech Agency Budgets Since FY2010
Relative Changes Above or Below FY2010, inflation-adjusted

Higher Education R&D Expenditures, By Source of Funds: FY1972–FY2018

DoD is a Substantial Source of Federal University R&D Funding for Various Disciplines

Share of R&D Funding from DoD for Engineering, IT and Materials Sciences

- Aerospace, aeronautical, and astronautical engineering: 60%
- Electrical, electronic, and communications engineering: 58%
- Industrial and manufacturing engineering: 48%
- Mechanical engineering: 46%
- Computer and information sciences: 44%
- Metallurgical and materials engineering: 39%
- Materials science: 33%
Composition of U.S. Basic Research, Applied Research, and Development by Funding Sector, 2019

- **Basic Research**
  - Federal Government: 42%
  - Universities: 14%
  - Business: 29%
  - Other: 16%

- **Applied Research**
  - Federal Government: 34%
  - Business: 54%
  - Other: 5%
  - Universities: 6%

- **Development**
  - Federal Government: 13%
  - Business: 85%
  - Other: 1%
  - Universities: 1%
Research & Development Focus Areas:

Biden Administration FY22 Budget Request

Where is the Fed Gov’t Going?
What Has Biden Proposed?

- A significant increase in federal R&D investment over FY21 – almost +9% total, and +17.2% for non-defense.

- A very “lopsided” request – DoD programs would receive +1.6%, while proposing non-defense spending +16.5%. Defense basic R&D would actually be cut $300M.

- A particular emphasis on applied S&T development, use, and societal impact – proposed new energy technology and climate programs are examples of this.

- The creation of an Advanced Research Projects Agency for Health (ARPA-H) modeled on DARPA/ARPA-E.

- This disproportionate shift to non-defense R&D will be pared back in the end due to narrow majorities in the House and Senate.
Proposed Increases in Science and Technology Programs in the FY2022 Request
Nominal Percentage Change from FY2021
Status of FY22 Appropriations

- House provided much of what Biden has requested;
- House has passed 9 of 12 bills (but not DOD, DHS and C/J/S);
- Senate has yet to pass any bills, though it has marked up three and released the remaining nine drafts;
- Continuing Resolution has passed – runs to Dec. 3rd;
- UM has faired well so far with its FY22 requests, BUT nothing signed into law yet…

FY22 Discretionary Budget Proposals

% change from F21 enacted

<table>
<thead>
<tr>
<th>Program</th>
<th>Biden Request</th>
<th>House Bill</th>
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</thead>
<tbody>
<tr>
<td>DOE ARPA-E ($0.4 B)</td>
<td>17%</td>
<td>41%</td>
</tr>
<tr>
<td>NIST ($1.0 B)</td>
<td>32%</td>
<td>45%</td>
</tr>
<tr>
<td>DOE Renewable Energy [EERE] ($2.9 B)</td>
<td>25%</td>
<td>32%</td>
</tr>
<tr>
<td>USGS ($1.3 B)</td>
<td>15%</td>
<td>33%</td>
</tr>
<tr>
<td>NOAA Research [OAR] ($0.6 B)</td>
<td>11%</td>
<td>20%</td>
</tr>
<tr>
<td>NIH ($43.0 B)</td>
<td>15%</td>
<td>21%</td>
</tr>
<tr>
<td>NSF ($8.5 B)</td>
<td>14%</td>
<td>20%</td>
</tr>
<tr>
<td>DOE Nuclear Energy ($1.5 B)</td>
<td>11%</td>
<td>23%</td>
</tr>
<tr>
<td>EPA S&amp;T ($0.7 B)</td>
<td>9%</td>
<td>19%</td>
</tr>
<tr>
<td>DOE Fossil Energy ($0.8 B)</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>NASA Science ($7.3 B)</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>DOE Office of Science ($7.0 B)</td>
<td>11%</td>
<td>19%</td>
</tr>
<tr>
<td>DOD RDT&amp;E [6.4-8] ($90.6 B)</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>DOE Nuclear Security [NNSA] ($19.7 B)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>DOD S&amp;T [6.1-3] ($16.9 B)</td>
<td>-13%</td>
<td>-5%</td>
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NIH, HRSA and Health R&D Proposals for FY22

• A roughly 20% increase for NIH, accelerating a six-year trend of multi-billion-dollar annual budget increases - each institute would receive an increase of at least 2.7%. Of the $9 billion proposed NIH increase, $6.5 billion would go to “ARPA-Health” (discussed on the next slide).

• Biden’s request also includes $8.7 billion for the CDC (increase of $1.6B) to modernize public health data collection, train new epidemiologists and other public health experts, and build international capacity to detect, prepare for, and respond to global public health threats.

• HRSA would receive $7.8 billion, an increase of $616 million (8.5%) over FY21. This includes a proposed $854 million for the HRSA Title VII health professions and Title VIII nursing workforce development and diversity programs, a $91.4 million (12.1%) increase over FY21.

• Climate change - the request also includes $100 million in new funds for research on the health impacts of climate change. Most of the money would support extramural research efforts aimed at understanding health-related climate vulnerability and building health resilience.
ARPA Health Proposal Overview

• The budget request seeks $6.5 billion for ARPA-H over three years to “drive transformational health research innovation and speed medical breakthroughs by tackling ambitious challenges requiring large-scale, sustained, and cross-sector coordination.”

• The initial focus of ARPA-H would include building platforms and capabilities to try to deliver cures for cancer, Alzheimer’s disease, diabetes, and other diseases.

• ARPA-H would follow the model of other “ARPAs,” (DARPA and the Advanced Research Projects Agency-Energy (ARPA-E)), including an organizational structure designed to be flat and nimble, tenure-limited program managers with a high degree of autonomy to select and fund projects, and a milestone-based contract approach.

• The House-passed FY22 Labor/HHS/Education Appropriations bill would provide $3 billion for ARPA-H in a new account at NIH available until September 30, 2024, with the condition that funds would be available only if legislation specifically establishing ARPA-H is enacted into law (such a provision was removed from the proposed House budget reconciliation package). The Senate is reluctant to fund ARPA-H until it is authorized in separate legislation.
Department of Defense S&T Priorities

Research, Development, Test & Evaluation Areas of Focus Are Shifting

- **Hypersonics:** Research on propulsion, advanced lightweight and high-temperature resistant materials and efficient design and production of new missiles and vehicles.

- **Microelectronics:** Investments in domestic design, fabrication, and packaging capabilities and capacity to improve access to trusted, state of the art microelectronics & semiconductors for Defense and Space sectors.

- **Artificial Intelligence:** AI is seen as an enabling technology for a range of advanced capabilities and technologies, now funded through over 600 programs DOD-wide.

- **5G Wireless Networks, Data Management & Cybersecurity:** Increasing bandwidth to add more sensors, data and sources to enable more networked capabilities – cybersecurity and supply chain related issues.

- **Climate Change:** R&D to both help DOD lower its carbon footprint & increase use of renewable, adapt operations to sea level rise, etc…
Research & Development Focus Areas:

NSF Reform, Infrastructure, and Reconciliation Packages*

(*Each Subject to Additional Revisions and Compromises)
United States Innovation and Competition Act (USICA)

Different House and Senate Visions May Take Time to Resolve...

• USICA, introduced by Senators Schumer (D-NY) and Young (R-IN) originally as the “Endless Frontier Act,” has gained bipartisan support and has been labeled as “must-pass” legislation, but the negotiation process has resulted in the inclusion of provisions that deviate from the bill’s original goals.

• The now $200+ billion authorization bill proposes an expanded role for the federal government in “strategic sectors” – including semiconductors, drones, wireless broadband, and artificial intelligence – with increased funding, supervision, and regulation of various industries.

• USICA also contains several higher-education provisions to facilitate research and development in the “key-technology focus areas” defined by USICA including robotics, artificial intelligence, and advanced energy sources.

• It also further expands the use of trade provisions in order to restrict the flow of Chinese goods and services and to bolster President Biden’s Buy American agenda.
The Potential “Transformation” of NSF

Congress Contemplating Major Changes to NSF’s Focus on Basic Science

• In the wake of big increases for the NIH, political support has grown for similarly large investments at the NSF. Presently in the basic sciences, NSF funds only 20% of grant applicants each year, even though 30% of applicants’ proposals are rated as highly meritorious by review panels.

• The Biden administration, the U.S. Senate (Endless Frontiers), and the U.S. House of Representatives (NSF for the Future Act) have each put forward a somewhat different vision for expanding the NSF, although they all favor more investment in emerging technologies/assisting in their commercialization.

• Each proposal would authorize huge spending increases ($100B over 5 years proposed by Senate) and some form of a new “Technology Directorate,” but these would create significant staffing needs and culture changes that take time.

• Funding for these new authorized activities would be provided via the infrastructure/reconciliation packages and also the annual appropriations process.
This annually produced memorandum outlines Administration’s multi-agency R&D priorities for agencies to consider when formulating their next budget submissions to OMB. Biden’s first such memo (which is for FY23) provides 5 priorities:

• **Pandemic Readiness and Prevention**
• **Tackling Climate Change** – specific initiatives in:
  • Climate science (observations, data & modeling), Innovation in clean-energy technologies and infrastructure (R&D, demonstration, and deployment), Climate adaptation and resilience (integration of physical, natural, and social sciences), and Nature-based climate solutions for mitigation and adaptation.
• **Catalyze Research and Innovation in Critical and Emerging Techs:**
  • Critical and emerging technologies including AI, quantum sciences, microelectronics, high-performance computing, biotechnology, robotics, and space technologies.
• **Innovation for Equity**
• **National Security and Economic Resilience**
Bipartisan Infrastructure Package - DOE Highlights

• $21.5 billion for the new DOE Office of Clean Energy Demonstrations;

• Across DOE’s existing offices, the bill also includes $16.3 billion for the Office of Energy Efficiency and Renewable Energy, $8.1 billion for the Office of Electricity, and $7.5 billion for the Office of Fossil Energy and Carbon Management;

• Would vastly expand DOE Hydrogen R&D and demonstration activities, allocating $8 billion to establish four regional clean hydrogen hubs, $1 billion to support hydrogen electrolysis demonstration projects aimed at reducing production costs, and $500 million for a clean hydrogen manufacturing and recycling program; and

• **Carbon Reduction:** $3.5 billion to establish four “regional direct air capture hubs,” $2.5 billion for a carbon capture demonstration program, and nearly $1 billion for carbon capture technology pilot projects.
Infrastructure Package – Other Opportunities

NOAA would receive the second-largest amount of funding among science agencies, with the bulk of its nearly $3 billion appropriation going toward environmental protection and restoration activities.

- $492 million would support coastal and inland flooding mapping and modeling;
- $150 million would go toward observations systems for ocean, coastal, and Great Lakes regions; and
- $80 million would support research supercomputing infrastructure for weather and climate forecasting.

$158 million for the DHS’s Science and Technology Directorate to support work aimed at protecting critical U.S. infrastructure.

- Eligible uses include projects that build resilience to electromagnetic pulses and geomagnetic disturbances, such as those caused by solar storms.
Budget Reconciliation Package/Build Back Better (BBB)

- The “budget reconciliation” process allows Senate Democrats to avoid the filibuster (60 votes) but limits the package to “revenue & spending related” provisions (which excludes policy issues like immigration).

- Proposed “BBB” spending would be in ADDITION to FY22 and would be “mandatory,” not discretionary (subject to annual appropriations) – provides agencies 5(+) year window to allocate this funding.

- House’s original proposed $3.5 trillion package has shrunken to roughly half this amount, to address disagreements from moderates/the Senate, and is still being negotiated.

- Bipartisan Infrastructure package unlikely to get vote in the House without a reconciliation package “deal” (which must be “pre-negotiated” with Senate) and vote occurring at same time – date of vote still TBD.
House Proposal

- House Science Committee was provided $45.5 billion to allocate to their reconciliation provisions, which was divided primarily among the DOE, NSF, NASA, NIST, and NOAA.

- Many of these R&D-related spending proposals (on following slides) and levels have been significantly reduced or dropped entirely as the BBB package has been reduced in size, however final #s still TBD...

- Committee Republicans opposed, pointing to sparse guidance from the Committee on how funds will be spent, and that it would create a funding “cliff” in 5 years.

<table>
<thead>
<tr>
<th>Science Committee Reconciliation Proposals</th>
<th>($, millions)</th>
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<tbody>
<tr>
<td>DOE Office of Science</td>
<td>12,769</td>
</tr>
<tr>
<td>Infrastructure and equipment</td>
<td>10,769</td>
</tr>
<tr>
<td>Fusion R&amp;D</td>
<td>2,457</td>
</tr>
<tr>
<td>Quantum computing access program</td>
<td>1,217</td>
</tr>
<tr>
<td>Low-dose radiation research</td>
<td>1,108</td>
</tr>
<tr>
<td>Computational Science Graduate Fellowships</td>
<td>70</td>
</tr>
<tr>
<td>DOE Applied Energy*</td>
<td>11,030</td>
</tr>
<tr>
<td>Infrastructure and equipment</td>
<td>3,430</td>
</tr>
<tr>
<td>Research</td>
<td>7,550</td>
</tr>
<tr>
<td>NASA</td>
<td>4,400</td>
</tr>
<tr>
<td>Infrastructure and equipment</td>
<td>4,000</td>
</tr>
<tr>
<td>Climate change R&amp;D</td>
<td>388</td>
</tr>
<tr>
<td>Cybersecurity</td>
<td>7</td>
</tr>
<tr>
<td>National Oceanic and Atmospheric Administration</td>
<td>4,256</td>
</tr>
<tr>
<td>Infrastructure and equipment</td>
<td>2,246</td>
</tr>
<tr>
<td>Weather, ocean, and climate research and forecasting</td>
<td>1,240</td>
</tr>
<tr>
<td>Climate resilience education and workforce programs</td>
<td>765</td>
</tr>
<tr>
<td>National Institute of Standards and Technology</td>
<td>4,200</td>
</tr>
<tr>
<td>Infrastructure and equipment</td>
<td>1,000</td>
</tr>
<tr>
<td>Research</td>
<td>1,195</td>
</tr>
<tr>
<td>Manufacturing Extension Partnership</td>
<td>1,000</td>
</tr>
<tr>
<td>Advanced manufacturing R&amp;D</td>
<td>1,000</td>
</tr>
<tr>
<td>Commerce Department</td>
<td>5,000</td>
</tr>
<tr>
<td>Regional innovation initiative</td>
<td>5,000</td>
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</table>


American Institute of Physics | aip.org/fyi
House Science Committee – Reconciliation Proposal

Department of Energy

- $15.6 billion to DOE, of which about $12.8 billion is for the Office of Science (all but $2 billion is for research infrastructure). (These numbers have been significantly cut)

- DOE’s Office of Energy Efficiency and Renewable Energy (EERE) would receive $1.8 billion total under the package for a mix of low-carbon demonstration projects and research infrastructure, as well as $70 million to establish a new clean energy manufacturing institute.

- $340 million for facilitating researchers’ access to U.S.-based quantum computers, $180 million for low-dose radiation research, and $116 million for DOE’s Computational Science Graduate Fellowship Program.
House Science Committee – Reconciliation Proposal

National Science Foundation

• $11 billion for NSF, $7.6 billion of which is for new and existing research awards, scholarships, fellowships, and tech transfer. (Significant reduction in new draft)

• Some of this funding would support a new “technology and innovation directorate,” the establishment of which has been the subject of extended legislative proceedings (Schumer’s Endless Frontier Act/USICA).

• $400 million for research on climate change and wildfires.

• $3.4 billion allocated to research infrastructure allocation, including $1 billion “for university facilities modernization” competitive grants ($300 million at HBCUs tribal colleges and other MSIs) – similar to ARRA funding opportunities 2009-2010. (New draft reduced this to only $100 million for university equipment/facility grants)
House Science Committee – Reconciliation Proposal

National Oceanic and Atmospheric Administration

- NOAA would receive $4.3 billion over five years to support activities in weather and climate research, forecasting, and decision support, as well as updating their associated observation and computing infrastructure.

- $765 million would go to developing a “climate-ready workforce” and to distributing “actionable climate information” to communities across the U.S.

- $173 million would support space weather observation and preparedness activities authorized by the Committee’s recently enacted PROSWIFT Act, including accelerated work on a new observation satellite.
House Science Committee – Reconciliation Proposal

NASA

- $4.4 billion over five years, of which $4 billion is for “repair, recapitalization, and modernization of physical infrastructure and facilities.” (New draft proposes just over $1 billion total)

- The remainder of the NASA funding in the Committee’s legislation is mainly for climate-related activities, with $225 million for R&D on “sustainable aviation” technologies.

- $85 million for R&D on “subseasonal to seasonal models and observations, climate resilience and sustainability, and airborne instruments, campaigns, and surface networks.”

- $28 million for climate research data management and processing.

- $50 million to support wildfire fighting operations.
House Science Committee – Reconciliation Proposal

National Institute for Standards and Technology

- NIST would receive $4.2 billion total over 10 years, of which $1 billion is for facility upgrades.

- $1.2 billion is for research on “artificial intelligence, cybersecurity, quantum information science and technology, biotechnology, communications technologies, advanced manufacturing, resilience to natural hazards including wildfires, greenhouse gas, and other climate-related measurement.”

- The Hollings Manufacturing Extension Partnership program, which is a network of centers to assist small and medium-size manufacturers with production and technical capabilities, would receive $1 billion.

- NIST would also get $850 million to fund new advanced manufacturing R&D and testbeds, as well as $150 million for a new semiconductor manufacturing innovation institute.
House Science Committee – Reconciliation Proposal

Department of Commerce & EPA

• $5 billion is for regional innovation initiatives and the remainder is split between NIST and NOAA.

• This summer, the Committee advanced bipartisan legislation that would create a program within the department supporting at least 10 “technology hubs” in regions that are not already leading innovation centers.

• EPA would receive $264 million over five years for a variety of climate change R&D and mitigation activities.

  • These include better characterizing cumulative pollution impacts, developing a “grants-based regional climate science network,” and “increasing engagement capacity with frontline communities with environmental justice concerns in translating, utilizing, and evaluating scientific research results.”
Other House Committees – Reconciliation Proposal

U.S. Department of Agriculture

The bill’s roughly $8 billion in USDA research program funding has a heavy focus on climate change:

• The Agricultural Research Service would receive $250 million, the U.S. Forest Service would receive $250 million, the Economic Research Service would receive $45 million, and the National Agricultural Statistics Service would receive $54 million, almost all of it for research related to climate and emissions.

• The National Institute of Food and Agriculture (NIFA), which would receive $6.3 billion for an array of line items, many with a climate focus, including (New draft significantly reduces this):
  o $2.7 billion for agricultural research facilities grants including $100 million for university research equipment grants;
  o $500 million each for the Agriculture and Food Research Initiative (AFRI), a competitive grants program and the Sustainable Agriculture Program; and
  o $200 million each for organic agriculture and specialty crop research.
Reconciliation & Infrastructure Observations

• The proposed smaller BBB package ($1.75T) has set off many fights to determine what policy and R&D provisions stay in and what goes – this will be subject of intense lobbying in the coming days and weeks.

• Agencies in some cases will have broad authority and little specific direction from Congress on the use of “new” funds.

• Agencies may also have a variety of approaches as to how quickly they disburse their new “extra” funding, and electoral pressures (2024) may drive some spending decisions.

• A possible path on pursuing these initiatives is:
  • Apprise government relations of your interest in an area;
  • Make a contact plan with key agencies, including precursor due diligence on their approach and who are the decision makers;
  • Formulate short papers to help federal executive branch officials shape how these programs should be structured (content and mechanism); and
  • Consider having the Hill weigh in with the Agencies to echo the suggestions in your papers.
How to Design Federal Requests and Capture Large Awards

“Follow the Money.”
Federal Relations Overview

• To know where you are going, you need to know where you have been.

• It’s about what resources we need (and in which areas) to take Missouri’s research and education programs to the next level.

• That is the federal relations mission.

• And if we know where we want to go, then we must ask: what’s the best way to get there?

• We must know the Federal R&D zeitgeist:
  • Evolving areas of R&D emphasis by the WH, OSTP, OMB, and Federal mission agencies – what’s in and what’s out;
  • What mechanisms do Agencies use to fund university R&D; and
  • What is Congress funding and what agencies/programs are disfavored for various reasons.
Needs Assessment

• What investments does Missouri need to go from good-to-great in selected areas of research emphasis?

• The University “foundation” – human and physical infrastructure:
  • People
  • Facilities
  • Equipment

• What is our triage intervention that creates a critical path to greatness?
  • Who on the faculty can we scale from a solo act to a team & will they be team players?
  • What is the connection between State funding and private philanthropy to our scientific research aspirations?
  • What public good or benefit will result from this investment?
  • What is the path for sustainment of our aspirations?
How to Get R&D Funding Using Congress

Program level expansion:
• Plus up budgets of existing programs in which you are heavily involved (e.g., defense, animal genomics) or could be more involved.

Create a new program:
• Propose a new pilot or demonstration program at a federal R&D agency to provide funding to a new/unique area of research.

Create a “narrow class” of competition:
• Use report language to structure competitive opportunities in such a way to make you prohibitive favorite to win awards.

Hard earmarks:
• Depending on the agency, these can provide direct support for buildings, instruments, or research (paying for faculty time to conduct research). But they are of limited amounts and duration.
Proposal Development - Strategic Objectives

Undertake a frank evaluation: Assess each proposed initiative for its research proficiency to determine if it is:

- World Class/One-of-a-kind?
- Competitive?
- Emerging?

“Who” is as important as “what”? Identify and support the “stars” on the faculty:

- Most research universities rely on their top 10%.
- Faculty with competitive federal funding track record.
- Researchers who have or are willing to develop relationships with Agency program managers.
Proposal Assessment - Defining Content

1. Define your “hard targets” of opportunity based on:
   - UM’s faculty expertise and available tools;
   - Consistency with customer agency’s mission/research priorities (ensure PI/Center Director/Dean formulated proposal based on agency priorities before proceeding); and
   - If the proposal-idea has an Agency Champion.

2. Facts: Gather your facts to justify a new or augmented investment and demonstrate you understand the need(s).

3. Outcomes: Can we define specific outcomes we seek that addresses the needs we identified?

4. Cost: Provide clear budgetary requirements and determine if the cost is shared with other partners, and how.

5. Use “Layman’s Terms”: Papers must be written so those not trained in science can understand our requests quickly and easily. Recycled, failed old peer review proposals are a non-starter.
Proposal Mechanics

How we can help support, vet, and shape your ideas:

• Supplementary research on how an idea matches a federal priority and previous funded examples;

• Provide data on agency funding trends and shifting research priorities;

• Creative thinking on aligning ideas to meet agency objectives;

• Research on types of grant and contract mechanisms used by federal agencies;

• Find prior year precedents of Congressional action (though past performance is no guarantee); and

• Candid assessment of probable congressional delegation and committee interest.
Proposal Development – Importance of Partners in Research (and Advocacy)

More “bang for the buck” if your delegation can support/fund joint Missouri requests with other partners in the State:

• Missouri Industrial Juggernauts:
  • Defense (Aerospace/Boeing, DRS, NGA, etc.)
  • Agriculture (Producer Groups)
  • Mining, Construction & Transportation

• Small Businesses:
  • Emerging companies in fields like medical countermeasures, materials, 3D printing/metal fabrication…

• Economic workforce significance to the State? Jobs, jobs, jobs

• Community Services: Health care providers, K-12 education, underserved populations, etc…
Congressional Initiative Decision Making Flow Chart

Existing Program / Requirement?

Yes

Construct Argument / Rationale: Why & How & For What Purpose?

In Budget? Talk w/ Program Office Or Wait Until Budget Is Released (February).

Yes

Brief Capitol Hill Staff To Ensure Program Is Not Reduced

No

Unfunded Requirement?

Yes

No

No

Gov’t Sponsor Support? or Congressional Support?

No

Yes

Create Congressional Initiative

Yes

No

Build Support Within Department Or Agency Or Congress. Brief Key Personnel In Program & Budget / Finance Offices Or Congressional Offices, Personal Or Professional.
The Return of Earmarks

- House and Senate Appropriations Committees have “resurrected” the practice, with limits:
  - Non-profits and state/local governments only are eligible.
  - Only certain agencies and accounts (and no DOE or NIH and DoD only for the House).
  - House Members especially constrained given 10 total request limit.

Preliminary House Data:

- House members submitted almost 3,000 requests for almost $6 billion in earmarks.
- All Democrats and 122 Republicans made requests (92 did not).
- Very few (~200) were for “STEM-related” requests, and they were heavily concentrated on USDA (facilities) and HHS/Education.
- Many other education-related requests specifically centered on the STEM workforce pipeline and reaching populations historically underrepresented in STEM.
House Community Project Funding Requests by Subcommittee

Excludes non-voting representatives. Graphs reflect the data submitted by offices into the database maintained by the Appropriations Committee, last accessed July 18, 2021.
Earmarks: Not a Long Term Solution

- Earmarks can be useful for a “one-time investment” to help build capacity and/or purchase needed equipment or facilities (in limited cases), but are poorly suited as a source of ongoing support for university research efforts;

- Advantage of accessing federal funding outside of the existing competitive processes, but may also invite additional scrutiny (from media) as a result;

- Requests that provide improved services to citizens may improve chances of securing an earmark, and partnering with local community organizations on such requests may also help (certainly with the House);

- Proposed earmarks for equipment need strong tie-in to societal benefit/applied R&D, rather than just basic R&D;

- Remember also that if Republicans capture House and/or Senate in the 2022 midterm elections, earmarks may suddenly go away again...
Final Observations and Thoughts….

• Appropriations:
  • Earmarks are a limited, but potential target of opportunity, but requires broader community support or engagement under new rules in the House and Senate.
  • End runs around the successful UMissouri system – will not help you succeed – please follow the process!
  • FY23 process will be truncated, so timing is of the essence.

• Reconciliation and Infrastructure Packages:
  • Prepare concept papers in addition to white papers for agencies NOW.
  • Will work to help you develop meetings with agency PMs once BIF and BBB signed into law.

• Lastly, remember that any conversations you have with Congressional offices, particularly related to federal funding, must always be coordinated with UM’s Government Relations….
Questions, Answers and Discussion Session