INNOVATION ADVOCACY COUNCIL | AN INITIATIVE OF SSTI
JOBS AND PROSPERITY THROUGH INNOVATION

Solutions for Job Creation & Economic Growth

The themes of President Trump's successful campaign reflect the following policy principles and solutions. His focus on infrastructure, the loss of manufacturing jobs, the importance of growing small businesses, and the need to innovate to keep America competitive clearly resonated with voters. We are excited that many of the President's priorities are reflected in ideas that our organization supports in the area of job growth and economic prosperity. As President Trump begins to turn campaign promises into action, SSTI and its policy-focused initiative, the Innovation Advocacy Council (IAC), suggest the following changes to government and national policy.

Principles

IAC's policy agenda aims to support the individuals, institutions, and processes producing innovations that create jobs and improve quality of life through technological advancement and economic prosperity.

To meet this mission, IAC's policy framework is structured around seven objectives:

- Advance prosperity through locally-designed strategies
- Modernize our nation's infrastructure to include and support new technologies
- Grow good paying jobs by increasing the velocity of innovation into new product lines and businesses
- Support small businesses and increase entrepreneurship
- Ensure the workforce is trained for the jobs of the future
- Reform national institutions to better support the innovation economy
- Enhance America's global competitiveness through increased funding for targeted research and development

Policy Solutions

Advance local prosperity through locally-designed strategies

Every region in the United States, large or small, possesses assets that can be leveraged for economic benefit. These assets represent concentrations of intellectual capital that generate inventions, discoveries, innovations, and ideas for new products and services that hold the potential to be transformed into new, high-growth businesses and new jobs. In many cases, Federally-funded basic and applied research provides the fuel for these inventions and discoveries. These new businesses and their technologies can improve U.S. competiveness in the world and also provide high paying, quality job growth within these regions. For the United States to continue its leadership position in innovation, we must capitalize on the geographically-diverse sources of innovation in our country and not leave significant portions of promising creativity and innovation untapped.

Across the country, there are initiatives and networks of activity—funded by the private sector, philanthropy, universities, states, and local government—with proven track records of creating jobs, boosting economic growth, improving businesses' efficiencies and profits, and forming new companies. These partnerships encourage the creation and growth of innovation- and technology-focused companies, in new economy industries such as advanced manufacturers, agricultural and medical technology, and energy production.

IAC's highest policy priority is to continue growing the most effective of these initiatives and networks, and to increase their presence throughout the country. These initiatives will be able to bring new jobs and economic impact to more Americans by using the Federal government to catalyze local solutions. Each region of the U.S. is unique and has its own set of strengths and opportunities, and also gaps to be filled. In a bipartisan poll conducted for IAC,[1] we asked respondents if they would support a policy change to "develop Federal government partnerships with cities, states and regions and non-profit organizations to help fund locally-designed strategies that encourage the creation and growth of technology companies." This proposal was met with overwhelming support from 78 percent of participants. Rather than a cookie-cutter approach, taxpayers prefer flexible Federal support for locally-designed programs, locally-identified priorities, and locally-identified gaps.

- *The Regional Innovation (RI) Program should be expanded and the office administering it should be adequately resourced in order to catalyze greater economic growth through industry-driven local networks (U.S. Department of Commerce)*

  Successful experience has demonstrated that Federal investments can catalyze meaningful and systemic change in communities that have developed plans to capitalize on their own unique innovation and sector strengths. The RI Program provides matching funds for private and state/local investment into programs that address regional gaps in the commercialization of innovation. The RI Program helps to strengthen multifaceted, regional ecosystems that include access to a continuum of investment capital, appropriate physical infrastructure (which might include affordable lab space, co-working environments, or science and research districts), a system of mentoring that matches industry-seasoned talent with emerging technologies and entrepreneurs, and a diverse and well-trained workforce. IAC recommends authorizing this successful program at $100 million, as intended in the original legislation. This increase will facilitate awards that provide for award timelines of up to 5 years and larger awards to establish stronger initiatives with the stability necessary to establish long-term sustainability. Increased funding will further enable the RI Program to support complementary innovation activities permitted in the original legislation but not yet funded, such as startup challenges connecting corporations with entrepreneurs and broader geographic efforts to combine rural and metro assets to jointly unlock greater economic prosperity for entire regions.

- *Expand the U.S. Small Business Administration's (SBA's) Regional Innovation Clusters program to support more industry-community partnerships*

  The SBA Regional Innovation Clusters (RIC) program is unique in recognizing the need for regional economies to leverage and connect centers of innovation, supply chains, and talent

[1] Poll of 1,000 likely voters conducted by Greenberg Quinlan Rosner Research and TargetPoint on behalf of SSTI's Innovation Advocacy Council in fall 2015.

pools—from academic centers to startups to multinational corporations—in "clusters" of industry-focused strengths unique to each region. From wood products in rural Appalachia Ohio and advanced manufacturing in inner-city Detroit to biosciences in St. Louis to unmanned aerial vehicles in Oklahoma and energy in Florida, the program has helped regions connect their mature industry strengths with newly created companies and latent pools of talent for new jobs. Further, a number of the clusters have helped communities and, importantly, the U.S. military pivot from old line technologies and manufacturing capabilities to new, innovative technologies. IAC recommends fully authorizing this program as a $25 million annual initiative to support innovation-based industry clusters across the country.

- *Use the convening function of the Federal government through entities such as the National Advisory Council on Innovation and Entrepreneurship (NACIE) to provide a stronger voice for manufacturing and other advanced industries in directing Federal innovation policy*

  Working groups, like NACIE, provide critical room for private sector voices—with firsthand experience on how to grow the economy and jobs—in Federal policy discussion and agency operations, bringing new ideas to government. Utilizing these outside advisors to provide substantive review and guidance brings the unique perspective of entrepreneurs, investors, CEOs, and innovation leaders into the design and dissemination of Federal programs. IAC recommends continuing support for NACIE.

Modernize our nation's infrastructure to include and support new technologies

Strong infrastructure is the backbone of the economy, but America's infrastructure needs to be revitalized in order to enable robust economic growth. Strategic investments in traditional infrastructure can not only improve the quality and safety of bridges, airports, and utilities, but also provide opportunities for innovative entrepreneurs and corporations to contribute to a modern infrastructure through the next wave of manufactured goods and smart technologies.

- *Improve the country's broadband and wireless internet infrastructure to provide greater access for all citizens to information and opportunities (Federal Communications Commission [FCC])*

  As a facilitator of customer identification, brand management, employee coordination, and direct sales, internet access is critical to present-day business operation. Broadband access in rural areas is just 61 percent—1.5 times worse than in metro areas—and 47 percent of students fail to meet the FCC standards for school connectivity.[2] In the interest of facilitating rural business and quality of life, IAC recommends that the Federal government incentivize internet service providers to build out broadband and wireless networks in rural and other low-access areas.

- *Bring new technologies to traditional infrastructure investments, such as more efficient and productive energy generation, improved cost-efficiency of airports and other facilities, and smart technologies that make communities safer*

[2] Federal Communications Commission. (2016, Jan. 29). *2016 Broadband Progress Report*. https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2016-broadband-progress-report.

Infrastructure is no longer necessarily a "dumb" object, planned and built once and then left to sit silently while it decays. Today's technology enables infrastructure to be a proving ground for new materials, adaptable to changing conditions, and a source for sensors revealing customer patterns and alerting owners to actual—not projected—maintenance needs. Investments in public infrastructure must be made in conjunction with the research centers, startups, and manufacturers that are actively developing these innovations. IAC recommends that Federal investments in infrastructure both include a set-aside to cover additional costs of incorporating smart technologies and include points in proposal- and contract-scoring for projects that propose specific construction of smart infrastructure.

- *Invest in the infrastructure needed to grow a 21st Century economy, such as the development of medical and scientific research parks, labs, and incubators*

  The process of making scientific and medical research progress and converting these innovations into real solutions and businesses is an infrastructure-intensive process. A common concern of cities throughout the country is a lack of sufficient laboratory space to investigate new drugs, robotics, and other innovations, and new products often thrive when cultivated in a scalable site co-located with collaborators and competitors. IAC proposes that Federal infrastructure spending plans include a three percent set-aside for technology parks, labs, incubators, and other research-related infrastructure.

Grow good-paying jobs by increasing the velocity of innovation into new product lines and businesses

Meaningful gains in job growth and sales opportunities occur when research reveals solutions to problems or leads to the creation of new small businesses, products, or manufacturing processes. Billions of dollars per year of private and public investment in R&D yields thousands of discoveries and technologies that have the potential to be brought to market and to help solve problems or advance new benefits in healthcare, energy, defense, and many other fields. Converting a research discovery in a lab to a successful product or service requires numerous steps and overcoming many challenges and barriers, including understanding specific customer needs, developing prototypes, running pilots or trials, securing regulatory approval, meeting necessary product cost targets, and other activities, depending on the technology and industry. There is an opportunity for the Federal government to reduce some of the barriers faced by innovators and entrepreneurs and to provide assistance in bringing these important innovations to market.

Notably, many of the products emerging from research transformation efforts are hard goods that have the potential to create new manufacturing jobs, an especially important opportunity for the American economy in the coming decades.

To increase job growth, IAC encourages the adoption of policies that will improve the rate of research-to-product conversion.

- *Implement a new research transformation capacity grant program to bolster regional strategies to convert research into new products and services throughout the country (National Institute of Standards and Technology [NIST])*

  Companies seeking to transform scientific research into technological innovations and new businesses face a variety of challenges, such as market segmentation and customer

development. Experienced nonprofit, venture development organizations can help companies overcome these barriers and accelerate their growth. A bill introduced by Senators Jerry Moran and Mark Warner in a prior Congress suggested supporting these activities through a Federal grant program funded by setting aside 0.35 percent of the extramural R&D budgets of Federal agencies with extramural R&D budgets over $100 million. IAC recommends implementing a new research transformation capacity program that leverages organizations working effectively at the regional or local level to support proof-of-concept and other activities needed to demonstrate new technologies at a sufficient level to attract private investment.

- *Modernize the Small Business Innovation Research (SBIR) program to make permanent its authorization and to allow for commercialization activities (SBA)*

  Billed as "America's Seed Fund," the SBIR program provides over $2 billion annually to small businesses to fund research and development activities through eleven Federal agencies. Currently, Federal rules prohibit awardees from using award funds for technology transformation activities like customer discovery, market research, intellectual property protection, and pursuing private investment. These are critical activities at an early stage, but most private investors are not willing to support companies until more of the R&D activities (the primary purpose of the SBIR funding) are complete. Allowing transformation activities to be included as a modest portion of the SBIR budget would both accelerate the ability of the companies to move their innovations to market and increase the likelihood that the applied R&D outcomes funded by SBIR will be well aligned with customer needs.[3] The previous reauthorization of SBIR included an ability for Federal agencies to accommodate some of these activities through a pilot program allowing flexibility in the use of administrative funds, but this program will expire in 2017. IAC recommends making SBIR permanent, fully authorizing the administrative funds pilot and expanding the regular program's use of funds to include transformation activities.

- *Encourage universities and American companies to work together to solve America's manufacturing problems by creating incentives for collaboration (NIST and National Science Foundation [NSF])*

  Industry-university collaborations can be very fruitful, but require either experienced collaborators on both sides or an effective intermediary organization to help navigate the cultural, legal, and structural challenges that need to be addressed to yield the most effective outcomes from working together. Incentives on both sides can help encourage the initial work leading to long-standing relationships that address thorny technical and manufacturing difficulties that companies face when bringing new products to market or in trying to meet aggressive cost targets needed to keep their manufacturing in America.

  - Incentives for industry can include an R&D tax credit for industry payments to universities or university research consortia. The U.S. has such a 20 percent credit for energy research, but not in other industries. IAC suggests establishing a tax credit for businesses for 20 percent of the expenses related to industry-university research collaboration.

[3] National Advisory Council on Innovation and Entrepreneurship (2016, Mar. 4). "Improving Commercialization Outcomes of the SBIR/STTR Programs." *U.S. Department of Commerce.* Ratified recommendation to Secretary of Commerce Penny Pritzker. https://www.eda.gov/oie/files/nacie/meetings/20160303-SBIR-STTR-Recommendations-NACIE.pdf.

- IAC recommends increasing Federal funding for programs that create industry-university collaborative research centers, particularly NSF's Engineering Research Centers and Industry/University Cooperative Research Centers and NIST's Manufacturing USA national network. This funding would encourage universities to seek out more of these partnerships.[4]

- *Streamline regulations and initiatives to facilitate the conversion of research from Federal laboratories into new jobs and businesses (Office of Science and Technology Policy [OSTP])*

  America's national laboratories are home to thousands of researchers and a huge array of laboratory equipment producing numerous scientific, medical, and technological innovations each year. However, the systemic changes needed to prioritize the efficient transformation of these innovations into new products, services, and businesses have not occurred. High-impact solutions include the following:

  - To effect a real change in technology transfer outputs, the management of the labs needs to be measured based on these outcomes and sufficient funding for commercialization activities needs to be available. The report card used to evaluate the contractors managing many of the national labs, the Performance Evaluation and Management Plan, treats successful transfers of technology to market as an afterthought.[5] IAC recommends adding technology impact or transformation outputs as a major category of measurement to increase the focus of lab managers on the needed activities to bring about change.[6]

  - IAC proposes setting aside a portion of Federal funding to the national labs for research activities to fund technology transfer efforts, both within the labs and with organizations around the country that provide technology transfer and entrepreneurship assistance, mentoring, and accelerator programs.

  - IAC recommends the permanent adoption of the U.S. Department of Energy's (DOE) Agreements for Commercializing Technology pilot, which establishes a lower barrier for contracts with businesses seeking to develop national lab research into new products and services.

  - IAC supports the continuation and implementation of pilot programs at the national labs to test new models and incentives to facilitate research transformation. An example of a promising initiative is DOE's Small Business Voucher program, which facilitates small business access to national lab facilities and equipment for product testing and development.

- *Pilot a program under the U.S. Department of Defense (DOD) to turn military research into products and services for both the public and private sectors*

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[4] Ezell, S. & Andes, S. (2016, Dec.). "Localizing the economic impact of research and development: Policy proposals for the Trump administration and Congress." Washington: Information Technology and Innovation Foundation and Bass Initiative on Innovation and Placemaking at Brookings: p. 27, http://www2.itif.org/2016-localizing-economic-impact.pdf.
[5] Stepp, M. et al. (2013). "Turning the Page: Reimagining the Federal Labs in the 21st Century Innovation Economy." Washington: Information Technology and Innovation Foundation, Center for American Progress and Heritage Foundation: pp. 48, http://www2.itif.org/2013-turning-the-page.pdf.
[6] Ibid., p. 53.

The military relies upon the effective conversion of research into field-ready products to facilitate the efficient completion of its mission. Innovations have led to unmanned aerial vehicles, better body armor, and life-saving medicine. In order to accelerate this conversion, the DOD should implement a pilot program to fund the development and production of new technologies. IAC proposes a $100 million pilot program funding regional collaborations of DOD installations, research institutions, and manufacturing centers aimed at providing the next wave of military technology. Awards should be made on a competitive basis to nonprofit organizations that will provide the coordinating service. Each award could focus on a different DOD need that already has research beyond the earliest stages of development (e.g. cyber security) and could be evaluated on the appropriateness of the proposed research, testing, and production partners in the collaboration. Agreements should be for a minimum of three years, or preferably as long as five, in order to accommodate a development and piloting cycle.

Support small businesses and increase entrepreneurship

High-growth small businesses and startups create the majority of new American jobs, with new companies alone accounting for 20 percent of all job creation.[7] Small factories are particularly important to manufacturing employment, with establishments of fewer than 100 employees accounting for more than one-third of all manufacturing jobs and those under 500 accounting for more than two-thirds.[8] Startups cannot grow without access to financing and other resources willing to work with the unique needs of small and young companies, and large banks are unable or unwilling to be this resource. California, New York, and Massachusetts have cultivated investors who understand the opportunities provided by small companies, but communities in the rest of the country need tools to help unlock capital for entrepreneurs. To accomplish this goal, IAC supports the following policy changes.

- *Modernize Treasury's small business capital programs to emphasize bank loans and private investments into American manufacturers and thousands of other small businesses and startups (U.S. Department of the Treasury [Treasury])*

  Banking regulations and market pressures have limited the loans available to small businesses that need capital to expand. Through a small business credit program and the Community Development Financial Institutions Fund, the Treasury has facilitated numerous loans and investments to entrepreneurs—and many of these transactions have included banks, funds, and other private capital. IAC proposes a Startup Capital Investment program that would leverage private financing to make a new investment in America's manufacturers and other growing businesses and would create thousands of new employment and investment opportunities throughout the country.

- *Revise existing Federal economic development programs that currently provide traditional loans and guarantees to allow funds to be used for equity investments, contract or royalty financing, and other early-stage capital to better support small businesses and startups (EDA, SBA, U.S. Department of Agriculture [USDA])*

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[7] Haltiwanger, J. C. et al. (2010). "Who Creates Jobs? Small vs. Large vs. Young." *National Bureau of Economic Research*, Working Paper 16300. http://www.nber.org/papers/w16300.pdf.
[8] Levinson, M. (2016). "Job Creation in the Manufacturing Revival." *Congressional Research Service*. https://fas.org/sgp/crs/misc/R41898.pdf.

Several Federal agencies provide funds to communities, nonprofits, and others to establish revolving loan funds focused on specific businesses and projects. The potential impact of these programs is stymied by a restriction on the use of these funds for basic loans or, in some cases, loan guarantees. If the same funds and programs provided capital that could be used by the recipient to provide a variety of debt and equity tools to private businesses and projects, then a wider variety of businesses and projects could be assisted and greater overall economic impact and returns for the program could be achieved. While equity investments often carry greater risk than debt, the implications for Federal funds are not changed by this proposal. Intermediary lending programs, such as the EDA Revolving Loan Fund, SBA Microloan program, and USDA Intermediary Relending Program, provide either grants, in which case any loss of funds is irrelevant to the Federal cost, or through loans to the fund with penalties for non-repayment—but as these repayments are not required to be made with the original Federal dollars, the intermediary could also repay any lost investments with its private match. IAC recommends expanding the regulations of Federal small business-focused intermediary lending programs to allow equity investments into the businesses.

- *Implement policies and guidance that encourage Federal economic development programs to specifically facilitate grant, loan, and investment opportunities to veteran, minority, and women entrepreneurs (SBA, EDA, USDA, U.S. Department of Housing and Urban Development [HUD]).*

  Despite their sacrifices, America's returning service members often struggle to acquire the capital they need to establish their own businesses—a problem shared by many women and minorities. Targeted programs, such as the SBA Veterans Advantage, designed to provide competitive awards and leverage private capital offer these individuals a path to entrepreneurial success and should be supported throughout business-related agencies in order to provide opportunities for all Americans. IAC suggests that all Federal agencies supporting direct or intermediary lending and investment programs (e.g., SBA, EDA, USDA, HUD) should develop special rates or set-asides to further assist veterans and other target populations.

Ensure the workforce is trained for the jobs of the future

An innovation-driven economy will create jobs for all skill sets. Individuals should be equipped for the job of their choice, and employers must be able to readily hire skilled workers to take advantage of new opportunities. However, the competition for technology workers has become the most significant constraint to economic development in many regions of the country. Companies are forgoing expansion plans because they cannot find the talent they require to compete. Furthermore, individuals who could be developing the next generation of products are in great demand and those with talent are earning ever higher salaries, creating a cadre of companies that cannot pay the high price for skilled workers. The problem is becoming particularly acute in small cities and rural areas that are losing talent to the major cities. To ensure that every community has access to a workforce trained for the jobs of the future, IAC supports the following proposals.

- *Facilitate the availability of Workforce Innovation & Opportunity Act (WIOA) funds to support programs specifically designed to improve entrepreneurial, advanced manufacturing, and high-technology skills (U.S. Department of Labor [DOL])*

From board membership to regional strategy, WIOA emphasizes employer engagement and economic development as a means to establishing a system-wide focus on in-demand skills. State and local boards need to ensure that innovation-based companies are represented in their pools of employer resources and that eligible education and training allows for STEM-related programs. Because many STEM-related occupations are strongly in-demand by the private sector,[9] more is needed to ensure results are achieved. DOL should explicitly encourage state and local workforce boards to assess the share of their employers and their placements that are being made in STEM-related industries. IAC proposes that DOL request that workforce areas report on their placements and education/training provided for STEM-related occupations, new business start-ups, and in advanced manufacturing industries.

- *Improve immigration laws so that American-trained STEM Ph.D. students and entrepreneurs can remain in the country to strengthen and create innovation- and technology-focused businesses and startups (U.S. Citizenship and Immigration Services)*

  Immigrants are a critical element of America's innovation leadership: immigrants will comprise nearly half of U.S. STEM Ph.D. graduates by 2020,[10] are more likely to start new businesses,[11] and are more likely to start firms with more than 10 employees.[12] However, current immigration policy means that the U.S. is not able to retain as much of this top global talent as actively wants to continue contributing to the American economy. New policies that can quickly remedy this talent drain have been proposed by Senator Moran and Representative Darrell Issa, among others, in recent sessions of Congress and should be implemented.

  - Greater flexibility for the optional practical training (OPT) program will enable more STEM Ph.D. graduates to remain in America, working fields directly tied to their academic programs, including for a post-completion period. The U.S. Department of Homeland Security issued final rules on F-1 nonimmigrant students in March 2016, but IAC suggests that a more transparent process for these extensions would facilitate greater use of the new rules, unlocking more talent for America's innovative companies.

  - The Startup Visa is a model to facilitate startups that would enable foreign entrepreneurs who have raised a minimum of $100,000 in capital from qualified American investors to maintain their visas, so long as their business continues to add U.S. jobs or generate a minimum level of additional private U.S. capital investment. The Startup Visa would be eligible to covert to permanent residency (green card) after two years if certain conditions are met. IAC proposes the adoption

[9] Xue, Y. & Larson, R. C. (2015, May). "STEM Crisis or STEM Surplus? Yes and Yes." *Monthly Labor Review*. https://www.bls.gov/opub/mlr/2015/article/stem-crisis-or-stem-surplus-yes-and-yes.htm.
[10] Han, X. & Appelbaum, R.P. (2016, July). "Will They Stay or Will They Go? International STEM Students Are Up for Grabs." *Marion Ewing Kauffman Foundation*.
[11] Fairlie, R.W. and Lofstrom, M. (2014). "Immigration and Entrepreneurship." In Chiswick, B.R. and Miller, P.W. (eds.) *Handbook on the Economics of International Migration*, Elsevier.
[12] Hunt, J. (2011). "Which Immigrants are Most Innovative and Entrepreneurial? Distinctions by Entry Visa." *Journal of Labor Economics*, 29:3, 417-457; Hunt, J. (2015). "Are Immigrants the Most Skilled US Computer and Engineering Workers?" *Journal of Labor Economics*, 33: S1, S39-S77.

of the Startup Visa as an "employment-based" visa with a dedicated number of available visas for eligible entrepreneurs.

- *Increase funding for programs and teachers for primary and secondary STEM education (U.S. Department of Education)*

  Not enough youth have access to quality STEM learning opportunities, and the disparity is apparent in studies of STEM-related test scores, interest, and degrees.[13] Every child that wants to participate in the STEM economy should be able to qualify for post-secondary educational opportunities and for a fast-growing technology economy. Youth interest in subjects is often driven by inspirational teachers, and a promising approach to better STEM performance is therefore to develop talented primary and secondary teachers and make them available throughout the country. The objectives of this approach are to better engage youth and their parents with STEM, expand opportunities for groups historically underrepresented in STEM fields, and design better postsecondary experiences for STEM students. To begin this process, IAC recommends that a national plan be put in place to provide funding for teachers in STEM, many of whom could find higher paying jobs outside of teaching, and to fund more interactive classrooms, including resources for equipment, experiential learning, and incentive programs designed to attract young people and teachers alike to related studies and careers. This plan must be implemented in collaboration with Federal agencies that employ the most scientists and engineers and have the greatest reliance on private-sector innovation—at a minimum DOD, DOE and the National Institutes of Health (NIH).

Reform national institutions to better support the innovation economy

To unlock the economy's full potential, our national institutions must be able to offer greater support for the entire innovation ecosystem. As discussed above, locally-designed strategies supported in part by the Federal government are a particularly effective means of strengthening innovation and bolstering job creation. Agencies and offices such as the EDA, NIST, and OSTP currently provide a foundation for this, but they must be strengthened and further aligned in order to allow state and local entities to leverage Federal programs to the greatest extent possible. To improve the Federal government's role in supporting the innovation economy, IAC recommends the below policies.

- *Increase funding for the Hollings Manufacturing Extension Partnership (MEP) to reach more small- and medium-sized manufacturers (NIST)*

  MEP, housed under NIST, builds the country's manufacturing base through public-private partnerships linking small and medium manufacturers with small businesses and technical experts. Through customized assistance to help companies run more efficiently and be more innovative, the program has made a strong impact since its creation in 1988, helping tens of thousands of manufacturers create more than 880,000 jobs and $98 billion in sales.[14] MEP plays an important role in strengthening the economy and it provides a strong value for the government's investment: for every $1 dedicated to MEP by the Federal government

[13] Cook, L. et al. (2015, June 29). "The 2015 U.S. News/Raytheon STEM Index." *U.S. News & World Report*. http://www.usnews.com/news/stem-index/articles/2015/06/29/the-2015-us-news-raytheon-stem-index.
[14] NIST. (2017, Jan. 26). "MEP: Who We Are." Retrieved from: https://www.nist.gov/mep/who-we-are.

there is a return of $17 in sales and $24 in "new client investment."[15] MEP is proven and successful. IAC recommends increasing Federal funding for MEP in order to strengthen U.S. manufacturers and the good-paying jobs they produce.

- *Establish a National Innovation Foundation to define, measure, and promote innovation (OSTP/National Economic Council)*

  The U.S. heavily invests in basic research; in FY2016, this investment totaled more than $33 billion.[16] As a country, however, we fall short in turning that research into innovative products and services. Programs to commercialize this research, like MEP, the RI Program, and SBIR, are housed in agencies across the government without enough coordination between them. Lacking a single "home" for these programs, gaps in the innovation continuum continue to exist, disadvantaging the states and regions that leverage these dollars for economic growth. IAC recommends the creation of a National Innovation Foundation to coordinate these programs and facilitate the translation of basic research being performed at agencies like NIH and NSF to the marketplace. IAC proposes the creation of a National Innovation Foundation to ensure that the Federal government's innovation activity is not duplicative and supports local innovation and entrepreneurship for the greatest impact possible.

- *Reauthorize EDA to continue its mission of promoting innovation and competitiveness in all regions of the country*

  EDA is home to high-quality programs that improve regional economies and grow the American innovation economy. With a portfolio including the RI Program and NACIE, EDA is in the position to bring together manufacturers, small businesses, and regional organizations to grow innovation and manufacturing. IAC supports a reauthorization of EDA that assigns greater government-wide economic development policy setting under the agency and strengthens the Office of Innovation and Entrepreneurship.

Enhance America's global competitiveness through increased funding for targeted research and development

America's global competitiveness is the direct result of targeted research and development funding. Innovation and research not only create jobs and businesses, but also address some of the most serious problems in our nation. The nation's national security advantage is based on the technical prowess of the armed forces, built on the shoulders of the nation's scientists and engineers who address the most complex technical issues from cyber security to new materials to mapping ocean floors. Similarly, America's newly found energy independence was generated by the research and development work of DOE labs, research institutions, and private sector research. Healthcare and treatment of disease depend on the research funded and conducted by NIH. Continued robust investment in support of research and development in these key scientific and technology areas will be critical as our near-peer competitors increase their investments in research and

[15] *Ibid*.
[16] American Association for the Advancement of Science. (2017, Jan. 26). "Historical Trends in Federal R&D.". Retrieved from: https://www.aaas.org/page/historical-trends-Federal-rd.

development, threatening American competitiveness.[17] To increase scientific research and development that addresses American competitiveness and improves the quality of life of all Americans, IAC supports increasing U.S. research and development through the following policies.

- *Greater funding for basic research, particularly to help provide cures for disease, more efficient production processes, and expanding the boundaries of human knowledge*

  As discretionary funding is further reduced by other commitments and priorities, the long-term competitiveness of the U.S. requires the protection of research and development funds. The outcomes of basic research improve all aspects of American society. For example, GPS is the result of a long term DOD investment and is now is a critical economic force with an estimated economic impact of over $56 billion in 2013 alone.[18] Cochlear implants, which allow more than 100,000 people to hear and reduce the cost of care dramatically for those born with deafness, was developed with support from NIH.[19] IAC suggests expanding Federal funding for scientific and medical R&D, particularly in combination with programs to leverage private R&D investment and transform the outputs of this research into new products and businesses.

- *Incentivize private industry to fund sector-specific research and development*

  The research and development tax credit provides an incentive to startup and mature businesses to invest in innovative research, promoting the continued competitiveness of U.S. industry as well as job growth. IAC recommends retaining the R&D tax credit in its current form.

[17] NSF. (2014). "Chapter 4: Research and Development: National Trends and International Comparisons." *Science and Engineering Indicators 2014*. Arlington, VA (NSB 14-01). https://www.nsf.gov/statistics/seind14/index.cfm/chapter-4/c4s2.htm#s1.
[18] GPS World. (2015 Sep. 1). "The Economic Benefits of GPS." Retrieved from: http://gpsworld.com/the-economic-benefits-of-gps/.
[19] NIH. (2010). "Factsheet: Cochlear Implants." Retrieved from: https://report.nih.gov/NIHfactsheets/Pdfs/CochlearImplants(NIDCD).pdf.