THE POWER OF PLACE

A NATIONAL STRATEGY FOR BUILDING AMERICA'S COMMUNITIES OF INNOVATION

ASSOCIATION OF UNIVERSITY RESEARCH PARKS

Creating Communities of Innovation

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OCTOBER 2, 2008

DEAR COLLEAGUES:

The last decade vividly demonstrates the economic forces leading to the globalization of science and innovation. Delegations of federal officials have visited China, India, the Middle East and other countries, and returned amazed at the speed and scale at which national governments outside of the United States are developing university research and science parks and centers, national laboratories, and other physical manifestations of science and technology.

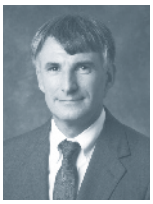
Within our own nation, research and science parks, technology incubators, venture accelerators and research universities traditionally have been the province of state and local governments. Individual entrepreneurship, local financial investment, and world-class research universities are part of the genius of the American innovation system that still leads the world.

The United States government annually funds billions of dollars of research and development, and it plays a major role in setting national economic development programs. Earlier this year, the Association of University Research Parks (AURP), in conjunction with the National Academy of Sciences, conducted a forum in Washington D.C. to examine the role of research and science parks within the global context. As a result of that forum, AURP has developed a set of recommendations and assembled an advisory board who represent research and science parks, technology incubators, university financing foundations, seed and venture capital groups, and science and technology development organizations.

The Power of Place explores a number of suggested federal initiatives, reforms and investments that will leverage the power of innovation in this country. With the new Presidential Administration and Congress in 2009, we hope *The Power of Place* stimulates discussion, legislation, and the expansion of and support for Communities of Innovation within the United States.

The Power of Place: Better Science; Better Innovation; A Better World.

Sincerely yours,



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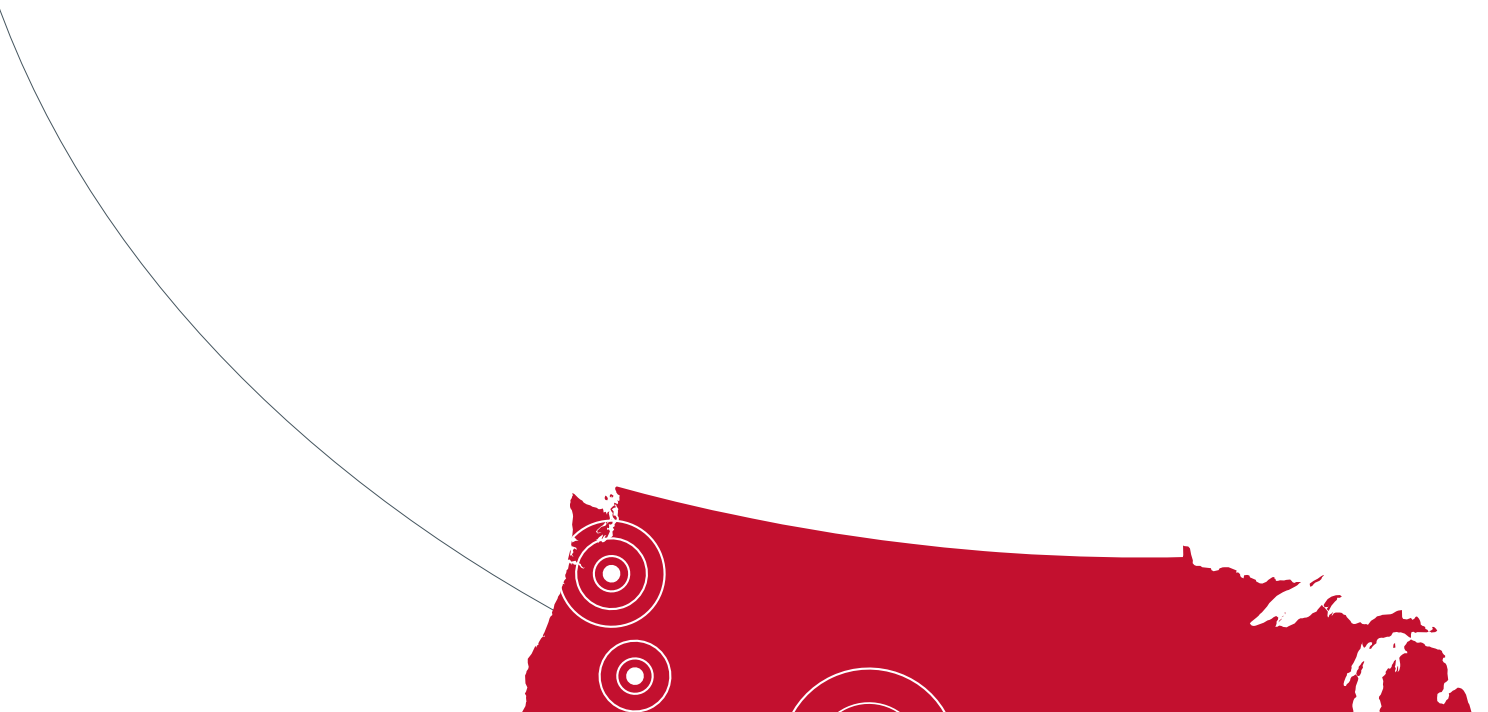

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POLICY RECOMMENDATIONS

- **Establish American Innovation Zones:** The Innovation Zones would serve as the centerpiece of efforts to modernize the U.S. approach to fostering competitive research and development. Innovation Zones are a critical next step towards American competitiveness, encouraging research in such a way as to accelerate investment and economic development around research clusters. The Innovation Zone approach envisions establishing objective criteria for national innovation assets, including research parks, technology incubators, universities, federal laboratories, and adjacent properties, and then providing regulatory reforms and economic incentives for their accelerated development.

- **Enact Federal Innovation Zone Partnership Program:** The federal government should establish a plan to competitively create research centers within the Innovation Zones that would require matching grants from state governments, local governments and private industry. These centers would focus on areas of high national needs, including energy research, homeland security, food safety, and global climate change.

- **Build Sustainable Communities of Innovation:** Incentives for sustainable 'smart growth' development should be central to establishing American Innovation Zones. The U.S. Department of Housing should explore best practices nationally to encourage density and mixed-use development in American Innovation Zones in urban areas, which will encourage researchers and entrepreneurs to live where they work, and reduce sprawl.

- **Encourage Federal Leasing and Federal Lab Construction in Innovation Zones:** The federal government should target federal leases for research and federal lab construction and related activities within American Innovation Zones.

- **Reform Federal Tax Provisions for Facilities Funded by Tax-Exempt Financing:** Current federal policy on corporate sponsored and/or funded research performed in facilities funded through tax-exempt bonds unduly restricts flexibility in negotiating corporate intellectual property (IP) rights. Eliminating the current IRS restrictions or increasing the safe harbors under IRS regulations in American Zones of Innovation to allow greater flexibility in intellectual property negotiations will improve U.S. competitiveness, and increase the likelihood that corporate R&D will stay in the U.S.

- **Create Enhanced Preferences for Small Business Innovative Research (SBIR)/Small Business Technology Transfer (STTR) and National Institute of Standards and Technology (NIST) Technology Innovation Program (TIP):** The federal government should provide incentives to small technology start-up companies located in American Zones of Innovation to be awarded SBIR, STTR, and NIST's new TIP contracts and grants. Cluster development, collaboration, and targeting the benefits of federal research dollars will provide incentive for new investment in the Innovation Zones, and improve the quality of research through greater cooperation among public and private researchers.

- **Solidify the Tax Benefits for Research and Development:** By reauthorizing the research and development tax credit, Congress will return the U.S. to an even playing field with many of its global competitors for research investment. Beyond this first step, Congress should offer an enhanced benefit for companies that perform their research within an Innovation Zone, or who contract with Innovation Zones entities for research or development.

- **Expand Enhanced Use Leasing (EUL) Authority:** Expand current enhanced use lease authority to all federal agencies to create more American Innovation Zones adjacent to federal labs.

- **Establish a Federal Technology Foundation** A federal technology foundation should be established to work with government managed federal labs. A foundation modeled on existing university research foundations could enable these laboratories to more effectively commercialize technology and use existing federal research assets for local technology-led economic development.

- **Develop Comprehensive Government-wide Database** Access to a government-wide database on all federal R&D funding is necessary to ensure that important national innovation assets are properly understood and leveraged for technology innovation.

- **Fully Fund the America COMPETES Act** The U.S. Congress took a great step forward in passing the America COMPETES Act in 2007. The Act authorizes a substantial federal investment in high risk, high reward research and improves funding to many of the U.S. science agencies. Research institutions and companies in Innovation Zones stand to benefit from the America COMPETES Act, but the Act has not been fully funded by Congress. The new Administration and the next Congress must make funding the America COMPETES Act a priority.

- **Import Innovation:** Research parks and incubators in American Innovation Zones should be targeted to recruit foreign technology companies using 'soft landing' techniques similar to those pioneered by the National Business Incubation Association (NBIA).

- **Welcome Human Innovation Capital to the U.S.:** In order to ensure continued retention of highly-skilled researchers and technicians, the U.S. must offer competitive immigration incentives that welcome foreigners into our Communities of Innovation, and retain their talents through the H-1B visa process.

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Arizona State University Research Park, Tempe, Arizona
BHDP Architecture, Cincinnati, Ohio
Biomedical Research Foundation of Northwest Louisiana, Shreveport, Louisiana
Booz Allen Hamilton, McLean, Virginia
Clemson University - International Center for Automotive Research, Greenville, South Carolina
Centennial Campus at North Carolina State University, Raleigh, North Carolina
Central Florida Research Park, Orlando, Florida
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The Facility Group, Smyrna, Georgia
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Research Triangle Foundation of North Carolina, Research Triangle Park, North Carolina
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Sasaki Associates Incorporated, Watertown, Massachusetts
University City Science Center, Philadelphia, Pennsylvania
The University of Arizona Science & Technology Park, Tucson, Arizona
The University Financing Foundation, Atlanta, Georgia
University of Kentucky - Coldstream Research Campus, Lexington, Kentucky
University of Maryland, Baltimore (UMB) BioPark, Baltimore, Maryland
The University of Mississippi, University, Mississippi
University of Missouri System-Missouri Research Park, Chesterfield, Missouri
University of Nebraska Technology Park LLC, Lincoln, Nebraska
University of New Orleans Research and Technology Park, New Orleans, Louisiana
University of South Carolina - Innovista, Columbia, South Carolina
University Research Park, University of Wisconsin-Madison, Madison, Wisconsin
University Wellness, Lavellette, New Jersey
Wexford Science & Technology LLC, Hanover, Maryland
The Whiting-Turner Contracting Company, Baltimore, Maryland

SPECIAL RECOGNITION AND THANKS TO OUR *POWER OF PLACE* SPONSORING ORGANIZATIONS

Arizona State University Research Park, Incorporated, Tempe, Arizona
BayBio, South San Francisco, California
Bio-Research & Development Growth Park at the Danforth Plant Science Center, Saint Louis, Missouri
Center for Emerging Technologies, Saint Louis, Missouri
The Chesapeake Crescent Initiative: Virginia, Maryland and the District of Columbia
Delaware Technology Park, Incorporated, Newark, Delaware
Maryland Technology Development Corporation, Columbia, Maryland
The Mississippi e-Center at Jackson State University, Jackson, Mississippi
North Dakota State University Research & Technology Park, Fargo, North Dakota
Ohio Agricultural Research & Development Center, The Ohio State University, Wooster, Ohio
Piedmont Triad Research Park, Winston Salem, North Carolina
Purdue Research Park, West Lafayette, Indiana
The Research Park at the University of Illinois at Urbana - Champaign, Champaign Illinois
Research Parks Maryland, State of Maryland
The Research Triangle Park, Research Triangle Park, North Carolina
Sandia Science & Technology Park/Science and Technology Park Development Corporation, Albuquerque, New Mexico
Texas Research & Technology Foundation, San Antonio, Texas
University City Science Center, Philadelphia, Pennsylvania
The University of Arizona Science & Technology Park, Tucson, Arizona
The University Financing Foundation, Atlanta, Georgia
University of New Orleans Research & Technology Park, New Orleans, Louisiana
University Research Park, University of Wisconsin-Madison, Madison, Wisconsin
UT-Baptist Research Park, Memphis Bioworks Foundation, Memphis, Tennessee
West Virginia University, Morgantown, West Virginia

THE POWER OF PLACE

A NATIONAL STRATEGY FOR BUILDING
AMERICA'S COMMUNITIES OF INNOVATION

Art is 'I'; Science is 'We' – Claude Bernard

Historically, American research innovation has led the way to progress in countless scientific disciplines. From establishing the first research park in the world, to building world-class research universities and federal laboratories while pioneering technology transfer and patent reform for public-private research partnerships, the U.S. has led the world in attracting research talent, funding scientific advances, and commercializing new discoveries. Innovations spawned in the basements, garages, dorm rooms, classrooms and laboratories of countless Americans will create jobs, foster the reversal of the U.S. trade imbalance, reduce U.S. dependence on foreign energy sources and attract and retain the brightest human capital. It will ultimately return the United States to the premier position it has historically enjoyed.

The United States is losing ground competitively. The ambitious entrepreneurs and scientists who are willing to invest time and money into an idea are being lost at a staggering pace to other countries. These foreign governments provide incentives for this U.S. human capital to uproot and move. These individuals find that the challenge of surviving in a foreign country is outweighed by the tremendous economic benefit these foreign communities provide.

At the present time, the U.S. is losing ground because we do not provide the *Place* for the Creative Class to prosper. We have left the responsibility of creating *Place* to local communities, many of which cannot bear the speculative burden of creating *Place* without governmental financial support. Policy support to attract foreign direct investment from across the globe into the U.S. is also urgently needed.

To that end, the Association of University Research Parks (AURP) offers a series of urgent recommendations for the U.S. Government, so that it can more precisely support American innovation and American innovators with both economic and policy-based changes. Our proposal targets the following:

- Creating American Innovation Zones to drive the creation of modern research and development collaboration;
- Formalizing a series of incentives that will support growth in these communities, including:
  - Reforming the tax code for tax-exempt financing of research park development;
  - Creating a permanent and enhanced research and development tax credit;
  - Expanding Enhanced Use Leasing (EUL) authority;
  - Making government-managed federal labs more effective partners in technology-led economic development;
  - Fully funding the America COMPETES Act of 2007;
  - Expanding the availability of visas for skilled researchers; and
  - Encouraging in-migration of foreign start-ups through "soft landing" programs.

Each of these initiatives are elements of a single strategy to increase innovation and competitiveness. We call on Congress and the new Administration to enact comprehensive legislation incorporating the initiatives listed above to increase U.S. competitiveness and ensure that we remain the world's leader in science and technology innovation.

U.S. COMMUNITIES OF INNOVATION IN 2008: THE CHALLENGE

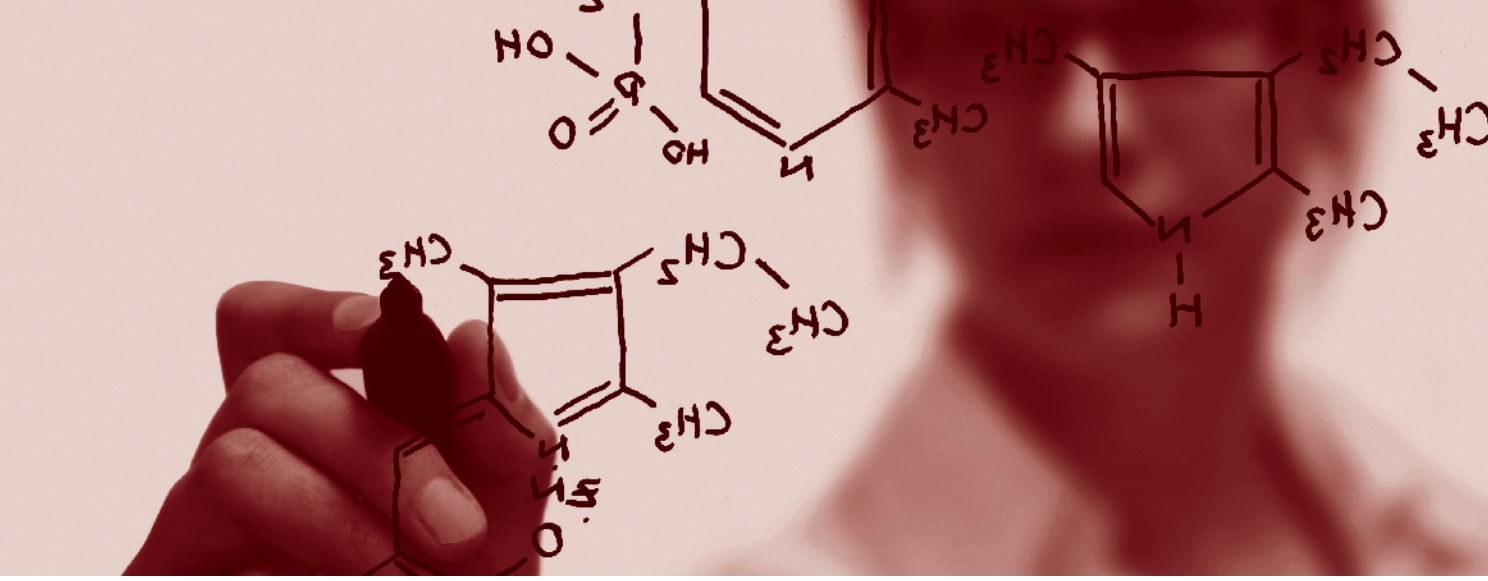
The global competition for scientific advances, research funding, and research talent threatens to eliminate any U.S. advantage. Many countries are now surpassing the U.S. with the creation of *Place* through direct national government funding of research parks and science cites. They are building new universities and national labs, and attracting top research talent and corporate funding to these new international Communities of Innovation. These countries have more than matched U.S. policies, and are providing financial and regulatory incentives for international corporations looking to establish research activities in particular districts and zones.

The United States has the necessary ingredients to match global competition—including world-class universities, individual entrepreneurship, and a robust system of private enterprise. Individual states, including Michigan and Pennsylvania, have enacted new programs to create clusters of innovation through the support of technology companies and research conducted in knowledge zones. The State of Maryland, for example, has targeted state infrastructure investment and tax increment financing tools to areas adjacent to U.S. military research and development labs. These areas are absorbing the influx of thousands of researchers moving into the state that resulted from the latest Base Realignment and Closure Commission (BRAC) round in 2005.

However, U.S. federal economic development tools do not meet the global technology development challenges that competing nations and individual U.S. states have been addressing.

Many useful strategies for the U.S. have been promulgated, such as the National Academies' *Rising above the Gathering Storm*. *The Gathering Storm* makes the case for a greater emphasis on Science, Technology, Engineering and Math (STEM) education and other reforms of a broader and longer term nature.

The Power of Place notes emerging trends in the competitive landscape for research. It highlights a series of initiatives that will ensure that the United States is positioned to remain a leader in building "Communities of Innovation." These Communities of Innovation are colleges and universities, research parks, technology incubators, venture accelerators, federal labs and adjoining



neighborhoods. With the rise of energy prices, clustering researchers where they can both live and innovate is also timely.

The Power of Place is not about real estate development. Rather, it focuses on the enhancement of U.S. research by providing initiatives for economic and policy reforms. These will empower U.S. entrepreneurs and scientists in the commercialization of their intellectual property, thus retaining U.S. economic competitiveness.

OUTCOMES

The economic growth associated with existing U.S. research and science parks has been substantial. New commercialization opportunities have created multiplier effects for job growth and start-up company support. By encouraging collaboration and the creation of Communities of Innovation, *The Power of Place* policy recommendations will increase domestic U.S. research and technology development and increase the effectiveness of federal research spending. These recommendations will also create a more attractive environment for in-bound foreign direct investment in research.

NEW REALITIES AND NEW SOLUTIONS

Global technology competition, intellectual property challenges, "off-shoring" of domestic U.S. research and development, private equity involvement, and new approaches to commercialization are all forces that impact innovation. For the centers of research – research parks, technology incubators, smart growth corridors, universities, and federal intramural research facilities – changes in the environment for innovative research require these research participants to evaluate how to adapt to new market forces.

In 1951, the United States became home to the first research park in the world, Stanford Research Park in Palo Alto, California. Over the last three decades, other U.S. research institutions have continued to pioneer new Communities of Innovation. Beyond establishing new structures where research could be nurtured and then launched commercially, many local communities enacted policies to favor these types of investments in research.

The U.S. Landscape

In 2007, AURP partnered with Battelle Technology Partnership to review the current state of research and science park development in the U.S. and Canada. This comprehensive study identified trends and emerging changes in research and science parks, and demonstrated the significant positive economic impact of research parks and technology incubators. Among the key findings:

- A new model for research park development is emerging that focuses on mixed-use space, planned multi-tenant facilities, and greater emphasis on partnerships with non-university entities, such as federal labs or corporate research and development.
- For every core research park job created, an additional 2.5 jobs are created within the local community, demonstrating the multiplier effect of research park and technology incubator development. The total North American employment impact of research and science parks is over 700,000 jobs.[1]

People are the key to improving economic development, and people need a *Place* in which to innovate. The Communities of Innovation that are developed through research and science parks are precisely this kind of *Place*. The results are evident. Hundreds of thousands of high-paying, high-skilled jobs have been created, and U.S. intellectual property has been kept at home.

What the AURP-Battelle Study does not reflect is how many companies, innovators and scientists (i.e. U.S. payroll) have left the U.S. because, when compared to other countries, the price of *Place* in America is too expensive.

An Expanding International Landscape

U.S.-led Communities of Innovation have been emulated across the globe, with large research and science parks developing in China, India, and the Middle East. The global landscape has not remained static. Presently, of the top ten largest research parks in the world, only one—The Research Triangle Park in North Carolina—is located within the United States. Brazil has developed a network of technology incubators financed by the national government that includes direct funding of hundreds of millions of dollars for start-up technology companies. India and China are building large research and science parks, and the increasing oil revenues in many

[1] Characteristics and Trends in North American Research Parks: 21st Century Directions (Executive Summary) October 2007.

nations in the Middle East are funding large-scale research and development investments that far surpass those being built in the United States.

Asia also provides several examples of world-class campuses that have started development with innovative approaches. Beyond their size, these new research and science parks demonstrate the importance of consolidating research, industry, education, and investment in a single cluster. These include:

- Vedanta, India: With $1 billion (US) of planned investment over the next decade, the public-private non-profit venture will link university students, education, and state-of-the-art research in a single campus. Vedanta will house nearly half a million residents, and will be linked by design to major commercial centers and global commerce by rail, highway infrastructure, and air.[2]

- Biopolis, Singapore: Founded in 2003, Biopolis now encompasses approximately 12 million square feet of research space focused almost exclusively on pharmaceutical research and development. This park was filled to near capacity within a year of its opening as Glaxo SmithKline, Isis Pharmaceuticals, and other significant corporate players occupied its space. Significant growth has continued over the past five years.[3]

- Suzhou Industrial Park/Suzhou, China: More than 100 Fortune 500 companies have established a presence in Suzhou, linking commercial manufacturing with research, substantial corporate investment, direct exports, and residential communities. In existence for more than a decade, this joint development between China and Singapore remains a significant force for growth and development in Asia.[4]

Top–ranked researchers from the United States are being recruited to lead teams within international research parks and centers associated with adjacent universities. Many of these international parks are led and financed by their national governments. Canada, which has a robust system of research parks, has begun to consider how research parks and incubators can become central to Canadian technology-led competitiveness strategy.

At the same time, innovation systems are changing. Science is becoming a more interdisciplinary, inter-institutional, and inter-global process. Innovations stemming from collaborations with university and federal lab spin-offs are accounting for a much larger share of innovations, according to a new study by the Information Technology and Innovation Foundation (ITIF).[5]

U.S. policymakers should be concerned about the decline of industrial support for U.S. academic research and development. A 2006 study by the National Science Foundation highlights the fact that many corporations are finding greater incentives in foreign countries, and increasing barriers to research in the U.S.[6] Federal funding of academic science and engineering research and development in the U.S. failed to outpace inflation for the second year in a row, according to a 2008 National Science Foundation study.[7]

All of these developments require for new federal policies that recognize the changing nature of innovation, and create hot spots of innovation which encourage cluster development to improve U.S. technological competitiveness.

The U.S. must develop a comprehensive national strategy to utilize physical and intellectual property, along with federal, state and local assets, to develop innovation zones supporting our research partnerships, research and science parks, and technology incubators. Congress and federal agencies should break down existing limits and restrictions on the flow of public and private resources to fund joint research initiatives, and stress *The Power of Place* - the physical proximity of innovation assets in formal zones of innovation.

[2] Chronicle of Higher Education (http://chronicle.com/media/flash/v53/i45/vedanta/); The Stanford Daily, Indian College to be Modeled After Stanford, Oct. 24, 2007.

[3] Nature, Singapore: Filling Biopolis, Nature 425, 746-747 (16 October 2003).

[4] Chemical and Engineering News, Chinese Industrial Parks Up the Ante, Vol. 84, No. 44 (Oct. 30, 2006).

[5] Where Do Innovations Come From? Transformations in the U.S. National Innovation System, 1970-2006", By Fred Block <http://www.longviewinstitute.org/people/block> and Matthew Keller <http://sociology.ucdavis.edu/people/mrkeller> July 09, 2008.

[6] NSF Infobrief 06-328, September 2006.

[7] Survey of Research and Development Expenditures at Universities and Colleges, FY 2007, National Science Foundation (2008).

CREATING COMMUNITIES OF INNOVATION

THE AMERICAN INNOVATION ZONE,

Where Intellectual Property Intersects Real Property;
Human Capital Connects Financial Capital

AURP proposes the creation of a new concept for innovation in the U.S.: a system of American Innovation Zones. The Innovation Zones would serve as the centerpiece of efforts to modernize the U.S. approach to fostering competitive research and development. Innovation Zones are a critical next step towards American competitiveness: encouraging research in such a way as to accelerate investment and economic development around research clusters. The Innovation Zone approach envisions establishing objective criteria for national innovation assets, including research parks, technology incubators, universities, federal laboratories, and adjacent properties – and then providing regulatory reforms and economic incentives for their accelerated development.

Objective Content-Based Criteria

Entities eligible for designation as an American Innovation Zone would be those research institutions that have historically been producers of intellectual property and high technology economic development. The newly created Innovation Zone designation would apply to the following types of entities:

Research and Science Parks
(including technology incubators and venture accelerators)
These clusters of research encompass a wide universe of cooperating entities, including institutions of higher education, start-up incubators, stand-alone incubators, federal labs and their partners that are designed to promote technology transfer, research and business partnerships, and economic growth.

Colleges and Universities
This would include accredited colleges and universities, including community colleges (those that are eligible for federal financial aid), and facilities located on land owned or controlled by one of these entities, as defined in the Higher Education Reauthorization Act.

Federal Labs
(as defined in the Stevenson-Wylder Technology Innovation Act)
This definition includes federal laboratories, federally-funded research and development centers, or other centers owned, leased, or otherwise funded by a federal agency and the federal government, whether operated by the government or by a contractor.

Enhanced Use Lease (EUL) Locations
Certain federal agencies are currently authorized to lease land and improvements to land to private sector entities. We recomend expanding this authority to all other federal agencies.

By establishing objective criteria for recognizing Innovation Zones, the ability to develop centers of innovation will be focused on the key characteristics and trends of effective research and development. The entity must be involved in the creation, promotion and commercialization of intellectual property. Manifestation of this activity will be considered through key attributes of successful Communities of Innovation to date, including:

- Trends towards greater intramural cooperation between federal labs and university researchers;
- A focus on sustainability as a central element of research park design;
- Greater emphasis on business incubation and focused research niches;
- Administrative and programmatic resources for the management of federal research grants;
- Experience in commercializing technology;
- Demonstrated local or state support for development initiatives; and
- The existence of international partnerships.

Incentives and Regulatory Reforms

Unlike other national governments, the U.S. Government is not leading the effort to build research parks and related innovation clusters. Nevertheless, the U.S. Government does have at its command a number of resources

that can help the local development of innovation hubs across the country. Collocation and intramural cooperation between federal labs and Communities of Innovation result in higher quality research and improved technology. There are several categories of incentives that are essential to this proposal, to driving new advances within Innovation Zones, and to encouraging universities, incubators, and communities to develop and grow these communities. They include:

- **Federal Tax Reform for Facilities Funded by Tax-Exempt Financing: Decouple Intellectual Property Rights from Tax Exempt Status Analysis**
  Current federal policy on corporate sponsored and/or funded research performed in facilities funded through tax-exempt bonds unduly restricts flexibility in negotiating corporate intellectual property (IP) rights. Corporations based in the U.S. now have a choice of where to conduct their research and development activity. Countries competing with the U.S. have no parallel intellectual property restrictions, meaning more corporations are choosing to off-shore their research. Eliminating the current IRS restrictions or increasing the safe harbors under IRS regulations in American Zones of Innovation to allow greater flexibility in intellectual property negotiations will improve U.S. competitiveness, and increase the likelihood that corporate R&D will stay in the U.S.

- **Enhanced Preference for Small Business Innovative Research (SBIR)/ Small Business Technology Transfer (STTR) and National Institute of Standards and Technology (NIST) Technology Innovation Program (TIP)**
  The federal government should provide incentives to small technology start-up companies located in American Zones of Innovation to be awarded SBIR, STTR, and NIST's new TIP contracts and grants. Cluster development, collaboration, and targeting the benefits of federal research dollars will incentivize new investment in the Innovation Zones, and improve the quality of research through greater cooperation among public and private researchers.

- **Federal Innovation Zone Partnership Program**
  The federal government should establish a plan to competitively create research centers within the Innovation Zones that would require matching grants from state governments, local governments and private industry. These centers would focus on areas of high national needs, including energy research, homeland security, food safety, and global climate change.

- **Fully Fund the America COMPETES Act**
  The U.S. Congress took a great step forward in passing the America COMPETES Act in 2007. The Act authorizes a substantial federal investment in high risk, high reward research and improves funding to many of the U.S. science agencies. Research institutions and companies in Innovation Zones stand to benefit from the America COMPETES Act, but the Act has not been fully funded by Congress. The new Administration and the next Congress must make funding the America COMPETES Act a priority.

- **Solidify the Tax Benefits for Research and Development**
  By reauthorizing the research and development tax credit, Congress will return the U.S. to an even playing field with many of its global competitors for research investment. Beyond this first step, Congress should offer an enhanced benefit for companies that perform their research within an Innovation Zone, or who contract with Innovation Zones entities for research.[8]

- **Build Sustainable Communities of Innovation: Dense is Smart**
  Incentives for sustainable 'smart growth' development should be central to establishing American Innovation Zones. The U.S. Department of Housing should explore best practices nationally to encourage density and mixed-use development in American Innovation Zones in urban areas, which will encourage researchers and entrepreneurs to live where they work, and reduce sprawl.

- **Federal Leasing and Federal Lab Construction**
  The federal government should target federal leases for research and federal lab construction and related activities within American Innovation Zones.

- **Importing Innovation**
  Research parks and incubators in American Innovation Zones should be targeted to recruit foreign technology companies using 'soft landing' techniques similar to those pioneered by the National Business Incubation Association (NBIA).[9]

While the federal government needs to take a leadership role in this arena, partnerships with state and local governments, universities and other partners will be essential. In order to make the concept of the American Innovation Zone a reality, state governments must also review their current approaches to economic development to ensure that they foster these communities in a fashion that parallels the federal effort.

[8] Greater detail on the Research and Development Tax Credit is outlined in Section III.

[9] These "soft landing" offerings are more fully detailed in Section IV.

POWER OF PLACE

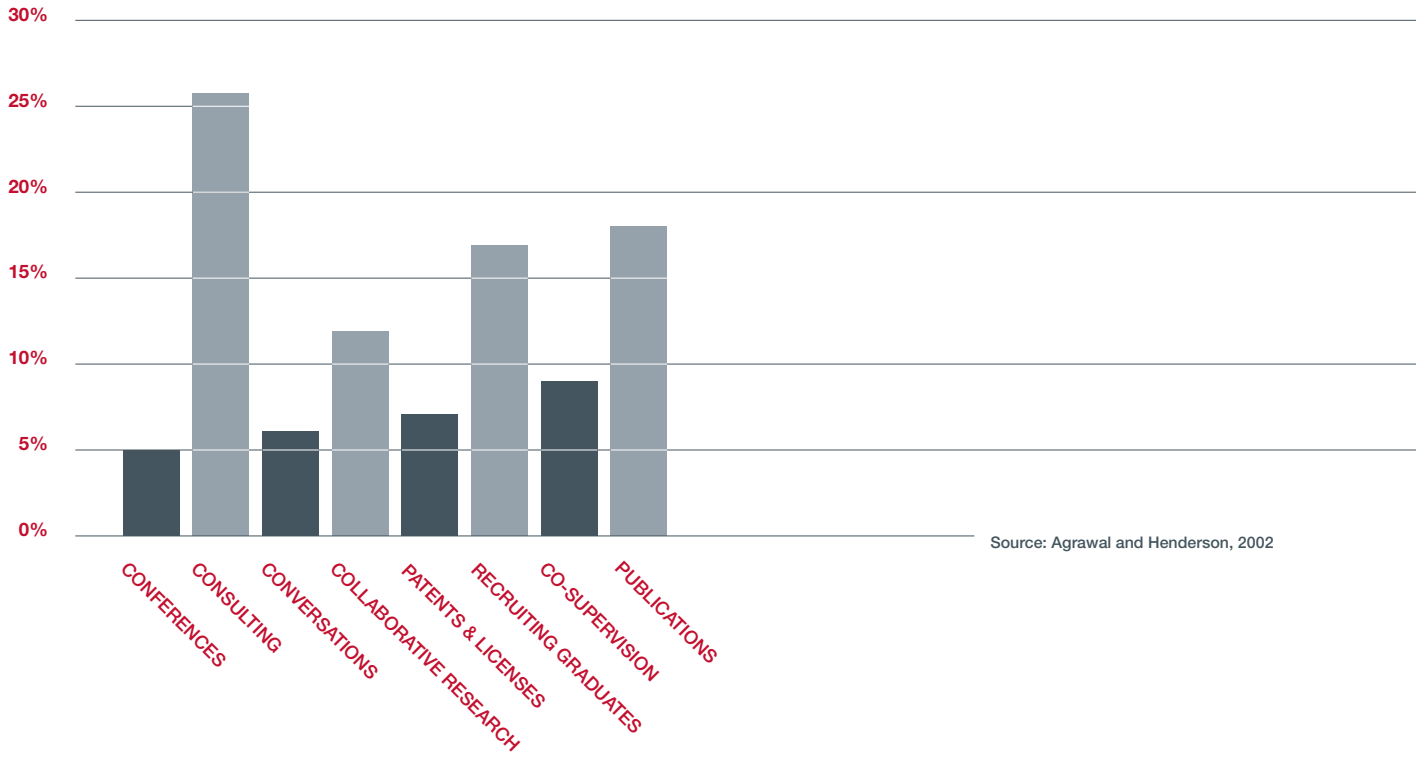
Better Science

According to officials at the U.S. National Oceanic and Atmospheric Administration (NOAA), the probability of detection of thunderstorms rose from 59% to 89% after they moved their National Weather Service Research Center to the Centennial Campus at North Carolina State University. NOAA attributes this to faculty and student partnerships possible because of their location. It is because of projects like these that AURP honored Centennial Campus at North Carolina State University as the *2007 AURP Award of Excellence for Outstanding Research/Science Park Achievement Award*.

Better Innovation

Technology transfer is more than just licensing and patents - it is human capital, conferences, and core research. Our goal should be to balance tech transfer, and grow commercialization. A 2002 study demonstrates that university technology commercialization is facilitated by conferences, consulting, conversations, and co-supervision, all of which take place in the physical connectedness in America's Communities of Innovation. These factors are cited more often than patents as vehicles of commercialization to the private sector. Clustering of research centers, venture accelerators, hotels, housing and mixed-use activities within Innovation Zones will improve technology commercialization in the U.S.

LICENSES AND PATENTS COMPARED TO OTHER ROUTES OF UNIVERSITY TECHNOLOGY TRANSFER; FROM SEAN SAFFORD NSF WORKSHOP 3 DECEMBER 2007



Source: Agrawal and Henderson, 2002

NOAA CENTER FOR WEATHER & CLIMATE PREDICTION AT THE UNIVERSITY OF MARYLAND RESEARCH PARK

The power of research and science parks to improve technology commercialization can be demonstrated by the example of Purdue chemistry professor Peter Kissinger. Thirty-two years ago, Dr. Kissinger started Bioanalytical Systems at the Purdue Research Park in West Lafayette, Indiana. The company has since developed drugs that treat depression, migraine headaches, cancer, and pain. It now employs over 380 people.

A Better World

The National Oceanic and Atmospheric Administration (NOAA) also moved a large component of its national prediction and research centers to the University of Maryland Research Park. This relationship is already improving science. Dr. Rita Colwell, the former director of the National Science Foundation, is a Distinguished University of Maryland Professor. One of her long-term international interests is examining methods of reducing cholera, which continues to be a major water-borne pathogen and scourge in many developing countries. Thanks to the NOAA partnership, Dr. Colwell was introduced to remote-sensing software modeling tools that NOAA had used for coastal prediction. Through the use of these tools, Dr. Colwell models the spread of cholera, thereby improving predictability and saving lives. Scientific discovery and data analysis that would have taken her months, if not years, will now take place in weeks thanks to these new NOAA tools. Dr. Colwell's scientific contribution to pathogen research has been enhanced in a way that could not have been imagined had NOAA and the university not become research park partners.

CLEMSON UNIVERSITY - INTERNATIONAL CENTER FOR AUTOMOTIVE RESEARCH

Photography by Rob Belknap

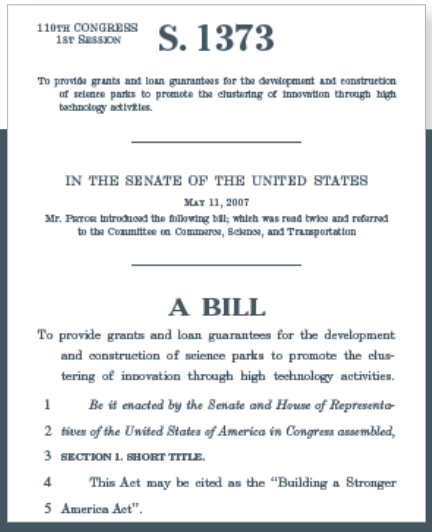
A number of American Innovation Zone initiatives were offered as a part of the Building a Stronger America Act (S. 1372/H.R. 4250). Sponsored by U.S. Senator Mark Pryor (D-AR) and by U.S. Representatives Heather Wilson (R-NM), Gabrielle Giffords (D-AZ), John Spratt (D-SC), and Lamar Smith (R-TX), this legislation offers several proposals to foster further development of science and research parks. These proposals offer a critical counterpart to the Innovation Zone concept, offering initial funding for development of construction plans, loan guarantees for construction of research and science parks, and a series of studies designed to focus on international partnerships and further research and science park expansion.

KEY FEATURES OF S. 1373

Amends the Stevenson-Wydler Act to authorize grants for the development of feasibility studies and plans for the construction of new or expansion of existing science parks.

Creates loan guarantees for project construction related to science parks.

Establishes a framework for the Secretary of Commerce to evaluate, in partnership with the National Academy of Sciences (NAS), a recurring three year review of science park development.



110TH CONGRESS
1ST SESSION

S. 1373

To provide grants and loan guarantees for the development and construction of science parks to promote the clustering of innovation through high technology activities.

IN THE SENATE OF THE UNITED STATES

MAY 11, 2007

Mr. PRYOR introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To provide grants and loan guarantees for the development and construction of science parks to promote the clustering of innovation through high technology activities.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 SECTION 1. SHORT TITLE.
4 This Act may be cited as the "Building a Stronger
5 America Act".

REWARDING COMMUNITIES OF INNOVATION

EXPANDING THE RESEARCH AND DEVELOPMENT TAX CREDIT

Once a unique and innovative idea pioneered in the U.S., research and development tax credits and incentives have now become a standard element of encouraging investment in research. However, while the U.S. was once a leader in advancing these credits, it now lags behind many other nations in offering tax incentives. Congress must take action to ensure that the U.S. restores its competitive advantage by reauthorizing the Research and Development Tax Credit, expanding its reach to favor Innovation Zones, and making the credit permanent.

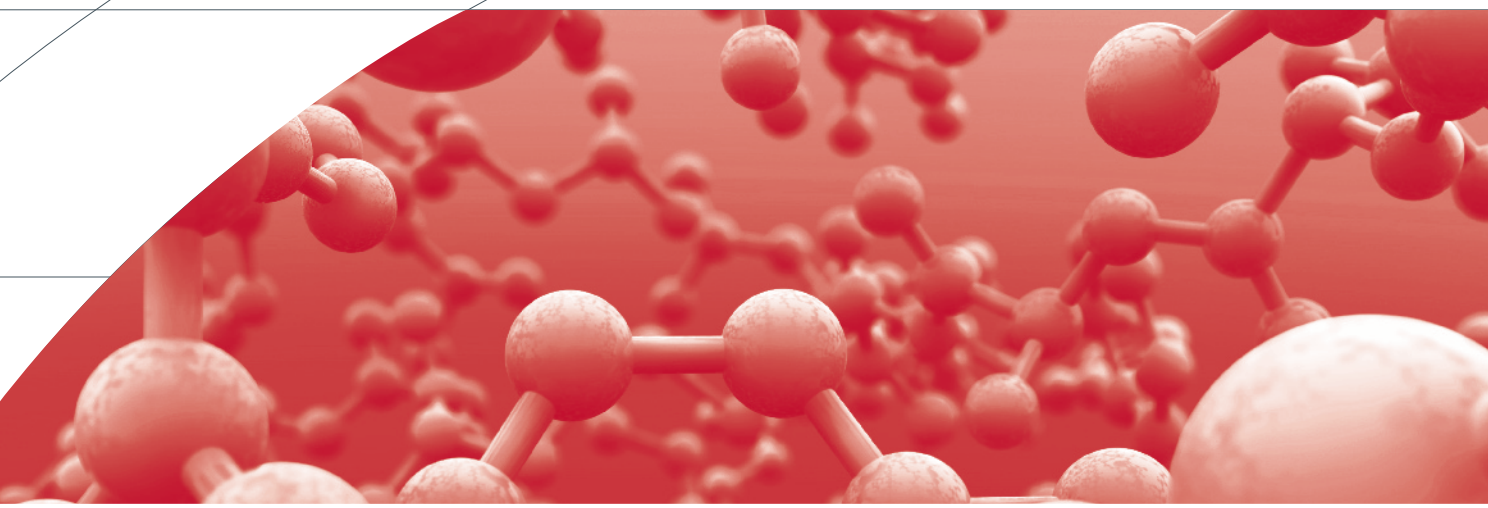
The Research and Development Tax Credit expired at the close of 2007. Under the last extension, Congress created an Alternative Simplified Credit (ASC) of 12 percent, which was designed to offer a more robust credit for small businesses and entities that are largely research-driven (i.e., without commercial products in the pipeline). The ASC was offered as an additional option for calculating the credit, adding to the existing 20 percent "traditional" formula, and the "alternative incremental research credit" (AIRC). In general, the credit can be claimed against Qualified Research Expenses (QRE's), including in-house wages and supplies, computer "time sharing" costs, and up to 65 percent of contract research expenses.

The Research and Development credit not only provides a direct tax benefit for tenants in incubators and research parks, but also encourages private sector partners to outsource research initiatives to claim the credit. More importantly, among countries with significant research and development investments, the U.S. is falling behind those nations that offer permanent tax benefits for research and development. Australia, Canada, France, India, Indonesia, Ireland, Japan, the Netherlands, Pakistan, Portugal, Singapore, Spain, and the United Kingdom all offer permanent credits, creating substantial incentives in an already competitive global market. This is particularly important to global companies, who have considerably more flexibility than start-up businesses in terms of where they choose to conduct research.

In 2005, roughly 30 percent of the entities claiming the tax credit had assets of $1 million or less. More than 50 percent had assets less that $5 million. For these firms, the percentage of the tax credit was higher than other businesses. In total, more than $6.3 billion in credits were claimed in the 2005 tax year. Importantly, roughly 70 percent of the credits claimed were related to wages - meaning that the direct impact of the credit is focused heavily on paying research teams.[10]

IN 2003, DESPITE THE EXISTENCE OF A U.S. RESEARCH AND DEVELOPMENT TAX CREDIT, U.S. SUBSIDIARIES NEVERTHELESS INVESTED $2.5 BILLION ON RESEARCH AND DEVELOPMENT IN CANADA, WHICH OFFERS A 20 PERCENT TAX DEDUCTION, AND HAS MADE A CONCERTED EFFORT TO MARKET THEIR RESEARCH ENVIRONMENT TO U.S. BUSINESS. THIS DEMONSTRATES THE CRITICAL IMPORTANCE OF TAX CREDITS THAT SUPPORT RESEARCH INITIATIVES.

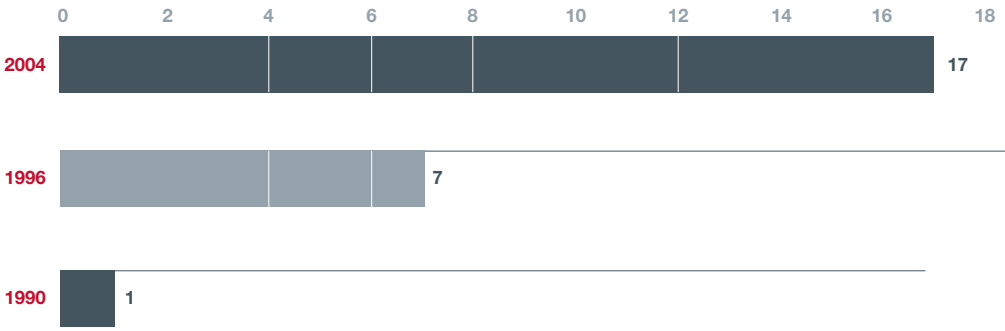
[10] *Supporting Innovation and Economic Growth*, April 2008 Ernst & Young study (http://www.investinamericasfuture.org/PDFs/R&DTaxCreditStudy2008final.pdf).



Extending a permanent research and development credit, with an expanded benefit available in American Innovation Zones, is a critical component of any effort to maintain the U.S. as a center for innovative research. Its absence is a competitive disadvantage for any effort to attract the best available talent and to spur research investment by the private sector.

In 1990, the U.S. ranked first in tax generosity of R&D among the 30 leading industrial nations that made up the Organization of Economic Cooperation and Development (OECD). By 2004, the U.S. had fallen to 17th. America must recommit to offering robust incentives that attract investment.

U.S. RANK IN TAX GENEROSITY OF R&D AMONG 30 OECD NATIONS, 200430



OECD data including Jacek Warda, op. cit. from Robert Atkinson testimony before US Committee on Science and Technology, US Congress Oct. 4, 2007

COLLABORATION AND COMMERCIALIZATION

INTEGRATING FEDERAL LABS:
Integrating Federal Labs into Communities of Innovation; Data Mining of Federal Research

Integrating Federal Labs into Communities of Innovation

Federal and national labs managed by the U.S. Government have not been as central to local technology development as they could be. They suffer from a lack of administrative and legal flexibility, limited resources for technology commercialization and the lack of a mission to work with private sector firms.

By contrast, labs managed as government owned-contractor operated (gocos) have associated research parks, venture funds and entrepreneurial leave policies for researchers. The Sandia Science and Technology Park in New Mexico, adjacent to the Sandia National Laboratories, is a leading example.

The National Governors Association has called for better technology transfer from federal labs, and we echo that call. Federal labs should be considered key elements in our national innovation strategy, and local partners in our Innovation Zones with universities, incubators, and Enhanced Use Lease tenants. Many national labs in other countries have technology development missions and are key players in regional technology development.

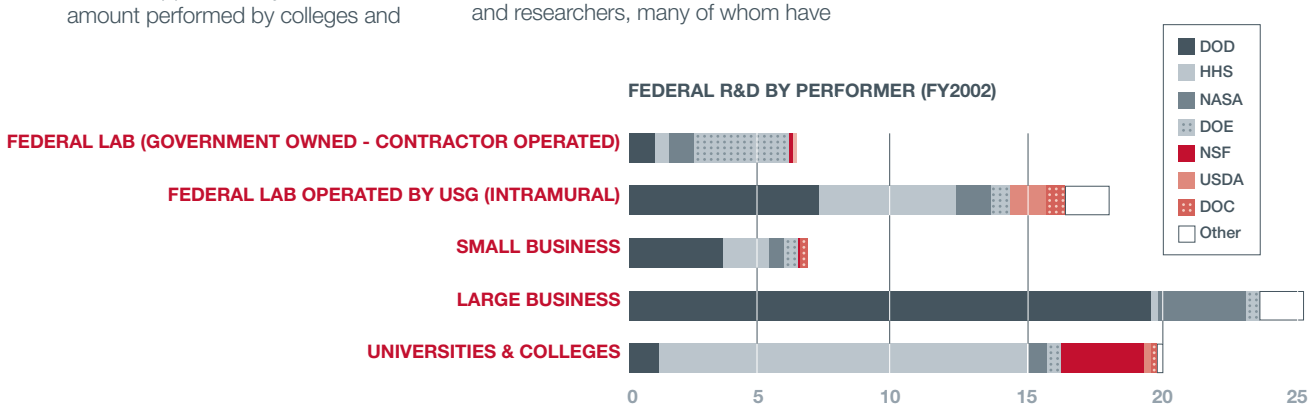
Federal labs perform nearly $20 billion a year in internal intramural research, which is approximately the same amount performed by colleges and universities. These labs are home to many Nobel Prize researchers. To more effectively transfer developed technologies, a federal technology foundation should be established to work with federal government labs. This could enable them to more effectively commercialize technology and use existing federal research assets. Universities have used such foundations to manage the non-linear and business aspects of technology transfer, and engage the university in the local business community. The Wisconsin Alumni Research Foundation (WARF) is the best-known example.

Some federal foundation models exist—such as the congressionally-chartered Jackson Foundation at the U.S. Uniform Heath Sciences University—but a national foundation would ensure that all federal labs are being optimized to contribute to national technology competitiveness and reduce legal and bureaucratic barriers. Additionally, such a foundation could link federal equipment and federal researchers more effectively with the private sector, and help to address conflicts of interest and related topics.

With the impending retirement of many of the nation's top scientists from U.S. federal labs, we need to ensure that these labs recruit young scientists and researchers, many of whom have entrepreneurial instincts and passion. A federal lab-wide foundation, based on university models, could take on technology commercialization and related activities for intramural research labs. This could help unlock these resources more effectively for national technology competitiveness.

Data mining of federal research

Sophisticated algorithms and data mining tools are being used with research databases to discover patterns of knowledge and create new companies to populate our nation's research parks and incubators. In an information-dominated society, data is one of the key enablers of innovation. The U.S. funded-RaDiUS, a database originally created by the Office of Science and Technology Policy, was the principal database of research grants funded by the U.S. Government. However, federal funding for RaDiUS was discontinued in 2007. This lack of funding creates an information void and no government-wide database. To ensure our Communities of Innovation have an understanding of the billions of dollars of research and development funded by the U.S. Government, a comprehensive government-wide database is necessary to ensure that important national innovation assets are properly leveraged.



Federal R&D by Funding Agency and by Performer (FY2002 $B)

100
75
50
approx. vol.
100
ml

INVESTING IN CAPITAL

THE NEED FOR HUMAN CAPITAL FROM GLOBAL PLAYERS

The marketplace for research talent and capital is global and increasingly competitive. In this environment, the skilled U.S. research workforce is declining, with fewer Americans attaining higher education in research sciences. Across the globe, other nations are seeking ways to attract new talent, or to encourage their citizens that study abroad to return home. These initiatives include:

- The proposed European Union (EU) "Blue Card" that would allow non-EU skilled workers to be employed in any EU country, a significant liberalization of EU policy.
- China's "green passage" program, initiated in 2007, which offers returning Chinese a series of tax benefits, guaranteed university placements for returning children, and exemption from household registration requirements.

In 2008, under existing immigration restrictions, the H-1B visa cap was limited to 85,000 visas. 65,000 of those visas are available as a base amount, with an additional 20,000 visas available for foreign graduates with advanced degrees from the U.S. Universities. The severe limitations on visas for highly skilled workers are one area where the U.S. lags many countries around the globe. Congressional efforts to address immigration policy have become mired in political gridlock, with high profile legislation failing to survive a Senate filibuster, and election-year politics effectively halting further action until 2009. In order to ensure continued retention of highly-skilled researchers and technicians, the U.S. must offer competitive immigration incentives that welcome foreigners into our Communities of Innovation, and retain their talents through the H-1B visa process.

In the arena of foreign investment, the U.S. is currently in the process of clarifying its foreign investment rules as a result of the passage of the Foreign Investment and National Security Act of 2007 (FINSA). FINSA formalized the existing process for reviewing foreign acquisitions in the U.S., and required the Department of Treasury to issue new regulations governing the foreign transaction (Committee on Foreign Investment, or CFIUS) review process. Many in the business community have filed comments in support of these new regulations, particularly because they contain an express exemption for "Greenfield" investment in the U.S. by foreign entities. This creates a clear expression of support for foreign direct investment in research, but there remain other policy initiatives that could further encourage "in-migration" of research resources, and ideally foreign start-up companies, into the U.S.

To increase the ability of the U.S. to attract this type of investment, Congress should support the "soft landing" strategy developed and supported by the National Business Incubation Association (NBIA). This program recognizes those incubators that have fostered an environment that provides critical resources to foreign businesses seeking to expand into new markets. Business incubators that receive the NBIA Soft Landings designation frequently offer some or all of the following resources:

- Translation services;
- Language training;
- Regulatory and administrative transition assistance;
- Cultural training;
- Visa assistance;
- Patent assistance;
- Resources for meeting import/export laws.

Federal support, and greater coordination among agencies, could bolster these efforts and link the soft landing concept with additional governmental support or preferences in the arena of grants, research, or visa allocations. Encouraging foreign companies and start-up businesses to engage in research in the U.S., creating Communities of Innovation that welcome global cooperation, will serve a central role in ensuring that America remains competitive in the race for international talent and resources.

POLICY RECOMMENDATION: EXPAND H-1B VISA AND EXPLORE NEW VISA INITIATIVES FOR RESEARCH

CONCLUSION

America stands at a crossroads for competitiveness and innovation. We can choose to adopt policies that enhance collaboration, encourage new models for research, and attract global talent to our Communities of Innovation, or we can continue to lose access to the best the world has to offer. The landscape for research is changing dramatically as countries across the globe are investing substantial sums in developing large, well-funded research communities, offering expanded incentives to attract corporate research and development, and breaking down public-private barriers to collaboration. As members of our own Communities of Innovation across the U.S., we call on the new Administration, along with Congress, and federal government to take action on these core issues of American competitiveness.

Across the country, Communities of Innovation continue to support U.S. economic growth, providing an important employment multiplier, commercializing new technologies, and advancing new scientific research. A central priority for the government must be the cultivation and expansion of these success stories, and the development of policies that allow the U.S. to remain at the forefront of innovation and technological success.

ASSOCIATION OF UNIVERSITY RESEARCH PARKS

Creating Communities of Innovation

www.aurp.net

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FACTS

ASSOCIATION OF UNIVERSITY RESEARCH PARKS

Creating Communities of Innovation

The Association of University Research Parks (AURP) is a 22-year-old professional association of university related research and science parks. AURP's mission is to promote and support the development of university research and science parks worldwide.

AURP's membership includes planned and operating parks, many of which contain technology incubators. A variety of university, governmental, not-for-profit and private companies interested in the development and operation of high technology economic development projects comprise AURP's membership.

WHAT IS A RESEARCH PARK?

AURP defines a university research park as a property-based venture, which has:

- Existing or planned land and buildings designed primarily for private and public research and development facilities, high technology and science based companies, and support services
- A contractual and/or formal ownership or operational relationship with one or more universities or other institutions of higher education and science research
- A role in promoting research and development by the university in partnership with industry, assisting in the growth of new venture, and promoting economic development
- A role in aiding the transfer of technology and business skills between the university and industry teams.
- A role in promoting technology-led economic development for the community or region.

ABOUT RESEARCH PARKS IN THE UNITED STATES AND CANADA:

- University research parks in the United States and Canada encompass more than 47,000 acres and include 124 million square feet of space
- At full build out, these research parks will include 275 million square feet of space
- More than 300,000 workers in North America work in a university research park
- Every core job in a research park generates an average of 2.57 jobs in the economy

UPCOMING AURP EVENTS:

2008 Annual Conference December 10-12 in St. Petersburg, Florida
"21st Century University-Industry Networks: Global, Sustainable, and Connected"

AURP 2009 Washington Summit Meeting February 26 in Washington, D.C.

BioParks 2009 May 16 in Atlanta, Georgia

2009 Annual Conference October 21-23 in Vancouver, British Columbia

GET THE LATEST INFORMATION ABOUT MEMBERSHIP BENEFITS, REGIONAL MEETINGS, SPONSORSHIP OPPORTUNITIES, BREAKING INDUSTRY NEWS, AND TRENDS IN PARK DEVELOPMENT:
VISIT WWW.AURP.NET

POLICY RECOMMENDATIONS

ASSOCIATION OF UNIVERSITY RESEARCH PARKS

Creating Communities of Innovation

- **Establish American Innovation Zones:** The Innovation Zones would serve as the centerpiece of efforts to modernize the U.S. approach to fostering competitive research and development. Innovation Zones are a critical next step towards American competitiveness, encouraging research in such a way as to accelerate investment and economic development around research clusters. The Innovation Zone approach envisions establishing objective criteria for national innovation assets, including research parks, technology incubators, universities, federal laboratories, and adjacent properties, and then providing regulatory reforms and economic incentives for their accelerated development.

- **Enact Federal Innovation Zone Partnership Program:** The federal government should establish a plan to competitively create research centers within the Innovation Zones that would require matching grants from state governments, local governments and private industry. These centers would focus on areas of high national needs, including energy research, homeland security, food safety, and global climate change.

- **Build Sustainable Communities of Innovation:** Incentives for sustainable 'smart growth' development should be central to establishing American Innovation Zones. The U.S. Department of Housing should explore best practices nationally to encourage density and mixed-use development in American Innovation Zones in urban areas, which will encourage researchers and entrepreneurs to live where they work, and reduce sprawl.

- **Encourage Federal Leasing and Federal Lab Construction in Innovation Zones:** The federal government should target federal leases for research and federal lab construction and related activities within American Innovation Zones.

- **Reform Federal Tax Provisions for Facilities Funded by Tax-Exempt Financing:** Current federal policy on corporate sponsored and/or funded research performed in facilities funded through tax-exempt bonds unduly restricts flexibility in negotiating corporate intellectual property (IP) rights. Eliminating the current IRS restrictions or increasing the safe harbors under IRS regulations in American Zones of Innovation to allow greater flexibility in intellectual property negotiations will improve U.S. competitiveness, and increase the likelihood that corporate R&D will stay in the U.S.

- **Create Enhanced Preferences for Small Business Innovative Research (SBIR)/Small Business Technology Transfer (STTR) and National Institute of Standards and Technology (NIST) Technology Innovation Program (TIP):** The federal government should provide incentives to small technology start-up companies located in American Zones of Innovation to be awarded SBIR, STTR, and NIST's new TIP contracts and grants. Cluster development, collaboration, and targeting the benefits of federal research dollars will provide incentive for new investment in the Innovation Zones, and improve the quality of research through greater cooperation among public and private researchers.

- **Solidify the Tax Benefits for Research and Development:** By reauthorizing the research and development tax credit, Congress will return the U.S. to an even playing field with many of its global competitors for research investment. Beyond this first step, Congress should offer an enhanced benefit for companies that perform their research within an Innovation Zone, or who contract with Innovation Zones entities for research or development.

- **Expand Enhanced Use Leasing (EUL) Authority:** Expand current enhanced use lease authority to all federal agencies to create more American Innovation Zones adjacent to federal labs.

- **Establish a Federal Technology Foundation** A federal technology foundation should be established to work with government managed federal labs. A foundation modeled on existing university research foundations could enable these laboratories to more effectively commercialize technology and use existing federal research assets for local technology-led economic development.

- **Develop Comprehensive Government-wide Database** Access to a government-wide database on all federal R&D funding is necessary to ensure that important national innovation assets are properly understood and leveraged for technology innovation.

- **Fully Fund the America COMPETES Act** The U.S. Congress took a great step forward in passing the America COMPETES Act in 2007. The Act authorizes a substantial federal investment in high risk, high reward research and improves funding to many of the U.S. science agencies. Research institutions and companies in Innovation Zones stand to benefit from the America COMPETES Act, but the Act has not been fully funded by Congress. The new Administration and the next Congress must make funding the America COMPETES Act a priority.

- **Import Innovation:** Research parks and incubators in American Innovation Zones should be targeted to recruit foreign technology companies using 'soft landing' techniques similar to those pioneered by the National Business Incubation Association (NBIA).

- **Welcome Human Innovation Capital to the U.S.:** In order to ensure continued retention of highly-skilled researchers and technicians, the U.S. must offer competitive immigration incentives that welcome foreigners into our communities of innovation, and retain their talents through the H-1B visa process.

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